Developing Contextual Quality Standards for Emergency Departments in Palestine

By

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Abstract

Background

Emergency departments (EDs) are crucial for delivering timely, life-saving care, particularly in low-resource and conflict-affected areas like Palestine. Palestinian hospitals face significant pressure in their EDs due to a heavy workload from routine injuries and those resulting from ongoing Israeli occupation. Enhancing healthcare quality at all levels of the health system is a national priority, with a focus on improving emergency care. However, the absence of specific national standards for measuring ED quality hinders efforts to standardise and enhance ED services in Palestine.

Aims and Objectives

This PhD thesis aims to establish contextual quality standards for EDs in Palestine. It focuses on developing, validating, and assessing the feasibility of implementing Emergency Department Quality Standards (EDQS) tailored to the specific challenges of the Palestinian healthcare system.

Methods

This research utilized a multi-methods approach. In the first study, a preliminary EDQS appropriate for hospital EDs in Palestine was developed through a literature review and refined using expert group discussions. The second study employed the e-Delphi technique to validate these EDQS. The third study assessed the feasibility of implementing the EDQS by conducting qualitative interviews with 10 ED front desk staff across nine hospitals in the West Bank.

Results

The PhD research successfully developed contextually validated EDQS. In the first phase, 103 preliminary standards for emergency department operations were established across 16 sub-domains. The second phase validated 100 standards with an 80% consensus from 53 experts, resulting in minor adjustments. The administrative domain achieved a 97.3% consensus, while the clinical domain reached 96.4%. The third phase identified four key

themes and 16 subthemes on the feasibility of EDQS in Palestinian EDs. Strong acceptance was noted, but challenges such as knowledge gaps, resource constraints, and resistance to change were highlighted. Nonetheless, participants believed EDQS could improve patient care and workflow efficiency with proper resources and strategies.

Conclusions

This study enhances emergency care quality in Palestine by developing and validating the EDQS. Using a systematic, evidence-based approach, 100 standards were formulated to address clinical and administrative needs, incorporating international best practices while accounting for local challenges like resource limitations, conflict disruptions, and staff shortages.

Expert validation underscored the standards' relevance, while a feasibility assessment identified barriers such as inadequate resources, lack of commitment, and knowledge gaps, highlighting the need for strategies like capacity building and stakeholder engagement.

These findings are crucial for improving emergency care in low-resource, conflict-affected regions. The standards offer a framework for enhancing services, ensuring patient safety, and improving outcomes. Future efforts should focus on implementing and evaluating these standards to measure their impact on patient outcomes and satisfaction.

Approval for the Inclusion of Publications in this PhD Thesis

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1- Bani Odeh AAlraof, Wallis LA, Hamdan M, et al. Consensus- based quality standards for emergency departments in Palestine. BMJ Open Quality 2024;13:e002598. doi:10.1136/ bmjoq-2023-002598.
2- Bani Odeh AA, Wallis L, Hamdan M, Stassen W (2025) Validating quality standards in Palestinian emergency departments: An e-Delphi survey approach. PLoS ONE 20(1): e0307632. https://doi.org/10.1371/journal.pone.0307632
3- Assessing the feasibility and acceptability of implementing emergency department quality standards in Palestine: A Qualitative study.

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Dedication

First and foremost, I extend my heartfelt thanks to Allah, my creator and source of inspiration, for bestowing me wisdom, knowledge, and strength. I owe it all to Almighty Allah for granting me the health and strength to undertake this long journey and enabling me to complete it.

I owe much to my family for their unwavering support, especially to my wonderful wife, Ramza, and our children: my eldest daughter, Leema; my daughter, Rama; my son, Omar; and my youngest daughter, Salma. Their inspiration, love, and patience have been the foundation of my pursuit of a PhD.

I dedicate this academic work to the souls of my father, Mohammad, and my mother, Najia (may Allah have mercy on them), as well as to my brothers and sisters, whose love, encouragement, and prayers have been pivotal to my success.

To my beloved homeland, Palestine, and my village of birth, Tammoun, you remain forever in my heart. I am grateful for my extended family, relatives, and friends, whose support has encouraged me every step of the way. This work is a testament to all of you.

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I am also grateful to my co-supervisor, Professor Lee Wallis, for encouraging me to join the University of Cape Town and for his valuable guidance throughout my research. Additionally, I thank Professor Moatasem Hamdan for his exceptional support and guidance, which greatly enhanced this research.

Without the support of these three remarkable supervisors, my PhD journey would have been significantly more challenging. Their guidance helped me refine my writing and shape my research, and I owe them my deepest gratitude for keeping me on track throughout this process.

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Lastly, I dedicate this work to my late cousin, Mohammad Masri, who assisted me with the statistical analysis at the beginning, may Allah have mercy on him.

