Arab American University

Faculty of Graduate Studies

Assessing the Impact of Knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals

By

Reema Odeh

Supervisor

Dr. Yahya Salahat

This thesis was submitted in partial fulfillment of the requirements for the Master`s degree in Quality Management in Healthcare.

September/2025

Thesis Approval

Assessing the Impact of Knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals

By

Reema Odeh

This thesis was defended successfully on 24.9.2025 and approved by:

Committee members	Signature
1. Dr. Yehya Salahat: Supervisor	
2. Dr. Ashraf Al-mimi: Internal Examiner	
3. Dr. Ebaa Barghouthi: External Examiner	

Declaration

I declare that this thesis was composed by myself and that the work contained herein is my own, except where it states otherwise by references or acknowledgment, the work presented is entirely my own.

Name: Reema AbdulMajeed Odeh

ID: 202020386

Signature: Reema Odeh

Date: 18.2.2026

Dedication

First and foremost, I want to thank God for His holy assistance, for giving me strength, and for blessing me throughout this journey. This milestone would not have seen the light of day without His grace.

To my parents, whose unwavering love, support, and sacrifices have shaped me into the person I am today. Your encouragement and belief in me have been my foundation, and I am forever grateful.

To my husband, thank you for your infinite patience, understanding, and encouragement. Your love and unwavering support have been a source of strength, and I could not have asked for a better partner to walk this journey with me.

For my children, who inspire me to learn more and make a difference in the world.
I want to be a role model for you, demonstrating that with dedication and hard work, anything is possible.

This thesis is dedicated to all of you, with love and gratitude.

Acknowledgements

I would like to express my heartfelt gratitude to everyone who contributed to the completion of this thesis, especially my parents, husband, colleagues, friends, and teachers.

Special and sincere thanks to my thesis advisor, Dr. Yahya Salahat, for his invaluable guidance, expertise, and encouragement throughout this process. His insights and feedback have been instrumental in shaping this work, and I am truly grateful for his continuous support.

I am deeply grateful to the professors and staff at the Arab American University (AAUP) for their guidance and assistance throughout my research. Their support has been essential in helping me reach this milestone. I also extend my heartfelt thanks to the Dean of Quality in Healthcare Institutions for their encouragement and support. Their leadership and commitment to academic excellence have fostered an inspiring environment for my studies.

I would like to extend my sincere gratitude to the Palestinian healthcare providers who participated in this research. Your willingness to share your time, knowledge, and experiences has been invaluable to the completion of this thesis. Your dedication to healthcare, despite the challenges you face, is truly inspiring.

Lastly, I would like to acknowledge all the individuals who have contributed in one way or another to the completion of this thesis. Your support, in all its forms, has been deeply appreciated.

Above all, I thank God, the Divine, who continues to make the impossible possible.

Thank you all for being part of this journey.

Abstract

Occupational safety and health (OSH) is considered one of the most essential aspects in the workplace, particularly in healthcare settings, as healthcare providers, including nurses, are exposed to a variety of occupational hazards that may have long-term adverse health effects. This study aims to assess the current levels of knowledge, attitudes, and practices (KAP) regarding OSH among nurses in Palestinian hospitals, examine the associations between KAP and selected demographic and organizational factors, and explore nurses' perceptions of the current OSH conditions and related challenges. To this end, a descriptive-analytical cross-sectional design was employed using a structured, self-administered KAP questionnaire on OSH developed by the researcher based on validated instruments from previous studies. The target population of the study consisted of (10,800) nurses working in the West Bank hospitals, from which a sample of 388 full-time registered nurses from different departments participated in this study.

From the statistical analyses, it was found that 24.2% of nurses demonstrated good knowledge, 30.9% positive attitudes, and 30.9% good safety practices; 26.3% achieved a high overall KAP score. Also, it was found that as knowledge increases, the OSH improves. It was concluded that having a good level of KAP is an important trait in being a nurse, especially considering the hazards found in this career. Furthermore, it found that resource constraints (29.6%) and unmet training needs (22.2%) were the most frequently cited implementation barriers. It is recommended that the Palestinian Ministry of Health (PMOH) and human recourses departments should hold structured training programs regarding OSH, self- discipline, and leadership. Additionally, the PMOH should encourage the incidence reporting culture among the healthcare providers. Moreover, nurses should attend special courses to improve their knowledge, commitment to safety standards, and controlling their attitudes and practices in hazardous situations.

Keywords: Knowledge, attitude, practices, occupational safety and health, nurses.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

Abbreviations	Title
AAUP	Arab American University of Palestine
ANOVA	Analysis of Variance
CAUTIs	Catheter-associated urinary tract infection
COVID-19	Coronavirus Disease
DV	Dependent Variable.
ER	Emergency Room
HAIs	Hospital-Acquired Infections
HCPs	Healthcare Providers
HCWs	Healthcare Workers
HIV	Human Immunodeficiency Virus
HSOPSC	Hospital Survey on Patient Safety Culture
HTMT	Heterotrait-Monotrait
ICU	Intensive Care Unit
IDV	Independent Variable
IRB	Institutional Review Board
IV	Intravenous
KAP	Knowledge, Attitudes and Practices
LMG	Lindeman Merenda Gold
NSIs	Needle-Stick Injuries
OR	Operating Room
OSH	Occupational Safety and Health
PCBS	Palestinian Central Bureau of Statistics
PLS-SEM	Partial Least Square Structural Equation Modeling
POMP	Percent of Maximum Possible
PPE	Personal Protective Equipment
PSC	Patient Safety Culture
QoL	Quality of Life
SD	Standard Deviations
WHO	World Health Organization

Chapter One: Introduction

1.1 Background

Healthcare providers, including doctors, nurses, and other healthcare workers (HCWs), are exposed to a variety of occupational hazards that may have long-term adverse health effects. For example, healthcare providers (HCPs) are at risk of infection from infectious diseases, musculoskeletal disorders from repetitive motions, and stress from work-related factors. As such, it is crucial to understand their knowledge, attitudes, and practices (KAP) toward occupational safety and health (OSH) to determine the extent to which they are aware of these hazards and how they are addressing them (Grantson, 2024).

Occupational hazards encompass workplace conditions that heighten the likelihood of a worker experiencing death, disability, or illness. Consequently, millions of workers globally face exposure to work-related accidents and hazardous substances. According to the latest International Labour Organization (ILO), in 2019 nearly three million work-related fatalities and over 395 million nonfatal occupational injuries occurred. In terms of regional distribution, Asia and the Pacific region have the highest share, accounting for nearly 63 percent of global work-related mortality, reflecting the fact that the region has the largest working population in the world. The ILO reported that 6.71% of all deaths worldwide were caused by work-related causes (International Labour Organization, 2023).

In Palestine, and according to the Palestinian Central Bureau of Statistics, there were 1,527 workplace injuries reported, with an increase of 33.6% from the 1,143 cases reported in 2020.The incidence rate of work injuries in the West Bank was 54.2 per 100,000 population compared to 41.5 per 100,000 in 2020. In 2021, there were 54 reported deaths due to workplace accidents, representing a notable significant increase in the work-related deaths compared to 2020. This was because work in 2020 was affected by the measures taken to curb the spread of the Covid-19 pandemic. These findings highlighted the need for a greater emphasis on OSH in the workplace. Increases in the above indicators will reduce productivity and directly and indirectly affect the national economy as well as have a negative psychological impact on employees and the workplace (Palestinian Central Bureau of Statistics, 2021).

According to the WHO, healthcare is considered one of the hazardous sectors (WHO, 2022). The healthcare system is specialized and complex, involving multiple health workers and units that work together to provide healthcare. A healthy and safe healthcare workplace is intended to improve healthcare quality, patient safety, provider retention, and sustainability. Safety practices can protect HCPs, visitors, and clients from health risks (Qaraman et al., 2022).

Nurses represent the largest cohort of healthcare professionals in the medical field, with many engaging directly with patients. Due to their extensive bedside duties, nurses face higher occupational risks compared to other healthcare staff. These risks encompass various hazards encountered during their work in healthcare settings, ranging from physical, chemical, and mechanical risks to psychosocial and biological dangers (Qaraman et al., 2022).

For example, needlestick injuries (NSIs) expose nurses to a variety of biological hazards, most notably blood-borne pathogens, that can cause serious infections. According to the WHO, NSIs contribute to 39% of Hepatitis C infections, 37% of Hepatitis B infections and 4.4% of HIV infections globally. Moreover, 54% of HCWs in low- and middle-income countries have latent TB infection (WHO, 2022). Nursing staff utilize chemicals, medications, and disinfectants in their daily tasks to assist in patient diagnosis and treatment. Nurses at hospitals have experienced injuries from sharp objects or used syringes. Subsequent investigations have revealed that contaminated needles and other sharp tools have led to the transmission of multiple blood-borne pathogens among hospital staff. (Tabash et al., 2024)

Nursing responsibilities within hospital environments also include tasks like, repositioning bedridden patients, aiding patient mobility, and facilitating patient transfers between departments (Simmons et al., 2025). Improper patient handling techniques can lead to musculoskeletal injuries, up to 72% of nurses have experienced chronic low back pain (WHO, 2022).

Additionally, occupational stress can significantly impact on the quality of life and the level of care nurses provide to their patients. Consequently, incidents of clinical practice errors have increased, and the quality of patient care delivered by nurses have declined due to job-related stress. Nursing staff play a critical role in promoting and protecting public health, and their actions can impact on the health and well-being not only affect themselves but also their patients. As such, it is important to ensure that they are knowledgeable about OSH issues and have the necessary attitudes and practices to prevent occupational hazards (Tabash et al., 2024)

In developing countries, the healthcare sector faces significant challenges regarding OSH including the absence of routine precautions, insufficient infrastructure, limited resources and training. A systematic review and meta-analysis study conducted in Ethiopia, revealed that 40% of HCWs experienced NSIs and the main causes were the lack of adequate training, lack of routine precautionary measures and working practices in the workplace (Kaweti & Feleke, 2024).

However, the Palestinian healthcare system, similar to low and middle-income countries, continues to face shortage in resources, the availability of essential drugs, protective supplies, equipment, and diagnostic tests in countries such as Palestine is limited (OCHA, 2024). Qaraman et al. (2022) conducted a study among nursing students in Gaza and showed that 21% of the nursing students were exposed to NSI's, and 62% of nursing students admitted needed for more OSH training. Workers in hospitals are at a high risk of sustaining injuries due to the nature of their work. The injuries can range from minor cuts to more severe injuries. According to Manyele et al., (2008) study, the most common injuries were NSIs with high percentage (52.9%), then exposure to patient blood (21.7%), chemicals' burn (10.6%) and slipping (5.9%).

Generally, the rate of injuries among healthcare and social assistance workers is higher than among workers in other industries (OSHA, 2013). According to U.S. Bureau of Labor Statistics, the rate of injuries and illnesses among healthcare and social assistance workers was 5.8 cases per 100 full-time workers in 2019, compared to 4.2 cases per 100 full-time workers across the manufacturing sector (Bureau of Labor Statistics, 2019).

In 2023, the total recordable cases (TRC) incidence rate in the private industry healthcare and social assistance sector was 3.6 cases per 100 full-time equivalent (FTE) workers, a decrease from 4.5 cases per 100 FTE workers in 2022. Despite this decline, this rate remains higher than the average rate for all industries, which was 2.4 cases per 100 FTE workers in 2023 (Bureau of Labor Statistics, 2024). These figures highlighted that healthcare sector continues to be at high risk towards occupational hazards, emphasizing the need for implementation the OSH measures.

The rate of injuries among healthcare sector workers in Palestine is not well documented. There is dearth of data and statistics in Palestinian hospitals regarding the nurses' injuries rate in their workplace (Qaraman et al., 2022). In Palestine, and despite conducting several studies which examined the KAP regarding the OSH among HCPs, reliable and comprehensive data on injury rates in Palestinian hospitals remain limited, creating a clear gap in understanding the OSH

conditions within hospitals. This gap emphasizes the importance of assessing KAP levels among HCPs and how nurses' KAP relate to OSH, which is the primary focus of this study.

1.2 Problem Statement

Occupational safety and health (OSH) is a critical component of any workplace. It is important to ensure that all employees are aware of the safety protocols and procedures in place to protect them from potential hazards. This includes providing training on the proper use of safety equipment and ensuring that all employees are aware of the potential risks associated with their jobs. Additionally, employers should ensure that all safety protocols are regularly reviewed and updated to ensure effectiveness.

Injuries in Palestinian hospitals can include physical injuries (such as slips, trips, and falls), biological, chemical, as well as psychological injuries (such as emotional distress or trauma) (Aladini et al., 2023).The rate of injuries among workers in hospitals varies depending on the type of hospital and job being done.

Despite the well-recognized occupational hazards and risks faced by HCPs particularly nurses, evidence in Palestine is limited and fragmented (Qaraman et al., 2022). Existing research is still insufficient, providing only limited information on occupational injuries and does not investigate how nurses' KAP influence OSH conditions in Palestinian hospitals. This evidence gap in understanding the impact of KAP of nursing staff on OSH and the factors influencing workplace safety for Palestinian nurses, emphasizing the importance of this study

Therefore, this study aims at assessing the impact of KAP of nursing staff on OSH in Palestinian hospitals. More specifically, to understanding the current level of KAP regarding the OSH among HCPs (nursing staff) in Palestinian hospitals.

1.3 Significance of the Study

Within the Palestinian context, the study is significant because nursing staff, who are on the front lines of patient care, are at risk of exposure to occupational hazards, such as chemical and biological hazards, physical hazards, and ergonomic hazards. As a result, nurses must be aware of the potential risks associated with their work and must be knowledgeable about the safety procedures and protocols that are necessary to protect themselves from potential hazards. Moreover, nurses must also have the necessary attitude and practice towards OSH to properly

protect themselves and their patients from occupational hazards. This includes having a positive attitude towards safety and being willing to take the necessary measures to ensure that safety protocols are followed. Additionally, nurses must also follow the guidelines, such as wearing protective equipment, following safety protocols, and reporting any potential hazards or incidents.

Hence, Palestinian hospitals face unique challenges in terms of OSH due to the ongoing political conflict and economic limitations. These challenges may have a significant impact on the health and well-being of HCPs, and may affect the quality of care they provide to patients. This research will provide valuable insights into the current state of OSH in Palestinian hospitals and will identify areas for improvement (Abu Aisheh et al., 2021).

This research is also important because it can help to identify the potential gaps in the current level of KAP among HCPs, and provide insight into how to improve safety in Palestinian hospitals. The importance of this study lies in its contribution in understanding the KAP of nurses toward OSH in Palestinian hospitals. The findings of this study will inform the development of interventions and policies aimed at improving OSH in the healthcare sector, and ultimately, ensure that nurses are better equipped to promote and protect the health of both them and their patients.

1.4 Aims and Objectives

The study aims to:

1. Assess the current levels of KAP among nurses in Palestinian hospitals.
2. Assess the current status of OSH for the nurses in Palestinian hospitals.
3. Assess the impact of KAP on OSH of the nurses in Palestinian hospitals.
4. Identify the barriers and challenges faced by Palestinian hospitals in implementing OSH policies and practices.
5. To assess the association between the demographic characteristics of nurses working in Palestinian hospitals and their levels of KAP related to OSH.

1.5 Study Questions, Hypotheses and the Conceptual Model

This study aims to answer the following questions:

1. What are the current levels of KAP among nurses in Palestinian hospitals?
2. What is the current perceived OSH of the nurses in Palestinian hospitals?
3. What is the impact of KAP on OSH of the nurses in Palestinian hospitals?
4. What are the barriers and challenges faced by Palestinian hospitals in implementing OSH policies and practices?
5. Do demographic information of nurses and Palestinian hospitals have any impact on KAP and OSH?

Accordingly, the main hypotheses of this study are:

1. H1: There is no significant impact of knowledge of nurses on OSH in Palestinian hospitals.
2. H2: There is no significant impact of attitudes of nurses on OSH in Palestinian hospitals.
3. H3: There is no significant impact of practices of nurses on OSH in Palestinian hospitals.
4. H4: There are no significant differences in KAP and perceived OSH across nurse demographic groups (gender, age, education, department, years of experience) or by hospital characteristics (ownership, region).

The conceptual model proposes that good knowledge, sufficient attitude and well practice among the nurses in their workplace improve the OSH which accordingly ensures safe working environment is shown in Figure (1).

The conceptual model shows the relationships between the independent variables (IDV): knowledge (K), attitude (A), and practices (P) (KAP) and the perceived OSH as a dependent variable (DV) among Palestinian's hospital nurses. The conceptual model also illustrates that the potential impact of the socio demographic characteristics (e.g., age, gender, education) of the Palestinian nurses and hospital characteristics (e.g., type, location) on the nurses KAP and OSH will also be considered.

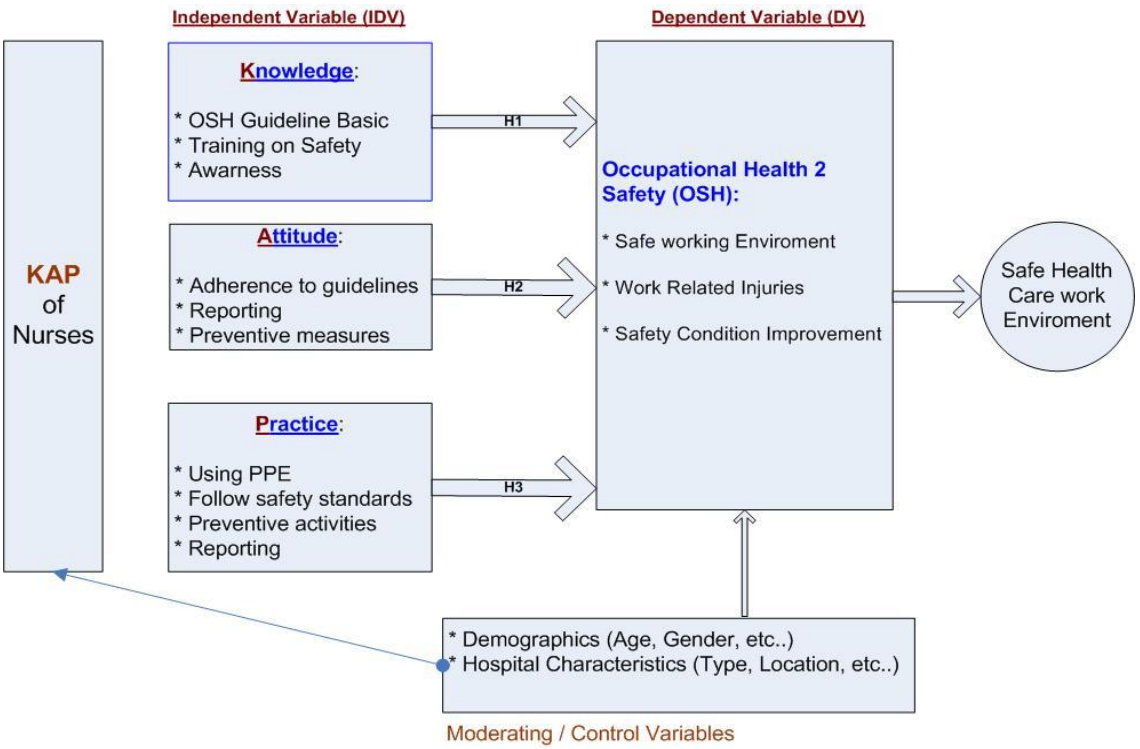

Figure (1): The Conceptual Model of the Study

1.6 Conceptual Definitions

In this study, there are the bellow conceptual definitions:

1. Knowledge, attitudes and practices (KAP) model: A knowledge, attitude and practices (KAP) survey is a quantitative method; predefined questions presented in standardized a questionnaire that collects both quantitative and qualitative information. Its surveys bring out misconceptions or wrong notions which might act as hurdles for adopting the actions what we desire to have the potential barriers as well for behavior change. Basically, a KAP survey records an "opinion" and is based on the "declarative" (i.e., statements). Stated another way, the KAP poll reflects what was said but there can be very large gaps between this and what was done (Wen et al., 2021).

2. Nurses' Knowledge: Nurses' knowledge towards OSH is all the required information, understanding and awareness level regarding the OSH protocols, safety guidelines and procedures, preventive measures towards healthcare environments and wok related risks and hazards (Aluko et al., 2016). The hazards are any potential risk or danger that may occur with the workers during the working time, which will lead to either short or long-term illness or injury. These potential risks and hazards arise from the work environments itself (Zaman et al., 2023).

Therefore, sufficient and good knowledge increases the nurses' ability to handle and distinguish between different potential risks that may occur in the hospital work time. The nurses' knowledge about safety protocols and policies will contribute in preventing incidences or reduce their effect (Obono et al., 2019).

3. Nurses' Attitude: Nurses' attitude towards OSH is the nurse's mental preparedness to adhere with the safety procedure during their working settings. The nurses' perceptions, beliefs and behavior regarding the safety practices in their work time reflects their adherence to apply the safety procedure and guidelines. The good nurses' attitude and perceptions about the importance of OSH will reduce the risk potential occurrence in their workplace (Aladini et al., 2023).

4. Nurses' Practice: Nurses' practice towards OSH is the nurse's way to implement the guidelines and safety precautions which includes adherence to the safety procedure, commitment in incident reporting process, participating in safety training courses and encouraging to build safety culture in the healthcare work settings (Zawahre, 2022).

5. Occupational safety and health (OSH): Occupational safety and health (OSH) is the discipline of multidisciplinary applied science to the recognition, control, and engineering of people's safety, health, and welfare at work. It is related to occupational medicine and occupational hygiene, and it complements workplace well-being programs. Publicity concerning safety precautions in the workplace prevents any danger that may occur to a member of the public who may have access to the place of work (Andersen et al., 2019).

6. Healthcare Providers: A healthcare provider is an individual or entity that provides medical treatment or healthcare. This can include doctors, nurse practitioners, or even midwives. It also includes professionals like radiologists and labs; further, it extends to hospitals, urgent care clinics, and medical supply companies. All other professions, facilities, and businesses offer services related to healthcare (Kak et al., 2021).

7. Socio-Demographic Information: The nursing socio-demographic information is the personal and professional characteristics of the nursing staff working in the hospitals such as age, gender, education level, years of nursing experience, etc., which may affect knowledge, attitude, practice, and OSH-related outcomes (Liu et al., 2025).

8. Hospital Characteristics: They refer to the characteristics and features for the hospitals, for example Hospital location, hospital type (Private, Governmental), hospital size (big, medium, small), etc. Palestinian Healthcare institutions and hospitals refer to the hospitals located in the West Bank, Gaza Strip, and East Jerusalem providing health care services. These hospitals include public (governmental), private and NGO's hospitals.

9. Safe Healthcare Work Environment: Safe healthcare work environment is an environment where OSH procedures, policies, standard precautions and regulations are effectively applied, so that the HCPs (nurses) are not exposed to risks during their working time. This will contribute of reducing the hazards of exposure and illness. It protects not only the nurses' mental and physical health, but it improves healthcare quality workforce (WHO, 2022).

10. Barriers and Challenges: Barriers and challenges are defined as structural, institutional or individual elements that create obstacles for the successful implementation of policies and precautions within the work time which will affect OSH for the nursing staff in their workplace. These can be limited resources, inadequate training (Aladini et al., 2023), and staff shortage, poor management, poor safety culture, communicational barriers (Khaled, 2024). As the current study mainly focuses on both assessing the current level of KAP among the nurses' staff in West Bank Palestinian hospitals and the impact of KAP on the OSH which will contribute to enhance the safety working environment.

1.7 Operational Definitions:

The previous conceptual framework figure (1) was constructed and adopted after reviewing the related literature about the KAP towards OSH among HCPs particularly nurses. It demonstrates the relationship between the Nurses' KAP as IDV and the perceived OSH among nurses as a DV. It also shows that the potential impact of Palestinian nurses' socio-demographic information and hospital characteristics (e.g., type, location) on nurses' KAP and OSH will be taken into account. The study employed a structured, self-administered KAP Questionnaire on OSH, developed by the researcher based on validated instruments from previous studies. The questionnaire consisted of two main parts (Part 1: covered Socio-demographic information and Part 2: covered KAP Assessment Questions, which were further divided into five sections: Knowledge, Attitude, Practice, and OSH perception, as well as the Barriers and Challenges section). Most items were answered on a 5-point Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree)

whereas the "barriers and challenges part" was open ended question. Appendix A includes the English and Arabic versions of the questionnaire.

In this study, the operational definitions are as follows:

1. **Nurses' Knowledge:** To assess the level of nurses' knowledge about OSH in the West Bank Palestinian hospitals, the researcher used adapted questionnaire to measure the level of Nurses' Knowledge, which includes (9) items and was categorized into (5) answers as: (Strongly agree, Agree, Neutral, Disagree, strongly disagree).

2. **Nurses' Attitude**: To assess the level of nurses' attitude about OSH in the West Bank Palestinian hospitals, the researcher used adapted questionnaire to measure the level of Nurses' attitude, which includes (8) items and was categorized into (5) answers as: (Strongly agree, Agree, Neutral, Disagree, strongly disagree).

3. **Nurses' Practices**: To assess the level of nurses' practice about OSH in the West Bank Palestinian hospitals, the researcher used adapted questionnaire to measure the level of Nurses' practice, which includes (11) items and was categorized into (5) answers as: (Strongly agree, Agree, Neutral, Disagree, strongly disagree)**.**

4. **Composite KAP:** To assess the overall level of nurses' KAP about OSH in the West Bank Palestinian hospitals, the researcher used the combined Knowledge, Attitude, and Practice items, which includes (28) items and was categorized into (5) answers as: (Strongly agree, Agree, Neutral, Disagree, strongly disagree)**.**

5. **Occupational safety and health (OSH) perception:** To assess the level of perceived OSH among nurses in the West Bank Palestinian hospitals, the researcher used adapted questionnaire to evaluate the level of nurses' perceived OSH, which includes (5) items and was categorized into (5) answers as: (Strongly agree, Agree, Neutral, Disagree, strongly disagree).

6. **Barriers and Challenges:** To identify the potential factors that impact nurses' commitment to safety protocols and adherence to OSH guidelines. An open-ended question for free text responses will be used to explore the barriers and challenges that nurse perceive as obstacles to implementing OSH policies in their hospitals.

1.8 Summary of chapter one:

This chapter provided an overview of OSH among HCPs, particularly nurses in healthcare workplaces, emphasizing the high-risk nature of hospital environments and the importance of adequate KAP in preventing workplace injuries. The chapter also discussed the local context and the major challenges that Palestinian hospitals face. It also discussed the study's background, problem statement, significance, study goals and objectives, hypothesis, and research questions, as well as general definitions of study variables such as knowledge, attitude, practices, and OSH.

1.9 Thesis Structure

This study includes the following structure. Chapter One explains the thesis topics, background, problem of the statement, significance of the study, study aims and objectives, study questions and hypotheses, Conceptual Definitions and conceptual framework model. The literature review in Chapter Two includes general overview of the literature approach, then a review of selected peer-reviewed articles which are related to the KAP of nurses regarding OSH exploring previous studies on KAP of HCPs toward OSH and their methodological approaches and main results of each article. The research methodology is presented in Chapter Three which describes the study type, design, setting, study target population and sampling, data collection tool, data collection procedure, method of data statistical analysis, and ethical considerations. The result and analysis are provided in Chapter Four which includes the study findings, and an interpretation of the output and analysis data. It includes both descriptive and analytical results used in accordance with the data analysis plan and to achieve the study's objectives. The discussion and conclusions are given in Chapter Five including summary of findings focusing on the main findings and their comparison with previous literature, the study's conclusion, recommendations, limitations and future work.

Chapter Two: Literature Review

2.1 Overview

Being a nurse or medical care worker is a job that involves great hazards because they deal with serious cases of injuries and diseases. Consequently, this requires having a set of standards that guarantee the safety of nurses in their work environment, including knowledge, attitude, practice, and occupational safety (WHO, 2024).

This chapter reviews the existing research and studies related to the hospital nurses' KAP and nurses' KAP impact on the OSH in the hospitals. As well as the most common literature that describes and studies the relationships between socio-demographic characteristics of the HCP and their KAP towards OSH. The literature review and previous studies were collected from scientific databases such as PubMed, Scopus, BMC Research, ScienceDirect, Google Scholar, and WHO/ILO databases by using special keywords combined with Boolean operators, such as AND, OR, and NOT, for example: knowledge, attitude and practice; KAP AND nurses; performance; OSH; nurses AND occupational injuries; occupational hazards. Studies were considered if they focused on OSH in healthcare settings, examined nurses or HCWs, and were published in English between 2010 and 2025. The most relevant regional and international articles published in recent years in English were reviewed.

2.1.1 Knowledge and Attitude

Having sufficient knowledge about the possible occupational hazards faced by nurses is necessary because it leads to avoiding the occurrence of injuries or even infections, especially in hospitals, which are the most appropriate environment for injuries, especially in the case of nurses. In other words, they deal with cases with highly infectious diseases as well as being subjected to serious injuries. The following scholars have dealt with knowledge, connecting it with nurses' attitudes towards occupational hazards.