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List of Abbreviations

Abbreviation	Full Term
ACLS	Advanced Cardiac Life Support
AI	Artificial Intelligence
BFHI	Baby-Friendly Hospital Initiatives
BLS	Basic Life Support
CBAHI	Central Board for Accreditation of Healthcare Institute
COREQ	Consolidated Criteria for Reporting Qualitative Research
CPR	Cardiopulmonary resuscitation
CQI	Continuous Quality Improvement
CREDES	Conducting and Reporting Delphi Studies
CSV	Comma-Separated Values – a text file format
ECS	Emergency Care System
ED	Emergency Department
EDQS	Emergency Department Quality Standards
EDs	Emergency Departments
EM	Emergency Medicine
EMS	Emergency Medical System
GDP	Gross Domestic Product
GS	Gaza Strip
HCAC	Health Care Accreditation Council
HCQ	Healthcare Quality
HEAT	Hospital Emergency Assessment Tool
HREC	Human Research Ethics Committee
IFEM	International Federation of Emergency Medicine
IoM	Institute of Medicine
IQR	Interquartile Range
ISO	International Organization for Standardisation
ISQua	International Society for Quality in Healthcare principle
JCI	Joint Commission International
KPIs	Key Performance Indicators

LMICs	Low and Middle-Income Countries
MMR	Maternal Mortality Rate
MoH	Ministry of Health
NGOs	Non-Governmental Organization
PDSA	Plan-Do-Study-Act Cycle
PHC	Primary Health Care
PRCS	Palestine Red Crescent Society
PSFHI	Patient Safety Friendly Hospital Initiative
PSIPC	Patient Safety- Infection Prevention and Control Program
QPS	Quality and Patient Safety
RUMBA	Relevant, Understandable, Measurable, Beneficial, and Achievable
SPO	Structure, process, and outcome
SPSS	Statistical Package for the Social Sciences
UCT	University of Cape Town
UNRWA	United Nations Relief and Works Agency
WB	West Bank
WHO	World Health Organization

Chapter 1: Introduction

1.1 Introduction

This chapter provides an overview of the research, outlining its background, significance, and the specific Palestinian context it addresses. It presents the research problem along with its objectives and questions. Additionally, the chapter summarizes the methodology and gives an overview of the three manuscripts. It explains the structure of the thesis and concludes with a summary of the chapter.

1.2 Research Background

The research background focuses on establishing quality standards for emergency departments (EDs) tailored to the Palestinian context. It outlines key concepts and definitions relevant to this study, including the emergency care system, EDs, quality of emergency care, external evaluation and accreditation, and continuous improvement. Additionally, it provides definitions of the data collection methods employed in this research.

1.2.1 Concepts and Definitions

1.2.1.1 Emergency Care System

Emergency care plays a vital role in the healthcare system and serves as the initial point of contact for many people worldwide (1). The emergency care or medical system (ECS or EMS) can be defined as "*a comprehensive, coordinated, and integrated system of care for patients suffering acute illness and injury"* (2). The emergency care system is structured to deliver prompt healthcare services for acute injuries and illnesses throughout an individual's lifetime. This system includes care at the scene of the incident, transportation, and ED care, and offers access to early surgical and critical care if required (3).

1.2.1.2 Emergency Department

The specific healthcare setting for this research is EDs in Palestine. EDs act as the primary entry point to hospitals, providing patients with clinical evaluation and treatment. Positioned at the border between hospitals and their neighboring communities, EDs are strategically significant as they offer round-the-clock care to patients with mental and physical health ailments, while also connecting patients with other suitable healthcare providers and settings. ED is defined as a "*unique operation, optimized to exist at the edge of chaos*" (4).

EDs in hospitals are equipped and ready to handle any type of medical emergency. These departments operate 24 hours a day, 365 days a year, and are staffed with skilled physicians, physician assistants, and nurses who possess special equipment and expertise to respond to adult and pediatric emergencies. Most ED physicians have undergone specialized training and hold board certification in emergency medicine. Furthermore, these departments are legally bound to treat every patient who requires medical attention, regardless of their financial circumstances or insurance status (5).

Collaboration among various professionals including physicians, nurses, paramedical practitioners, administrators, and occasionally individuals from outside the ED is essential to provide care in the ED. The interdisciplinary nature of the process highlights the significance of team performance in ensuring the safety of patients (4).

1.2.1.3 Emergency Care Quality

The quality of care in healthcare organizations can be greatly impacted by effective management, given the complexity of these systems (6). The fundamental idea is that the principles of healthcare quality that apply to EMS are identical (7). According to healthcare quality pioneers, quality of care comprises technical, interpersonal, and organizational factors (8). The definition of quality of care is challenging and more than 100 definitions have been presented in the literature (9), but the most broadly applied definition for quality of care according to WHO is "*the degree to which health services for individuals and populations are effective, safe and people-centered*", and based on this definition, quality indicators are defined as "*quantitative measures that provide information about the effectiveness, safety, and/or people-centeredness of care*" (10). The Institute of Medicine (IoM) defines quality as ''*the degree to which healthcare services for individuals and*

populations increase the likelihood of desired outcomes and are consistent with current professional knowledge'' (7,11). Furthermore, they outlined six dimensions of quality care, which are: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity (7).

It is a common misconception that emergency care services are a financial burden on health systems in low- and middle-income countries (LMICs), but many interventions can be made to improve the quality of emergency care services in ED with minimal resource investment. Examples include the introduction of clinical protocols, process tools, and standards to guide emergency care providers (3). Poor quality healthcare has become a growing concern worldwide. In LMICs, more deaths occur from poor quality care than from lack of access to care, and up to 60% of deaths may be due to poor quality of care (12). Measuring the quality of emergency care delivery is fundamental to improving the overall quality of healthcare in this context (13).

The field of healthcare quality measurement has expanded in recent decades and has attracted increasing interest among researchers, healthcare leaders, and the public. They are increasingly looking to develop more systematic ways to measure and assess the quality of care delivered by different providers (10).

Emergency care systems are increasingly recognised as the primary health care (PHC) delivery platform through which a significant portion of death and disability can be prevented (3,13). However, in many places, the provision of high-quality, coordinated emergency care is still in the early stages, including in LMICs (13).

Emergency medical services, including ED, have a crucial role in the chain of survival for critically ill or injured patients. To keep up with current advancements, they require continual assessment and evaluation (14).

1.2.1.4 Accreditation and external evaluation

Accreditation is a voluntary evaluation process undertaken by organizations or institutions to assess their compliance with established quality and performance standards. In the healthcare sector, facilities like hospitals including EDs and clinics participate in accreditation to showcase their dedication to delivering safe and excellent care (15). Accreditation and external evaluation serve as valuable tools for healthcare facilities and organizations to enhance the quality of their services and attain public acknowledgment for

their performance levels. These processes not only encourage improvements in healthcare quality but also offer governments and other stakeholders a means to incentivize healthcare facilities to enhance their standards of care. However, it is essential to conduct thorough assessments of the costs and benefits associated with implementing accreditation and external evaluation programs, given their potential financial implications. Furthermore, to maintain their effectiveness in improving healthcare quality, ongoing evaluation and continuous improvement of accreditation and external evaluation processes are crucial. By addressing challenges, measuring outcomes, and adapting standards to specific contexts, the impact of these initiatives can be maximized, resulting in sustained enhancements to the overall quality of healthcare services (16).

In the evaluation of quality of care, an accreditation standard is defined as a desired and achievable level of performance against which actual performance is measured and enables 'health service organizations, large and small, to embed practical and effective quality improvement and patient safety initiatives into their daily operations' (17). However, the impact of accreditation on quality of care is still challenging, and the majority of the studies focused on hospital accreditation (16).

1.2.1.5 Patient Safety

Patient safety encompasses various definitions, but at its core, it involves the prevention of harm to patients during their healthcare journey under the supervision of health professionals (18). Patient safety, considered both a human right and a fundamental principle of healthcare, has seen limited improvement despite being highlighted in the influential report "To Err is Human" two decades ago (18). According to recent data from the World Health Organization (WHO), patient safety has emerged as a substantial global issue. Out of the 421 million hospital admissions annually, approximately 10% lead to patient harm. In the Eastern Mediterranean Region, the rate rises to 18%, with an alarming 83% of these incidents considered preventable (19). These statistics highlight the urgent need for improved patient safety measures worldwide. The report "To Err is Human" urged healthcare professionals to take responsibility for patient safety and aimed to reduce medical errors by 50% within five years (19).

Enhancing patient safety in the ED is of utmost importance. The Institute of Medicine (IoM) report from 1999, which focused on health system safety, identified the ED as a particularly unsafe area within hospitals. It revealed that a significant 70% of errors

occurring in the ED were preventable. This highlights the urgent need for targeted efforts to improve patient safety and reduce preventable errors in emergency care settings (20).

1.2.1.6 Continuous Quality Improvement

Continuous quality improvement is defined as "*a process for continuously improving the quality of patient care*" (21). Continuous Quality Improvement (CQI) in the EDs refers to an ongoing process of systematically assessing, monitoring, and improving the quality of care provided to patients (7). It involves analysing data, identifying areas for improvement, implementing changes, and evaluating the impact of those changes (22). The objective of CQI in the EDs is to improve patient outcomes, optimize the utilization of resources, enhance patient satisfaction, and ensure the overall efficiency and safety of care delivery. By cultivating a culture of learning, collaboration, and evidence-based practice, CQI initiatives in the EDs encourage a proactive approach to enhancing quality, where healthcare professionals consistently work towards improving care delivery and addressing the changing requirements of patients. (7,21,22).

1.2.2 Gathering Data Methods

1.2.2.1 Delphi Technique

The Delphi technique is a widely used method for gathering data from experts in a specific field. The technique is an effective systematic approach for building consensus by utilizing multiple iterations of surveys to gather data from a chosen panel of participants (23). The RAND Corporation developed this method in the late 1940s, and it has since been applied to explore consensus on various topics such as health, education, administration, and military issues and policies (23,24). The Delphi process involves a multistage approach, starting with the initial measurement of opinions in the first stage. Afterward, data analysis is conducted, and a modified survey is designed for the second stage, which entails a second measurement of opinions. This iterative process can be repeated until consensus is determined to have been achieved (24). The Delphi technique is highly favoured in the development of healthcare quality standards and indicators due to its ability to involve many individuals from diverse locations and areas of expertise in an anonymous manner.

This approach helps prevent the dominance of a few experts in the consensus process, leading to a more inclusive and well-balanced decision-making approach (25).

1.2.2.2 LimeSurvey

LimeSurvey is an open-source online survey application that helps users develop and conduct surveys and questionnaires (26). It provides a web-based interface for designing and managing surveys, collecting responses, and analyzing the data. LimeSurvey offers a wide range of question types, including multiple-choice, open-ended, ranking, and more, allowing users to develop diverse and customized surveys. With this application, users can create surveys with branching and skip logic, which enables the customization of survey paths based on respondents' answers. This application offers several advantages, such as supporting multiple languages and providing features for managing participant invitations, reminders, and quotas. Additionally, LimeSurvey offers options for data analysis and reporting, including the ability to export survey results to various formats such as Excel, (26,27). This application was used to gather expert opinions on the developed quality standards for EDs in Palestine through two rounds of electronic Delphi surveys.