To begin with, Shaheen et al., (2023) assured that HCWs face terrible occupational hazards which may lead to death. Consequently, their study aimed to assess the KAP of occupational hazards among nurse in tertiary care hospitals of Rawalpindi. It employed the descriptive cross-sectional study, that the sample comprised 422 nurses having clinical experience with more than one year. Also, collected data was analyzed using SPSS calculating frequencies and percentages. It was

found that (87.7%) of nurses had high knowledge of occupational hazards, with positive attitude towards them, while only (51.7%) followed safety practices. It was found that there was no relationship between knowledge, attitude and practices. Also, it is imperative to improve these practices to reduce occupational hazards. This study contributes in understanding the full-sized scale of the hazards of being a nurse and the level of knowledge that nurses have about these hazards.

Mansour et al., (2022) evaluated the knowledge, attitude and perceptions of nurses about occupational hazards. It adopted the descriptive Cross-sectional study design. Its sample consisted of 250 nurses randomly selected at Jinnah and Mayo Hospital Lahore. The collected data was analyzed statistically in the form of descriptive statistics (frequencies, percentages, tables and graphs). It was found that (60.8%) of the sample were having great knowledge about occupational hazards, while (39.2%) had poor knowledge about occupational hazards. As for their attitudes towards occupational hazards, (58%) had positive attitudes towards the occupational hazards while (32%) had negatives attitudes. It is concluded that knowledge about occupational hazards varies according to education and experience, so it is imperative to introduce more courses about occupational safety to nurses.

Also, Pratiwi and Ivanovic (2022) conducted a study at the department of industrial engineering, at Universitas Muhammadiyah Surakarta (IE UMS) in Indonesia. This study aimed to identify, test, and analyze how OSH culture influences implementing of OSH awareness for students. It used a Partial Least Square Structural Equation Modeling (PLS-SEM) approach to analyze the relationships between the variables. The IDV in the OSH culture are individual, organizational, occupational, and environmental factors, while the DV is awareness. The results showed that the occupational and environmental factors have the greatest positive and significant influence on the awareness level of implementing OSH culture, while the individual factor has no significant effect. The study provided recommendations to improve the implementation of OSH culture by increasing the focus on occupational and environmental factors, as well as organizational commitment and individual competence related to OSH.

Still, Rusdiana et al. (2022) investigated the relationship between nurses' knowledge and attitudes with their compliance to standard precautions in hospitals. It synthesized data from various articles published in the last five years, revealing a significant correlation between nurses' knowledge and

adherence to safety protocols, with a pooled odds ratio of 4.69. This indicates that nurses with good knowledge are 4.69 times more likely to comply with standard precautions compared to those with poor knowledge. Similarly, the analysis showed that positive attitudes among nurses also enhance compliance, with a pooled odds ratio of 2.34.

The research highlighted the critical role of knowledge and attitudes in ensuring adherence to standard precautions, which are essential for preventing occupational hazards in healthcare settings. The findings suggested that improving nurses' knowledge through training and education can significantly impact their compliance with safety measures. However, the study also noted variations in research results, indicating that while knowledge and attitudes are important, other factors such as workload and facility availability may also influence compliance levels.

It underscored the importance of fostering a knowledgeable and positive attitude among nurses to enhance compliance with standard precautions in hospitals. The results advocated targeted educational programs and supportive work environments to mitigate risks associated with occupational health hazards. By addressing these factors, healthcare institutions can improve safety for both HCWs and patients, ultimately leading to better health outcomes.

2.1.2 Knowledge, Practice and Safety

Nurses who face great life-threatening situations which require having great knowledge as well as sufficient experience as a result of practicing nursing for a long time which secures the safety of the well-trained staff of nurses (Ndikwetepo, 2018). Many scholars tackled the relationship among knowledge, practice and safety. To begin with, Amin et al. (2023) conducted a study at Mardan Medical Complex in Pakistan aiming to assess the knowledge and safety practices regarding occupational hazards among operating room (OR) staff. It involved 109 participants, including surgeons, anesthetists, technologists, and nurses, who completed a validated questionnaire. The findings revealed that while 95% of surgeons were aware of work-related hazards, awareness levels varied among other staff, with less experienced personnel showing lower knowledge. The study highlighted the need for improved training and safety practices to mitigate risks associated with occupational hazards.

Results indicated that surgeons exhibited the highest level of knowledge and adherence to safety practices, followed by anesthetists, technologists, and nurses. Despite the overall awareness of

hazards like noise, NSIs, and contamination from patient fluids, the study found that many staff members lacked adequate training on preventive measures. The statistical analysis showed no significant correlation between job experience and knowledge of safety practices, suggesting that experience alone does not guarantee awareness of occupational hazards.

It also underscored the importance of regular training and reinforcement of safety protocols among HCWs to minimize exposure to occupational hazards. It advocates for mandatory training programs and better communication regarding safety practices to enhance the overall health and safety of OR staff. By addressing these gaps, healthcare facilities can work towards reducing morbidity and mortality associated with occupational hazards in the operating room environment. Additionally, Aladini et al. (2023) conducted a study at Al-Shifa Medical Complex in Gaza Strip, aimed to assess the KAP of OSH among HCWs. A total of 330 HCWs participated, revealing that nurses exhibited the highest level of OSH knowledge, while administrative staff showed the lowest. The findings indicated a significant gap in training, with 80.3% of HCWs not having received any OSH training, highlighting the need for focused educational programs to enhance safety practices in healthcare settings.

The results demonstrated that while nurses had a relatively positive attitude towards OSH, other groups, particularly engineers and technicians, displayed a negative attitude. The study also found that good practices towards OSH were more prevalent among nurses compared to other HCW's. This aligns with previous research indicating that continuous training and education significantly improve the knowledge and practices of healthcare professionals regarding occupational safety. Despite the relatively higher knowledge and positive attitudes among nurses, there remains a critical need for comprehensive training programs across all HCW categories to bridge the existing gaps in OSH practices. It emphasized the importance of institutional commitment in improving safety management practices and fostering a culture of safety within healthcare facilities, to protect workers from occupational hazards effectively.

Furthermore, Qaraman et al. (2022) conducted a study among nursing students at Al-Israa University in Gaza Strip, aimed to assess their KAP regarding OSH. It revealed that the majority of participants were female, and enrolled in diploma programs. The findings indicated that students who attended safety precautions courses had significantly higher knowledge and practice scores compared to those who did not. Overall, the mean scores for knowledge, attitudes, and practices

were 78.2%, 80.6%, and 81.2%, respectively, highlighting a generally positive outlook towards OSH among the students. The results also showed that a notable percentage of nursing students had experienced NSI's, which raises concerns about their safety practices. Despite high levels of knowledge and positive attitudes towards safety protocols, some students reported inadequate adherence to essential practices, such as proper hand hygiene and safe disposal of needles. The study emphasized the importance of continuous training and education in OSH to enhance the safety practices of nursing students, particularly in clinical settings where they are exposed to various risks.

It was recommended that clinical training departments and universities maintain and improve OSH training for health science students, as it positively impacts their practices. It underscored the need for further research on OSH among various health-related students to develop effective strategies for improving workplace safety in healthcare settings. By addressing these issues, the healthcare system can better protect its workers and improve the quality of care provided to patients.

Furthermore, Ilo et al. (2022) assessed the knowledge and practices of nurses regarding preventive measures for occupational health hazards. The research involved a descriptive cross-sectional survey with 214 nurses participating, revealing a high level of knowledge (91.6%) about occupational hazards and their preventive measures. The findings indicated that nurses frequently implemented safety practices, particularly in hand hygiene and the use of personal protective equipment (PPE), although there were gaps in the use of post-exposure prophylaxis. The study recommended conducting risk assessment regularly to identify the potential hazards at a safe stage.

In addition, Shawahna (2021) aimed to assess knowledge, attitude, and use of protective measures against COVID-19 among nurses in the Occupied Palestinian Territory during the ongoing pandemic. A questionnaire-based multicenter cross-sectional study was conducted, with 455 nurses participating. The findings indicated that nurses generally had high knowledge, a moderately optimistic attitude, and appropriately used protective measures against COVID-19. Factors such as gender, self-rated social status, academic achievements, and experience of contracting COVID-19 were associated with higher knowledge, attitude, and use of protective measures among nurses.

Knowledge levels among nurses were suboptimal, with less than one-third scoring 80% and above. Female nurses tended to have higher knowledge scores than male nurses, and those who self-rated

their social status as high also had better knowledge. Regarding attitudes, less than half of the nurses expressed positive attitudes towards controlling COVID-19. In terms of practice, the majority of nurses reported adequate use of protective measures, with high scores in this domain. The study highlighted the need for continuous updates on knowledge, attitude, and protective measure practices to safeguard HCPs, especially nurses, during the ongoing pandemic and future health crises. It was found that nurses with good knowledge and positive attitudes are more likely to use protective measures effectively, highlighting the importance of educational interventions in promoting awareness and appropriate practices among HCWs. Factors such as financial and social conditions also play a role in shaping nurses' attitudes and behaviors towards infection control. The study underscored the need for continuous updates and effort to protect HCPs, emphasizing the significance of KAP in mitigating the spread of COVID-19.

Despite the good knowledge and practice levels, the study identified several factors that hindered the effective implementation of preventive measures. Its key issues included inadequate provision of PPE, poor government support for working conditions, and insufficient staff training. These challenges highlight the need for improved resources and training to enhance safety practices among nurses, who are often at risk due to their frontline roles in healthcare. It was concluded that while nurses demonstrate commendable knowledge and practice regarding occupational health hazards, ongoing risk assessments and better resource allocation are essential to further reduce risks in the workplace. Future research should focus on broader settings, including rural health facilities, to gain a comprehensive understanding of occupational health practices among nurses across different environments.

2.1.3 KAP and Safety

Safety in the work environment is necessary for having a good health facility and providing the appropriate work conditions for nurses to be away from threats. However, nurses should have sufficient knowledge along with good attitude towards their job and excellent expertise through practicing nursing for a good period. The following scholars delved into the relationship between KAP and safety because they are strongly related to each other (Geiger-Brown & Lipscomb, 2010). Wijaya and Indasah (2023) conducted a study at Taman Husada Bontang Hospital which aimed to analyze the impact of socialization, experience, and perception of nurses on OSH practices. It involved 155 nurses selected from a total of 252, utilizing a quantitative design with observational

and cross-sectional methods. Results indicated that socialization activity exposure significantly influenced OSH practices, while experience and perception did not show a statistically significant effect. This highlights the importance of continuous education and training in OSH for nurses to enhance healthcare quality and safety.

The findings emphasized the critical role of OSH in healthcare settings, particularly in hospitals where nurses are exposed to various occupational hazards. The study revealed that a majority of nurses had moderate levels of socialization activity exposure, experience, and perception regarding OSH practices. Despite the lack of significant correlation between experience and perception with OSH practices, the study underscores the necessity for hospitals to integrate OSH into their culture and daily operations to ensure a safe working environment for healthcare professionals. It advocates for the establishment of OSH practices as a core component of nursing culture within hospitals. By fostering a better understanding and compliance with OSH standards through socialization and training, healthcare facilities can improve the safety and well-being of both nurses and patients. The study calls for ongoing efforts to enhance OSH knowledge and practices among nurses, ultimately contributing to higher quality healthcare services and reduced occupational risks.

Similarly, Al-Qahtani (2023) conducted a study by Awad Mohammed Al-Qahtani assessed the KAP regarding hand hygiene among nurses in Najran, Saudi Arabia. It revealed that a significant majority of the 386 participating nurses demonstrated good knowledge (42.5%) and positive attitudes (48.4%) towards hand hygiene, with an impressive 94% exhibiting good practices. Factors such as age, gender, nationality, years of experience, and formal training in hand hygiene were found to significantly influence the KAP scores. Notably, female nurses and those with more experience showed better compliance, highlighting the importance of targeted training and education in improving hand hygiene practices.

The findings underscored the critical role of hand hygiene in preventing healthcare-associated infections, particularly in the context of the ongoing COVID-19 pandemic. Despite the generally positive results, the study identified areas for improvement, particularly in the awareness of hand hygiene practices before clean procedures. The research emphasizes the need for continuous education and reinforcement of hand hygiene protocols among HCWs to enhance compliance and ultimately reduce infection rates in healthcare settings. Further studies are recommended to explore

the underlying factors affecting hand hygiene practices and to develop effective interventions tailored to the specific needs of healthcare professionals.

It evaluated hand hygiene practices among nurses in Najran City, Saudi Arabia, revealing that 94% of nurses exhibit good hygiene practices, significantly outperforming nursing students, particularly first-year students. Factors influencing these practices include cultural norms, education, and the availability of resources. Female nurses tend to have better hand hygiene knowledge and practices due to societal expectations regarding cleanliness. The COVID-19 pandemic positively impacted nurses' attitudes towards hand hygiene, although it did not significantly change their compliance rates. It emphasized the need for continuous education and resource availability to enhance hand hygiene practices and reduce hospital-acquired infections, providing valuable insights for healthcare administrators and policymakers.

Moreover, Danaei et al. (2022) study conducted a study at Nemazee Hospital in Shiraz, Iran, aimed to assess the KAP of nurses and auxiliary nurses regarding isolation precautions. It revealed that while the participants demonstrated a good level of knowledge and positive attitudes towards infection prevention, their actual practices were significantly lacking. This discrepancy highlights a critical gap in compliance with established infection control protocols, which is essential for ensuring patient and HCW safety.

The findings indicated that droplet precautions received the lowest KAP scores among the various domains assessed. Notably, previous training sessions positively influenced the practice scores of nurses, suggesting that ongoing education and training are vital for improving adherence to infection control measures. Additionally, the study found that age and gender played a role in KAP scores, with younger nurses and female participants generally performing better in knowledge and attitudes towards standard precautions.

It also underscored the need for targeted interventions to enhance the practical application of infection control measures among HCWs. It calls for hospital management to address the identified gaps in practice and to implement effective training programs that can foster a culture of safety and compliance with isolation precautions. This is particularly crucial in the context of ongoing global health challenges, such as the COVID-19 pandemic, where adherence to infection control practices is paramount.

Hence, Khelgi et al. (2021) conducted a study at Justice K. S. Hegde Charitable Hospital in Mangalore, India, aimed to assess the knowledge, attitude, and practices regarding NSIs among nursing staff. The research highlighted that HCWs, particularly nurses, are at higher risk of NSIs, which can lead to serious infections such as HIV, Hepatitis B, and Hepatitis C. The survey revealed that 13.3% of the nursing faculty had experienced a NSI, with a significant portion aware of universal precaution guidelines and post-exposure prophylaxis, although knowledge gaps remained. Results indicated that while a majority of nurses were knowledgeable about NSIs and took precautions, such as using gloves and sharp trays, there were still concerning practices, such as recapping needles and a reluctance to report injuries. Specifically, 28% of nurses expressed unwillingness to report NSIs, often citing reasons like the belief that reporting was unnecessary or due to time constraints. It was also found that despite formal training, many nurses were unaware of the preventive guidelines established by the hospital's infection control committee.

It also emphasized the need for ongoing education and reinforcement of safety protocols to reduce the incidence of NSIs among nursing staff. While the knowledge and practices observed were promising, there is a clear need for improvement in reporting and adherence to safety measures. The findings suggested that management should prioritize continuous training and awareness programs to enhance the overall safety and health of HCWs in the hospital setting.

In healthcare settings, workplace safety culture is strongly associated with the culture of patient safety. However, both of them are crucial for improving healthcare settings safety and preventing risks to both the HCPs and their patients. This means that when the HCPs believe that their work environment is safe and healthy, they are more likely to perceive and promote a strong patient safety culture. Which include management support for OSH culture, fostering the ability to report safety concerns without fear of Punishment, and the overall rating of workplace safety, all of which correlate with more positive views of the patient safety culture (Hesgrove et al., 2024).

Similarly, Zabin et al. (2022) investigated the perceptions of Patient Safety Culture (PSC) among nurses at An-Najah National University Hospital in Palestine. It aims to identify areas needing improvement and assess the relationship between various demographic factors and nurses' perceptions of PSC. It utilized a cross-sectional design, collecting data from 107 nurses through an online survey based on the Hospital Survey on Patient Safety Culture (HSOPSC). The findings indicate that while nurses generally view aspects like organizational learning and teamwork

positively, they express significant concerns regarding the non-punitive response to errors. Results showed that the highest positive responses were related to organizational learning (87%) and teamwork within units (86%), while the non-punitive response to error received the lowest score (22%). Multiple regression analysis revealed that communication openness significantly predicted overall perceptions of safety, and feedback about errors predicted the frequency of reported events. Interestingly, age was identified as a predictor of PSC, suggesting that older nurses may have different perceptions compared to their younger counterparts.

It was concluded that while nurses at the hospital perceive a generally positive safety culture, there is a critical need for management to address the negative perceptions surrounding the non-punitive response to errors. Enhancing the culture of incident reporting and fostering an environment where staffs feel safe to report errors without fear of punishment is essential for improving patient safety. The findings underscored the importance of continuous education and support for nurses to strengthen the overall safety climate in healthcare settings.

Furthermore, Zabin et al. (2023) conducted a systematic review for English published articles in the period from 2017 to 2021. The review found a significant association between job-related stress, patient safety culture, and patient safety. Three of the seven reviewed articles investigated the relationship. The remaining studies examined the relationship indirectly, focusing on factors influencing job stress and its impact on patients. This review showed a negative relationship between job stress and culture of patient safety. It was found that Job stress appears to be one of the barriers to enhancing the patient safety culture; hence it is necessary to develop the stress management strategies for nurses and other healthcare professionals.

Likewise, Kakkar et al. (2021) aimed to evaluate the effectiveness of an educational intervention on nursing staff regarding infection control practices and its impact on the incidence of hospital-acquired infections (HAIs), specifically catheter-associated urinary tract infections (CAUTIs) and intravenous (IV) line-related infections. Conducted with 105 nurses in a tertiary care hospital in India, the research involved assessing baseline knowledge, attitudes, and practices (KAP) before and after a structured training module. The results indicated an increase in knowledge and attitude scores post-intervention, although the actual change in infection rates was not statistically significant.

Despite the educational intervention improving nurses' knowledge and attitudes towards infection control, the study found no significant reduction in the incidence of CAUTIs, while there was a slight decrease in IV line-related infections. The findings suggest that while educational programs can enhance understanding and awareness among nursing staff, they may not immediately translate into improved clinical practices or reduced infection rates. This highlights the need for ongoing education and training to reinforce infection control measures.

It underscores the critical role of nursing education in infection prevention but also points to the limitations of a single training session in effecting substantial changes in practice and outcomes. Continuous education and regular training sessions are essential to maintain high standards of infection control and ultimately reduce the incidence of HAIs in healthcare settings.

Using data from a survey of over 7,000 nurses across 70 hospitals, the study employed statistical models to analyze how various aspects of the nursing practice environment influence missed care. Results indicate that a supportive work environment correlates with a reduction in missed nursing care, with specific dimensions such as staffing adequacy and nurse-manager support showing strong associations. The findings suggest that improvements in these areas could lead to significant decreases in the percentage of necessary care left undone.

The implications of this research are substantial for healthcare administrators and policymakers, emphasizing the need for resource allocation that fosters a positive nursing practice environment. By addressing modifiable factors within hospitals, such as staffing levels and inter-professional relationships, healthcare systems can enhance the quality of care delivered to patients. Ultimately, it advocated collaborative efforts among nursing staff, leadership, and administration to minimize missed nursing care and improve patient outcomes.

2.2 Previous Studies

The relationship between KAP and OSH has been widely focused in recent years, particularly in healthcare settings. This section explores key studies conducted internationally, regionally, and locally (in Palestine) that have investigated these constructs and their influence on improving OSH level especially in the environment of health facilities.

2.2.1 International Studies:

Internationally, Studies about the relationship between KAP and occupational safety have been highlighted. These studies implemented in a range of healthcare and cultural settings, demonstrate common challenges and effective approaches to enhance OSH outcomes.

Knowledge is considered as one of the most important factors in reducing the occupational hazards in the workplace, as highlighted by several studies. For example, in Pakistan, Mansour et al. (2022) found that increased knowledge of safety practices greatly reduced the number of occupational hazards occurrence in work place. Similarly, Shaheen et al. (2023) highlighted the need for training regarding the occupational hazards, safety measures and protocols, which contribute directly in enhancing workplace safety and increasing the preventive measures compliance. Amin et al. (2023) also underscored the importance of regular training on safety practice and protocols to minimize exposure to occupational hazards. It advocates for mandatory training programs and better communication regarding safety practices to enhance the overall health and safety of OR staff.

Other studies provided a much narrower focus on the influence of attitudes, behaviors and the implementation of OSH culture by focusing on occupational and environmental factors, as well as organizational commitment and individual competence related to OSH, revealing a significant correlation between nurses' knowledge and adherence to safety protocols. For example, In Indonesia, Pratiwi and Ivanovic (2022) analyzed how OSH culture influences implementing of OSH awareness for students, and it was found that the occupational and environmental factors have the greatest positive and significant influence on the awareness level of implementing OSH culture, while the individual factor has no significant effect. Still, Rusdiana et al. (2022) highlighted the critical role of knowledge and attitudes in ensuring adherence to standard precautions. In addition, Wijaya and Indasah (2023) emphasized the critical role of OSH in healthcare, particularly in hospitals where nurses are subjected to variety of work-related risks to ensure a safe working environment for healthcare professionals. By fostering a better understanding and compliance with OSH standards through socialization and training ultimately contributing to higher quality healthcare services and reduced occupational risks.

The relationship between KAP and safety has been tackled by many scholars. In Nigeria, Ilo et al. (2022) It found that despite of implementing safety practices, particularly in hand hygiene and the

use of PPE, although there were gaps in the use of post-exposure prophylaxis. The study emphasizes the need to regularly conducting risk assessment in the work place to identify the potential risks.

In India, Khelgi et al. (2021) emphasized that reporting and adherence to safety protocols obviously need to be improved. Therefore, the study emphasized the need for ongoing education of safety protocols to reduce the incidence of NSIs among nursing staff.

Moreover, KAP of nurses regarding isolation precautions IP assessed at Nemazee Hospital in Shiraz, Iran by Danaei et al. (2022), the findings revealed that, while the participants 'nurses had a high level of knowledge and positive attitudes toward infection prevention, their actual practices were significantly inadequate. This discrepancy reveals a critical gap in adherence to established infection control protocols. The study discovered that age and gender played a role in KAP scores, with younger nurses and female participants generally showing better knowledge and attitudes toward standard precautions. It also underscored the need for targeted interventions to enhance the practical application of infection control measures among HCWs.

These international studies commissioned together support KAP being necessary to improving occupational safety in healthcare through encouraged understanding, creating a positive attitude and promoting compliance with protective measures.

Collectively, these international studies affirm the critical role of KAP in advancing occupational safety in healthcare settings by promoting informed practices, cultivating positive attitudes, and encouraging consistent adherence to protective measures.

2.2.2 Arab and Local Studies

Locally speaking, tackling the issues of the relationship between KAP and OSH in the health facilities' environment represents an important and essential area of concern.

For example, In Saudi Arabia, Al-Qahtani (2023) found that a (42.5%) of nurses had good knowledge and (42.5%) had positive attitudes towards hand hygiene, with 94% exhibiting good practices. Another study by (Abalkhail et al., (2021) conducted at a University Hospital in Qassim, Saudi Arabia to assess the KAP towards standard infection control precautions among HCW.A total sample of 213 HCWs was recruited. It revealed that the prevalence of good knowledge, attitude, and practice were 67.6%, 61.5%, and 73.2%, respectively. It found that the experience

duration was negatively associated with knowledge which might indicate that older academic programs did not adequately cover topics on infection control in health-care facilities.

Also, at Jeddah, Saudi Arabia Alharazi et al. (2022) conducted a study Aimed to investigate the prevalence of NSIs which considered one of the most serious Occupational hazards faced by the HCWs, it showed that 19.7% of nurses were exposed to NSI and this ratio was not high compared to other previous studies.

In Egypt, a study by Hemdan Ahmed et al. (2024) conducted among critical care nurses in Ain Shams University hospitals and it showed that more than half of the nurses had inadequate level of total preventive measures regarding occupational hazards in ICU. In addition, a descriptive study by Nasser Rayan et al. (2021) was conducted at four hospitals in Ain Shams University and it revealed that the Nurses' total practice, attitude regarding occupational health hazards (33% satisfactory and 67% unsatisfactory), only (8.8 % satisfactory and 91.2 % unsatisfactory) respectively. It also found that Physical hazards were the most common, chemical Hazards were the least.

Moreover, Sa et al. (2016) an interventional study conducted at Zagazig University Hospital and recruited 50 nurses in oncology Units to protect them from cytotoxic drugs (CDs) exposure hazards. The study applied health educational program for improving nurses' KAP towards CDs and then investigated the effect of these programs (Pre and post intervention) in enhancing the Knowledge and practice of oncology nurses. It was concluded that sufficient education and training as well as hospital policy are effective tools to improve the safety climate in hospitals. Therefore, it highlighted the critical role of a safety committee in the hospital to ensure the appropriate implementation of safety policies, and keep the staff informed about the safety procedures.

Furthermore, there is a growing emphasis on developing effective and continuous educational training programs. Many of the existing studies highlighted the importance of conducting educational courses to increase the health awareness among nurses and then to mitigate the occupational health hazard occurrence.

Existing literature on the assessment of OSH in Palestinian hospitals is vast and varied. However, several studies provide localized insights on the opportunities and barriers. The studies have

examined the impact of workplace hazards on the OSH of hospital staff. Other research has explored the effectiveness of safety interventions, such as safety training, improved hazard identification processes, and increased safety awareness.

Current trends in the research topic include the use of innovative risk assessment techniques, to detect the environmental and occupational hazards in hospitals. In addition, there is a growing emphasis on developing effective organizational and cultural approaches to OSH management in Palestinian hospitals.

Additionally, understanding the HCPs knowledge, attitude, and practice related to OSH can help identify areas for improvement in order to reduce the potential risk.

In Palestine, Gaza, Aladini et al. (2023) conducted an important study at Al-Shifa Medical Complex to evaluate the KAP levels of medical staff about OSH. The results highlighted substantial inconsistencies in knowledge and adherence, largely due to poor training and lack of enforcement of policies. The authors recommended systematic changes and improved investment in continuing professional development. Similarly, Qaraman et al. (2022) examined KAP among nursing students at Al-Israa University. They reported that early exposure to principles of safety during training assisted the students in being ready for the reality of the clinical environment. They called for more in-depth and extensive inclusion of OSH topics in nursing curriculum.

Also, In the West Bank, Palestine WB, Zabin et al. (2022) investigated the culture of patient safety among nurses at An-Najah National University Hospital. Even though this study was not specifically focused on OSH, it emphasizes nurses' culture of safety and highlighted the critical need for enhancing the culture of incident reporting. This article demonstrates the interconnectedness of patient safety and worker safety. Moreover, Shawahna (2021) investigated the protective behaviors of nurses during the COVID-19 pandemic and compared their knowledge and attitudes about infection prevention. The results showed that stress, limited resources, and inconsistent directions from authorities interfered with safe practices during the health emergency.

Likewise, Alamleh (2021) a cross-sectional study conducted in the West Bank governmental hospitals among the anesthesia staff to identify the occupational hazard types among the anesthesia staff. It found that 63.2 % of anesthesia staff was exposed to moderate occupational hazards, with biological and chemical hazards most severe. Biological hazards (63.2%) were the most commonly

reported type of occupational hazard, followed by chemical (60.1%). Furthermore, the results highlighted that the most common occupational hazards that participants reported being exposed to were ionizing radiation from x-rays (76.4%), followed by inhalation of anesthesia gases (70.31%), and then exposure to fluids and blood-borne pathogens from patients (69.94%). It was found that there is no significant relationship between staff awareness and hazards exposure and the variables (gender, marital status, primary work location, monthly income, education level, and job position). In comparison, the means of exposure to occupational hazards and age differed significantly, favoring the age category (36 - 45). Additionally, it was discovered that there are significant differences between those who have completed OSH training courses. Hence, staff that have completed previous training courses have been exposed to occupational hazards less.

Overall, both regional and local studies shown were valuable, but they demonstrated a fragmented body of research, and there is a lack of comprehensive studies on all aspects of KAP and their associations and relevance to OSH. This indicates an opportunity for research in the Palestinian health care system to be more integrated and context-specific.

From the previous studies whether in worldwide or in Palestine, we can recognize that we need to emphasize the importance of healthcare provider's KAP assessment to protect the health and safety in healthcare settings. Tables 2.1, 2.2 and 2.3 outline, respectively, the key findings of the selected reviewed studies, internationally, regionally and locally.

Table (2.1): Summary of international selected studies

Previous Study	Country	Main Findings	Dimensions
(Shaheen et al., 2023)	Pakistan	• Good knowledge and positive attitude regarding OSH but unsatisfactory practices. • There was no association between k, A, and P	**K & A**
(Manzoor et al., 2022)	Pakistan	• Good knowledge (60.8%), positive attitude (58%), towards the safety measure. • K, A and perception level was varying with education and experience. • The need for educational sessions about safety measures. • Highlighted K as key to reducing occupational injuries and improving safety behavior.	**K & A**
(Pratiwi & Ivanovic, 2022)	Indonesia	The results show that the occupational and environmental factors have the greatest positive and significant influence on the awareness level of implementing OSH culture, while the individual factor has no significant effect. • Demonstrated that safe daily habits reduce workplace injuries among nurses.	K & A
(Rusdiana et al., 2022)	Indonesia	• A significant correlation between nurses' K and adherence to safety protocols, this indicates that nurses with good K are 4.69 times more likely to comply with standard precautions. Similarly, the positive A also enhances compliance, with a pooled odds ratio of 2.34. • Found strong policy enforcement correlates with better compliance and lower incident rates.	K & A
(Amin et al., 2023)	Pakistan	• Limited (K) directly affected compliance with standard safety precautions. • The association with the participants' job experience, degree of K, and the safety practices was not statistically significant. • Measures and routine training are required to promote staff on safety practices.	K, P and Safety
(Ilo et al. 2022)	Nigeria	• Linked combined KAP factors to stronger adherence to OSH protocols. • It is recommended to conduct risk assessment regularly to identify the potential hazards at a safe stage.	K, P and Safety
(Wijaya & Indasah, 2023)	Indonesia	• The study highlights the importance of continuous education and training in OSH to enhance healthcare quality and safety. • It underscores the necessity for hospitals to integrate OSH into their culture and daily operations to ensure a safe working environment for HCPs.	KAP and Safety

(Kakkar et al., 2021)	India	Hospital-acquired infections (HAIs) are a global problem. One of the common causes of HAI is through the HCWs, mainly because of failure to comply with the recommended infection control guidelines.	K, P and Safety
(Danaei et al., 2022)	Iran	• It found that the nurses have a good level of K and positive A, poor P towards infection prevention. • It also found that nurses with previous training sessions presented a higher score of P. • It proved that targeted training significantly improves safety behaviors.	KAP and Safety
(Khelgi et al., 2021)	India	• There is a need for improvement in reporting and adherence to safety measures. • The best way to reduce NSI is to impart K and awareness to the faculty. • The findings suggested that management should prioritize continuous training programs	KAP and Safety

Table (2.2): Summary of Arab selected studies

Previous Study	**Country**	**Main Findings**	**Dimensions**
(Al-Qahtani, 2023)	Najran, Saudi Arabia	It found that nurses have good K (42.5%) and positive A (48.4%) with good P (94%). • Factors (age, gender, experience, and formal training) significantly influence the KAP scores. Notably, female nurses and those with more experience showed better compliance. • It emphasized the need for continuous education and resource availability	KAP and Safety
(Hemdan Ahmed et al.,2024)	Ain Shams University hospitals / Egypt	• The current study result showed that more than half of the studied nurses had inadequate level of total preventive measures regarding occupational hazards in ICU • There was highly statistically significant positive correlation between total exposure to physical hazards and total psychological hazards, total social hazards and total knowledge.	K, P and Safety
(Shamkh et al., 2022)	Iraq	• There is a highly significant between nurses' socio-demographics data and occupational hazard. • The present study concluded that the overall assessment of occupational hazard among nurses was within the low level. • It is emphasized the need for educational courses to increase health awareness among nurses to prevent occupational health hazard especially new nurses.	K, P and Safety

(Sa et al., 2016)	Zagazig University Hospital /Egypt	• It was also concluded that sufficient education and training as well as hospital policy are effective tools to improve the safety climate in hospitals. • A safety committee in the hospital should ensure the appropriate implementation of safety policies, and keep the staff informed about the safety procedures.	K, P and Safety
(Alharazi et al., 2022)	Jeddah, Saudi Arabia	• The prevalence of NSIs among nurses in Jeddah, Saudi Arabia, was 19.7%. • The nurses need to be provided with educational training on how to prevent NSIs.	K, P and Safety
(Nasser Rayan et al., 2021)	Ain Shams University / Egypt	• The Nurses' total practice, attitude regarding occupational health hazards (33% satisfactory & 67% unsatisfactory), only 8.8 % satisfactory and 91.2 % unsatisfactory) respectively. • Physical hazards were the most common, chemical Hazards were the least, and a positive correlation was found between practice and attitude scores.	KAP &safety
(Abalkhail et al., 2021)	Qassim, Saudi Arabia	• The duration of experience was negatively associated with knowledge which might indicate that older academic programs did not adequately cover topics on infection control in health-care facilities. • They found that receiving training is positively associated with good knowledge and practice. • training programs for HCWs might be useful in improving their knowledge and expected to facilitate positive attitude and practice.	KAP& safety

Table (2.3): Summary of Local (Palestinian) selected studies

Previous Study	**Country**	**Main Findings**	**Dimensions**
(Alamleh, 2021)	WB /Palestine	• It found that 63.2 % of anesthesia staff was exposed to moderate occupational hazards, with biological and chemical hazards most severe. Biological hazards (63.2%) were the most commonly reported type of occupational hazard, followed by chemical (60.1%). • There was no significant relationship between the occupational hazards' exposure and most of demographic characteristics, except for staff aged 36-45, who have a higher level of exposure.	K, P and Safety
(Aladini et al., 2023)	Gaza / Palestine	• Found varied levels of KAP among nurses; lack of training and system support noted as major issues. • There is a significant gap in training, with 80.3% of HCWs not having received any OSH training.	K, P and Safety

(Zakarneh, 2023)	Northern WB / Palestine	39% of the emergency Department ED nurses had good K, while 73% had low commitment of standard precautions. • It was discovered that a large proportion of nurses in ED were exposed to biological and occupational hazards. Corona virus was contracted by 50% of nurses. 81% were exposed to bodily fluids, while 96% experienced NSI. • Only gender and the level of commitment to standard precautions showed significant differences. • The top three contributing factors were workload, nurse shortages and fatigue. • Emphasize the importance of Continuous education on practical aspects.	K&A
(Qaraman et al., 2022)	Gaza / Palestine	• Overall, the mean scores for K, A and P were high. The results also showed that a notable percentage of nursing students had experienced NSI, which raises concerns about their safety practices. • It emphasized the importance of incorporating OSH education into early nursing training.	K, P and Safety
(Shawahna, 2021)	WB/ Palestine	• Knowledge levels among nurses were suboptimal, with less than one-third scoring 80% and above. Attitudes, less than half of the nurses expressed positive attitudes. • Factors (gender, academic achievements, and experience) were associated with higher knowledge, attitude, and use of protective measures among nurses. • Female tended to have higher knowledge scores than male nurses. • Showed stress and weak institutional communication impeded compliance with protective practices.	K, P and Safety
(Zabin et al., 2022)	WB Palestine	There is a critical need for enhancing the culture of incident reporting. • It underscored the importance of continuous education and support for nurses to strengthen the overall safety climate in healthcare settings. • Studied safety culture; revealed link between institutional policies and safety behavior.	KAP and Safety
(Zawahre, 2022)	Jerusalem / Palestine	Nurses' K and P regarding OSH are related to their educational qualifications. • Kas well as perceptions are related to their conscious practices of occupational hazards' prevention. • It is important to raise the nurses' awareness about the OSH and to follow clear plans and policies.	K&A
(Al-Khatib et al., 2015)	Nablus WB / Palestine	More than half of nurses (51.7%) had been exposed to blood and body fluids (BBF), with a higher risk. • Despite adequate knowledge of safety precautions, BBF exposure was still high (62.2%). • emphasized the importance of stronger OSH guidelines, monitoring systems, and clear reporting policies.	KAP & safety

2.3 Concluding Remarks on Previous Studies and Research Gap

The previous literature reviewed includes international research, as well as Palestinian, trials to show that KAP is vital in understanding occupational safety for nurses. International literature depicts a more holistic view and explains how knowledge, attitude, and practice work together to mitigate hazards, improve organizational safety, and enable better health performance.

At a local level, Existing literature in Palestine is still insufficient and we need more studies that examine not only assessment of the current situation, we need to study the impact of applying the OSH protocols on the nurses' job performance and need for further research on OSH among various health-related students to develop effective strategies for improving workplace safety in healthcare settings.

The respective available studies for Palestine primarily focus on the various elements of KAP individually, rather than assessing the broader impact that the components of KAP can have on occupational safety. Structural factors such as a volatile political and security situation, inadequate funding and resources, and lack of capacity and infrastructure make it increasingly difficult to implement effective safety protocols.

The literature gap clearly spans more than just academic interest, but offers great value to the current study, which seeks to examine how the KAP elements together impact nurses' OSH in the field of health in Palestine. By doing this, the study aims to create evidence-based recommendations for capacity enhancement, policy improvement, and organizational reform that respects the unique local context. Consequently, the significance of this study is that it highlights the importance of the relationship between OSH and KAP in health facilities among nurses.

2.4 Summary of chapter two:

Chapter two provided a comprehensive review of the literature from previous researchers in the field of OSH and KAP among HCPs, specifically nurses. Studies on the KAP's role in preventing workplace hazards, promoting an OSH culture among nurses in healthcare settings, occupational hazards, and workplace safety are discussed. The literature review included studies on OSH and KAP, as well as local, regional, and international literature, which highlighted the prevalence of injuries among HCPs, with a focus on the hazards that nurses face. The review highlighted a clear gap in the Palestinian context, emphasizing the importance of this study.

Chapter Three: Research Methodology

3.1 Overview

The study's methodology and its procedures represent a central focus through which the practical aspect of the study was completed. It is through these methods that the required data is collected for statistical analysis in order to reach the results, which will then be interpreted.

Accordingly, this chapter details the study design, study settings, eligibility (inclusion criteria, exclusion criteria), population and sampling, instrument development and validation, data collection procedures, ethical approvals, and the statistical methods used. The following is a description of these procedures

3.2 Study Design

To achieve the study objectives, the researcher employed a descriptive-analytical cross-sectional design. This design describes the current levels of knowledge, attitudes, practices (KAP), and perceived OSH among Palestinian hospital nurses and examines associations among these domains and demographic/hospital characteristics.

3.3 Sources of the Study Data

The study relied on two main types of data:

1. Primary Data: This was collected through field research using a structured, self-administered questionnaire covering all study variables (KAP, OSH, demographics), coded and analyzed in R (v4.4.3) with appropriate inferential tests.
2. Secondary Data: The researcher reviewed books, journals, and relevant publications related to the study topic—assessing the impact of knowledge on OSH among nursing staff in Palestinian hospitals. This review enriched the study scientifically by familiarizing the researcher with established scientific methods and proper research foundations, as well as providing insights into recent developments in the field since prior studies.

3.4 Study Setting

To assess the knowledge, attitudes, and practices of HCPs (registered nurses) regarding OSH in Palestinian hospitals, this study was conducted in the West Bank-Palestine. The study sample was selected from full-time registered nurses working in Palestinian hospitals located in West Bank which included (North, Middle, South) of west Bank. Jerusalem was excluded due to the political difficulties. The West Bank Healthcare facilities include public hospitals (Governmental), private and NGOs. (See appendix F)

3.5 Study Population and Sample

The study population is defined as all the elements or units that were studied by the researcher. Based on the research problem and objectives, the target population consists of all full-time registered nurses working in Palestinian hospitals.

3.5.1 Target Population and Sample Size Determination

The target population comprised all registered nurses currently employed in hospitals located in the West Bank governorates of Palestine (N = 10,800, Ministry of Health registry, and PCBS). The minimum sample size was calculated with the single-population proportion formula (Thompson, 2012):

$$n = \frac{N\, z^2\, p(1-p)}{d^2\,(N-1) + z^2\, p(1-p)},$$

Where:

- N = 10,800 (population size),
- p = 0.50 (maximum heterogeneity, providing the most conservative estimate),
- d = 0.05 (desired margin of error), and
- z = 1.96 (two-tailed 95% confidence level).

Which yields a sample size of 371.

3.5.2 Sampling Procedure

Because political and movement restrictions prevented random on-site recruitment, a convenience, self-selection design was used. An electronic questionnaire link was emailed and messaged to

nursing directors at all eligible West Bank hospitals, who circulated it to their registered-nurse staff. The survey was open December 1, 2024 to March 31, 2025 and yielded 388 complete responses, exceeding the required 371 and therefore maintaining the planned 5% precision at the 95% confidence level.

Inclusion/Exclusion criteria: All full-time registered nurses currently employed in inpatient or outpatient units in West Bank (Governmental, private and NGOs), hospitals located in the (North, Middle, South) of the West Bank. Excluded: Part-time nurses, interns/trainees nurses, non-clinical staff, nurses on long-term leave, and nurses working in the hospitals located in Jerusalem or the Gaza Strip

3.6 Data Collection Tool and Process

3.6.1 Study Instrument

After reviewing several studies related to the research problem and gathering the opinions of specialists through informal personal interviews, the researcher developed the questionnaire following these steps:

1. Identifying the main dimensions included in the questionnaire based on relevant and validated prior studies. As shown below Table (3.1).
2. Clarifying the items under each dimension.
3. Presenting the questionnaire to the supervising professor to assess its suitability for data collection.
4. Making preliminary adjustments to the questionnaire as recommended by the supervising professor.
5. Submitting the questionnaire to specialized professors, a statistical expert, and others, as detailed in Appendix (B), which lists the members of the review panel.
6. After incorporating the modifications recommended by the reviewers, some items were removed, revised, or reformulated. The final version of the questionnaire consisted of 34 items, divided into three main items:
    - The first item: "Assessment of Knowledge, Attitudes, and Practices," comprising 28 items distributed across three dimensions: knowledge, attitudes, and practices.
    - The second item: "Current Occupational Health and Safety Practices," consisting of 5 items.

- An additional item covering "Barriers and Challenges" as detailed in Table (3.1).

7- The self-administered instrument comprised four 5-point Likert subscales (1 = strongly disagree, 5 = strongly agree):

- **Knowledge** (9 items), factual acquaintance with hazards, protocols, and emergency procedures.
- **Attitude** (8 items), evaluative stance toward safety reporting and shared responsibility.
- **Practice** (11 items), routine protective behaviors (e.g., PPE use, hand hygiene).
- **OSH perception** (5 items), subjective evaluation of workplace safety climate.

Arabic response options were translated a priori into ordered English factors. (See Appendix A) for Arabic and English questionnaire. Two negatively worded items ("excessive burden," "experienced injuries") were reverse coded so that higher scores uniformly indicated stronger safety orientation. In addition to socio-demographic variables (age, gender, education, years of experience), nurses reported basic hospital descriptors (type, geographic location, capacity, and clinical department).

3.6.2 Expert Validity

The preliminary version of the questionnaire was presented to five university professors specializing in the relevant field, as detailed in Appendix B. These professors are affiliated with universities in the Palestinian territories of the West Bank. They provided their observations and feedback on the questionnaire items, assessing the alignment and suitability of the items for each dimension of the questionnaire, as well as the clarity of the language used. Based on their feedback, some items were excluded, and others were modified accordingly.

Table (3.1): Dimensions of the Impact of Knowledge on Occupational Health and Safety

Dimensions of the First Axis: Assessment of Knowledge, Attitudes, and Practices	**No. of Items**	**References**

Knowledge	**9**	(Nasab et al., 2009); (Nuñez& Villanueva, 2011); (Floyde et al., 2013); (Olcay et al., 2021); (Dhahir et al., 2021).
Attitudes	**8**	(Aluko et al., 2016); (Lee et al.2021) ;(Elegbede et al., 2024); (Samaei et al., 2015); (Benli et al.,2016); (Gharibi et al., 2016); (Almutairi et al., 2020).
Practices	**11**	**(**Odonkor&Sallar, 2024**); (**Gebreeyessus, 2022**);** **(**Elegbede et al.,2024) ;(Awan et al. 2017);
Total	**28**	
OSH perception	**5**	**(**Boucaut& Cusack, 2016); (Wong, 2017); (Tetzlaff et al., 2021); (Abdullah, 2010)
Barriers and Challenges	**1**	**(**Mizuno-Lewis et al., 2014); (Thapa et al., 2022).
Total	**34**	

3.7 Period of the Study

The process of data collection was completed between December 1st, 2024, and March 31st, 2025, which was a suitable period time to recruit the recommended sample.

3.8 Data Management Process

3.8.1 Data Management and Missing-Data Handling

Data entry was double-keyed in R 4.4.3. Overall missingness across the analytic data set was 1.14%; no single variable exceeded 3% missing. Little's missing completely at random (MCAR)test was not significant ($\chi^2 = 132.4$, df = 140, p = .640). We therefore implemented 20-fold multivariate imputation by chained equations (mice) to maintain full sample size and then—consistent with guidance for < 5%missingness (Graham, 2009; von Hippel, 2007)—selected one completed data set at random for all subsequent analyses. This "single draw" strategy satisfies the following practical aims:

- **Bias control**: Imputed values replace otherwise missing data; parameter estimates remain unbiased because missingness is minimal (von Hippel, 2007).
- **Stable denominators**: Using exactly n = 388 in every table eliminates shifting cell counts that reader find confusing (Graham, 2009).

3.8.2 Recoding, Scoring, and Variable Construction

The recoding decisions for every demographic and organizational predictor are summarized in Table (3.2). For gender, hospital location and the four experience categories, no aggregation was carried out. Collapsing was restricted to situations in which expected cell frequencies fell below the guideline of five per cell for reliable χ^2 and logistic estimates (Cochran, 1977). Thus, the two hospital types (private, and NGOs) were merged into a single "Private" level that retained conceptual coherence while avoiding sparse counts (< 5% of the total sample). Similarly, more than forty free-text Arabic department labels were first mapped to nine clinically recognizable units; frequencies then dictated their reduction to four final levels; Emergency, ICU, Surgery and Other. Reference categories were chosen to maximize interpretability as in Table3.2 below.

Table (3.2)

Demographic and Organizational Predictors

Variable	Key steps in recoding	Final Analytic Levels (Reference First)
Gender	No collapsing (binary in source)	Female, Male
Age	Arabic strings translated and ordered chronologically	< 30 yr, 30–39 yr, 40–49 yr, ≥ 50 yr
Education	Five raw categories collapsed: "None, Secondary or Diploma" merged	Up-to-Diploma, Bachelor's, Master's
Experience	Four Arabic ranges retained verbatim and ordered	< 5 yr, 5–10 yr, 11–20 yr, > 20 yr

Hospital type	NGO and private hospitals merged (combined N < 5%); public kept separate	Public, Private
Hospital location	Already three mutually exclusive regions; no reduction	North, Central, South
Clinical department	40+ Arabic free-text labels → mapped to 9categories → aggregated by frequency	Emergency, ICU, Surgery, Other

(†) the left-most level is the reference category in all regression models.

Table (3.3) details the construction of the five analytic domains. Raw item sums were rescaled to percent-of-maximum-possible (POMP) scores so that every domain range from 0 to 100 and remains directly comparable (Cohen, Cohen, Aiken, & West, 1999). A single 70% cut-off was kept so that enough cases remained for the multivariable models. Pilot logistic runs showed the issue clearly: with the stricter Bloom level of ≥ 80%, only 9% of nurses fell into the "good" OSH group, standard errors exploded, and quasi-complete separation warnings appeared. Dropping the line to 70% tripled the size of the positive group and the models converged cleanly. Such instability is typical when maximum-likelihood estimation is applied to very sparse outcome cells (King & Zeng, 2001).

Three items were removed before scoring because they undermined reliability or discriminant validity: Attitude "excessive burden" and OSH "experienced injuries" depressed Cronbach's α by ≥ 10%, while the Practice item on "incentives" showed very high cross-correlations with Attitude items, pushing the Attitude–Practice HTMT above 0.90; deleting it reduced the ratio to 0.87 and restored discriminant validity.

Table (3.3)

Scale Scoring and Dichotomization

Domain	Items retained‡	Score metric (Numerical)	Categorical (Dummy: 0/1)
Knowledge	9	POMP 0–100	≥ 70 = "Good"
Attitude	7	POMP 0–100	≥ 70 = "Positive"
Practice	10	POMP 0–100	≥ 70 = "Good practice"
Composite KAP	All Knowledge, Attitude, and Practice items (9 + 7 + 10)	POMP 0–100	≥ 70 = "Good"
OSH perception	4	POMP 0–100	≥ 70 = "Good safety"

‡ **Problematic items (ATT excessive burden, OSH experienced injuries, PRA incentives) were removed after reliability and validity diagnostics.**

3.8.3 Barriers' Classification

Open-ended responses about obstacles to OSH were first stripped of punctuation, stop-words, and extra spaces, then tokenized and matched to a pre-defined keyword dictionary that covered nine specific themes (e.g., funding, training, infrastructure). Because several themes attracted very few entries and partly overlapped conceptually, they were regrouped into five broader categories: Resource Constraints, Organizational Challenges, Staff Development, Operational Challenges, and Other/Unclear, with an additional Missing level for blank replies.

3.9 Reliability and Validity

3.9.1 Reliability Measures

Cronbach's α estimates internal consistency under the assumption that all items contribute equally (τ-equivalence). McDonald's t_{otal} relaxes that assumption by weighting items according to their factor loadings and is therefore regarded as a more accurate reliability index when items differ in strength (Dunn, Baguley, & Brunsden, 2014). Composite reliability, calculated from the same loadings, reflects the proportion of variance in the latent construct that is captured by its indicators.

After refinement, Cronbach's α ranged from 0.78 to 0.89 and McDonald's total from 0.83 to 0.90, indicating strong internal consistency. Additionally, composite reliability values ranged from 0.80 to 0.88, exceeding the 0.70 benchmark as shown in Table (3.4).

Table (3.4)

Internal Consistency and Composite Reliability Estimates for the Four Study Scales

Scale	Cronbach's α	McDonald's ω	Composite reliability
Knowledge	0.89	0.90	0.88
Attitude	0.78	0.84	0.80
Practice	0.83	0.87	0.84
OSH	0.82	0.83	0.82

3.9.2 Discriminant Validity

The Heterotrait–Monotrait (HTMT) Ratio (HTMT) statistic compares average correlations between items of different constructs (Heterotrait) with those of the same construct (Monotrait); values <0.90 suggest the constructs remain empirically distinct (Henseler, Ringle, &Sarstedt, 2015). All HTMT values are below the conservative 0.90 ceiling, indicating satisfactory discriminator validity as summarized in Table (3.5).

Table 3.5

Heterotrait-Monotrait Ratios Among Knowledge, Attitude, Practice, and OSH Constructs

Construct 1	Construct 2	HTMT
Knowledge	Attitude	0.64
Knowledge	Practice	0.73
Knowledge	OSH	0.55
Attitude	Practice	0.87
Attitude	OSH	0.41
Practice	OSH	0.38

Table 3.5

Heterotrait-Monotrait Ratios Among Knowledge, Attitude, Practice, and OSH Constructs

Construct 1	Construct 2	HTMT
Note. HTMT = Heterotrait–Monotrait ratio. Values below 0.90 indicate satisfactory discriminant validity.		

3.10 Piloting

A pilot Study was conducted in order to assess and evaluate the clarity and reliability of the study questionnaire prior to the final online form distribution. The reviewed questionnaires were distributed to a pilot sample comprising 10% of the total sample size. Registered nurses were asked to fill in the questionnaire and provide feedback on any unclear or ambiguous items found.

Based on the nursing comments and feedback the final questionnaire was refined accordingly and used in full-scale data collection. It is important to note that the responses were not included in the final data analysis and interpretation.

3.11 Ethical Consideration

The researcher obtained ethical approval through an official letter from the Dean of Graduate Studies at the Arab American University (AAUP) to facilitate the distribution of the questionnaires to the study target population, which included full-time registered nurses working in Palestinian hospitals. This is clarified in Appendix (D). All registered nurses were invited to fill in the online study survey which included a consent form with all study related information such as the study purpose, aims, objectives and participants' rights. Participation was entirely voluntary, and no personal identification was used in the data collection process. The participants were assured that all information they provided would be kept confidential. The researcher contact information was provided for the participant in case any further information or clarifications needed (see Appendix C).

3.12 Summary of chapter three:

Chapter Three outlines the research methodological framework that used to evaluate Nurses' KAP regarding the OSH in the West Bank Palestinian hospitals. It includes full description for the study type, design, setting, study population and sampling procedure, and inclusion/exclusion criteria for participant selection. Additionally, it illustrates the research data collection tool and process which covers, study instrument development process including KAP and OSH items, as well as the validity and reliability for the research tool. Chapter three also covers the data management and missing data handling, recoding, scoring, and variable construction process .it details data collection steps, data collection period, piloting study, ethical considerations, and general overview of statistical techniques used in analysis.

Chapter Four: Results and Analysis

4.1 Statistical Analysis

Descriptive statistics summarize central tendency and dispersion for continuous variables and frequency distributions for categorical variables. Group differences in mean POMP scores across demographic strata were evaluated with independent-sample t tests or one-way/Welch ANOVA depending on variance homogeneity. Hypotheses concerning the impact of Knowledge, Attitude, and Practice on OSH (H1–H3) were tested with separate binary logistic regressions at first; then a joint model including the three predictors explored their unique contributions. Demographic effects on KAP and OSH (H4a and H4b) were estimated with multivariable logistic models that entered all recoded demographic factors simultaneously. Multicollinearity was negligible (all rescaled variance-inflation indices ≤1.41, far below conservative caution thresholds of 5 commonly cited for logistic regression (Hosmer, Lemeshow, & Sturdivant, 2013)). Model adequacy was judged by likelihood-ratio χ^2, AIC, Nagelkerke pseudo-R^2, and - when applicable - the Hosmer–Lemeshow calibration χ^2. Relative importance of Knowledge, Attitude and Practice for predicting composite KAP was quantified with the LMG decomposition of explained variance, a method robust to predictor ordering and inter-correlation. All inferential tests were two-tailed with level of significance $\alpha = 0.05$.

4.2 Socio-Demographic Profile of the Sample

The analytic sample comprised N = 388 nurses from Palestinian hospitals. Women made up a narrow majority (n = 203, 52.3%), with men accounting for n = 185, 47.7%. Age was broadly distributed: <30 years (n = 115, 29.6%), 30–39 (n = 127, 32.7%), 40–49 (n = 103, 26.5%), and ≥50 (n = 43, 11.1%). The largest clinical group worked in Emergency (n = 160, 41.2%), followed by Surgery (n = 119, 30.7%), ICU (n = 76, 19.6%), and Other (n = 33, 8.5%), which includes Internal Medicine, Pediatrics, Maternity, Outpatient clinics, administrative services, Oncology, Bone Marrow Transplant, Infection Control, and Nursing Education. Educational attainment spanned the spectrum: Up to diploma (n = 152, 39.2%), Bachelor's (n = 125, 32.2%), and Master's (n = 111, 28.6%). Professional tenure was almost evenly balanced: <5 years (n = 104, 26.8%), 5–10 years (n = 117, 30.2%), 11–20 years (n = 113, 29.1%), and ≥20 years (n = 54, 13.9%). Geographically, nurses worked in North (n = 158, 40.7%), Central (n = 131, 33.8%), and South (n = 99, 25.5%) West Bank region. Finally, Public hospitals (n = 229, 59.0%) and private hospitals

(n = 159, 41.0%) were both well represented. This distribution reflects a broadly representative cross-section across sex, age, department, education, experience, and hospital characteristics (see Table 4.1).

Table (4.1)

Socio-Demographic Profile of Palestinian Nurses (N = 388)

Demographic Characteristic	Category	Frequency (%)
Gender	Female	203 (52.3%)
	Male	185 (47.7%)
Age Category	Less than 30 years	115 (29.6%)
	30–39 years	127 (32.7%)
	40–49 years	103 (26.5%)
	50 years or more	43 (11.1%)
Department	Emergency	160 (41.2%)
	ICU	76 (19.6%)
	Other[1]	33 (8.5%)
	Surgery	119 (30.7%)
Educational Level	Up to Diploma	152 (39.2%)
	Bachelor's	125 (32.2%)
	Master's	111 (28.6%)
Years of Experience	<5 years	104 (26.8%)
	5–10 years	117 (30.2%)

Table (4.1)

Socio-Demographic Profile of Palestinian Nurses (N = 388)

	11–20 years	113 (29.1%)
	20+ years	54 (13.9%)
Hospital Location	North	158 (40.7%)
	Central	131 (33.8%)
	South	99 (25.5%)
Hospital Type	Private	159 (41.0%)
	Public	229 (59.0%)

Note. Percentages are based on valid responses (N = 388).

[1]"Other" department include Internal Medicine, Pediatrics, Maternity, Outpatient Clinics, Administrative Services, Oncology, Bone Marrow Transplant, Infection Control, and Nursing Education.

4.3 Relative Importance of Knowledge, Attitude, and Practice Domains

To quantify how much each domain contributes uniquely to the total KAP score, we carried out a relative-importance analysis based on the Lindeman–Merenda–Gold (LMG) algorithm (Lindeman et al., 1980) as implemented in the *relimpo* package for R (4.4.3). Unlike a simple multiple-regression R^2, which is tautologically 1.00 here because the three sub-scores sum to the total, LMG partitions that perfect fit into additive, order-invariant shares (Grömping, 2006). Concretely, the algorithm computes each predictor's incremental contribution to R^2 across all 3! = 6 possible entry orders and averages those increments, ensuring that the resulting weights sum exactly to the model R^2 and are unaffected by multicollinearity. The analysis shows that the practice domain accounted for the largest proportion of the variance in the composite KAP score (34.7%), followed closely by knowledge (33.0%) and attitude (32.4%). Taken together, the three domains necessarily explain 100% of the variance in overall KAP. These percentages, reported in Table (4.2), represent standardized Lindeman weights and indicate that improvements in

practice would yield the greatest marginal gain in the total KAP score, even only slightly more than gains in knowledge or attitude.