1.2.2.3 Interviews

A technique used in qualitative studies to collect comprehensive data regarding participants' experiences, perceptions, attitudes, and beliefs. Through direct communication between the participant and the researcher, open-ended questions are used to promote candid and thorough idea expression. This method investigates contextual effects, understands complex events, and finds themes that quantitative methods might miss. The type of interview may be semi-structured, unstructured, or structured, depending on the objectives of the study and the level of flexibility needed. This approach enables the development of a comprehensive understanding of participants' perspectives and the organizational, social, and cultural factors that impact them (28).

1.3 Palestinian Context (Research Setting)

1.3.1 History and Geography

Palestine is a region that has experienced significant changes in borders and political status. The historical land of Palestine covers approximately 27,000 km², with Israeli occupation controlling over 85%. Despite Palestinians constituting 48% of the population, they live in less than 15% of the land, while the Palestinian National Authority currently governs 6,000 km² (29).

Palestine's history has been shaped by its strategic location as a crossroads for trade routes connecting Asia and Egypt. It is situated in the southwestern part of Asia, on the southern coast of the eastern Mediterranean. This location has made Palestine a land bridge linking Asia and Africa, the Mediterranean and the Red Sea, and the Atlantic and Indian Oceans. Within the Arab world, Palestine is situated in the Asian wing, southwest of the Levant, between the Mediterranean Sea in the west and the Jordan River in the east (30,31). During the late 19th century, Palestine was part of the Ottoman Empire, comprising regions like Jerusalem and parts of Syria. Overall, Palestine's historical significance, strategic location linking Asia, Africa, and the Mediterranean, and its association with religious pilgrimage make it a unique and complex region (31).

According to current administrative divisions, Palestine is divided into two geographic regions: The West Bank (WB) and the Gaza Strip (GS). The WB is divided into 11 Governorates (Jenin, Tubas & Northern Valleys, Tulkarm, Nablus, Qalqiliya, Salfit, Ramallah & Al-Bireh, Jericho & Al-Aghwar (Ariha), Jerusalem (Al Quds), Bethlehem (Beit Lahm), and Hebron (Al Khalil)). GS is divided into 5 Governorates (North Gaza, Gaza, Deir Al Balah, Khan Yunis, and Rafah) (32).

1.3.2 Population and Demography

The estimated Palestinian population in mid-2022 was approximately 14.3 million. Within this total, 5,354,656 reside in the State of Palestine. Of these, 3,188,387 are in the WB, accounting for 59.5% of the state's population, comprising 1,623,618 males and 1,564,769 females. In the GS, there are 2,166,269 individuals, representing 40.5% of the overall population, including 1,097,553 males and 1,068,716 females. Meanwhile, 1.7 million

Palestinians are in the 1948 occupied territories, while the remaining 7.2 million are in the Diaspora. Of those in the Diaspora, 6.4 million live in various Arab countries, while 800 thousand are in foreign countries (33).

The Palestinian society is young, with 37.3% of the population under 15 (35.2% in WB and 40.4% in GS) and 28% between 15-19 years (28.1% in WB and 27.8% in GS). Only 5.7% are 65 years and above (6.3% in WB and 4.8% in GS). The population increases annually at a rate of 2.4% (2.1% in WB and 2.7% in GS) (29).

The rapid population growth and changing age structure in Palestine will increase demand for public services like healthcare, education, and employment. This will require more healthcare professionals and facilities. The demographic transition will have implications for the healthcare needs of different population groups (34).

In 2023, the sex ratio in Palestine was 103.3 males per 100 females, with 103.8 males in the WB and 102.7 males in GS per 100 females. In 2022, the number of women of reproductive age 15-49 in Palestine was 1.3 million, representing 24.9% of the population - 25.2% of them lived in the WB and 24.4% in the GS (33). The total fertility rate for 2017-2019 was 3.8 and 3.9 births in WB and GS, respectively (29).

1.3.3 Economic Status

The economic situation in Palestine, especially in the GS, is extremely challenging and continues to deteriorate due to ongoing conflicts, political instability, and structural issues.

In Gaza, the economy has been severely impacted by repeated conflicts and blockades, resulting in significant infrastructure damage and a collapse in economic activity. Unemployment in Gaza has reached unprecedented levels, exceeding 74% in the fourth quarter of 2023. The region's contribution to Palestine's gross domestic product (GDP) has dropped from around 34% before 2006 to less than 5% by the end of 2023. The economy also suffers from critical shortages in essential services such as water, electricity, and healthcare supplies (35,36).

The WB, despite some progress, still faces major economic challenges. The Palestinian economy experienced a decline in 2023, with significant drops in construction, agriculture, industry, and services. GDP per capita contracted by 22% between the third and fourth quarters of 2023, and gross consumption decreased by over 33%. The economic outlook is uncertain due to a trade deficit and reduced investments, worsening the difficulties, which

will, in return, increase poverty rates in Palestine (35,36). The poverty rate was 24.2% in 2022, with 1.25 million people living below the poverty line (37).

Overall, the economic situation in Palestine is characterized by high unemployment, declining GDP, and significant humanitarian needs, particularly in Gaza. The potential for improvement is closely linked to political progress and the resolution of the ongoing conflict.

1.3.4 The Israeli Occupation and the Health Situation

Despite the Geneva Conventions and other international accords mandating that occupying powers provide medical care, Israel has neglected these duties for Palestinians in the WB and GS. Instead, healthcare is provided by the Ministry of Health (MoH), established in 1994 according to the Oslo Accord, along with private and nongovernmental health providers (38). The Israeli occupation's siege and closure policy has severely hindered healthcare access in Gaza, Jerusalem, and areas impacted by settlements and the apartheid wall. Over the past decade, targeted attacks on Gaza's health system by Israel have led to high infection rates and psychological problems among children and women. Palestinian prisoners in Israeli jails face harsh health and environmental conditions (34,39).

Palestinians face restricted movement compared to Jewish settlers in the WB due to Israeli checkpoints and road closures. Jewish settlers can freely access Israeli-only roads, integrating with Israel's pre-1967 borders. This results in delays for Palestinian emergency services at checkpoints, averaging 27 minutes, and hampers access to medical centres due to the separation barrier, particularly in WB cities like Qalqilya, Tulkarm, and Jenin (38).

The negative impact of war and prolonged military occupations on health goes beyond violence-related injuries, disabilities, and deaths. War indirectly affects health by targeting healthcare facilities and disrupting health systems, thereby reducing access to both curative and preventive services. These ongoing occupation measures hinder the development of the health sector in Palestine, compromise patient safety, and prevent timely access to essential health services (34,38).

1.4 Significance of the Research

The significance of the research is that: 1) It establishes the first validated quality standards for EDs in Palestine, offering essential evidence for the health sector. 2) It introduces reference standards for assessing ED quality for the first time. 3) It gathers staff insights on the factors that facilitate the implementation of these standards, along with their benefits, challenges, and potential solutions. 4) It encourages continuous improvement through commitment and adherence.

1.5 Statement of the Research Problem

The quality of healthcare services in EDs is vital for improving patient outcomes and reducing avoidable mortality and morbidity associated with emergencies (3). Existing literature emphasizes that measurement tools are essential for assessing the quality of EDs and identifying areas for improvement. Various measurement tools and indicators are used worldwide; some are standardised across healthcare systems, while others are tailored to the specific needs, disease profiles, and economic contexts of individual countries. These tools often serve as a foundation for establishing quality systems, supporting continuous improvement, and obtaining accreditation at both global and regional levels (40).

However, Palestine currently lacks standardised quality measures specifically designed for its EDs. This gap highlights the need for research aimed at developing tailored quality standards that meet the unique demands of the Palestinian healthcare context. ***Figure 1*** summarizes the research problem.

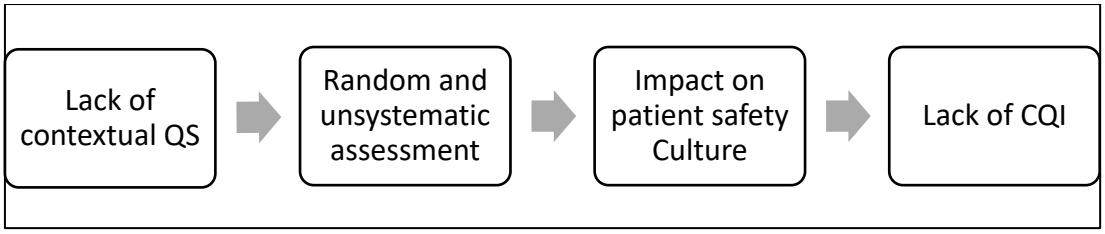

Figure 1: Summary of the research problem.

1.6 Research Question

What is the set of quality standards that are appropriate to the conditions of EDs in Palestine?

1.7 Thesis Aim

The overall aim was to develop a set of contextual quality standards for the Palestinian EDs.

1.8 Objectives

This research is divided into the following objectives:

1.8.1 To identify and develop appropriate quality standards for EDs in Palestine.
1.8.2 To validate the developed quality standards for hospital EDs in Palestine.
1.8.3 To assess the feasibility and acceptability of implementing quality standards for EDs in Palestine.

1.9 Summary of the Methodology and Overview of the Three Manuscripts

The research utilizes a multi-phase, multi-methods approach to identify, validate, and assess the implementation of context-specific quality standards for EDs in Palestine. The study began with a comprehensive literature review and consultations with an expert panel to establish a consensus on essential quality standards. These standards were then validated through a Delphi survey involving experts, which included multiple rounds to reach a consensus. Finally, a qualitative assessment was conducted to explore the feasibility and acceptability of implementing these standards through semi-structured interviews with ED staff. The responses were analysed using thematic analysis. This stepwise methodological approach ensures that the quality standards are both evidence-based and tailored to the unique challenges and realities faced by Palestinian EDs.

The three manuscripts collectively provide a comprehensive approach to developing, validating, and assessing the feasibility of implementing ED quality standards specific to the Palestinian context.

The first manuscript, published in BMJ Open Quality, established consensus-based ED quality standards (41). This was achieved through a literature review and consultations with an expert panel, which identified key standards tailored to local needs.

Building on this foundation, the second manuscript, , validated these standards using a Delphi survey with Palestinian ED professionals (42). This process helped refine the standards based on expert consensus, ensuring their relevance, actionability, and appropriateness for the healthcare context in Palestine.