Table (4.2)

Standardized Relative Importance Coefficients (% of Total Variance in Overall KAP)

KAP Dimension	Relative Importance (RI)
Knowledge	33.0%
Attitude	32.4%
Practice	34.7%

4.4 Descriptive Statistics of KAP and OSH Scores by Participant Characteristics

Across the sample of 388 nurses, mean scores generally indicated favorable levels of knowledge, attitudes, practices, and perceptions of OSH. Table (8) shows that there were minimal gender differences across all domains: women (M = 75.5, SD = 11.4) and men (M = 75.6, SD = 11.4) achieved essentially identical knowledge scores, and differences in attitudes (women: M = 79.2, SD = 9.5; men: M = 78.9, SD = 10.6), practices (women: M = 77.2, SD = 10.1; men: M = 75.7, SD = 11.0), and OSH perceptions (women: M = 66.7, SD = 18.6; men: M = 68.6, SD = 16.4) never exceeded two points, indicating gender parity in KAP and perceived safety. Mean KAP and OSH scores varied modestly across age groups. Knowledge scores ranged narrowly from 74.5 (SD = 9.0; ≥50 years) to 76.1 (SD = 7.4; 40–49 years). Perceived OSH improved gradually with increasing age, rising from a mean of 63.7 (SD = 22.6) among nurses younger than 30, to 68.2 (SD = 15.5) among those aged 30–39 years, 69.4 (SD = 15.5) among 40–49 years, and ultimately 72.1 (SD = 10.1) for nurses 50 years or older.

Differences by department were more notable. Nurses in "Other" departments; primarily outpatient and specialized units such as maternity and pediatrics, reported the highest scores across all domains: knowledge (M = 79.5, SD = 14.0), attitude (M = 82.8, SD = 12.2), practice (M = 82.2, SD = 9.8), and OSH perception (M = 70.5, SD = 19.3). In contrast, emergency-department nurses scored lowest for knowledge (M = 74.4, SD = 9.8), attitude (M = 77.7, SD = 8.6), and practice (M = 75.0, SD = 7.9), while their perceived OSH (M = 67.0, SD = 15.8) was comparable to ICU nurses (M = 66.7, SD = 19.7). Educational level displayed mixed associations with KAP and OSH.

Bachelor's-level nurses achieved notably higher attitude (M = 81.1, SD = 11.8) and practice (M = 79.5, SD = 12.7) scores compared to diploma-level (attitude: M = 77.8, SD = 8.7; practice: M = 76.6, SD = 7.9) or master's-degree nurses (attitude: M = 78.3, SD = 9.3; practice: M = 72.9, SD = 10.0). However, bachelor's-level nurses rated occupational safety lowest (M = 63.1, SD = 21.1). Diploma-level nurses reported higher OSH scores (M = 69.6, SD = 16.5), despite lower KAP averages overall.

Work experience showed only slight disparities with KAP domains but displayed a clearer trend with OSH perceptions. Nurses with fewer than five years of experience had the lowest OSH mean (M = 65.0, SD = 22.2), while those with 20 or more years of experience reported the highest perceived OSH (M = 71.2, SD = 11.6). Regarding hospital-related characteristics, location had minimal impact on KAP scores but showed moderate variability in OSH perception. Nurses from southern hospitals perceived safety most positively (M = 69.8, SD = 13.6), compared to northern (M = 67.0, SD = 19.1) and central hospitals (M = 66.6, SD = 18.4), despite slightly lower attitude scores in southern hospitals (M = 77.3, SD = 7.9). Public and private hospitals yielded nearly identical means across all five domains (e.g., OSH: public M = 68.0, SD = 17.9; private M = 67.0, SD = 17.2), highlighting that hospital type may not substantially influence KAP or OSH scores in this sample as the inferential statistics present later. Overall, these descriptive patterns suggest modest demographic and institutional variability in nurses' knowledge, attitudes, practices, and OSH perceptions, with clearer differences emerging primarily by department and years of experience.

Table (4.3)

Descriptive Statistics of KAP and OSH Scores by Participant Characteristics

Characteristic	**Mean (SD)**				
	Knowledge	**Attitude**	**Practice**	**KAP**	**OSH**
Gender					
Female	75.5 (11.4)	79.2 (9.5)	77.2 (10.1)	77.3 (8.8)	66.7 (18.6)
Male	75.6 (11.4)	78.9 (10.6)	75.7 (11.0)	76.7 (9.7)	68.6 (16.4)
Age Category					
Less than 30 years	75.5 (14.0)	78.8 (11.5)	77.0 (12.8)	77.1 (11.6)	63.7 (22.6)

30–39 years	75.6 (12.2)	80.3 (10.0)	77.1 (10.2)	77.7 (9.0)	68.2 (15.5)
40–49 years	76.1 (7.4)	77.9 (9.3)	75.5 (8.5)	76.5 (7.0)	69.4 (15.5)
50 years or more	74.5 (9.0)	78.4 (7.3)	75.6 (9.0)	76.2 (7.0)	72.1 (10.1)
Department					
Emergency	74.4 (9.8)	77.7 (8.6)	75.0 (7.9)	75.7 (7.2)	67.0 (15.8)
ICU	75.4 (12.0)	79.1 (11.1)	77.2 (11.6)	77.3 (9.2)	66.7 (19.7)
Surgery	76.1 (11.9)	79.7 (10.2)	76.4 (12.5)	77.4 (10.7)	68.3 (18.1)
Other	79.5 (14.0)	82.8 (12.2)	82.2 (9.8)	81.5 (10.9)	70.5 (19.3)
Educational Level					
Up to Diploma	75.5 (9.8)	77.8 (8.7)	76.6 (7.9)	76.6 (7.6)	69.6 (16.5)
Bachelor's	75.6 (14.7)	81.1 (11.8)	79.5 (12.7)	78.7 (11.5)	63.1 (21.1)
Master's	75.7 (9.0)	78.3 (9.3)	72.9 (10.0)	75.6 (7.9)	70.0 (13.5)
Years of Experience					
<5 years	74.7 (14.3)	78.1 (11.6)	76.0 (13.1)	76.3 (11.8)	65.0 (22.2)
5–10 years	76.7 (9.5)	79.2 (8.8)	77.3 (9.0)	77.8 (8.1)	66.8 (16.5)
11–20 years	74.6 (11.4)	79.0 (10.4)	75.8 (10.0)	76.5 (8.4)	69.1 (16.1)
20+ years	76.6 (8.2)	80.2 (8.3)	77.1 (9.0)	78.0 (7.2)	71.2 (11.6)
Hospital Location					
North	76.0 (11.0)	79.7 (10.2)	77.1 (10.3)	77.6 (8.9)	67.0 (19.1)
Central	74.9 (13.9)	79.5 (11.0)	76.0 (12.2)	76.8 (10.9)	66.6 (18.4)
South	75.8 (7.6)	77.3 (7.9)	76.2 (8.3)	76.4 (6.8)	69.8 (13.6)
Hospital Type					
Public	75.5 (12.7)	79.6 (10.5)	76.7 (11.3)	77.3 (10.0)	68.0 (17.9)
Private	75.6 (9.2)	78.2 (9.3)	76.2 (9.4)	76.7 (7.9)	67.0 (17.2)

4.5 Results of Bivariate Comparisons between Demographic Characteristics and POMP Scores

Table (9) displays a series of bivariate analyses that were conducted to explore the associations between demographic characteristics (gender, age group, clinical department, educational attainment, years of experience, hospital location, and hospital type) and the five domain outcomes

measured as Percent of Maximum Possible (POMP) scores: Knowledge (KNO), Attitude (ATT), Practice (PRA), KAP and OSH. For each test, assumptions were checked. Homogeneity of variance was assessed using median-centered Levene's tests; when violations occurred, Welch ANOVA or Welch t-tests were applied to correct for unequal variances. Given the large sample size (N = 388), the Central Limit Theorem supports the assumption of approximate normality of residuals. All means (M) and standard deviations (SD) reported here are expressed on a 0–100 POMP scale.

4.5.1 Gender

Men and women showed no statistically significant differences across the four domains. For Knowledge, women (M = 75.48, SD = 11.42) and men (M = 75.65, SD = 11.36) performed comparably, t (386) = −0.14, p = .886, 95% CI [−2.44, 2.11]. Similarly, Attitude, t (386) = 0.29, p = .776, Practice, t (386) = 1.42, p = .157, and OSH, t (386) = −1.08, p = .282, showed no meaningful gender disparities. All Levene tests were non-significant (p ranged from .136 to .973), confirming equal variances. For composite KAP, no difference emerged between women and men, t (386) = 0.58, p = .560; Levene's p = .567 confirmed equal variances.

4.5.2 Age Group

Nurses were categorized into four age brackets: <30, 30–39, 40–49, and ≥50 years. Because Levene's tests indicated variance heterogeneity, Welch ANOVAs were used. Knowledge, Welch F (3, 159.57) = 0.35, p = .793, Attitude, F (3, 168.52) = 1.26, p = .288, and Practice, F (3, 159.99) = 0.74, p = .531, showed no statistical differences across age groups. OSH showed small but statistically significant age differences, Welch F (3, 176.67) = 3.55, p = .016. Nurses younger than 30 years (M = 63.70, SD = 22.56) had lower OSH scores compared to those aged ≥50 years (M = 72.09, SD = 10.15), as shown in the previous section. For composite KAP, variance heterogeneity (Levene's p = .002) led to a Welch ANOVA, which showed no age effect, Welch F (3, 163.57) = 0.58, p = .629.

4.5.3 Clinical Department

Clinical departments were classified as Emergency, ICU, Surgery, and Other. Due to variance heterogeneity indicated by Levene's test for Knowledge, Attitude, and Practice, Welch ANOVAs were applied, while OSH employed classical ANOVA. Knowledge showed no departmental

differences, Welch F (3, 115.30) = 1.67, p = .178. Attitude approached significance, Welch F (3, 114.90) = 2.36, p = .075. A significant effect emerged for Practice, Welch F (3, 115.92) = 5.49, p = .001, where nurses in "Other" (M = 82.20, SD = 9.82) reported better practice than those in Emergency (M = 75.00, SD = 7.87, p = .002) and Surgery (M = 76.45, SD = 11.93, p = .014). OSH scores were uniform across departments, classical F (3, 384) = 0.48, p =. 693.For composite KAP, a Welch ANOVA revealed a significant departmental difference, Welch F (3, 114.21) = 3.44, p = .019; the means (Emergency M = 75.7; ICU M = 77.3; Surgery M = 77.4; Other M = 81.5) suggest the composite KAP pattern mirrors the Practice finding; scores are highest in “Other” departments.

4.5.4 Educational Attainment

Educational levels: Up-to-Diploma, Bachelor’s, and Master’s, were analyzed using Welch ANOVAs due to significant variance heterogeneity. Knowledge did not vary significantly by education, Welch F (2, 241.27) = 0.02, p = .983. Attitude differed modestly, Welch F (2, 239.46) = 3.35, p = .037; bachelor’s degree holders (M = 81.06, SD = 11.79) scored higher than those with diplomas (M = 77.82, SD = 8.71) and master's degrees (M = 78.35, SD = 9.25). Practice demonstrated a robust effect, Welch F (2, 227.53) = 10.46, p < .001; nurses with bachelor’s degrees (M = 79.54) surpassed both diploma-level (M = 76.60) and master’s-level nurses (M = 72.93). OSH also differed significantly, Welch F (2, 247.04) = 5.18, p = .006; Bachelor’s-degree nurses (M = 63.05) reported lower OSH than Diploma (M = 69.61) and Master’s groups (M = 69.99). For composite KAP, the Welch test approached significance, F (2, 237.43) = 2.91, p = .057, hinting that bachelor-level nurses may have slightly higher overall KAP than the other groups.

4.5.5 Years of Experience

Four experience groups were compared (<5, 5–10, 11–20, and >20 years). Levene’s test dictated Welch ANOVAs for Knowledge, Practice, and OSH, while Attitude used classical ANOVA. None of the domains; Knowledge, Welch F (3, 187.61) = 1.17, p = .324; Attitude, classical F (3, 384) = 0.55, p = .649; Practice, Welch F (3, 180.88) = 0.65, p = .585; OSH, Welch F (3, 192.87) = 2.24, p = .084, showed significant effects related to years of experience. For composite KAP, there were no statistical differences across experience groups.

4.5.6 Hospital Location

Hospital location (North, Central, South) was examined using Welch ANOVAs due to variance heterogeneity, except for Practice (homoscedastic). None of the domains differed significantly: Knowledge, Welch F (2, 248.51) = 0.27, p = .763; Attitude, Welch F (2, 248.01) = 2.58, p = .078; Practice, classical F (2, 385) = 0.40, p = .668; OSH, Welch F (2, 251.34) = 1.46, p = .234. For composite KAP, there were no statistical differences across location groups.

4.5.7 Hospital Type

Hospital type (Public vs. Private) showed no significant differences in any domain, with equal variances confirmed (Levene's p ≥ .055): Knowledge, t (386) = -0.13, p = .899; Attitude, t (386) = 1.35, p = .178; Practice, t (386) = 0.44, p = .658; OSH, t (386) = 0.58, p =. 561.For composite KAP, there were no statistically differences across hospital type groups.

4.5.8 Summary

Collectively, demographic characteristics showed limited associations with KAP and OSH scores. Gender and hospital type had no meaningful effect. Age was associated solely with OSH, indicating higher scores among older nurses. Clinical department significantly influenced Practice only, favoring other departments. Educational attainment consistently predicted Attitude, Practice, and OSH, with bachelor's-level nurses scoring highest in attitudes and practices but lowest in OSH perceptions. Experience and hospital location demonstrated no significant associations. These findings provide a robust empirical basis for subsequent multivariable modeling.

Table (4.4)

Bivariate Analysis of Demographic Characteristics and Domain Scores (KAP and OSH)

Domain	**Characteristic**	**Levene*P* value**	**Statistic ($t/F_w(df)$)**	***P* value**
Knowledge	Gender	0.503	t (386) = -0.14	0.886
	Age Category	0.000	$F_w(3, 159.57) = 0.35$	0.793
	Department	0.003	$F_w(3, 115.30) = 1.67$	0.177
	Educational Level	0.000	$F_w(2, 241.27) = 0.02$	0.983

Table (4.4)

Bivariate Analysis of Demographic Characteristics and Domain Scores (KAP and OSH)

Domain	Characteristic	Levene*P* value	Statistic ($t/F_w(df)$)	*P* value
	Years of Experience	0.026	$F_w(3, 187.61) = 1.17$	0.323
	Hospital Location	0.010	$F_w(2, 248.51) = 0.27$	0.763
	Hospital Type	0.094	$t\ (386) = -0.13$	0.899
Attitude	Gender	0.973	$t\ (386) = 0.29$	0.776
	Age Category	0.013	$F_w(3, 168.52) = 1.27$	0.288
	Department	0.002	$F_w(3, 114.90) = 2.36$	0.075
	Educational Level	0.000	$F_w\ (2, 239.46) = 3.35$	0.037
	Years of Experience	0.399	$F\ (3, 384) = 0.55$	0.649
	Hospital Location	0.013	$F_w(2, 248.01) = 2.58$	0.078
	Hospital Type	0.097	$t(386) = 1.35$	0.178
Practice	Gender	0.283	$t(386) = 1.42$	0.157
	Age Category	0.010	$F_w(3, 159.99) = 0.74$	0.531
	Department	0.019	$F_w\ (3, 115.92) = 5.49$	0.001
	Educational Level	0.000	$F_w\ (2, 227.53) = 10.46$	0.000
	Years of Experience	0.021	$F_w\ (3, 180.88) = 0.65$	0.585
	Hospital Location	0.052	$F(2, 385) = 0.40$	0.668
	Hospital Type	0.055	$t\ (386) = 0.44$	0.658
KAP	Gender	0.567	$t\ (386) = 0.58$	0.560
	Age Category	0.002	$F_w(3, 163.57) = 0.58$	0.629

Table (4.4)

Bivariate Analysis of Demographic Characteristics and Domain Scores (KAP and OSH)

Domain	Characteristic	Levene*P* value	Statistic ($t/F_w(df)$)	*P* value
	Department	0.004	F_w (3, 114.21) = 3.44	0.019
	Educational Level	0.000	F_w(2, 237.43) = 2.91	0.057
	Years of Experience	0.112	F(3, 384) = 0.81	0.489
	Hospital Location	0.029	F_w(2, 246.76) = 0.69	0.501
	Hospital Type	0.081	t (386) = 0.61	0.545
OSH	Gender	0.136	t (386) = -1.08	0.282
	Age Category	0.000	F_w(3, 176.67) = 3.55	0.016
	Department	0.271	F(3, 384) = 0.48	0.693
	Educational Level	0.000	F_w(2, 247.04) = 5.18	0.006
	Years of Experience	0.001	F_w(3, 192.87) = 2.25	0.084
	Hospital Location	0.007	F_w(2, 251.34) = 1.46	0.234
	Hospital Type	0.755	t(386) = 0.58	0.561

4.6 Categorized Levels of Knowledge, Attitude, Practice, Overall KAP, and Occupational Safety and Health Among Palestinian Nurses

Across the sample of 388 nurses, three quarters (75.8%, n = 294) fell below the mastery threshold for knowledge, whereas only 24.2% (n = 94) achieved a "good knowledge" score. A similar pattern emerged for both attitude and practice: 69.1% of participants were classified as having a negative attitude toward OSH or as exhibiting poor safety practices (n = 268 in each case), while approximately one third demonstrated positive attitudes (30.9%, n = 120) or good practices (30.9%, n = 120). When the three domains were aggregated into an overall KAP index, nearly

three quarters of nurses (73.7%, n = 286) scored in the "low" range, leaving only 26.3% (n = 102) in the "high" category. By contrast, the occupational-safety-and-health (OSH) outcome showed the most favorable distribution: 62.4% of respondents (n = 242) met or exceeded the 70% threshold for "good safety," whereas 37.6% (n = 146) were categorized as experiencing "poor safety." These figures suggest that, although a majority of nurses perceive their immediate workplace safety environment as satisfactory, substantial deficits remain in their knowledge base, attitudinal orientation, and day-to-day safety practices. Targeted educational and behavioral interventions appear warranted, particularly for the two thirds of nurses who display negative attitudes and sub-optimal practice despite reporting comparatively better OSH conditions. Table (4.5) summarizes these results.

Table (4.5)

Frequency of Nurses in "Good" versus "Poor" Categories for Knowledge, Attitude, Practice, Composite KAP, and OSH (N = 388)

KAP Dimension	Category	Frequency (%)
Knowledge	Poor knowledge	294 (75.8%)
	Good knowledge	94 (24.2%)
Attitude	Negative attitude	268 (69.1%)
	Positive attitude	120 (30.9%)
Practices	Poor practices	268 (69.1%)
	Good practices	120 (30.9%)
Total KAP score	Low	286 (73.7%)
	High	102 (26.3%)
Occupational Safety and Health	Poor safety	146 (37.6%)
	Good safety	242 (62.4%)

Note. Scores ≥ 70% of POMP were classified as "good or positive"; scores < 70% were classified as "poor or negative".

4.7 Logistic Regression Models: Associations Between KAP Dimensions and Perceived OSH

Four separate one-predictor logistic regressions examined whether "good" scores on Knowledge, Attitude, Practice, and the composite KAP index predicted "good" perceived (OSH) as shown in Table (4.6).

- **Knowledge with OSH:** Nurses with good knowledge were 11.2 times more likely to report good OSH than those with poor knowledge, OR = 11.2, 95% CI [5.9, 23.0], z = 7.07, p <.001. Model fit improved significantly over the intercept-only model, LR $\chi^2(1) = 66.0$, p <.001; Nagelkerke $R^2 = 0.21$ and AIC = 451.9 indicate that knowledge alone explains roughly one-fifth of the variance in OSH status.
- **Attitude with OSH:** Holding a positive attitude increased the odds of good safety almost ninefold, OR = 8.9, 95% CI [3.6, 26.9], z = 4.31, p < .001. Model fit improved sharply over the intercept-only model, LR $\chi^2(1) = 25.3$, p < .001; Although significant, the attitude-only model accounted for less variance ($R^2 = 0.09$; AIC = 492.6) than the knowledge model.
- **Practice with OSH**: Good practice quadrupled the odds of good OSH, OR = 4.2, 95% CI [2.1, 8.6], z = 4.04, p < .001. The model fit improvement was statistically significant (LR $\chi^2(1) = 17.8$, p < .001), with a modest $R^2 = 0.06$ (AIC = 500.1).
- **Composite KAP with OSH**: An overall good KAP profile yielded odds similar to the knowledge effect, OR = 11.2, 95% CI [4.6, 33.8], z = 4.86, p < .001. Model fit improved significantly over the intercept-only model, LR $\chi^2(1) = 34.3$, p < .001; The model's explanatory power was intermediate ($R^2 = 0.12$; AIC = 483.5).

Table (4.6)

Univariate Logistic Regression of Individual KAP Dimensions Predicting Good OSH Status

Model	OR (95% CI)	Wald *z*	*p*	LR $\chi^2(1)$	*p*	AIC	NagelkerkeR^2
KNO → OSH	11.2 (5.9 - 23.0)	7.07	<.001	66.0	<.001	451.9	0.213
ATT → OSH	8.9 (3.6 - 26.9)	4.31	<.001	25.3	<.001	492.6	0.086
PRA → OSH	4.2 (2.1 - 8.6)	4.04	<.001	17.8	<.001	500.1	0.061
KAP → OSH	11.2 (4.6 - 33.8)	4.86	<.001	34.3	<.001	483.5	0.115

4.8 KAP Dimensions Simultaneously Predicting Perceived OSH

A multivariable logistic regression tested whether the three binary KAP dimensions jointly predicted "good" occupational-safety status, as shown in Table (4.7). The model was highly significant, likelihood-ratio $\chi^2(3) = 72.25$, $p < .001$, explained roughly one-quarter of the outcome variance (Nagelkerke $R^2 = 0.231$), and had the lowest AIC among the candidate specifications (AIC = 449.6). Calibration was good as Hosmer–Lemeshow $\chi^2(1) = 0.08$, $p = .778$, indicating close agreement between predicted probabilities and observed event rates across risk deciles. Controlling for overlap among the KAP domains, knowledge remained the only unique predictor. Nurses who met the "good knowledge" threshold were nearly eight times more likely to report good OSH than those with poor knowledge, OR = 7.8, 95%CI [4.0, 16.6], $z = 5.66$, $p < .001$. A positive attitude showed a marginally significant trend, OR = 2.8, 95% CI [0.9, 9.6], $z = 1.80$, $p = .073$, but didn't reach the assigned level of significance $\alpha = 0.05$, and good practice was not independently associated with OSH, OR = 1.8, 95% CI [0.8, 4.2], $z = 1.43$, $p = .152$. These results indicate that, after accounting for shared variance, knowledge is the primary KAP component linked to perceived occupational safety.

Table (4.7)

Multivariable Logistic Regression of Knowledge, Attitude, and Practice Jointly Predicting good OSH Status

Characteristic	**OR (95% CI)**	**Wald *z***	***p***
(Intercept)	0.1 (0.0 - 0.2)	-4.23	<.001
Knowledge	7.8 (4.0 - 16.6)	5.66	<.001
Attitude	2.8 (0.9 - 9.6)	1.80	0.073
Practice	1.8 (0.8 - 4.2)	1.43	0.152

Note. Model $\chi^2(3) = 72.2$, $p < .001$; AIC = 449.6; Nagelkerke's $R^2 = 0.231$; Hosmer–Lemeshow $\chi^2(1) = 0.08$, $p = .778$.

4.9 Demographic Correlates of "Good" KAP

A multivariable logistic regression tested whether nurse and hospital level characteristics predicted an overall good KAP score as summarized in Table (4.8). Likelihood-ratio test showed that

predictors didn't collectively improve the model over the intercept-only model, likelihood-ratio $\chi^2(15) = 16.0$, p =.383. While, Calibration remained adequate, i.e., the model's predictions match the observed outcomes reasonably well, Hosmer–Lemeshow $\chi^2(8) = 10.23$, p = .249. Furthermore, the model explained little outcome variance (Nagelkerke $R^2 = 0.091$; AIC = 241.8). Among the 15 predictors, only holding a master's degree was significant: nurses with a master's degree were more than three times as likely to demonstrate good KAP compared with those whose education did not exceed a diploma, OR = 3.4, 95% CI [1.2, 12.6], z = 2.08, p = .038. Sex, age group, years of experience, hospital type and location, and clinical department were all unrelated to KAP status ($|z| < 1.25$, $p > .220$). Thus, in this sample, formal educational attainment, specifically postgraduate study, is the only demographic factor linked to superior knowledge, attitudes, and practices; workplace setting and other personal attributes show no independent association.

Table (4.8)

Multivariable Logistic Regression of Demographic Characteristics Predicting Good Composite KAP Status

Characteristic	**OR (95% CI)**	**Wald *z***	***p***
(Intercept)	3.5 (1.3 - 10.4)	2.33	0.020
Male vs. Female	1.1 (0.5 - 2.5)	0.25	0.799
Age 30–39 vs. < 30	1.2 (0.4 - 4.0)	0.35	0.728
Age 40–49 vs. < 30	2.1 (0.4 - 11.0)	0.91	0.363
Age ≥ 50 vs. < 30	1.3 (0.2 - 12.7)	0.21	0.830
Bachelor's vs. ≤ Diploma	1.2 (0.5 - 2.8)	0.37	0.711
Master's vs. ≤ Diploma	3.4 (1.2 - 12.6)	2.08	0.038*
5–10 yrs vs. < 5 yrs	2.1 (0.7 - 7.1)	1.21	0.227
11–20 yrs vs. < 5 yrs	1.5 (0.4 - 6.2)	0.53	0.594
≥ 20 yrs vs. < 5 yrs	2.5 (0.3 - 25.1)	0.78	0.432

Private vs. Public hospital	1.5 (0.7 - 3.4)	0.92	0.355
Central vs. North hospital	1.0 (0.4 - 2.4)	-0.04	0.968
South vs. North hospital	1.3 (0.5 - 3.5)	0.48	0.635
ICU vs. Emergency	1.3 (0.4 - 4.3)	0.42	0.676
Surgery vs. Emergency	0.9 (0.4 - 2.4)	-0.18	0.856
Other vs. Emergency	0.5 (0.1 - 1.8)	-1.14	0.254

Note. Model $\chi^2(15) = 16.0$, $p = .383$; AIC = 241.8; Nagelkerke's $R^2 = 0.091$; Hosmer–Lemeshow $\chi^2(8) = 10.23$, $p = .249$.

4.10 Demographic Predictors of Perceived OSH Status

A multivariable logistic model entered the same 15 demographic covariates but used good vs. poor OSH as the outcome as given in Table (4.9). The predictor set improved discrimination relative to an intercept-only model, likelihood-ratio $\chi^2(15) = 35.65$, $p = .002$, and accounted for a modest share of variance (Nagelkerke $R^2 = 0.120$; AIC = 510.2). Model's predictions match the observed outcomes reasonably well: Hosmer–Lemeshow $\chi^2(8) = 15.64$, p =. 048.Two of the educational attainment categories emerged as significant factors, but in the opposite direction to that observed for KAP. Relative to nurses whose education did not exceed a diploma, those with a bachelor's degree had 60% lower odds of reporting good OSH (OR = 0.4, 95% CI [0.2, 0.6], z = -3.69, p < .001), and those with a master's degree had about 50% lower odds (OR = 0.5, 95% CI [0.3, 0.9], z = -2.20, p = .028). A marginal location effect was also observed; nurses in southern hospitals were 1.6 times more likely than those in northern hospitals to report good OSH (OR = 1.6, 95% CI [0.9, 3.0], p = .088). No other variables: sex, age, clinical experience, hospital ownership, or clinical department, were associated with OSH ($p \geq .130$). The inverse association between higher academic degrees and perceived safety may reflect more critical appraisal by highly educated nurses and warrants qualitative follow-up.

Table (4.9)

Multivariable Logistic Regression of Demographic Characteristics Predicting Good OSH Status

Characteristic	OR (95% CI)	Wald *z*	*p*
(Intercept)	1.5 (0.8 - 3.0)	1.17	0.241
Male vs. Female	1.2 (0.8 - 1.9)	0.82	0.411
Age 30–39 vs. < 30	1.5 (0.7 - 3.2)	1.15	0.251
Age 40–49 vs. < 30	2.0 (0.8 - 5.3)	1.46	0.143
Age ≥ 50 vs. < 30	2.9 (0.8 - 11.5)	1.52	0.130
Bachelor's vs. ≤ Diploma	0.4 (0.2 - 0.6)	-3.69	<.001*
Master's vs. ≤ Diploma	0.5 (0.3 - 0.9)	-2.20	0.028*
5–10 yrs vs. < 5 yrs	1.0 (0.5 - 2.1)	0.05	0.962
11–20 yrs vs. < 5 yrs	1.0 (0.4 - 2.5)	0.02	0.985
≥ 20 yrs vs. < 5 yrs	0.7 (0.2 - 2.3)	-0.65	0.514
Private vs. Public hospital	0.9 (0.6 - 1.5)	-0.31	0.760
Central vs. North hospital	1.0 (0.6 - 1.6)	-0.13	0.893
South vs. North hospital	1.6 (0.9 - 3.0)	1.71	0.088
ICU vs. Emergency	1.0 (0.5 - 1.9)	-0.05	0.961
Surgery vs. Emergency	1.2 (0.7 - 2.2)	0.75	0.451
Other vs. Emergency	1.3 (0.6 - 3.2)	0.61	0.539

Note. Model χ^2 (15) = 35.6, p = .002; AIC = 510.2; Nagelkerke's R^2= .120; Hosmer–Lemeshow χ^2(8) = 15.64, p = .048.

4.11 Reported Barriers to Implementing Occupational Safety and Health Measures

Open-ended responses (N = 388) were coded into five higher-order themes. Resource constraints such as shortages of personnel, equipment, budget, or space formed the second-largest theme (n = 115, 29.6%), after Other or Unclear responses; ambiguous statements that could not be confidently classified, were the most common, accounting for one third of all comments (n = 130, 33.5%). Followed by needs for staff development (training, up-skilling; n = 86, 22.2%); such as enhanced safety-awareness training and regular in-house workshops. Operational challenges (e.g., high

workload, patient flow) were mentioned less often (n = 31, 8.0%), and organizational challenges; policy gaps, weak supervision, poor coordination, were least frequent (n = 26, 6.7%).These patterns underscore that, alongside critical capacity and resource shortfalls, a substantial minority of nurses (over 22%) explicitly requested targeted training interventions, suggesting that any improvement strategy must balance material investment with comprehensive competency development. All results are given in Table (4.10).

Table (4.10)

Distribution of Perceived Barriers to OSH Implementation Among Palestinian Nurses (N = 388*)*

Theme	N (%)
Resource constraints	115 (29.6%)
Staff development	86 (22.2%)
Operational challenges	31 (8.0%)
Organizational challenges	26 (6.7%)
Other / Unclear responses	130 (33.5%)

4.12 Summary of the Results

This cross-sectional survey investigated registered nurses' occupational safety knowledge, attitudes, practices, and perceptions across West Bank hospitals. Employing a self-administered 5-point Likert questionnaire, we targeted all 10,800 registered nurses and calculated a conservative minimum sample of 371 using the single-population proportion formula (N=10,800; z=1.96; p=0.50; d=0.05). Recruitment proceeded via email distribution to nursing directors, yielding 388 completed responses and preserving the planned 5% precision at 95% confidence.

Given that missing values affected only 1.14% of all observations and Little's MCAR test (χ^2 = 132.4, p = .640) strongly supports a missing-completely-at-random mechanism, analyzing a single randomly chosen imputed dataset is both practical and statistically defensible. Simulation studies show that when the fraction of missing information is very small, something typically true when overall item-level missingness is below about five per cent—the relative efficiency of analyzing just one completed data set remains above 95%, so point estimates and standard errors differ only trivially from those obtained with full Rubin pooling (von Hippel, 2007; Rubin, 1987).

The recoding strategy for demographic and organizational predictors followed established guidelines, effectively merging categories with expected cell frequencies below five to ensure robust $\chi^2$and logistic analyses. Specifically, NGO and private hospitals were combined into a unified "Private" category to mitigate sparse counts. Over forty free-text departmental labels were systematically categorized first into nine clinical groupings and then aggregated into four clearly defined analytic levels (Emergency, ICU, Surgery, and Other), enhancing analytic interpretability and statistical stability.

Psychometric refinements, including careful item removal based on internal consistency and discriminant validity assessments, were effectively employed. Reliability estimates were robust, with Cronbach's α ranging from .78 to .89, McDonald's T_{otaro} .83 to .90, and Heterotrait–Monotrait (HTMT) ratios consistently below the .90 threshold. These results strongly support the internal consistency and empirical distinctiveness of the Knowledge, Attitude, Practice, and OSH constructs.

Analytical procedures were thorough, employing descriptive statistics, Welch corrections for variance heterogeneity, and appropriate logistic regression diagnostics. Multi-collinearity checks indicated minimal concern, with variance inflation factors consistently below 1.5, ensuring robust logistic regression outcomes. Relative importance analysis, utilizing the Lindeman–Merenda–Gold (LMG) algorithm, effectively decomposed variance contributions across Knowledge, Attitude, and Practice domains, providing clear insights into their relative impact on overall KAP scores.

Collectively, the study's findings underscore significant gaps in OSH among Palestinian hospital nurses, despite generally favorable safety perceptions. Only 24.2% of nurses achieved a mastery-level knowledge score, while approximately one-third demonstrated positive safety attitudes (30.9%) and effective safety practices (30.9%). Nonetheless, the majority (62.4%) perceived their work environment as safe. Logistic regression analyses revealed knowledge as the primary predictor of favorable OSH perceptions (OR = 7.8, 95% CI [4.0, 16.6], $p < .001$), overshadowing attitude (OR = 2.8, 95% CI [0.9, 9.6], $p = .073$) and practice (OR = 1.8, 95% CI [0.8, 4.2], $p = .152$), when all domains were considered simultaneously.

Educational level notably influenced outcomes. Master's degree holders were significantly more likely to demonstrate high overall KAP scores (OR = 3.4, 95% CI [1.2, 12.6], $p = .038$), yet

paradoxically reported lower OSH perceptions compared to diploma holders (OR = 0.5, 95% CI [0.3, 0.9], p = .028). Bachelor's-level nurses similarly reported reduced OSH perceptions relative to diploma-level peers (OR = 0.4, 95% CI [0.2, 0.6], p < .001).

Additionally, clinical department influenced practice scores significantly, with nurses in "Other" specialized or outpatient units- comprising smaller units such as internal medicine, pediatrics, maternity, outpatient clinics, administrative services, Oncology, etc.- reporting higher scores (M = 82.2, SD = 9.8) compared to emergency (M = 75.0, SD = 7.9) and surgical departments (M = 76.4, SD = 12.5), F (3, 115.92) = 5.49, p = .001.

Nurses in the combined "Other" category—comprising smaller units such as Internal Medicine (n = 2), Pediatrics (n = 5), Maternity (n = 5), Outpatient clinics (n = 4), Administrative services (n = 4), Oncology (n = 1), Bone Marrow Transplant (n = 1), Infection Control (n = 1), Nursing education (n = 1), and one miscellaneous "Other" department (n = 1)—reported the highest mean practice scores (M = 82.2, SD = 9.8). In contrast, nurses in emergency (M = 75.0, SD = 7.9) and surgical wards (M = 76.4, SD = 12.5) recorded significantly lower practice levels, underscoring the relative strength of safety behaviors in specialized and outpatient settings.2, SD = 9.8) compared to emergency (M = 75.0, SD = 7.9) and surgical departments (M = 76.4, SD = 12.5), F (3, 115.92) = 5.49, p = .001.

Demographic characteristics including gender, years of experience, hospital ownership, and geographical location demonstrated minimal or no significant associations with either KAP or OSH outcomes, underscoring the predominant influence of knowledge and educational attainment on occupational safety perceptions.

Barriers were categorized into five overarching themes: Resource Constraints (115; 29.6%), Staff Development (86; 22.2%), Operational Challenges (31; 8.0%), Organizational Challenges (26; 6.7%), and Other/Unclear Responses (130; 33.5%). Resource Constraints chiefly reflected shortages of nursing personnel, limited material supplies, and insufficient medical equipment—for example, respondents cited "shortage of human resources," "limited protective gear," and "lack of advanced medical devices." Staff Development issues were characterized by a lack of safety awareness training, inadequate in-house workshops, and absence of formal professional development programs, as in comments like "insufficient safety training for new nurses" and "no established occupational-safety courses." Operational Challenges centered on patient-related and

workflow pressures—examples include "high patient volume and negative work culture hindering incident reporting" and "noncompliance of patients and companions with safety protocols." Organizational Challenges involved administrative coordination gaps and policy enforcement lapses, illustrated by remarks such as "absence of dedicated safety-follow-up committees" and "no clear incident-reporting protocols." Finally, Other/Unclear Responses comprised brief or ambiguous entries (e.g., single-word replies or blanks) that could not be meaningfully classified. These thematic insights complement the quantitative distributions and underscore the need for targeted resource allocation, comprehensive training initiatives, and strengthened administrative oversight.

Together, these findings point to the critical need for integrated strategies that blend enhanced hands-on training with targeted resource investments to bolster nurses' safety competencies and practical skills. Prioritizing structured professional development - alongside systematic upgrades to equipment and staffing - should yield the most pronounced improvements in both safety practice and perception. Looking ahead, future studies would benefit from probability-based sampling frames paired with longitudinal or mixed-method designs that include qualitative follow-up interviews, thereby deepening our understanding of how interventions unfold over time and ensuring the broader applicability of these insights.

Chapter Five: Discussion, Conclusions and Recommendations

5.1 Overview

Health care providers particularly, Nurses face great hazards including infections, injuries from repetitive tasks, and stress due to working conditions. Consequently, workers need to understand their KAP regarding OSH to better recognize and manage these risks.

Occupational hazards are workplace conditions that can lead to illness, disability, or death. Each year, nearly three million workers die, and over 395 million are injured globally due to unsafe work environments. According to the World Health Organization (WHO), these hazards are a major cause of workplace illness and death.

Nurses, as the largest healthcare professional group, face significant risks due to their direct patient contact and duties. They are often exposed to physical, chemical, mechanical, psychosocial, and biological hazards.

Additionally, Palestinian hospitals face unique OSH challenges due to political conflict and economic difficulties. This study aims to explore perceived OSH practices in these hospitals and identify areas for improvement. The injury rate among HCWs is higher than in other sectors, and there is a lack of information about this in Palestine. A study noted that 21% of nursing students face needle stuck injuries, with many seeking more OSH training. Needle stick injuries are the most common, and factors like inadequate training and long hours contribute to their frequency. This study will also evaluate the KAP levels of nurses and the state of OSH in Palestinian hospitals.

5.1.1 Study Purpose and Research Questions

Guided by a Knowledge-Attitude-Practice (KAP) model, the study assessed nurses' current levels of OSH knowledge, safety attitudes, and safety practices; described perceived OSH conditions; tested whether each KAP domain (knowledge, attitude, practice) predicts perceived OSH (H1–H3) and examined the composite KAP–OSH association; assessed whether nurse and hospital characteristics are associated with (a) good composite KAP and (b) good perceived OSH (H4); and identified perceived barriers to implementing OSH policies and practices.

5.1.2 Brief Summary of Key Results

A descriptive-analytical cross-sectional survey was administered to registered nurses working in West Bank hospitals. The target population was 10,800 nurses; due to movement restrictions, recruitment relied on a convenience, self-selection approach and yielded 388 valid responses between December 1, 2024, and March 31, 2025 (minimum required n = 371). Knowledge, attitude, practice, and OSH perception were measured using 5-point Likert items (Knowledge=9, Attitude=7, Practice=10, OSH=4 after refinement) and scored as percent-of-maximum-possible (POMP; 0-100), then dichotomized at 70% or higher to classify good or positive status. Internal consistency was acceptable to strong (Cronbach's $\alpha = .78–.89$; McDonald's $\omega = .83–.90$).

For Research Questions 1 and 2, KAP mastery was limited: 24.2% of nurses (n = 94) achieved good knowledge, 30.9% (n = 120) demonstrated positive attitudes, and 30.9% (n = 120) reported good safety practices; 26.3% (n = 102) achieved high overall KAP, whereas 62.4% (n = 242) reported good OSH. Addressing Research Question 3 and testing H1-H3, univariate logistic regressions showed that good knowledge (OR = 11.2, 95% CI [5.9, 23.0], $p < .001$), positive attitude (OR = 8.9, 95% CI [3.6, 26.9], $p < .001$), and good practice (OR = 4.2, 95% CI [2.1, 8.6], $p < .001$) each was significantly associated with higher odds of reporting good OSH. In the multivariable model entering knowledge, attitude, and practice simultaneously, only knowledge remained a unique predictor (OR = 7.8, 95% CI [4.0, 16.6], $p < .001$), while attitude showed a non-significant trend ($p = .073$) and practice was not significant ($p = .152$). Accordingly, knowledge emerged as the only independent predictor of perceived OSH in the adjusted model, whereas the univariate associations for attitude and practice attenuated and were no longer statistically significant after mutual adjustment. Regarding Research Question 5 (H4), multivariable demographic models showed limited independent effects overall, with education as the main exception: nurses with a master's degree had higher odds of good composite KAP than those with ≤diploma (OR = 3.4, 95% CI [1.2, 12.6], $p = .038$), whereas bachelor's- and master's-level nurses had lower odds of good perceived OSH relative to ≤diploma (OR = 0.4, $p < .001$; OR = 0.5, $p = .028$).

For Research Question 4, nurses most frequently identified resource constraints (29.6%) and unmet training or staff development needs (22.2%) as barriers to OSH implementation, alongside smaller proportions citing operational (8.0%) and organizational challenges (6.7%).

Overall, the pattern of results suggests a discrepancy between relatively favorable safety perceptions and limited KAP mastery, with knowledge functioning as the principal unique predictor of perceived OSH. The findings therefore support prioritizing structured OSH training (with reinforcement of reporting culture and safety leadership) while addressing resource gaps such as staffing and protective supplies to strengthen OSH in Palestinian hospital settings.

5.2. Discussion of Methodological Approaches and Sample Characteristics

The methodology of this study outlines the procedures followed in this study conducted on the effects of knowledge on OSH of nursing staff in Palestinian hospitals. The manual specifies methods for obtaining and processing information, such as setting up data analysis, specifying population size, selecting a sample group, creating supplementary questionnaires, and recommending statistical techniques for analysis.

An analytical approach was taken to describe and analyze the phenomenon, with a focus on clarifying its relationship to other factors. This method helps to systematically collect and interpret data related to the topic.

The study included two data types: primary and secondary. Primary data was collected through field research using a questionnaire, which was analyzed with R programming language (version: 4.4.3) using statistical tests. To support the study's background, secondary data was obtained from books, journals, and publications.

Its population consisted of all full-time registered nurses in Palestinian hospitals. By means of a formula, the sample size was determined to be representative and valid from 371 respondents who completed 388 valid questionnaires. The primary findings encompassed demographic information such as age, gender, education, experience, and hospital characteristics.

Experts were involved in the creation of the questionnaire by identifying relevant dimensions from previous studies. Feedback led to a final version containing 34 items on knowledge, attitudes, practices, and challenges. Five university professors conducted tests to verify the accuracy. Execution included the setup, approval and distribution of the questionnaire, followed by statistical analysis using R programming language (version: 4.4.3).

5.3. Discussion of the Results Compared with Previous Literature

5.3.1. Discussion of the Results Related to KAP & OSH

KAP, which stands for Knowledge, Attitude, and Practices, is an incredibly dynamic and versatile framework that is widely utilized across various sectors to not only assess but also enhance performance levels, particularly in organizational and workplace environments. Think of it as a powerful tool designed for unlocking the potential of teams and individuals by diving deep into how well employees understand their roles, how they feel about their responsibilities, and how effectively they turn that understanding into action!

This framework serves as a vital instrument when it comes to crafting well-rounded and impactful training programs. By evaluating employees' knowledge—essentially what they know about their tasks—alongside their attitudes, or how they feel about those tasks, and their practices, which entail how they implement their knowledge in real-world scenarios, organizations can gain invaluable insights. This comprehensive understanding is crucial.

It's important to realize that an employee may be well-versed in the theoretical aspects of their job but could potentially lack the enthusiasm or the right mindset needed to excel. Alternatively, they might grasp the concept but not execute their duties effectively. Identifying these gaps in knowledge, attitude, and practice is key! It provides a roadmap for developing targeted training initiatives that resonate with employees, enhancing not just their skills, but also their engagement and motivation. By harnessing the power of KAP, organizations can craft training programs that are not just effective but are also exciting, ensuring that employees are not only equipped with the right tools but are also inspired to use them. These results agree with the results of (Amin et al.,2023; Qaraman et al., 2022; Danaei et al., 2022; Aladini et al., 2023)

In sectors where health and safety are crucial—such as the bustling realms of manufacturing, the compassionate sphere of healthcare, and the dynamic environment of construction, KAP surveys emerge as an indispensable tool. These surveys provide a thorough assessment of employees' knowledge regarding essential safety protocols, an insight into their attitudes toward safety practices, and a measure of how diligently they adhere to the vital safety guidelines set in place. By conducting these insightful surveys, organizations can not only uncover areas that require

improvement but also foster a culture of safety awareness and responsibility among their workforce.

This proactive approach goes a long way in significantly reducing workplace accidents and enhancing overall safety performance across the board. Ultimately, the result is a safer, more secure working environment where employees feel valued and protected. These results agree with the results of (Rusdiana et al., 2022; Amin et al.,2023; Qaraman et al, 2022; Khelgi et al., 2021; Wijaya &Indasah ,2023; Kakkar et al.,2021; Hessels et al., 2015; Al-Qahtani ,2023; Danaei et al., 2022).

In organizations that are deeply committed to the thrilling journey of continuous improvement, the Knowledge Assessment Process (KAP) can play a pivotal role in evaluating several crucial aspects. It goes beyond mere paperwork; it actively assesses whether employees not only comprehend the essential quality control processes but also cultivate the right mindset and attitude toward quality. Furthermore, it scrutinizes whether they consistently practice these vital principles in their daily tasks, ensuring that the ethos of quality permeates throughout the organization.

This assessment becomes particularly invaluable in dynamic fields such as manufacturing, where precision and attention to detail can significantly impact outcomes; customer service, where the experience must be nothing short of exceptional; and operations management, where efficiency and effectiveness are paramount. By implementing KAP, organizations can foster an environment where quality is not only understood but embraced as a way of life, driving success in every corner of their operations. These results agree with the results of (Qaraman et al., 2022; Wijaya&Indasah ,2023).

KAP is an incredibly valuable and insightful framework designed specifically for conducting performance evaluations in the workplace. This comprehensive tool goes beyond merely measuring the output or results of employees; it delves deeper to uncover and analyze the various factors that contribute to these results. By utilizing KAP, employers can gain a clearer, more nuanced understanding of their team members' performance.

For instance, imagine a situation where an employee appears to be struggling and performing poorly in their role. Rather than jumping to conclusions about their abilities, KAP encourages a thorough exploration of the underlying causes. An employee's lack of sufficient knowledge in

their field may significantly impact on their overall output, leading to unsatisfactory performance. Additionally, an employee's negative attitude towards their work can create a ripple effect, hamper not just their achievements but also affecting team morale and dynamics. More critically, the framework prompts evaluators to consider whether an employee is effectively applying their knowledge in a practical context, as sometimes having the right skills isn't enough if they cannot be implemented successfully. In this way, KAP empowers employers with the tools to foster a culture of continuous improvement and constructive feedback. It facilitates meaningful discussions that can lead to personalized developmental opportunities, ensuring that every employee has the chance to thrive and excel in their role. By embracing KAP, organizations can not only enhance individual performance but also drive overall success and engagement within their teams. How exhilarating it is to think about the potential unlock this framework has in shaping a brighter, more productive work environment. These results agree with (Al-Qahtani, 2023; Danaei et al., 2022).

In crucial sectors such as public health and education, the KAP framework is frequently utilized as a powerful tool to inspire and drive significant behavior change among the population. This innovative approach allows practitioners and researchers to delve deep into the minds and lifestyles of individuals, uncovering insights that can lead to meaningful improvements in community well-being. For instance, when it comes to encouraging healthier eating habits, a carefully crafted KAP survey would go beyond mere surface-level questions. It would meticulously assess individuals' knowledge about the fundamentals of nutrition—covering everything from essential vitamins and minerals to the impact of junk food on overall health. But it doesn't stop there! This enlightening survey would also explore the attitudes individuals hold toward healthy food choices, shedding light on their beliefs, motivations, and any potential barriers that may stand in their way.

Importantly, the KAP survey would evaluate not just what people know or how they feel, but also whether they are putting their knowledge and positive attitudes into action. Are they truly practicing good dietary habits? The data gathered through such an engaging survey has the potential to paint a vivid picture of the community's dietary behaviors, allowing professionals to tailor interventions with precision and creativity.

By harnessing the power of KAP, we can inspire individuals to embrace healthier lifestyles and make informed choices that benefit both their health and the health of their communities. These results agree with the results of (Alberta, 2024; Zhou et al., 2022 Khirfan, 2020)

KAP surveys offer a fantastic opportunity for organizations to dive deep into the fascinating world of work culture and employee engagement! By carefully gauging the knowledge that employees possess about the core values and essential policies of the company, businesses can uncover valuable insights. These surveys not only evaluate how well employees understand these foundational elements but also examine their attitudes toward the overarching goals of the organization.

Imagine discovering how passionate and aligned your team is with the company's mission! Moreover, KAP surveys delve into the actual behaviors of employees—specifically, how they engage with their tasks and responsibilities on a day-to-day basis. This exploration can illuminate key areas where employees thrive and where enhancements might be necessary.

Armed with this wealth of information, companies can strategically align their workforce with their broader objectives, fostering a more harmonious and productive work environment. Ultimately, the insights garnered from KAP surveys are not just data points; they are the building blocks of a thriving organizational culture, paving the way for success and fulfillment for everyone involved. These results agree with the results of (Pratiwi& Ivanovic,2022; Aladini et al.,2023; Wijaya&Indasah ,2023; Danaei et al., 2022; Zabin et al.,2022).

There is an incredibly strong and dynamic relationship between Knowledge, Attitude, and Performance (KAP) that profoundly influences Employee Performance in any organization. To kick things off, let's consider the indispensable role of knowledge. Employees who possess a deep and thorough understanding of their specific roles, responsibilities, and the organizational processes that drive their work are typically much more efficient and effective in tackling their daily tasks. When employees are well-informed, they can navigate challenges with agility and precision! Moreover, a solid foundation of knowledge not only empowers employees to make better decisions, but it also minimizes the likelihood of mistakes. Think about it—when individuals feel confident in their skills and understanding of their work environment, they are far more equipped to handle unexpected challenges that may arise. This boost in confidence breeds a greater

willingness to innovate and take calculated risks, ultimately contributing to a thriving workplace climate.

In addition to knowledge, truly significant is the influence that an employee's attitude toward their work can have on their level of engagement, motivation, and overall performance. It’s no secret that a positive attitude acts like a powerful catalyst that can amplify productivity levels! Conversely, when negativity creeps in, it can lead to disengagement, lower morale, and even conflict among colleagues, which can hamper the overall performance of the team.

However, let's focus on the bright side! Employees who cultivate a favorable attitude toward their organizational goals and day-to-day tasks are often the ones who strive to go above and beyond. These enthusiastic individuals are more likely to take initiative, demonstrate creativity, and ultimately achieve higher performance levels. So, it’s clear that KAP is a multi-faceted relationship that can transform workplaces and drive extraordinary success. These results agree with the results of (Mansour et al.,2022; Pratiwi& Ivanovi,2022; Shaheen et al.,2023; Rusdiana et al., 2022). Even if employees possess a clear understanding of what needs to be done and approach their work with the right attitude, it is essential that they translate this knowledge into action through their daily practices and behaviors. Knowing the correct procedures is just the beginning; if an employee fully understands the steps but fails to apply them effectively in real-world situations, it can lead to detrimental effects on their overall performance. This misalignment can create gaps in productivity and result in missed opportunities for growth and improvement.

Therefore, the consistent and effective application of knowledge is not just important, it is crucial for achieving high performance within an organization. This practice fundamentally shapes how employees approach their daily tasks, concoct solutions to challenges they encounter, and ultimately deliver impactful results. It’s the difference between knowing the playbook and executing the plays with precision and enthusiasm. When employees harness their knowledge and consistently put it into practice, they empower themselves and their teams to reach new heights of success. These results agree with the results of (IIO et al.,2022; Aladini et al., 2023; Qaraman et al., 2022; Amin et al.,2023).

By harnessing the powerful tool of KAP, organizations are empowered to uncover crucial gaps that may exist within their workforce. This innovative approach enables leaders to pinpoint discrepancies that could hinder overall effectiveness, particularly in the realms of knowledge,

attitude, and practice. For instance, imagine an employee who is fully aware of the correct procedures and protocols, embodying the aspect of knowledge. However, a closer examination might reveal that this same employee feels a lack of enthusiasm or motivation to implement these procedures—this is the attitude gap. Even more striking, they might struggle to apply this knowledge consistently in their day-to-day activities, showcasing a practice gap. Remarkably, by identifying and addressing these gaps, organizations can pave the way for a significant uplift in employee performance. Moreover, the implementation of a dynamic feedback loop established through the KAP assessment offers invaluable insights, allowing employees to better understand their areas for improvement. Take, for example, a scenario where employees are found to lack critical knowledge in specific domains; this presents a fantastic opportunity for organizations to provide targeted training sessions that can enhance their skill sets and confidence. Conversely, if the assessment reveals that employees harbor negative attitudes toward certain tasks, this indicates a pressing need for motivational strategies or perhaps even a cultural shift within the organization to inspire enthusiasm and engagement.

Similarly, if it becomes evident that the primary concern lies within the realm of practical application—where employees are consistently falling short in executing tasks—then organizations can respond proactively by revising workflows to ensure they are as efficient as possible or perhaps increasing oversight through regular monitoring to keep everyone on track. In this exhilarating journey of improvement driven by KAP, organizations not only elevate employee performance but also cultivate a thriving workplace culture that fosters continuous growth and development. These results agree with the results of (IIO et al.,2022; Shawahna ,2021; Aladini et al.,2023; Qaraman et al., 2022; Amin et al.,2023);

To conclude, it is essential to highlight that KAP offers an incredibly thorough and insightful understanding of the various factors that play critical roles in influencing employee performance across diverse organizations. By carefully assessing and evaluating employees' knowledge, attitudes, and their specific practices, companies have the opportunity to implement well-targeted interventions that are designed to significantly enhance overall performance and productivity levels.

Furthermore, aligning and integrating employees’ knowledge with an upbeat, positive attitude and efficient, effective practices is paramount! This strategic alignment not only serves to maximize

productivity but also propels organizations toward successfully achieving their overarching goals. It contributes to cultivating a highly motivated and engaged workforce that is excited to contribute their best efforts. By fostering such an environment, businesses can set themselves on a path to remarkable growth, inspiring innovation, and ultimately, sustainable success.

5.3.2. Discussion of the Results Related to Relationship between the Socio-Demographic Variables & Hospital Characteristics and KAP and OSH

Gender

The lack of significant gender differences in OSH and KAP indicated that male and female health professionals use OSH procedures and demonstrate similar knowledge, attitudes, and practice behavior toward safety in the workplace. This is likely since nursing education is significantly specialized and prescriptive. Nurses are normally trained in a program where all health professionals are taught to practice the same safety processes, across genders. In most health systems, nurses of both sexes are required to follow the same curriculum, level of experience, and continuing professional development around OSH. Uniform training experiences provide access to the same principles and applications of OSH that lead to a common starting point of knowledge. Additionally, the profession of nursing, by its very nature, imposes the same safety standards and ethical expectations on all practitioners in high-risk healthcare settings. Such uniform expectations as professionals limit the exposure of gendered differences in knowledge and conduct related to safety. All nurses, regardless of gender, are expected to minimize workplace hazards, manage infection control, and ensure personal and patient safety, and this remains the same regardless of gender, which suggests similar attitudes and behaviors will be observed across gender.

Cultural and institutional factors may also play a role in this uniformity. Equitable opportunities for training and professional development in many contemporary healthcare institutions are codified into institutional diversity and inclusion policies which tend to diminish the differential impacts of gender in terms of the acquisition of knowledge and the practical application of the OSH measures. Hence, workplace dynamics often foster a team based rather than gendered approach to safety which is usually predicated on shared responsibility and group adherence to safety requirements. These results agreed with the studies of (Almutairi et al., 2020; Al-Qahtani, 2023; Amin et al.,2023; Asante-Duah, 2002). However, they disagreed with (Cohen et al., 1999)

Age

The Welch Ftest results of KAP showed no statistical differences across age groups indicate that each group of respondents has a similar understanding, perception, and behavior toward the topic. This finding indicates that age is not a substantial demographic factor related to knowledge, attitude, or practices of individuals, either about health, safety, or any other aspect.

One possible reason for this result is the greater access of information and training opportunities for all individuals, regardless of their age, especially in professional and institutional environments. In a lot of industries such as healthcare, education, and workplace areas, KAP can be directed more by a formal agreement/guidelines, training, and organizational culture than by age. Therefore, there would be less differentiation between younger and older individual's learning outcomes and practice behaviors. For instance, younger professionals may be more technologically oriented and are more rapid adopters of new information through technology, while older professionals may account for this differently with experiential learning and situational judgement. Again, these differences often even out to a similar KAP performance.