The third manuscript, a qualitative study, investigates the feasibility and acceptability of implementing these validated standards. It gathers insights from ED staff through semi-structured interviews, revealing practical considerations, potential challenges, and the necessary support for successful adoption.

These manuscripts collectively establish a framework to enhance ED quality in Palestine, based on evidence-based best practices and the experiences of local healthcare providers.

1.10 Structure of the Thesis

This thesis comprises eight chapters: introduction, literature review, research methodology and design, Manuscript One, Manuscript Two, Manuscript Three, integrated findings and discussions, and conclusion with recommendations. The following sections provide an overview of each chapter.

Chapter One: Introduces the study by providing essential background, concepts, and definitions, focusing on healthcare quality in Palestinian EDs. It describes the Palestinian context and its healthcare system, setting the stage for the research. The chapter highlights the research's significance and clearly defines the problem, objectives, and guiding questions. A summary of the methodology outlines the research approach across three manuscripts, followed by an overview of the thesis structure. The chapter concludes by summarizing these elements and setting the stage for the detailed analysis that follows.

Chapter Two: This chapter outlines the Palestinian healthcare system while reviewing key literature related to EDQS. It highlights the global context, challenges in resource-limited environments, and specific issues affecting Palestinian healthcare. The review also presented theoretical frameworks for healthcare quality standards and identified gaps in the existing literature.

Chapter Three: This chapter presented a thorough summary of the research techniques used to accomplish the goals of this doctoral thesis. additionally, described the multi-method approach that was employed in this study to develop, validate, and evaluate the viability of EDQS in the Palestinian context. This approach included the use of expert consensus procedures, literature analysis, and qualitative data collection. This chapter also presented the three interconnected publications' research design, data collection procedures, sampling plans, data analysis methods, and ethical considerations.

Chapter Four: This chapter presented the full first manuscript of the thesis, *"Consensus-based Quality Standards for Emergency Departments in Palestine."* It outlines a comprehensive framework of quality standards designed for the specific needs of EDs in Palestine. Addressing a critical gap in standards, the study reviews regional and international standards while integrating expert feedback from local relevance.

Chapter Five: This chapter provides a complete presentation of the second manuscript for the thesis, titled *"Validating Quality Standards in Palestinian EDs: An Electronic Delphi Survey Approach."* Building on the previous chapter, it focuses on using the two rounds e-Delphi technique to validate quality standards for Palestinian EDs. This manuscript presented key insights for assessing the feasibility of implementing EDQS in Palestinian Eds that will be presented in the next Chapter.

Chapter Six: This chapter presented the third manuscript of the thesis, titled *"Assessing the Feasibility and Acceptability of Implementing Emergency Department Quality Standards in Palestine: A Qualitative Study."* Building on their development and validation covered in Chapters Four and Five, it assesses the feasibility of EDQS implementation from the perception of emergency department personnel. The chapter emphasizes front desk personnel, outlining the challenges, facilitators, and strategies for integrating EDQS into existing workflows.

Chapter Seven: This chapter presents the integrated findings from all three manuscripts and discusses the contributions of these studies to the development, validation, and feasibility of implementing EDQS in Palestine. This chapter illustrates the overall significance of the studies, sets up the findings within both global and local healthcare challenges, and presents implications for the enhancement of emergency care.

Chapter Eight: This chapter concludes the thesis by synthesizing key findings across all three manuscripts and emphasizing their collective significance. It also proposes recommendations for future research to further expand upon these insights.

Chapter 2: Literature Review

2.1 Introduction

This chapter provides an overview of the healthcare system in Palestine. It includes a literature review on the development, validation, and implementation of healthcare quality standards, especially in LMICs and conflict-affected areas like Palestine. It examines the global landscape, addresses the challenges developing regions face, and discusses the specific context of healthcare in Palestine. Additionally, it identifies existing gaps, strengths, and weaknesses of the literature and reviews, and establishes a foundation for the methodologies that will be used in the following chapters, as well as a summary of the chapter.

This chapter reviews the literature on EDQS, focusing on patient safety culture, key performance indicators (KPIs), accreditation frameworks, and challenges in resource-limited settings. It identifies gaps in the literature and underscores the need for context-specific EDQS in Palestine.

The literature selection used a comprehensive search strategy detailed in Chapter 4 (Manuscript One). Briefly, studies were obtained from PubMed, Web of Science, and Google Scholar, prioritizing peer-reviewed research from the past 10-15 years.

2.2 Health System in Palestine

2.2.1 Health Sector Structure

The Palestinian health sector consists of four main health providers: The MoH, the United Nations Relief and Works Agency (UNRWA), Non-Governmental Organizations (NGOs), and the private sector. The public sector makes up most of the health service delivery system at its different levels, especially primary and secondary health care. It serves the population through a network of PHC centres and hospitals in the different governorates. The MoH plays a crucial role in providing tertiary healthcare services, which are specialized medical services. To meet the high demand, the MoH offers specialized services in its hospitals while also purchasing services that are not available at government hospitals from other national specialized hospitals and medical centres. This includes facilities located in East Jerusalem and private hospitals (33).

2.2.2 National Health Indicators

Palestine's health situation has significantly improved over the past two decades, as shown by key indicators. Life expectancy reached 74.3 years in 2022, with men at 75.4 and women at 73.2. Progress is also evident in infectious disease control: no polio cases have been reported since 1988, no measles since 2019, and no recent tetanus cases, due to effective surveillance and national vaccination programs by the MoH (33). Non-communicable diseases are considered the main cause of mortality in Palestine, contributing to around 70% of deaths in 2020. In 2022, there were 5455 newly reported cancer cases in Palestine, with an incidence rate of 108.2 per 100,000 population. When comparing the 2022 figures to those from 2018, which stood at 4852 cases, there was an 11% increase in cancer cases (33,43).

In 2022, Palestine reported a total of 15,018 deaths, with 8,957 (59.6%) in the WB and 6,061 (40.4%) in the GS. The leading cause of death was ischemic heart disease, accounting for 3,345 cases (22.2% of all deaths), followed by cancer, which caused 2,147 cases (14.3%) (33).

In 2022, Palestine reported 1,426 infant mortality cases, resulting in an infant mortality rate of 10.4 per 1,000 live births, higher than in 2021 but still lower than in previous years. This improvement is attributed to better health services and increased awareness among pregnant women. In 2022, there were 1,742 reported under-5 deaths in Palestine, with a death rate of 12.7 per 1,000 live births, higher than the 2021 rate (33).

In 2022, the maternal mortality rate (MMR) in Palestine was 21.9 per 100,000 live births, compared to 32 per 100,000 live births in 2010 (33).

2.2.3 Primary Health Care in Palestine

Primary Health Care plays a crucial role in promoting health equity and ensuring universal access to essential healthcare services. By emphasizing prevention and early intervention, PHC can reduce the burden on secondary and tertiary healthcare services (33).

PHC centres in Palestine function across four levels, delivering vital preventive and curative health services like immunization, general medicine, various medical specialties, family planning, maternal and child health services, health education, dental health,

emergency medical services, gynaecological and obstetric care services, along with laboratory and radiology services (43).

Palestine currently has 767 PHC centers, with 608 in the WB and 159 in the GS. Out of these, 493 are affiliated with the MoH, representing 63.4% of all healthcare facilities. The number of PHC centres affiliated with the MoH has risen from 203 in late 1994 to 493 in 2022, reflecting a growth of 142.8%. NGOs manage 192 health centres, accounting for 25.9% of the total. In addition, 65 UNRWA facilities are serving Palestinian refugees, and the Palestinian Military Medical Services runs 17 centres. In total, these centres provide essential medical services to the population, ensuring access to essential healthcare needs across the WB and GS. The distribution of these facilities reflects the ongoing efforts to address the healthcare challenges faced by Palestinians, particularly in areas with limited access to medical services (Al-Aghwar district and affected areas by the Separation Wall and settlements). Collaboration between government agencies, NGOs, UNRWA, and the military medical services plays a crucial role in delivering comprehensive healthcare to communities in need. As the healthcare landscape continues to evolve, these centres remain vital pillars of support for individuals and families seeking medical assistance in Palestine and achieving universal health coverage (33,34).

2.2.4 Hospitals in Palestine

In 2022, Palestine had a total of 93 hospitals and 6,900 hospital beds, including those in psychiatric and neurological hospitals, with 62% located in the WB and 38% in the GS, compared to 6435 beds in 2019. The number of beds per 10,000 population was 12.9 beds, with 1.7 hospitals per 100,000 population in Palestine. In the WB, these rates were 13.4 beds per 10,000 population and 1.8 hospitals per 100,000 population, while in the GS, there were 12.1 beds per 10,000 population and 1.6 hospitals per 100,000 population. The highest rates of hospitals per population and beds per population were observed in Bethlehem in the WB and Gaza City in the GS. Out of the total hospitals in Palestine, 31 were operated by the MoH, accounting for 33% of all hospitals. These MoH hospitals provided 3,909 beds, constituting 57% of the total beds in Palestine. Additionally, other hospitals, operated by entities such as UNRWA, NGOs, private institutions, and the military, comprised the remainder (33,34).

The majority of hospital beds in Palestine are general beds, constituting 71.6% of the total. Additionally, 21.3% are specialized beds, 3.5% are maternity beds, and the remainder are

designated for rehabilitation (33). In 2022, approximately 3,051,430 patients visited specialized outpatient clinics in Palestinian hospitals, around 3,145,014 patients visited EDs, 303,589 surgical operations were performed, and there were 142,993 births (33).

2.2.5 Emergency Care Services

Since 1996, the Palestine Red Crescent Society (PRCS) has provided prehospital emergency care in Palestine. Authorised by the Presidential Decree, PRCS is responsible for delivering Emergency Medical Services outside hospital settings and transporting patients (34). Prehospital services in the WB, Palestine, are primarily provided by PRCS, which constitutes 70% of these services and operates 74 ambulances. The MoH manages 36 ambulances, and municipalities also contribute 36 ambulances to the overall prehospital care network. Additionally, there are 52 private ambulances distributed across 42 private centres. These prehospital services are supported by a workforce comprising 39 emergency medicine technicians, 31 nurses, and 45 ambulance drivers (44).