In addition, in the environments that stress continuing education and lifelong learning, adults of all ages may pursue the same professional development, training programs, workshops, and seminars. Adult learners often have similar experiences in the learning environment, which equalizes their knowledge base and solidifies their attitudes and actions to be consistent. For example, in the health care field, training and compliance for up-to-date policies and procedures enhance the likelihood that all employees, regardless of age, are using contemporary and best practices.

Psychosocial factors might also play a role in the KAP sameness across age groups. The intrinsic motivation to do well, the personal responsibility for the area of practice, and the awareness of the consequences of poor practice are often equal across ages. In high-stakes situations where the outcome has the potential to affect the safety of the patient, the effective functioning of the organization, or the well-being of the person, regardless of age, everyone is motivated to practice and have a good attitude as best practice and incorporating good practices are morally or ethically impossible to ignore.

Furthermore, the development of workplace shifts and emphasis on equitable and competent-based performance assessments have contributed to a lessening in age-related stereotypes. Today, many organizations focus on performance and meeting standards, rather than making ability assumptions based on age. In this merit-based framework, minimal KAP outcome differences exist across employee age groups, as all performance is evaluated in the same manner.

Also, OSH showed small but statistically significant age differences. Significant age-based differences in OSH suggest that age has a significant effect on an individual's learning style, conceptualization of workplace safety, and understanding of workplace safety. These age-based differences may be due to several factors including generational experience, cognitive and physical changes associated with age, differences in safety training, differences in risk perceptions and differences in adaptations to workplace safety technologies, and policies.

Mature workers often have an extended duration of seeing hazard occurrence, which may enhance a worker's perception of hazards in the workplace and, therefore, increase worker's affiliations to safety rules. Since the industry-specific hazards are frequently visible and encounter during a worker's career path, older workers should demonstrate risk-management ability and a more cautious disposition in the workplace. Yet, there could be mitigating factors for older employees, including physical restrictions that would impair movement, prolonged or slow speed, or chronic health or geriatric impairments that increase the probability of a workplace injury. Older employees may exhibit more cautious behaviors for reasons of necessity as well as personal safety.

On the flip side, youth may provide greater levels of physical agility and better reflexes, which may be needed in physically active and high-risk environments. It is known that youth do not have the same risk identification capabilities or experience those older workers will have developed. Youth may also demonstrate a higher level of confidence or carelessness which may result in underestimating risk and neglecting safety procedures. This can be exacerbated in the absence of adequate training or mentoring. Learning from experiences is dissimilar, therefore, the compliance and attitude towards OSH may vary.

Differences in generations' learning styles and technology competencies have led to differences in OSH practices depending on age groups. Younger workers, sometimes referred to as "digital natives", may be more receptive to using safety devices, mobile safety apps, e-learning, and wearable safety technology, and can therefore more easily access and utilize in real-time safety

content. Older workers are usually capable but may require a traditional style of learning/training or time to become accustomed to, or transition to, contemporary technologies/learning/training methods that impact how communication and learning relate to OSH across age groups.

Access to training, and therefore the timing of an individual's entry into the workforce impacts OSH knowledge. Typically, younger workers are more likely educated with the newer models. In other words, younger workers may have completed educational curriculums containing safety standards with respect to legislation and legislation advances in technology today, while older workers, who may have entered the workforce decades ago, were trained under a different safety paradigm. Older workers may not know of newer safety protocols unless they are continuously trained. The "gap" or discrepancy in knowledge makes a case for promoting age-inclusive continuing education, to inform all ages of the OSH.

Age-related values and priorities may also factor into attitudes toward safety. For example, older workers may focus on long-term health and career stability, leading to adherence to safety rules, while younger workers prioritize productivity, career advancement, and peer approval, and are thus more prone to making short cuts or engaging in risky behavior in the absence of direct oversight.

The substantial variation in OSH knowledge, attitudes, and practices across age prudence does point to the benefit of tailoring safety training and interventions to the age cohort's needs, abilities, and learning styles. Understanding the OSH needs across age groups can improve an organization's overall workplace safety and support greater levels of participation in OSH initiatives, as well as ultimately decreasing accidents and injuries for all employees. These results agree with (Elegbede et al., 2024; Floyde et al., 2013; Gebreeyessus,2022; Grantson, 2024). However, it disagreed with(Henseler et al., 2015).

Clinical Departments

The lack of statistically significant differences in OSH and KAP between Emergency, Intensive Care Unit (ICU), and Surgical departments indicates an equally consistent and uniform application of safety standards, knowledge which is shared, and professionalism in high-risk clinical contexts. This supports the effectiveness of institutional policies and standardized training orientation

allowing health professionals across the institution to be equally informed and prepared to operate safely.

Hospitals maintain uniform safety standards through their implementation of hospital-wide procedures and national healthcare directives that establish OSH compliance requirements for every department. The intense patient care requirements in Emergency, ICU, and Surgery departments lead hospitals to implement strict safety measures for their operations. Hospitals implement infection control protocols alongside personal protective equipment guidelines and waste disposal standards and emergency response procedures in these departments. Employees who work in Emergency, ICU and Surgery departments receive standardized safety training to meet identical safety standards along with professional conduct guidelines.

The hospitals' departments are staffed with highly trained professionals who work in theses departments after completing extensive instruction that qualifies them for clinical work. The training program features detailed content about OSH along with patient handling and exposure control and emergency preparedness. The Emergency, ICU and Surgical units involve direct exposure to life-threatening situations which causes institutions to focus heavily on safety education and risk mitigation to protect both patients and staff. The dedication to safety education creates an organizational culture that spreads across different departments to maintain uniform practices and knowledge levels.

The consistent work at hospitals emerges from teamwork between different professionals. Healthcare facilities implement interdepartmental communication and cross-training programs that allow employees to work in multiple departments and unify their training. Through these approach departments share safety information and successful methods to decrease differences in operation between departments. Hospitals create universal safety frameworks through their implementation of safety interventions which include infection prevention protocols and occupational hazard reporting systems.

The healthcare setting requires exploration of both psychological and cultural aspects that influence OSH and KAP practices. Healthcare professionals who work in high-pressure Emergency, ICU, and Surgery departments naturally maintain superior safety standards because they face high-risk situations daily. Medical personnel in these areas understand the severe impact of their mistakes on both patients and team members and themselves. The collective accountability

among staff in such environments creates a unified approach to safety which produces standardized safety practices across different departments.

In addition to this, the leadership and institutional accountability mechanisms which include internal audits and peer evaluations, and regular performance reviews guarantee uniform safety standards across all departments. These oversight systems perform a vital function in keeping departments aligned with their KAP standards. Healthcare institutions establish a culture of safety protocol compliance through their accountability enforcement and compliance reward system.

These results agree with (Ilo et al. 2022; Kakkar et al. 2021; Manzoor et al. 2022; Nuñez &Villanueva ,2011). However, they disagree with (Pratiwi & Ivanovic. 2022; Shaheen et al. 2023; Wen et al., 2021). However, they disagreed with(Che Huei et al., 2020).

Educational Level

Research has revealed that graduates with bachelor's degrees demonstrated superior performance when compared to diploma and master's degree holders within OSH and KAP.

The educational experience available at the bachelor's level tends to provide an optimal mix of theoretical framework and practical work involvement. The nursing bachelor's degree curriculum and programs in allied health and technical fields present specialized subjects that cover workplace safety and infection control and risk management along with evidence-based practices. Throughout their education students will complete multiple clinical rotations that provide hands-on experience with real-world safety standards and protocols. The level of learning combined with practical training generates better OSH knowledge and safety practices which surpass what diploma holders achieve through their shorter training periods and limited scope of instruction.

Diploma programs deliver essential training for new employees through detailed task-based instruction which may limit the development of broad safety knowledge systems. Employees who hold diplomas usually lack educational exposure to the latest OSH and KAP methods. The students' knowledge remains limited and outdated thus affecting their evaluation results and the way they handle daily safety measures.

Postgraduate education primarily trains students on leadership, research and administration while specializing on front-end operations less, thus resulting in lower OSH and KAP scores among

master's degree holders. Nurses who hold master's degrees commonly direct their professional focus toward healthcare management and education and policy development instead of working in clinical nursing roles. The lack of hands-on occupational safety experience leads master's degree holders to receive less training than their bachelor's degree counterparts who actively work in patient care settings.

Bachelor's degree holders usually begin their careers during the early-to-mid stages when they participate most actively in clinical operations. KAP assessments require staff members from this group to perform safety drills and infection control practices as well as maintain compliance measures. The responsibilities of master's degree holders tend to extend beyond administrative and educational functions which result in lower engagement with hands-on safety operations whereas diploma holders usually handle more operational tasks.

It is likely that undergraduate educational programs prioritize interdisciplinary learning which combines safety with communication and public health and ethics. This approach helps students develop better understanding of OSH principles through comprehensive education that goes beyond technical standards to create ethical and safe practice habits.

These results can stem from motivational influences along with professional obligations in the workplace. The presence of a bachelor's degree could drive workers to exceed assessment standards and apply OSH principles effectively because they aim to progress in their careers. The increased level of clinical performance monitoring together with documentation requirements causes HCWs to strictly follow KAP guidelines.

The higher scores in OSH and KAP among bachelor's degree graduates stem from their thorough educational background along with their active frontline roles and their equal involvement in theoretical and practical aspects. The findings emphasize that educational programs should match practical skill requirements while demonstrating that ongoing training for all educational stages is essential to maintain standard safety practices throughout the workforce.

These results agree with the results of (Awan et al., 2017; Benli et al., 2016; Anderson et al., 2019). However, they disagree with (Aluko et al., 2016)

Years of Experience

It has been found that Years of experience have a significant level when dealing with OSH and KAP. This suggests that individuals with greater professional experience tend to demonstrate a higher level of expertise, understanding, and adherence to occupational safety protocols, as well as more refined knowledge, attitudes, and practices regarding workplace safety. This observation is grounded in the idea that experience contributes significantly to the development of competence in both the theoretical and practical aspects of OSH and KAP.

A professional gains practical knowledge when they experience multiple workplace situations and problems during their extended career period. Exposure to workplace dangers and safety issues through experience in OSH enables professionals to develop their comprehension of safety procedures. Employees with extensive experience in safety management can identify dangers effectively and evaluate risks precisely while executing emergency response operations. Professional expertise typically emerges from long-term practice combined with both informal learning experiences and structured training programs.

Health care professionals who work in hospitals receive extensive training in basic infection control techniques and emergency procedures. The work of safety officers and experienced nurses in hospital environments exposes them to many situations which demand protective equipment absorption of pathogens and emergency response. Through their practical experience with workplace hazards they develop superior skills for addressing OSH risks when compared to those with limited experience. The specialized knowledge about OSH protocols that safety officers and experienced nurses possess becomes more comprehensive and applicable to their roles because it is developed through direct experience in their work environments.

The duration of practical experience helps people develop their safety skills beyond the achievements that can result from educational instruction. Memorizing safety rules proves insufficient for proper implementation because it requires muscle memory alongside quick decisions and adaptable behavior. The experience that employees acquire through time enhances their ability to execute safety procedures when facing actual situations. The experience gained from hands-on work directly affects how fast and how well they handle emergencies, thus protecting their own safety as well as their colleagues' and patients' safety.

The work experience of a person tends to yield better ability in making decisions about safety protocol changes according to current circumstances. Safety decisions under time pressure or complex circumstances like operating rooms or emergency responses become more instinctive when a person with long experience evaluates risks before implementing necessary safety measures.

An individual's safety outlook evolves greatly through the years based on their life experiences. Professionals who confront workplace hazards repeatedly build a greater sense of duty toward safe work practices alongside their colleagues. Workers in high-risk fields like healthcare, construction and industrial work must always maintain a strong safety attitude.

Workers who have been on the job longer usually care more about safety because they know firsthand what can happen when things go wrong. For example, a seasoned HCWs who has seen the effects of infections or accidents is likely to take safety rules more seriously. Since they've been in the field for a while, they really want to keep others safe and prevent accidents.

Workers with more years of experience are usually more committed to safety because they've seen the damage that can happen when things go wrong. For example, a HCW who has seen the effects of infections or accidents will likely feel a stronger need to stick to safety rules. Having spent a lot of time in their job, they're often more focused on preventing accidents and making sure everyone stays safe.

Workers with more experience tend to care more about safety because they've seen the effects of unsafe practices, either first hand or through their coworkers. For example, a seasoned healthcare worker who has seen the impact of infections or preventable accidents is likely to take safety rules seriously. Their time in the field makes them more invested in keeping everyone safe.

Experience also plays a big role in mentoring newer workers. Experienced employees often help train newcomers on the right safety practices, which helps keep the workplace’s safety culture strong. When older workers show younger ones the ropes, it keeps everyone informed and looking out for each other.

Workers with more experience are generally more committed to safety because they've seen what can go wrong, either through their own experiences or by watching incidents happen to others. For example, a seasoned HCW who has seen the effects of infections or accidents is likely to take

safety protocols seriously. Their time spent in the job usually makes them more dedicated to preventing accidents and looking out for their colleagues.

Another important part of having experience is the ability to mentor newer workers. Experienced employees play a big role in teaching and guiding those just starting out on correct safety practices. This helps keep a strong safety culture alive in the workplace over time. When veteran workers teach younger ones the right ways to stay safe, it keeps everyone aligned and aware of each other's well-being.

Experienced workers not only share technical know-how but also set an example through their own behavior. For instance, a senior nurse might show a newcomer the right way to wear personal protective equipment (PPE) or explain why infection control is crucial. This teaching boosts the safety awareness of newer employees and helps ensure that everyone follows consistent safety standards.

While having experience is beneficial, it can also come with some challenges. Safety protocols and guidelines can change as new research and risks emerge. Workers who have been on the job for many years might find it hard to adjust to new systems or technologies, especially if they're used to older ways of doing things. However, these experienced workers often have a solid foundation of knowledge and problem-solving skills, which can help them adapt when changes occur.

These results agree with the studies of (Amin et al., 2023; Aluko et al., 2016; Danaei et al., 2022; Dhahir et al., 2021). However, they disagree with (Elegbede et al., 2024).

Hospital Type

It has been found no major differences between private and public hospitals when it comes to how HCWs understand and practice OSH. This means that, no matter the type of hospital, workers have similar levels of knowledge and attitudes toward safety. This is important because it goes against the idea that private hospitals are always better at handling safety measures just because they have more money or better facilities, while public hospitals often get thought of as falling behind due to red tape or lack of resources.

In many countries, both private and public hospitals follow the same health and safety rules set by local health authorities. These rules usually cover basic stuff like staff training, using protective gear, keeping infections at bay, and being ready for emergencies. Because of this, hospitals end up having similar knowledge and practices no matter if they're public or private. Plus, the accreditation processes, whether from the Joint Commission, ISO, or local quality authorities, are pretty much the same for all hospitals, which helps ensure that safety protocols are applied consistently.

Healthcare workers in both public and private hospitals usually get similar training and have to meet the same licensing and certification rules. Nursing and medical schools require courses on important topics like infection control, patient safety, risk management, and ethics. Since staff at both types of hospitals come from the same schools, their basic knowledge and grasp of safety protocols are alike, leading to similar scores in knowledge, attitude, and practice.

Nowadays, safety in healthcare is viewed as something everyone shares, not just tied to a specific place. Workers across different settings really care about keeping patients safe and making sure the workplace is good for everyone. This common goal can help bridge any gaps that come from how different institutions are set up. Plus, there are usually training sessions, workshops, and seminars available in both private and public hospitals that keep everyone on the same page about safety practices.

Safety in healthcare is becoming more of a shared value among all professionals, rather than something just tied to specific institutions. People who work in healthcare, no matter where they are, prioritize patient safety and their own work environment as part of their job. This common goal helps bridge any gaps that might come from different hospital structures.

There's plenty of training and seminars available in both private and public hospitals, which helps everyone stay updated on safety practices. Hospitals often share their best practices based on what they’ve learned from each other, national guidelines, or industry standards. Sharing knowledge through conferences and publications helps keep safety practices consistent across different places.

Both types of hospitals run similar departments like emergency rooms, ICUs, and surgical units, and staff face similar risks like NSIs, communicable diseases, and stress. Since the jobs are pretty

much the same, the need for safety protocols and awareness is constant everywhere. That means workers are likely to adopt good safety practices, no matter the hospital type.

The lack of major differences in safety measures between public and private hospitals suggests that those in charge can roll out unified safety programs and training without needing different strategies for different institutions. This makes it easier to implement policies and allocate resources, ensuring that HCWs safety is fair across the board.

These results agree with (Cohen et al., 1999; Henseler et al., 2015; Kak et al., 2021; Khelgi et al., 2021). However, they disagree with (Lee et al., 2021).

Hospital Location

It has been found that there are no statistically significant differences in OSH and KAP based on hospital location suggests that geographic factors—whether urban, suburban, or rural—do not meaningfully affect the level of safety awareness, professional behavior, or application of safety practices among HCWs. This outcome has important implications for understanding the consistency of healthcare service delivery and workforce preparedness across various regions.

In many countries, healthcare systems have rules that keep safety standards the same for all hospitals, no matter where they are. This means that whether a hospital is in a busy city or a small town, it must meet the same safety and infection control rules. Healthcare workers everywhere usually stick to the same guidelines for handwashing, wearing personal protective gear, handling waste, and getting ready for emergencies.

This national standard helps reduce differences between regions and encourages consistent safety knowledge and practices. Healthcare workers usually go through the same training programs, especially in places where ongoing education and license renewals are required for everyone in the field.

Healthcare workers don’t really show big location-based differences in OSH and KAP. This is likely because they all come from similar schools or training programs that stick to the national curriculum. Whether they study in cities or small towns, they must meet the same licensing and accreditation rules. This keeps their basic knowledge and approach to safety and professional work consistent.

New tech and online learning have really helped close the gap between city healthcare facilities and those in more remote places. With online courses, webinars, and virtual simulations, HCWs in rural areas can get the same training as those in cities. This means that keeping up with professional development in OSH and KAP isn't held back where you are.

Lots of hospitals team up with regional health networks or partnerships to improve training, quality, and safety across different locations. This kind of teamwork keeps things consistent between facilities. No matter where they are, these hospitals usually build a culture focused on safety, driven by their leaders, performance goals, and outside evaluations. Since safety is a key part of providing good care and maintaining a solid reputation, hospitals in both cities and rural areas are eager to invest in staff training, safety programs, and following the rules.

Healthcare workers everywhere usually have similar values when it comes to patient care and safety at work. This shared mindset helps explain why their attitudes and behaviors around occupational safety and knowledge are often alike. So, efforts to boost safety and knowledge can be rolled out on a national or organization-wide level without needing big changes for different locations.

Resources can be shared fairly without assuming that rural hospitals are any less capable than urban ones. This makes planning for health initiatives like safety campaigns and infection prevention easier. Still, rural hospitals might struggle with things like not having enough staff, fewer specialized services, or delays in getting supplies and equipment. These issues can affect how well certain health measures work in real life, even if the staff has similar knowledge and attitudes. So, while where a hospital is located might not directly impact what they know or believe, it's important to recognize the different challenges they face when providing support.

These results agree with Kakkar et al., 2021; Hosmer et al., 2013; Nasab et al., 2009; Ndikwetepo, 2018). However, they disagreed with (Manzoor et al., 2022).

5.3.3. Results Related to the Challenges and Barriers

Occupational Safety and Health (OSH) and KAP frameworks are vital parts of healthcare system. They play a huge role in keeping the HCWs healthy and safe, reducing and improving the healthcare workplace and hence the healthcare outcomes. Nevertheless, the discovery of OSH and KAP in healthcare facilities often encounters a lot of obstacles. These obstacles can be easily

categorized into four areas: resource constraints, organizational challenges, staff development limitations, and operational difficulties.

Not having enough resources is known to be one of the most basic obstacles for the smooth introduction of OSH and KAP programs in hospitals. By and large, the lack of funds is often the cause of the underinvestment in primary safety equipment in the form of personal protective equipment (PPE), sanitation suppliers, and monitoring tools. The greater part of the hospitals, especially those in low resource settings, might fail in their attempts to come up with enough money from their budgets to cover the necessary staff training and the implementation of the regular risk assessments, and maintain the infrastructure.

Besides financial issues, there is usually a need for experts in the field due to personnel shortages. Hospitals that are not fully staffed like to concentrate on patient care than on safety training and control jobs. As a result, this situation breeds a safety culture of a reactive nature and not one of a proactive kind. The implementation of reliable and efficient OSH and KAP programs without tools and specialists in the long term becomes a real huddle.

Organizational structure and culture really matter when it comes to making safety programs work. In many hospitals, efforts like OSH and KAP often fall short because management isn't committed and these initiatives aren't part of the key policies. If the leaders don't make health and safety a priority, it's tough to get funding, enforce rules, or get staff to follow them. Communication also plays a big role; if messages about safety aren't reaching all employees clearly, it creates confusion and misinformation. This can lead to people not following the rules. Without a solid leadership structure that encourages communication, safety programs struggle to take off.

The knowledge and attitudes of healthcare staff are central to making KAP initiatives successful. Unfortunately, many hospitals don't put enough resources into ongoing training about OSH. This can leave staff unaware of safety processes, underestimating risks, or even having negative views about following procedures. Even when training does happen, it's often a one-off event instead of something that keeps going. Without regular updates, what staff learn doesn't always stick in the long run. In this setting, there's often a big gap between what workers know about safety and what they do. Without consistent training, staff might not have the skills or motivation to keep up safety standards.

Everyday hospital life is usually hectic and demanding, which makes it even harder to implement OSH and KAP programs. Staff often have a lot on their plates and can't find time for safety training or to think about their practices. Because of this, following safety protocols can feel more like a hassle than something important. Also, if different departments enforce safety rules inconsistently, it creates confusion and weakens the overall effort. When some teams stick to the rules and others don't, it makes it hard to take safety initiatives seriously. There's often resistance to change, especially if new processes disrupt old routines or seem too bureaucratic.

These results agree with (White et al., 2008; Elegbede et al., 2024; Cohen et al., 1999; Che Huei et al., 2020).

5.4. General Applications of KAP and Its Relationship with Employees Performance

KAP is a method for evaluating and enhancing performance across a range of industries, especially in the workplace. Better training programs are made possible by helping firms determine how well their employees understand their jobs, duties, and adherence to rules. Because they evaluate workers' awareness of safety procedures, attitudes toward safety measures, and compliance with rules, KAP surveys are essential in industries where health and safety are of utmost importance, such as manufacturing, healthcare, and construction. Additionally, they assess ongoing enhancements to quality control procedures, especially in sectors that prioritize accuracy and effectiveness. By evaluating knowledge of nutrition and healthy practices, KAP surveys are also utilized in public health and education to promote behavior change and enhance community well-being. KAP strengthens the workplace culture by comprehending how employees relate to the company's ideals.

5.5 Conclusions

Nurse staffs are on the front lines of patient care; therefore, they are at a high risk of sustaining injuries due to the nature of their work. They are always at risk of exposure to occupational hazards, such as chemical and biological hazards, physical hazards, and ergonomic hazards. As a result, nurses must be aware of the potential risks associated with their work and must be knowledgeable about the safety procedures and protocols that are necessary to protect themselves from potential hazards. Moreover, nurses must also have the necessary attitude and practice towards OSH in order to properly protect themselves and their patients from occupational hazards. This includes having a positive attitude towards safety and being willing to take the necessary

measures to ensure that safety protocols are followed. Additionally, nurses must also practice good safety habits, such as wearing protective equipment, following safety protocols, and reporting any potential hazards or incidents.

Believing in the importance of the work environment and occupational safety impact in enhancing the nurse's performance and hence the quality of healthcare, this research was conducted.

After analyzing the data, the following conclusions have been drawn:

1. Having a good level of KAP is an important trait in being a nurse, especially in light of the hazards that surround this career.
2. Having a level of knowledge in the field of work has high value in preventing the hazards of nurses' face because knowledge is power and a solution for problems.
3. Self-Discipline and patience are the key factors in dealing with people and keeping nurses away of hazards.
4. Nurses should be leaders with proper knowledge because this trait improves safety among nurses and keeps them away from hazard.
5. The current levels of KAP between nurses in Palestinian hospitals were rated highly for their great experience in the field because they receive urgent cases due to the occupations' atrocious acts.
6. Palestinian nurses' attitude towards hazardous situations has been rated "high" because they deal with each case they receive professionally and according to the protocol.
7. The level of knowledge of the Palestinian nurses determines the level of OSH they have because having knowledge is the basis of being occupationally safe.
8. Having higher behavioral scores leads to improved OSH because acting wisely in hazardous situations is crucial in having OSH.
9. Implementing OSH and KAP in Palestinian hospitals face many challenges including resource constraints, organizational challenges, staff development limitations, and operational difficulties.

10. Age and years of experience influence the success of implementing the KAP and OSH because older employees are wiser and take in consideration every act in their job.
11. Gender and location of the hospital do not influence the implementation of OSH and KAP because governments support all hospitals regardless of whether they are private or public or even in the countryside or the city.

5.6 Recommendations

5.6.1 Recommendation for Nurses

1. Palestinian nurses should attend special courses related to controlling their attitudes in hazardous situations.
2. They should be aware of the up-to-date developments in their field in terms of knowledge and practices.
3. They should focus on gaining more knowledge and expertise to be act wisely under-pressure and in hazardous situations especially in the Palestinian territory.

5.6.2 Recommendations for Hospitals and the Palestinian Ministry of Health

1. The Palestinian Ministry of Health should urge Palestinian hospitals' administration to assess the performance of their nurses periodically in order to take necessary actions towards any nurse with poor qualifications.
2. The hospital's administration should urge the supervisor of the nurses to pay attention to every nurse in his department because any lack of attention and knowledge about safety leads to catastrophic results.
3. Hospital administrations should implement a bonus system for highly qualified nurses in order to encourage other nurses to excel in their duties and develop their performance.

5.6.3 Recommendations for Future Research

Future studies recommended for scholars include studying the impact of psychological stress on nurses in the Gazan hospitals. Also, it is recommended to study the current OSH reality based on incident reports and hospital records of OSH and incidence reports, which help us to identify area for improvements.

5.7 Research strength and Limitations

5.7.1 Reassert strength:

There are several strength aspects in this study such as:

1. The study used a large and representative sample of nurses N=388 from multiple Palestinian hospitals types and various regions across different hospital's departments increasing the generalizability of the findings to the larger nursing workforce.
2. The study used a questionnaire after validity and reliability testing and item refinement to ensure that the KAP and OSH measures were valid and internally consistent.
3. The study Robust and multivariable statistical analysis, such as POMP scoring and inferential testing

5.7.2 Study limitation

There are several limitations in this study including:

1. The study is implemented in The West Bank; therefore, the sample is limited to Palestinian hospitals in the West Bank, and hence the hospitals in Jerusalem and Gaza strip are not included.

Limited inclusion of systematic organizational factors such as staffing ratios, safety culture, .2
PPE availability, training frequency and prior receiving of specific training.

3. The reliance of self-reporting data using a self-administered online questionnaire which may have introduced information and recall them bias, affecting the accuracy of responses.
4. Cross-sectional studies design cannot determine a cause-and-effect relationship or analyze behavior over time. To investigate cause and effect, you should conduct a longitudinal or experimental study.

5.8 Summary of chapter five:

The chapter five provided a comprehensive discussion of the results focusing on the main findings which was found in result chapter. Additionally, it provided a comparison with previous existing literature. Moreover, it outlined the study's conclusion, recommendations, limitations and future work.

References

International Labour Organization. (2023). International Labour Organization. (2023). A call for safer and healthier working environments. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/publication/wcms_903140.pdf

Khirfan, R. (2020). Possibility of enhancing cost containment practices in Saudi Arabia through utilization of KAP model for behaviour modification. *Research Journal of Pharmacy and Technology*, 13(11), 5595–5600. https://doi.org/10.5958/0974-360X.2020.00976.2

Zhou, H., Zhao, R., & Yang, Y. (2022). A qualitative study on knowledge, attitude, and practice of nursing students in the early stage of the COVID-19 epidemic and inspiration for nursing education in mainland China. Frontiers in Public Health, 10, 84558. https://doi.org/10.3389/fpubh.2022.845588

Abalkhail, A., Al Imam, M. H., Elmosaad, Y. M., Jaber, M. F., Hosis, K. A, & Alhumaydhi, F. A., ... & Mahmud, I. (2021). Knowledge, attitude and practice of standard infection control precautions among health-care workers in a university hospital in Qassim, Saudi Arabia: a cross-sectional survey. International journal of environmental research and public health, 18(22), 11831. https://doi.org/10.3390/ijerph182211831

Abdullah, N. A. (2010). ccupational health and safety management perceptions in Malaysian public hospitals: implications for the implementation of standardized management systems [Doctoral dissertation, Curtin University]. Curtin University Institutional Repository. http://hdl.handle.net/20.500.11937/1339

Abu Aisheh, Y. I., Tayeh, B. A., & Alaloul, W. S., & Jouda, A. F. (2021). Barriers of occupational safety implementation in infrastructure projects: gaza Strip case. International journal of environmental research and public health, 18(7), 3553. https://doi.org/10.3390/ijerph18073553

Aladini, S., Kuhail, M., & El-Ramlawi, A., Salhab, M., Shaqura, A., & Awad, R. (2023). Knowledge, attitude, and practices of occupational health and safety among health care workers at Al-Shifa Medical-Complex in Gaza-Strip, Palestine. Israa Univ J Appl Sci, 6, 121-135.

Alamleh, B. M. (2021). Occupational Hazards Among Anesthesia Staff in Palestinian Governmental Hospitals in the West Bank. Doctoral dissertation, Al-Quds University.

Alberta, T. L. (2024). Nutrition for Health Promotion in Nursing Education: Knowledge, Attitudes, Beliefs, and Instructional Practices of Nursing Faculty. (Doctoral dissertation, Oakland University).

Alharazi, R., Almutary, H., Felemban, O., Alariany, A. S., Alshamrani, F. A, & Hawsawi, E. H., & Alsulami, L. M. (2022). Prevalence of needle stick injuries among nurses in Jeddah, Saudi Arabia. Nursing: Research and Reviews, 12, 235–246. https://doi.org/10.2147/NRR.S376343

Al-Khatib, I. A., El Ansari, W., Areqat, T. A., Darkhawaja, R. A., Mansour, S. H, & Tucktuck, M. A., & Khatib, J. I. (2015). Occupational safety precautions among nurses at four hospitals, Nablus district, Palestine. The International Journal of Occupational and Environmental Medicine, 6(4), 243–246. https://doi.org/10.15171/ijoem.2015.581

Almutairi, N. S., Tamrin, S. B., & Guan, N. Y., & How, V. (2020). Review of Knowledge, Attitude, and Practice Among Laboratory Workers Towards Occupational Safety and Health. Malaysian. Journal of Medicine & Health Sciences, 16(1).

Al-Qahtani, A. M. (2023). Clean hands, safe care: how knowledge, attitude, and practice impact hand hygiene among nurses in Najran, Saudi Arabia. Frontiers in Public Health, 11. https://doi.org/10.3389/fpubh.2023.1158678

Altman, D. G. (2006). The cost of dichotomizing continuous variables. BMJ, 332(7549), 1080-1081.

Aluko, O. O., Adebayo, A. E., & Adebisi, T. F., Ewegbemi, M. K., Abidoye, A. T. (2016). Knowledge, attitudes and perceptions of occupational hazards and safety practices in Nigerian healthcare workers. BMC research notes, 9, 1-14.https://doi.org/10.1186/s13104-016-1880-2

Amin, B., Ali, N., Shahzeb, M., & Ahmad, S., Shah, A., & Ahmad, N. (2023). Knowledge and safety practices on occupational hazards among operating room staff in Mardan Medical Complex, Mardan, Pakistan. Anaesthesia, Pain & Intensive Care, 27(1), 59-64.

Andersen, J. H., Malmros, P., Ebbehoej, N. E., Flachs, E. M, & Bengtsen, E., & Bonde, J. P. (2019). Systematic literature review on the effects of occupational safety and health (OSH) interventions at the workplace. Scandinavian journal of work, environment & health, 45(2), 103-113.

Asante-Duah, D. K. (2002). Public health risk assessment for human exposure to chemicals (Vol. 6). London: Kluwer Academic.

Awan, A., Afzal, M., & Majeed, I., Waqas, A., & Gilani, S. A. (2017). Assessment of knowledge, attitude and practices regarding occupational hazards among Nurses at Nawaz Sharif Social Security Hospital Lahore Pakistan. Saudi J. Med. Pharm. Sci, 3(6), 622-630.

Benli, A. R., Özenver, F., Sürmen, S., Kayış, S. A., Koyuncu, M, & Sunay, D. (2016). Knowledge, attitude and behaviours of hospital staff with regard to the occupational health and safety. Turkish Journal of Family Medicine and Primary Care, 10(4), 188-195.

Boucaut, R., & Cusack, L. (2016). Sometimes your safety goes a bit by the wayside'… exploring occupational health and safety (OHS) with student nurses. Nurse Education in Practice, 20, 93-98.

Bureau of Labor Statistics. (2019). Monthly Labor Review. Department of Labor. Retrieved from https://www.bls.gov/opub/mlr/2019/

U.S. Bureau of Labor Statistics. (2024, November 8). Employer-reported workplace injuries and illnesses, 2023 [News release]. https://www.bls.gov/news.release/osh.nr0.htm

Che Huei, L., Ya-Wen, L., Chiu Ming, Y., Li Chen, H., Jong Yi, W., & Ming Hung, L. (2020). Occupational health and safety hazards faced by healthcare professionals in Taiwan: A systematic review of risk factors and control strategies. SAGE open medicine, 8, 2050312120918999. https://doi.org/10.1177/2050312120918999

L., Ya-Wen, L., & Chiu Ming, Y., Li Chen, H., Jong Yi, W., & Ming Hu. (2020). Occupational health and safety hazards faced by healthcare professionals in Taiwan: A systematic review of risk factors and control strategies. SAGE Open Medicine, 8. https://doi.org/2050312120918999

Cohen, P., Cohen, J., Aiken, L. S., & West, S. G. (1999). The problem of units and the circumstance for POMP. Multivariate Behavioral Research, 34(3), 315-346.

Danaei, M., McLaws, M. L., Shayan, Z., Momeni, M., Aminnia, S., Yaghout, Y, & Askarian, M. (2022). Knowledge, Attitudes, and Practice Toward Isolation Precautions Amongst Nurses and Auxiliary Nurses in Nemazee Hospital, Shiraz, Iran. Shiraz E-Medical Journal, 23(2).

Dhahir, D. M., Yasser, N., & Mayahi, A. (2021). Assessment of health workers knowledge toward occupational health and safety program in Alkut city's primary health care centers. Medico-Legal Updat, 21(1), 1536-41.

Elegbede, S., Gbajumo-Sheriff, M., & Gbadamosi, A., Kolawole, I., & Omotoye, O. (2024). The Influence of Industrial Health and Safety Practices on Employees 'attitude Among Nurses in Oauth, Osun Stat. African Journal for The Psychological Studies of Social Issues, 27(1).

Floyde, A., Lawson, G., & Shalloe, S., Eastgate, R., & D'Cruz, M. (2013). The design and implementation of knowledge management systems and e-learning for improved occupational health and safety in small to medium sized enterprises. Safety science, 60, 69-76.

Gammarano, R. (2025, April 28). The right to occupational safety and health: Still unrealized. ILOSTAT. https://ilostat.ilo.org/the-right-to-occupational-safety-and-health-still-unrealized/

Gebreeyessus, G. D. (2022). Knowledge, attitude, and practices on occupational health and safety principles among cleaners: the case of Tikur Anbassa Specialized Referral Hospital, Addis Ababa, Ethiopia. Open Health, 3(1), 22-33.

Geiger-Brown, J., & Lipscomb, J. (2010). The health care work environment and adverse health and safety consequences for nurses. Annual review of nursing research, 28, 191.

Gharibi, V., Mortazavi, S. B., Jafari, A. J., Malakouti, J, & Abadi, M. B. . (2016). The relationship between workers' attitude towards safety and occupational accidents experience. International Journal of Occupational Hygiene, 8(3), 145-150.

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. Annual Review of Psychology, 60, 549-576.

Grantson, E. (2024). Knowledge, Attitudes And Practices Of Occupational Health And Safety Measures Among Environmental Health Workers In The University Of Cape Coast. Doctoral dissertation, University of Cape Coast.

Greenland, S., Pearl, J., & Robins, J. M. (1999). Causal diagrams for epidemiologic research. Epidemiology, 10(1), 37-48.

Grömping, U. (2006). Relative importance for linear regression in R: The relaimpo package. Journal of Statistical Software, 17(1), 1-27.

Hemdan Ahmed, H., Said Ali, H., & Nadr Ebraheim, M. (2024). Assessing Occupational Health Hazards Associated with Nursing Practice among Critical Care Nurses. Egyptian Journal of Health Care, 15(4), 1839-1854.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based SEM. Journal of the Academy of Marketing Science, 43, 115-135.

Hesgrove, B., Zebrak, K., Yount, N., Sorra, J., & Ginsberg, C. (2024). Associations between patient safety culture and workplace safety culture in hospital settings. BMC health services research, 24(1), 568. https://doi.org/10.1186/s12913-024-10984-3

Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). Applied logistic regression (3 ed.). Wiley.

Ilo, I. J., Uchenwoke, C., Umeh, U., Nwankwo, U., Ede, S., & Nwankwo, C. (2022). Knowledge and practice of preventive measures for occupational health hazards among nurses working in a teaching hospital in Enugu. Annals of Clinical and Biomedical Research, 3, 182. https://doi.org/10.4081/acbr.2022.182

International Labour Organization. (2023, November 26). Nearly 3 million people die of work-related accidents and diseases [Press release]. ILO. https://www.ilo.org/resource/news/nearly-3-million-people-die-work-related-accidents-and-diseases

Kak, N., Burkhalter, B., & Cooper, M.- A. (2021). Measuring the competence of healthcare providers. (Operations research issue paper, 2(1)). Quality Assurance Project (QA) for the U.S. Agency for International Development

Kakkar, S. K., Bala, M., & Arora, V. (2021). Educating nursing staff regarding infection control practices and assessing its impact on the incidence of hospital-acquired infections. Journal of education and health promotion, 10(1), 40.

Kaweti, G., & Feleke, T. (2024). Prevalence and associated factors of needlestick and sharp object injuries among healthcare workers in Ethiopia: a systematic review and meta-analysis. Frontiers in Epidemiology, 4, 1385417.

Khaled, H. H. (2024). Barriers to implementing nursing evidence-based practice at the Palestinian Medical Complex: A cross-sectional study. Journal of Family Medicine and Primary Care, 13(1), 5113-5120.

Khelgi, A., Raj, R., Reji, R., & Chandran, R. (2021). Knowledge, Attitude and Practice Regarding Needle-Stick Injuries among Nursing Staff in a Tertiary Care Hospital, Mangalore, India. Journal of Evolution of Medical and Dental Sciences, 10(30), 2290-2294.

Lee, J., Lee, S., & Lee, M., & Kang, Y. . (2021). Occupational health nurses' personal attitudes toward smoking: A cross-sectional study. journal of Occupational Health, 63(1). https://doi.org/e12221

Levy, B. S. (Ed.). (2006). Occupational and environmental health: recognizing and preventing disease and injury. Lippincott Williams & Wilkins.

Lindeman, R. H., Merenda, P. F., & Gold, R. Z. (1980). Introduction to bivariate and multivariate analysis. Scott, Foresman.

Liu, D., Wang, H., & Zhang, W., Chen, P., Lin, Y., Xie, Y. (2025). Sociodemographic characteristics, occupational characteristics, motivational factors, and job satisfaction among primary health service practitioners. BMC Primary Care, 26(1), 24. https://doi.org/10.1186/s12875-025-02714-3

Manzoor, S., ul Haq, N., & Zakar, M. Z. (2022). Knowledge, Attitudes and Perceptions of Nurses Regarding Occupational Health Hazards in Tertiary Care Hospitals of Pakistan. Journal of Farkhanda Institute of Nursing and Public Health (JFINPH), 2(2), 29-34.

Mizuno-Lewis, S., Kono, K., Lewis, D. R., Gotoh, Y., Hagi, N, Sato, M, & Kondo, N. (2014). Barriers to continuing education and continuing professional development among Occupational Health Nurses in Japan. Workplace health & safety, 62(5), 198-205.

Nasab, H. S., Ghofranipour, F., Kazemnejad, A., Khavanin, A, & Tavakoli, R. (2009). Evaluation of knowledge, attitude and behavior of workers towards occupational health and safety. Iranian journal of public health, 38(2), 125-129.

Nasser Rayan, H., Mohamed Abdallah, S., & Mohamed Abdrabou, H. (2021). Assessment of Nurse Interns' Knowledge and Practice &Attitude regarding Occupational Health Hazards. Egyptian Journal of Health Care, 12(1), 1576-1590.

Ndikwetepo, M. N. (2018). The experiences of critical care nurses regarding staff shortage at a regional hospital in Namibia. Doctoral dissertation, Stellenbosch: Stellenbosch University.

Nsubuga, F. M., & Jaakkola, M. S. (2005). Needle stick injuries among nurses in sub-Saharan Africa. Tropical Medicine and International Health, 10(8), 773–781. https://doi.org/10.1111/j.1365-3156.2005.01453.x

Nuñez, I., & Villanueva, M. (2011). Safety capital: the management of organizational knowledge on occupational health and safety. Journal of Workplace Learning, 23(1), 56-71.

Obono, M., Adeosun, S. A., & Olaiya, P. A. (2019). Assessment of the knowledge, attitudes and perception of potential occupational hazards by healthcare workers in a tertiary healthcare facility in Lagos. Nigeria. Int J Res Sci Innov, 6(4).

Odonkor, S. T., &Sallar, A. M. (2024). Occupational health and safety knowledge, attitudes and practices among healthcare workers in Accra Ghana. Scientific African, 24. https://doi.org/10.1016/j.sciaf.2024.e02130

Office for the Coordination of Humanitarian Affairs. (2024, April). *Occupied Palestinian territory (OPT) flash appeal*. United Nations. https://digitallibrary.un.org/record/4059068

Olcay, Z. F., Temur, S., & Sakalli, A. E. (2021). A Research on the Knowledge Level and Safety Culture of Students Taking Occupational Health and Safety Course. Cypriot Journal of Educational Sciences, 16(1), 187-200.

OSHA. (2013). Safe patient handling programs: effectiveness and cost savings. Caring for Our Caregivers, 800, 1-5. Retrieved from https://www.osha.gov/Publications/OSHA3279.pdf

Palestinian Central Bureau of Statistics. (2021). Health annual report 2021. Palestinian Central Bureau of Statistics. Retrieved from https://www.pcbs.gov.ps/sites/default/files/HealthAnnualReport2021.pdf

Pratiwi, I., & Ivanovic, Y. (2022). Analysis of the Effect of Occupational Safety and Health (OSH) Culture on Implementing OSH Awareness: A Case Study. Jurnal Teknik Industri, 23(1), 17-30.

Qaraman, A. F., Elbayoumi, M., Kakemam, E., & Albelbeisi, A. H. (2022). Knowledge, Attitudes, and Practice towards Occupational Health and Safety among Nursing Students in Gaza Strip, Palestine. Ethiopian Journal of Health Sciences, 32(5), 1007–1018. https://doi.org/10.4314/ejhs.v32i5.16

Rusdiana, E., Suhartono, E., Marlinae, L, & Wydiamala, E. (2022). Relationship of Knowledge and Attitude of Nurses with Compliance with Standard Application of Precautions in Hospital. Jurnal Berkala Kesehatan, 8(1), 1-11.

Sa, B., Aa, H., Sa, E. N., & Mf, Z. (2016). Role of occupational health and safety program in improving knowledge and practice among nurses exposed to chemotherapy at Zagazig university hospitals. Egyptian Journal of Occupational Medicine, 40(2), 2-219.

Samaei, S. E., Raadabadi, M., Khanjani, N., Heravizadeh, O, & Hosseinabadi, M. B., & Pirani, S. (2015). Safety attitudes among nurses and its relation with occupational accidents: a questionnaire based survey. International Journal of Occupational Hygiene, 7(4), 177-186.

Shaheen, D. Y., Diba, F., Khan, J., Habib, M. F., Raisani, S. A., Bashir, N, & Javed, A. (2023). Assessment of Knowledge, Attitude and Practices Related to Occupational Hazards among Nurses of Tertiary care Hospitals of Rawalpindi: Occupational Hazards Among Nurses. Pakistan Journal of Health Sciences, 4(5), 37-41. https://doi.org/10.54393/pjhs.v4i05.755

Shamkh, S. S., Mohammed, A. H., & Al-Abedi, G. A. (2022). Occupational hazards among nurses at primary health care centers in Al-Amara City/ Iraq. Bahrain Medical Bulletin, 44(1). https://www.bahrainmedicalbulletin.com/MARCH_2022/BMB-22-181.pdf

Shawahna, R. (2021). Knowledge, attitude, and use of protective measures against COVID-19 among nurses: a questionnaire-based multicenter cross-sectional study. BMC nursing, 20(1), 163. https://doi.org/10.1186/s12912-021-00689-x

Simmons, S. F., Hollingsworth, E., & Slagle, J. M. (2025). An Observational Study of Nursing Delivery of Mobility Assistance in Acute Care. Journal of the American Medical Directors Association.

Tabash, M. I., Saada, A. A., AbuQamar, M., Mansour, H. H., Alajerami, Y., & Abushab, K. (2024). Infection control measures at diagnostic imaging departments in governmental hospitals, Gaza-Strip. Radiography, 30(2), 567-573.

Tetzlaff, E. J., Goggins, K. A., Pegoraro, A. L., Dorman, S. C, & Pakalnis, V., & Eger, T. R. (2021). Safety culture: a retrospective analysis of occupational health and safety mining reports. Safety and health at work, 12(2), 201-208.

Thapa, D. R., Subedi, M., Ekström-Bergström, A., Areskoug Josefsson, K, & Krettek, A. (2022). Facilitators for and barriers to nurses' work-related health-a qualitative study. BMC nursing, 21(1), 218.

von Hippel, P. T. (2007). Regression with missing Ys: An improved strategy for analyzing multiply imputed data. Sociological Methodology , 37, 83-117.

Wen, X., Wang, F., Li, X., & Gu, H. (2021). Study on the Knowledge, Attitude, and Practice (KAP) of Nursing Staff and Influencing Factors on COVID-19. Frontiers in public health, 8, 560606. https://doi.org/10.3389/fpubh.2020.560606

White, D., Oelke, N. D., Besner, J., Doran, D., McGillis Hall, L., & Giovannetti, P. (2008). Nursing scope of practice: descriptions and challenges. Nursing leadership (Toronto, Ont.), 21(1), 44–57. https://doi.org/10.12927/cjnl.2008.19690

WHO. (2022). Occupational health: health workers. Retrieved from https://www.who.int/news-room/fact-sheets/detail/occupational-health--health-workers

WHO. (2024). Retrieved from https://www.who.int/

Wijaya, M. I., & Indasah, I. (2023). Analysis of the Role of Socialization, Experience and Perception of Nurses on the Application of Occupational Safety and Health. Babali Nursing Research, 4(2), 303-313. https://doi.org/10.37363/bnr.2023.42233

Wong, Y. C. (2017). Workplace health and safety for nurses in Hong Kong Hospitals: An Occupational Health Service study. Doctoral dissertation, Monash University.

World Health Organization. (2002). Occupational health: A manual for primary health care workers. No. WHO-EM/OCH/85/E/L.

Zabin, L. M., Zaitoun, R. S., & Abdullah, A. A. (2022). Patient safety culture in Palestine: university hospital nurses' perspectives. BMC nursing, 21(1), 204.

Zabin, L., Zaitoun, R., & Sweity, E. (2023). The relationship between job stress and patient safety culture among nurses: a systematic review. BMC nursing, 22(1), 39.

Zakarneh, A. E. (2023). Occupational Hazards and Nursing Commitment of Standard Precautions at the Emergency Department of Northern West Bank Hospitals Palestine. Doctoral dissertation, AAUP.

Zaman, Z., Shanjabin, S., & Islam, S. A. (2023). Impact of Occupational Hazards on Healthcare Professionals' Mental (Psychological) Health: Evidence from Government-Owned Hospitals in Khulna, Bangladesh. International Journal of Human Resource Studies, 13.

Zawahre, D. D. (2022). palestinian Nurses' Knowlwdge and Perceptions Regarding Occupational Hazards in Three Jerusalem Hospitals. Doctoral dissertation, Al-Quds University.

Appendices

Appendix A: Study Questionnaire (English and Arabic version)

الجامعـــة العربيـــة الأمريكيـــة

موقع رام الله

Arab American University

Ramallah Site

Student Thesis Questionnaire

Assessing the Impact of Knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals

Dear Respected Nurses,

Greetings,

I am pleased to present to you this questionnaire as an essential part of my current master's thesis, which aims to assess the impact of knowledge on occupational health safety among nursing staff in Palestinian hospitals. This research seeks to understand the relationship between acquired knowledge and health safety practices, as well as identify areas that can be improved to enhance the work environment and healthcare in the community.

We hope you will take a few minutes of your valuable time to answer the questions in this questionnaire with honesty and candor. We would like to assure you that the information you provide will be used solely for scientific research purposes and that your identity and personal information will not be disclosed in any form.

Please accept my respect and appreciation,

Reema Odeh

Master Degree Student

Arab American University AAUP

Email:R.odeh15@student.aaup.edu , Tel: +970 569 176 987

Part 1: Socio –Demographic information

(Zawahreh,2022)

Age:

☐ Under 30 years ☐ 30-39 years ☐ 40-49 years ☐ more than 50 years

Gender:

☐ Male ☐ Female

Education Level:

☐ Diploma ☐ bachelor's degree ☐ master's degree

☐ Other, please specify …….

Years of Nursing Experience:

☐ Less than 5 years ☐ 5-10 years ☐ 11-20 years ☐ over 20 years

Type of the Hospital:

☐ Governmental ☐ private ☐ NGO's

Hospital Location:

☐ North West Bank ☐ Middle West Bank ☐ South West Bank

Hospital Size:

☐ Small (less than 100 beds) ☐ Medium (100-200 beds) ☐ Large (over 200 beds)

Department:

☐ Medical/Surgical ☐ Intensive Care Unit (ICU) ☐ Emergency Room (ER)

☐ Others (please specify) ……

Part 2: KAP Assessment Questions

#	**Knowledge**(Zawahreh,2022)	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	I am familiar with the Occupational Safety and Health (OSH) guidelines and policies in our hospital					
2	I can identify the key OSH hazards that I may encounter in my daily work					
3	I receive training on OSH practices and guidelines at our hospital					
4	I am aware of the specific procedures to follow in the event of a workplace injury or exposure to hazardous materials					
5	I am familiar with the occupational infections and their sources					
6	I am familiar with chemical hazards in the hospital					
7	I am familiar with Physical hazards (such as slips, trips, falls, fire,….etc) in the hospital (Jimoh, 2013)					
8	I am familiar with suspected flue-infected patient					
9	I have an understanding of infection control protocols, including hand hygiene practices, isolation precautions, and disinfection procedures.					
Attitudes(Zawahreh,2022)						
10	I believe that adherence to OSH guidelines can improve the safety of nurses in Palestinian hospitals (Aluko et al., 2016)					
11	I am willing to report safety incidents and near misses in our workplace (Abdullah, 2010)					
12	I believe that reporting incidents improves workplace safety (Abdullah, 2010)					
13	I feel comfortable discussing safety concerns with my superiors and/or colleagues					

14	I believe that addressing occupational hazards is a matter of great importance and should be promptly addressed in the hospital					
15	I think that preventing occupational hazards is a shared responsibility between hospital management and staff					
16	Giving extra attention to occupational hazards is an unnecessary burden for you (Aluko et al., 2016)					
17	Punitive actions should be taken against individuals who violate safety practices					
Practices(Zawahreh,2022)						
18	I often use personal protective equipment (PPE) when providing patient care					
19	I follow standard safety protocols when handling hazardous materials or performing high-risk procedures					
20	I frequently engage in activities to prevent workplace injuries and illnesses, such as proper body mechanics and infection control (Njagi et al., 2012)					
21	Staff training, and the provision of personal protective equipment are necessary to reduce the risk of exposure to occupational hazards					
22	Wearing face masks is necessary during procedures where there's a possibility of blood splash or spill					
23	Gloves are essential and should always be worn when administering injections and drawing blood					
24	I follow the practice of properly washing my hands after each contact with a patient					
25	Disposal boxes should be located within close proximity to where you practice					

26	All OSH related incidents are reported in our department					
27	Exposure and control policies should be regularly-reviewed by hospital management to address occupational hazards					
28	Incentives will help increasing the adherence to standards and precautions					
	OSH Reality(Zawahreh,2022)					
29	Staff can easily understand and apply the written safety rules and instructions					
30	I personally experienced many work-related injuries or illnesses in the past year					
31	I consider our workplace to be safe					
32	I noticed improvements in OSH practices and safety conditions in my hospital in the last year					
33	Health workers avoid prolonged standing as a way to reduce occupational hazards					
Barriers and Challenges (Roze et al., 2021)						
34	What do you believe are the main barriers and challenges in implementing OSH policies and practices in your hospital?					

الجامعـــة العربيـــة الأمريكيـــة

موقع رام الله

Arab American University

Ramallah Site

استبيان -رسالة ماجستير

تقييم أثر المعرفة والمواقف والممارسات على السلامة والصحة المهنية لدى طاقم التمريض في المستشفيات الفلسطينية

السادة الممرضين والممرضات المحترمين،

تحية طيبة وبعد،

يسرني أن أقدم لكم هذه الاستبانة كجزء أساسي من رسالة الماجستير التي أعدها حالياً، والتي تهدف إلى تقييم أثر المعرفة على السلامة الصحية المهنية لدى طاقم التمريض في المستشفيات الفلسطينية. يهدف هذا البحث إلى فهم العلاقة بين المعرفة المكتسبة وممارسات السلامة الصحية، وكذلك تحديد النواحي التي يمكن تحسينها لتعزيز بيئة العمل والرعاية الصحية في المجتمع.

نأمل من حضرتكم أن تستثمروا بضع دقائق من وقتكم الثمين للإجابة عن الأسئلة المطروحة في هذه الاستبانة بكل صدق وصراحة. يهمنا أن نؤكد أن المعلومات التي ستقدمونها ستستخدم فقط لأغراض البحث العلمي ولن يتم الكشف عن هويتكم أو معلوماتكم الشخصية بأي شكل من الأشكال.

تفضلوا بقبول فائق الاحترام والتقدير،

ريما عودة

طالبة الماجستير

الجامعة العربية الامريكية

ايميل: R.odeh15@student.aaup.edu

تلفون: 987 176 569 970+

الجزء الأول: المعلومات الديموغرافية

العمر:

☐ أقل من 30 سنة ☐ 30-39 سنة ☐ 40-49 سنة ☐ أكثر من 50 سنة

الجنس:

☐ أنثى ☐ ذكر

التحصيل العلمي:

☐ وما ☐ كالوريوس ☐ الماجستير ☐ ى .....

سنوات الخبرة:

☐ أقل من 5 سنوات ☐ من 5-10 سنوات ☐ من 11-20 سنة ☐ أكثر من ٢٠ سنة

تصنيف المستشفى:

☐ حكومي ☐ خاص ☐ منظماتNGO'S

موقع المستشفى:

☐ شمال ☐ وسط ☐ جنوب

سعة المستشفى:

☐ صغيرة (أقل من 100سرير) ☐ متوسطة (من 200-100 سرير) ☐ كبيرة (أكثر من 200 سرير)

القسم:

☐ حة ☐ ة المكثفة ☐ وارئ أخرى (الرجاء تحديدها) .....

الجزء الثاني: أسئلة تقييم المعرفة والاتجاهات والممارسات

الرقم	السؤال	أوافق بشدة	أوافق	حيادي	لا اوافق	لا أوافق بشدة
	المعرفة					
1	أنا على دراية بإرشادات وسياسات السلامة والصحة المهنية في المستشفى					
2	يمكنني تحديد المخاطر الرئيسية للسلامة والصحة المهنية التي قد أواجهها خلال عملي اليومي					
3	أتلقى التدريب على ممارسات وإرشادات الصحة والسلامة المهنية في المستشفى					
4	أنا على دراية بالإجراءات المحددة التي يجب اتباعها في حالة حدوث إصابة في مكان العمل أو التعرض لمواد خطرة					
5	أنا على دراية بالعدوى المهنية ومصادرها					
6	أنا على دراية بالمخاطر الكيميائية الموجودة في المستشفى					
7	أنا على دراية بالمخاطر الجسدية (مثل الانزلاق والتعثر والسقوط والحريق وما إلى ذلك) في المستشفى					
8	أنا على دراية بمريض يشتبه في إصابته بالإنفلونزا					
9	لدي فهم لبروتوكولات مكافحة العدوى بما في ذلك ممارسات نظافة وتعقيم اليدين واحتياطات العزل واجراءات التعقيم					
	السلوكيات					
10	أعتقد أن الالتزام بإرشادات الصحة والسلامة المهنية يمكن أن يحسن سلامة الممرضين /الممرضات في المستشفيات الفلسطينية					
11	أنا على استعداد للإبلاغ عن حوادث السلامة والحوادث الوشيكة في مكان عملنا					
12	أعتقد أن الإبلاغ عن الحوادث يحسن السلامة في مكان العمل					
13	أشعر بالراحة عند مناقشة المخاوف المتعلقة بالسلامة مع رؤسائي و/أو زملائي					
14	أعتقد أن معالجة المخاطر المهنية أمر بالغ الأهمية ويجب معالجته على الفور في المستشفى					

15	أعتقد أن الوقاية من المخاطر المهنية هي مسؤولية مشتركة بين إدارة المستشفى والموظفين					
16	إن إيلاء اهتمام إضافي للمخاطر المهنية يمثل عبئًا غير ضروري بالنسبة لك					
17	ينبغي اتخاذ إجراءات عقابية ضد الأفراد الذين ينتهكون ممارسات السلامة					
الممارسات						
18	غالبًا ما أستخدم معدات الحماية الشخصية (PPE) عند تقديم الرعاية للمرضى					
19	أقوم باتباع بروتوكولات السلامة عند التعامل مع المواد الخطرة أو تنفيذ إجراءات عالية المخاطر					
20	أشارك في أنشطة للوقاية من الإصابات والأمراض في مكان العمل، مثل مكافحة العدوى					
21	يعد تدريب الموظفين وتوفير معدات الحماية الشخصية أمرًا ضروريًا لتقليل مخاطر التعرض للمخاطر المهنية					
22	يعد ارتداء أقنعة الوجه ضروريًا أثناء الإجراءات حيث يكون هناك احتمال لتناثر الدم أو انسكابه					
23	تعتبر القفازات ضرورية ويجب ارتداؤها دائمًا عند إعطاء الحقن وسحب الدم					
24	أتبع ممارسات غسل اليدين بشكل صحيح بعد كل اتصال مع المريض					
25	يجب أن تكون صناديق النفايات الطبية موجودة على مقربة من المكان الذي نعمل فيه					
26	يتم الإبلاغ عن جميع الحوادث المهنية في قسمنا					
27	يجب مراجعة سياسات وأنظمة السلامة بانتظام من قبل إدارة المستشفى لمعالجة المخاطر المهنية					
28	ستساعد الحوافز على زيادة الالتزام بالمعايير والاحتياطات					
واقع الصحة والسلامة المهنية						

29	يمكن للموظفين فهم وتطبيق قواعد وتعليمات السلامة المكتوبة بسهولة					
30	لقد تعرضت شخصيًا للعديد من الإصابات أو الأمراض المتعلقة بالعمل في العام الماضي					
31	أعتقد أن مكان عملنا آمن					
32	لقد لاحظت تحسينات في ممارسات الصحة والسلامة المهنية وظروف السلامة في المستشفى في العام الماضي					
33	يتجنب العاملون الصحيون الوقوف لفترات طويلة كوسيلة للحد من المخاطر المهنية					

العوائق والتحديات

34	ما هي برأيك العوائق والتحديات الرئيسية التي تواجه تنفيذ سياسات وممارسات الصحة والسلامة المهنية في المستشفى الخاص بك؟	

Appendix B: The names of experts who evaluated the study instrument

Expert Name	Department / Field
Dr.Yahya Salahat	Quality Management – An Najah University
Dr. Yousef Al Mimi	Quality Management in healthcare –AAUP
Dr. Ashraf Al Mimi	Quality Management -AAUP
Dr. Ahmad Hanini	Health care Science –An Najah University
Dr. Mamoun Shawahneh	Health care Science – Ministry of Education
Ms. Hanaa Jarrar	Public Health and Nursing -Modern University College

Appendix C: Informed Consent (Arabic version)

تقييم أثر المعرفة والمواقف والممارسات على السلامة والصحة المهنية لدى طاقم التمريض في المستشفيات الفلسطينية

عزيزي الممرض / عزيزتي الممرضة

تحية طيبة وبعد

أنا الطالبة: ريما عودة من برنامج الماجستير في ادارة الجودة في المؤسسات الصحية في الجامعة العربية الأمريكية، يسرني أن أقدم لكم هذه الاستبانة كجزء أساسي من رسالة الماجستير التي أعدها حالياً، والتي تهدف إلى تقييم أثر المعرفة على السلامة الصحية المهنية لدى طاقم التمريض في المستشفيات الفلسطينية. يهدف هذا البحث إلى فهم العلاقة بين المعرفة المكتسبة وممارسات السلامة الصحية، وكذلك تحديد النواحي التي يمكن تحسينها لتعزيز بيئة العمل والرعاية الصحية في المجتمع. نأمل من حضرتكم أن تستثمروا بضع دقائق من وقتكم الثمين للإجابة عن الأسئلة المطروحة في هذه الاستبانة بكل صدق وصراحة. يهمنا أن نؤكد أن المعلومات التي ستقدمونها ستستخدم فقط لأغراض البحث العلمي ولن يتم الكشف عن هويتكم أو معلوماتكم الشخصية بأي شكل من الأشكال.

تفضلوا بقبول فائق الاحترام والتقدير،

ريما عودة

طالبة الماجستير

الجامعة العربية الامريكية

ايميل: R.odeh15@student.aaup.edu

تلفون: 987 176 569 970+

Appendix D: Institutional Review Board (IRB) form

Arab American University
Institutional Review Board - Ramallah

الجامعـــة العربيـــة الأمريكيـــة
مجلس اخلاقيات البحث العلمي – رام الله

IRB Approval Letter

Study Title: "Assessing the Impact of Knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals".

Submitted by: Reema AbdulMajeed Mahmoud Odeh

Date received: 28th November 2024

Date reviewed: 2nd December 2024

Date approved: 2nd December 2024

Your Study titled **"Assessing the Impact of Knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals"** with the code number **"R-2024/A/167/N"** was reviewed by the Arab American University Institutional Review Board - Ramallah and it was approved on the 2nd of December 2024.

Sajed Ghawadra, PhD
IRB-R Chairman
Arab American University of Palestine

الجامعة العربية الأمريكية - فلسطين
مجلس اخلاقيات البحث العلمي - رام الله
IRB-R
ARAB AMERICAN UNIVERSITY-PALESTINE
INSTITUTIONAL REVIEW BOARD - RAMALLAH

General Conditions:

1. Valid for 6 months from the date of approval.
2. It is important to inform the IRB-R with any modification of the approved study protocol.
3. The Bord appreciates a copy of the research when accomplished.

رام الله – فلسطين
Tel: 02-294-1999 **E-Email:** IRB-R@aaup.edu **Website:** www.aaup.edu

Arab American University
Institutional Review Board - Ramallah

الجامعـــة العربيـــة الأمريكيـــة
مجلس اخلاقيات البحث العلمي– رام الله

AAUP-IRB-R APPLICATION FORM

Applicant Information

Name of Applicant(s): Reema AbdulMajeed Mahmoud Odeh

University ID No.: 202020386

Faculty: graduate studies

Department: Administrative and financial studies

Program: Quality management in healthcare institutions

Name of main supervisor: Dr Yahya Salahat

Name of co-supervisor(s): Not Available

Name of external supervisor: Not available

General Information

Study title:

Assessing the impact of knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals

Study summary:

Occupational Safety and Health (OSHA) is a critical component of any workplace. It is important to ensure that all employees are aware of the safety protocols and procedures in place to protect them from potential hazards. This includes providing training on the proper use of safety equipment and ensuring that all employees are aware of the potential risks associated with their jobs. Additionally, employers should ensure that all safety protocols are regularly reviewed and updated to ensure effectiveness.

The main goal of the study is to assess the current levels of knowledge, attitudes and practices (KAP) among nurses in Palestinian hospitals and to identify the barriers and challenges faced in implementing OHS policies and practices.

Data will be collected using a self-administered questionnaire. The study population consists of all registered full-time nurses working in Palestinian hospitals.

Type of the study:

1. Experimental (interventional) study.
2. **Non-experimental (non-interventional) study.**

Has this study been conducted at AAUP in the past?

□ Yes
□ No

If yes, give details:

Has this study been conducted in Palestine in the past? □ Yes □ No

If yes, give details:

Yes, similar studies have previously been conducted in Palestine, with a focus on related variables such as healthcare workers' knowledge, attitudes, and practices regarding occupational safety and health. However, the number of these studies is limited, indicating a significant gap in the literature that our research seeks to fill.
Our research not only addresses these existing variables but also incorporates additional factors that have not been widely studied. We aim to improve our understanding and provide a more comprehensive perspective on the knowledge, attitudes, and practices of healthcare workers regarding occupational safety and health in Palestine.

Is this research funded? □ Yes □ No

If yes, give details:

Research Details

Study introduction and background:

Occupational Safety and Health (OSHA) is a critical component of any workplace. It is important to ensure that all employees are aware of the safety protocols and procedures in place to protect them from potential hazards. This includes providing training on the proper use of safety equipment and ensuring that all employees are aware of the potential risks associated with their jobs. Additionally, employers should ensure that all safety protocols are regularly reviewed and updated to ensure effectiveness.

Injuries in Palestinian hospitals can include physical injuries, such as slips, trips, and falls, as well as psychological injuries, such as emotional distress or trauma. Other potential sources of injury include inadequate staffing, inadequate training, and inadequate safety protocols. The rate of injuries among workers in hospitals varies depending on the type of hospital and job being done. Workers in hospitals are at a high risk of sustaining injuries due to the nature of their work. The injuries can range from minor cuts to more severe injuries.

(200 words)

The rate of injuries among workers in hospitals in Palestine is not well documented. There is dearth of data and statistics in Palestinian hospitals regarding the nurses' injuries rate in their workplace.

Why it is important to conduct this study?

This research is of significant importance as it will contribute to our

understanding of the KAP of nurses toward OHS in Palestinian hospitals. The findings of this study will inform the development of interventions and policies aimed at improving OHS in the healthcare sector, and ultimately, ensure that nurses are better equipped to promote and protect the health of both themselves and their patients.

Study objectives:

The research objectives for the study can be described as follows:

1. To assess the current levels of knowledge, attitudes and practices (KAP) among nurses in Palestinian hospitals.
2. To assess the current reality of occupational safety and health (OSH) for the nurses in Palestinian hospitals.
3. To assess the impact of KAP on OSH of the nurses in Palestinian hospitals.
4. To identify the barriers and challenges faced by Palestinian hospitals in implementing OHS policies and practices.
5. To examine if demographic information of nurses and Palestinian hospitals have any impact on KAP and OSH.

Methodology	
Study design:	1. Case Study design 2. Case-control design 3. Cohort (Longitudinal) design 4. Cross-Sectional design 5. Descriptive design 6. Observational design

7. Randomized controlled trials (RCTs)
8. Quasi experiments; non-randomized, (non-controlled / one group)
9. Quasi experiments; non-randomized, (controlled / two groups)
10. Retrospective designs
11. Prospective designs
12. Others

Method of data collection:

13. Quantitative method
14. Qualitative method
15. Mixed method

Sampling method:

1. Simple random sampling
2. Systematic sampling
3. Stratified sampling
4. Clustered sampling
5. Convenience sampling
6. Quota sampling
7. Judgement (or Purposive) Sampling
8. Snowball sampling
9. Universal sampling

Study population (sample size and target group):

The study population consists of all registered full-time nurses working in Palestinian hospitals in the West Bank. The population size will be estimated based on data provided by the Palestinian Nursing Union and the Ministry of Health. A random sample will be determined accordingly using the Steven Thompson formula stated below, the sample size was calculated:

$$n=\frac{N\times p(1-p)}{\left[\left[N-1\times\left(d^2\div z^2\right)\right]+p(1-p)\right]}$$

Where, n= the sample size, N=population size (10800), P=proportion of property offers and neutral (P=0.5), d=error margin (5%) and z= is the upper α/2 of the normal distribution (Z=1.96). Due to the situation, we have in Palestine, only hospitals working in West Bank will be included in this study.

Hence, the sample size will be n=371 nurses.

How will the data be collected?

Data will be collected using a self-administered questionnaire. The questionnaire will consist of two main parts: the first part will assess the demographic characteristics of the participants, while the second part will assess the knowledge, attitude, and practice of the participants toward occupational health and safety. The questionnaire will be developed in English and translated into Arabic.

Who will collect the data?

The **researcher** will collect the data for this study, using an electronic questionnaire. The survey will be designed to gather relevant information efficiently and effectively from participants. The electronic questionnaire will be distributed via digital platforms to ensure broad accessibility and convenience for respondents.

How long will the study be?

The study is anticipated to be approximately 3 to 6 months. This timeframe includes phases for planning and designing the study, developing the questionnaire, collecting data, analyzing the results, and writing the final report.

Ethical Issues	
Are the patients file or medical records needed?	□ Yes □ No
Are human subjects involved?	□ Yes □ No
Does the study involve people from a vulnerable groups?	□ Yes □ No
How long is each participant going to be involved in the study?	Participants in this study will only need to complete the attached questionnaires. There are no other tasks or procedures involved. Simply completing the questionnaires is all that is required to participate in the study.

For experimental (interventional) study.

What is the intervention (educational program, drugs, therapy, treatment,medical device,…etc.) of this study?	1. Educational program, 2. Drugs 3. Therapy 4. Treatment 5. Medical device 6. Other
Who will give the intervention?	
Is the intervention of the study New?	□ Yes □ No

. If yes, is the newintervention tested before?	□ Yes □ No □ Not applicable
.If yes, has the newintervention granted license?	□ Yes □ No □ Not applicable
. If yes, Who gave the licenses?	
How much is the intervention cost?	
Who will pay?	
Is there any continuity of treatment provided after the study is completed?	□ Yes □ No
Does this study involve any clinical procedure?	□ Yes □ No □ Not applicable
Does this study include taking blood, tissue, biological sample from human subjects?	□ Yes □ No □ Not applicable
What is the language of the questionnaires?	4. English 5. Arabic 6. Both
Did you translate the questionnaires from the original language?	□ Yes □ No
Will the questionnaires / interview include sensitive, embarrassment, upsetting topics?	□ Yes □ No □ Not applicable

What are the benefits for the participants?

This study will enhance our understanding of the Knowledge, Attitudes, and Practices (KAP) of nurses regarding Occupational Health and Safety (OHS) in Palestinian hospitals. The findings will guide the formulation of targeted interventions and policies designed to improve OHS standards within the healthcare sector. These efforts will empower nurses, allowing them to effectively promote and protect the health of themselves. We can create a safer and more supportive working environment for healthcare

professionals, resulting in improved health outcomes overall.

Is there any potential harm for the participants? □ Yes ☒ No □ Not applicable

. If yes, please specify?

. If yes, how are you going to minimize it?

Is there an insurance coverage for the study? □ Yes ☒ No □ Not applicable

Is there any payment for the participants? □ Yes ☒ No

Is there any payment for the persons who will be recruited for the study? □ Yes ☒ No

How will the data / records (e.g. questionnaires) of the participants be kept?

The data and records collected from participants, such as questionnaires, will be kept securely and managed with a strong emphasis on confidentiality and compliance with ethical standards. All data will be stored in password-protected electronic formats. Only the research team have an access to use theses data in the study research period / time.

How will you keep the anonymity of the participants?

In order to protect the identities of participants, we will anonymize or de-identify the data before analyzing it by eliminating personal information and replacing it with unique codes.

However, this study's questionnaire doesn't include any personally identifiable information such as your name or the hospital name.

Who will have an access to the research data?

Access to your data is restricted and governed by strict privacy and confidentiality guidelines. Only research team (researcher, supervisor). However, this study's questionnaire doesn't include any

personally identifiable information such as your name or the hospital name.

For how long will you keep the research data?

Only the research team have the rights to use these data in the study research period / time. (based on University recommendation)

Are you going to provide a Participant Information Sheet, and Informed Consent? ☐ Yes ☐ No

Does any researcher have a conflict of interest? ☐ Yes ☐ No

To ensure participant's confidentiality, I agree to comply to the Caldicott Principles as follows:

1. I will not use identifiable information unless it is necessary.
2. I will only use the minimum necessary patient-identifiable information.
3. I will ensure that the access to patient identifiable information will be on a strictly need-to-know basis.
4. I will ensure that everyone with access to patient identifiable information is aware of their responsibilities.
5. I understand and will comply with the law.
6. I understand that the duty to share information can be as important as the duty to protect patient confidentiality.

Other information?

The required Documents:
1. Approval of passing of proposal defense (for Master & PhD degree) OR regestration of thesis I.
2. The research proposal.
3. AAUP-IRB Participants Information Sheet.
4. AAUP-IRB Informed Consent.
5. Study Questionnaires.

Note:

- Choose the language for (AAUP-IRB Participants Information Sheet, AAUP-IRB Informed Consent, Study Questionnaires), English or Arabic regarding the participants; if they can speak/read English (such as doctors, nurses, medical students…etc.) or not.

- The applicant will submit the AAUP-IRB-Ramallah application at (IRB-R@aaup.edu).
- For Students, your supervisor must check the application and be copied in the email.
- Every application might takes 30 days for review.

Arab American University
Institutional Review Board - Ramallah

الجامعـــة العربيـــة الأمريكيـــة
مجلس اخلاقيات البحث العلمي – رام الله

PARTICIPANTINFORMATION SHEET

AAUP-IRB-R Code No.:……
AAUP-IRB-R Date:…….

Study Title: Assessing the impact of knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals

We would like to invite you to take part in a research study. Before you decide whether to participate, you need to understand why the research is being done and what it would involve. Please take time to read the following information carefully; talk to others about the study if you wish.

Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

1. **What is the purpose of this study?**

The study research purposes can be described as follows:

- To assess the current levels of knowledge, attitudes and practices (KAP) among nurses in Palestinian hospitals.
- To assess the current reality of occupational safety and health (OSH) for the nurses in Palestinian hospitals.
- To assess the impact of KAP on OSH of the nurses in Palestinian hospitals.
- To identify the barriers and challenges faced by Palestinian hospitals in implementing OHS policies and practices.
- To examine if demographic information of nurses and Palestinian hospitals have any impact on KAP and OSH.

2. **Why is this study important?**

This research is of significant importance as it will contribute to our understanding of the KAP of nurses toward OHS in Palestinian hospitals. The findings of this study will inform the development of interventions and policies aimed at improving OHS in the healthcare sector, and ultimately, ensure that nurses are better equipped to promote and protect the health of both themselves and their patients.

3. **What is the procedure that is being tested?** *(If applicable)*

There is no test. The **procedure is** assessing the impact of knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals using questionnaire .

4. Why have I been invited to participate in this study?

All registered Nurses working in the Palestinian hospitals in west bank are invited to fill the survey and participate in this study because it enhances our understanding of the Knowledge, Attitudes, and Practices (KAP) of nurses regarding Occupational Health and Safety (OHS) in Palestinian hospitals.

The findings of this study will guide the formulation of targeted interventions and policies designed to improve OHS standards within the healthcare sector. These efforts will empower nurses, allowing them to effectively promote and protect the health of themselves and their patients.

We can create a safer and more supportive working environment for healthcare professionals, resulting in improved health outcomes overall.

5. Who should not participate in the study?

Our target population: all registered Nurses working in the Palestinian hospitals in west Bank are invited to fill the survey and participate in this study.

So the other healthcare providers are excluded in this study.

6. Can I refuse to take part in the study?

Yes, you can refuse to take part in the study. Participation in research is typically voluntary, and you have the right to decline or withdraw at any time without any consequences. If you have concerns or need more information before making a decision, you can contact the researcher for clarification.

7. What will happen to me if I take part?

If you choose to take part in the study, you may be asked to complete specific tasks, surveys, or assessments related to the research objectives. Participation could lead to potential benefits, such as contributing to medical knowledge. However, before agreeing to participate, you can contact the researcher to have further information.

8. How long will I be involved in this study?

Participants in this study will only need to complete the attached questionnaires. There are no other tasks or procedures involved. Simply completing the questionnaires is all that is required to participate in the study.

9. What are the possible disadvantages and risks?

Participating in this study which involves filling out questionnaires, there are some potential disadvantages that participants should be aware of, including:

- Confidentiality Concerns: It's crucial for study researcher to ensure that participants understand their rights and to protect their privacy
- Time Commitment: participants may find that completing the questionnaires takes more time than they initially expected.
- Misunderstanding: Participants might misunderstand questions, leading to inaccurate responses that could affect the study's results.
- Potential for Bias: Participants may feel pressured to respond in a socially acceptable manner, rather than providing honest and accurate answers.

10. What are the possible benefits to me?

This study will enhance our understanding of the Knowledge, Attitudes, and Practices (KAP) of nurses regarding Occupational Health and Safety (OHS) in Palestinian hospitals. The findings will guide the formulation of targeted interventions and policies designed to improve OHS standards within the healthcare sector. These efforts will empower nurses, allowing them to effectively promote and protect the health of themselves. We can create a safer and more supportive working environment for healthcare professionals, resulting in improved health outcomes overall.

11. Who will have access to my medical records and research data?

Access to your research data is restricted and governed by strict privacy and confidentiality guidelines. Only research team (researcher, supervisor). However, this study's questionnaire doesn't include any personally identifiable information such as your name or the hospital name

12. Will my records/data be kept confidential?

Yes, your records and data should be kept confidential, especially in a research context.

13. What will happen to any samples I give? *(If applicable)*

……

14. What will happen if I don't want to carry on with the study?

Participation in research is typically voluntary, and you have the right to decline or withdraw at any time without any consequences

15. What will happen to the results of the research study?

The results of our research study can significantly contribute to the body of knowledge in the medical field. Typically, the results of this research involving the questionnaire will be followed by data analysis, which includes:

- **Processing the Data**: Organize and prepare collected data for analysis to ensure accuracy and completeness.
- **Statistical Evaluation**: we will use statistical methods to interpret the data, and identify patterns, relationships, and significant findings based on study hypotheses or objectives.

16. Will I receive compensation for participating in this study?

No, participants in this study will not be compensated for completing the survey. Your contribution to the research is valuable, and we appreciate you taking the time to participate.

17. Who should I contact if I have additional questions/problems during the study?

Researcher contact details:

Phone No: 0569176987

Student: Reema Abdulmajeed Mahmoud Odeh

18. Who should I contact if I am unhappy with how the study is being conducted?

The researcher / student

Phone No: 0569176987

Student : Reema Abdulmajeed Mahmoud Odeh

Institutional Review Board – Ramallah
Arab American University
Email:IRB-R@aaup.edu

Appendix E: Facilitation Letter from Ministry of Health and private Hospitals

Arab American University
Faculty of Graduate Studies
الجامعة العربية الأمريكية
كلية الدراسات العليا

2024/12/2

إلى من يهمه الامر

تسهيل مهمة بحثية

تحية طيبة وبعد،

تُهديكم كلية الدراسات العُليا في الجامعة العربية الأمريكية أطيب التحيات، وبالإشارة الى الموضوع أعلاه، تشهد كلية الدراسات العُليا في الجامعة أن الطالبة **ريما عبد المجيد محمود عودة والتي** تحمل الرقم الجامعي 202020386 هي طالبة ماجستير في برنامج إدارة الجودة في المؤسسات الصحية وتعمل على رسالة الماجستير الخاصة بها بعنوان:

"Assessing the impact of knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals"

تحت إشراف الدكتور يحيى صلاحات. نأمل من حضرتكم الإيعاز لمن يلزم لمساعدتها للحصول على المعلومات اللازمة للدراسة، علماً أن المعلومات ستستخدم لغاية البحث فقط وسيتم التعامل معها بغاية السرية، وقد أُعطيت هذه الرسالة بناءً على طلبها.

وتفضلوا بقبول فائق الاحترام

عميد كلية الدراسات العُليا

د. نوار قطب

كلية الدراسات العليا
FACULTY OF GRADUATE STUDIES

Jenin Tel: +970-4-2418888 Ext.:1471,1472 Fax: +970-4-2510810 P.O. Box:240
Ramallah Tel: +970-2-2941999 Fax: +970-2-2941979 Abu Qash - Near Alrehan
E-mail: FGS@aaup.edu ; PGS@aaup.edu Website: www.aaup.edu

State of Palestine
Ministry of Health
Education in Health and Scientific Research Unit

دولة فلسطين
وزارة الصحة
وحدة التعليم الصحي والبحث العلمي

Ref.: ....
Date:..................

الرقـــم: ٢٠٢٤/٣٠٢٦/١٦٣
التـاريخ: ٢٠٢٤/١٢/١١

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،

ق. أ. المدير التنفيذي لمجمع فلسطين الطبي المحترم،،،

تحية واحترام،،،

<u>الموضــوع: تسهيل مهمة بحث</u>

يرجى تسهيل مهمة **الطالبة: ريما عبد المجيد عودة – ماجستير اداره الجودة في المؤسسات الصحية / الجامعة العربية الامريكية**، وبإشراف د. يحيى صلاحات، في عمل بحث بعنوان:

"Assessing the impact of knowledge, Attitude and Practices of Nursing Staff on Occupational Safety and Health in Palestinian Hospitals

السماح للطالبة بجمع المعلومات عن طريق تعبئة استبانة من قبل الطاقم التمريضي بعد اخذ موافقتهم، وذلك في:

– جميع المستشفيات الحكومية في الضفة الغربية – مجمع فلسطين الطبي

على ان يتم الالتزام باساليب واخلاقيات البحث العلمي، والحفاظ على سرية المعلومات.
على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر لحين الحصول على موافقة الوزارة على نتائج البحث.

مع الاحترام،،،

د. عبد الله القواسمي
رئيس وحدة التعليم الصحي والبحث العلمي

نسخة: عميد كلية الدراسات العليا المحترمة/ الجامعة العربية الامريكية

Telfax.:09-2333901 scientificresearch.dep@gmail.com تلفاكس: 09-2333901

Appendix F: The Name of the Participated Hospitals

Hospital Name	Type	Location (WB)
Palestine Medical Complex	MOH	Ramallah/ Middle
Al-Istishari Arab Hospital	Private	Ramallah/ Middle
Rafidia Surgical Hospital	MOH	Nablus /North
Nablus Specialized Hospital	Private	Nablus /North
Al-Watani Medical Hospital	MOH	Nablus /North
Ibn Sina Hospital	private	Jenin /North
Martyr Yasser Arafat Governmental Hospital	MOH	Salfit /North
Jericho Governmental Hospital	MOH	Jericho
Al Ahli Hospital	Private	Hebron (south)
Beit Jala Hospital (Al-Hussein Governmental Hospital)	MOH	Beit Jala (Bethlehem)/ South

الملخص

تُعَدّ السلامة والصحة المهنية من الجوانب الأساسية في بيئة العمل، ولا سيما في المؤسسات الصحية، حيث يتعرض مقدمو الرعاية الصحية، بمن فيهم الممرضون والممرضات والعاملين الآخرين في مجال الرعاية الصحية، إلى مجموعة متنوعة من المخاطر المهنية التي قد تخلّف آثاراً صحية سلبية على المدى الطويل. تهدف هذه الدراسة إلى تقييم المستويات الحالية من المعرفة والمواقف والممارساتKAP المتعلقة بالسلامة والصحة المهنية OSH لدى الممرضين والممرضات في المستشفيات الفلسطينية. كما تهدف الى دراسة العلاقة بين مؤشرات المعرفة والمواقف والممارسات وبعض العوامل الديموغرافية المختارة، بالإضافة إلى دراسة وتقييم تصورات الممرضين والممرضات عن وضع السلامة والصحة المهنية الحالي في المستشفيات الفلسطينية والتحديات المرتبطة بها.

تبنت الدراسة الأساليب التحليلية الوصفية-تحليلي مقطعي باستخدام استبيان لقياس المعرفة والمواقف والممارسات المتعلقة بالسلامة والصحة المهنية، وقد طوّرها الباحث بالاستناد إلى أدوات مستخدمة في دراسات سابقة بحيث تكون مجتمع الدراسة من (10,800) ممرض وممرضة يعملون في مستشفيات الضفة الغربية. كما تضمنت حجم عينة الدراسة (388) ممرضًا وممرضة مسجلاً في مستشفيات الضفة الغربية ممن يعملون في أقسام مختلفة مثل: الطوارئ، وحدة العناية المركزة، الجراحة، إلخ.

أظهرت التحليلات الإحصائية أن 24.2%من الممرضين قد أظهروا مستوى جيداً من المعرفة، و30.9%أبدوا مواقف إيجابية، و30.9%مارسوا ممارسات سليمة في مجال السلامة، في حين أن 26.3%فقط حققوا درجة مرتفعة في المؤشر الكلي للمعرفة والمواقف والممارسات .(KAP) كما تبين أن تحسّن مستوى المعرفة يؤدي إلى تحسّن مستوى السلامة والصحة المهنية. وخلصت الدراسة إلى أن امتلاك مستوى جيد من المعرفة والمواقف والممارسات يُعد سمة أساسية لدى الممرضين، ولا سيما في ظل طبيعة المخاطر المرتبطة بمهنة التمريض. كما أظهرت النتائج أن قيود الموارد (29.6%) والحاجة غير الملبّاة إلى التدريب (22.2%) كانت من أكثر العوائق التي ذُكرت بشأن تطبيق إجراءات السلامة والصحة المهنية. يُوصى بأن تقوم وزارة الصحة بتنظيم دورات تدريبية حول الصحة والسلامة المهنية والانضباط الذاتي والقيادة.

وتوصي الدراسة بأن تقوم وزارة الصحة الفلسطينية وإدارات الموارد البشرية بتنظيم برامج ودورات تدريبية ممنهجة حول السلامة والصحة المهنية، والانضباط الذاتي، والقيادة. كما ينبغي على وزارة الصحة تعزيز ثقافة الإبلاغ عن الحوادث بين مقدمي الرعاية الصحية. بالإضافة إلى ذلك، ينبغي على الممرضين الالتحاق بدورات تدريبية متخصصة لتحسين مستولى المعرفة بالسلامة المهنية والمخاطر المحتملة والتزامهم بمعايير السلامة، وتعزيز قدرتهم على ضبط مواقفهم وممارساتهم في المواقف والحالات الخطرة.

الكلمات المفتاحية: المعرفة، المواقف، الممارسات، السلامة والصحة المهنية، الممرضون والممرضات