Emergency medical services in Palestine are provided through a diverse network that includes public, private, and non-governmental health sectors. In the WB, there are a total of 54 EDs, with 15 in public hospitals and 25 in private and NGOs hospitals. Furthermore, 14 emergency centres affiliated with the MoH offer essential emergency medical services, including the stabilization of emergency cases and safe delivery. These facilities collectively have around 450 emergency beds, with 206 beds specifically allocated to the MoH. Approximately 600 nursing specialists work in these facilities, 261 of whom are from the MoH. Additionally, there are about 400 general practitioners, including 123 from the MoH, and 78 doctors specializing in emergency medicine. According to a 2023 survey conducted by the Ambulance and ED of the MoH, only 25 out of 54 emergency centres are equipped with a triage system (44,45).

Similar to global patterns, Palestinian EDs are heavily used not only for emergencies but also for routine care, especially during afternoons and nights. They play a critical and distinct role in providing emergency care, particularly during frequent conflicts with Israel. Amid the GS and WB war spanning from October 2023 to 2024, Palestinian hospital EDs attended to numerous casualties, treating over 90,000 injuries in the GS and around 6,000 in the WB. (29,33,46).

The total visits to hospitals' emergency services in Palestine in 2022 reached 3,145,014, predominantly at MoH hospitals' EDs, accounting for about 84% (2,656,175 visits) due to health insurance coverage and accessibility in all areas, including the WB and GS. In contrast, private hospitals in Palestine saw about 488,839 visits to their EDs within the same timeframe (33). This distribution highlights the crucial contribution of MoH hospitals in delivering healthcare to Palestinians, particularly beneficiaries of state-provided health insurance for their medical requirements (34,45).

Prolonged military occupation significantly impacts the health of Palestinians and their healthcare system. Issues such as understaffing, shortages, and power outages are increasing in times of conflict, placing a heavy burden on emergency services. These conditions are very challenging for the Palestinian ED staff emotionally and physically (47).

In 2022, approximately four million patients were treated in EDs across public, private, and NGO hospitals in the WB and GS, highlighting the significant demand for emergency medical services in the region. Of these, more than one million patients visited the public hospital EDs in the WB. (45).

2.2.6 Emergency Care Quality in Palestine

A human rights-based approach is crucial for ensuring the right to quality emergency care and for addressing the structural and political factors that lead to poor health outcomes. In Palestine, human rights violations have led to serious health deficiencies and poor quality healthcare (38). Healthcare access in Palestine is disrupted by occupation restrictions on population movement, checkpoints, closures, and the separation wall (39).

The quality of ED services in Palestine suffers due to limited resources, structural racism, and occupation-related restrictions, leading to poor management of high-risk cases like traumatic injuries, acute myocardial infarction, and stroke. Israeli military invasions into the WB and GS further strain Palestinian emergency medical systems, hindering their development and disrupting essential services. This growing instability and insecurity, especially in the WB and East Jerusalem, has increased the demand for high-quality trauma and emergency care facilities (38,48).

Emergency care in the Palestinian healthcare system is underdeveloped, lacking specialized training programs and quality standards. This deficiency hinders the national

health strategy for emergency services, making timely and effective care challenging. Without specialized training, creating a skilled emergency response system is difficult, which can negatively impact patient care and outcomes. Thus, developing EDQS could be crucial for enhancing Palestine's emergency care system. The establishment of EDQS is essential for addressing these systemic shortcomings. By implementing EDQS, the Palestinian healthcare system can create a framework that not only emphasizes the importance of specialized training but also sets benchmarks for quality and performance in emergency care across Palestine. This framework can guide healthcare professionals in delivering consistent, high-quality care, ensuring that patients receive timely interventions that are critical for improving survival rates and overall health outcomes (38).

2.3 EDQS in a Global Context

EDs are integral to healthcare systems globally, functioning as the initial access point for critically ill patients and facilitating the transition between primary and secondary care (41). Studies indicate that 54% of global morbidity and mortality is associated with conditions potentially affected by the quality of emergency care (13). This underscores the pressing necessity for standardised quality systems in EDs, especially in low-resource environments where inefficiencies and overcrowding are more evident.

Establishing EDQS is essential for ensuring emergency medical services meet standards for patient safety, clinical effectiveness, and operational efficiency. This section reviews current approaches for assessing and improving emergency department quality, including patient safety culture assessments, KPIs, and accreditation standards. While these approaches provide valuable insights into emergency care quality, they have limitations in standardisation, applicability across different healthcare settings, and feasibility in resource-limited environments.

2.3.1 Measuring Emergency Care Quality: Existing Approaches

Several assessment methods have been used to assess ED quality. One widely method is the patient safety culture survey (PSCS), which measures the attitude of healthcare providers toward patient safety culture in the EDs (49).

Several studies have explored the relationship between safety culture and adverse events in Eds. A study by Ricklin and colleagues (2019) found that weak patient safety culture,

ineffective teamwork, weak or lack of communication between departments, increased scholarly demands, and multitasking have been identified to be associated with more adverse events (49,50). Similarly, a study by Wang and colleagues (2014) identified that patient safety culture was an indicator of adverse events, and an enhancement of patient safety culture was related to reducing the incidence of adverse events (51,52).

However, safety culture assessments have significant limitations. They often depend on self-reported data, which can lead to bias and subjectivity. While they effectively identify areas of concern, they lack specific interventions or standardised benchmarks for quality improvement (49,53). This underscores the necessity for a structured EDQS framework that combines objective performance indicators with cultural assessments to improve comprehensive ED quality evaluation.

2.3.2 The Role of KPIs in ED Quality Assessment

Some studies talk about KPIs in the ED. They are specific and measurable elements of healthcare that can be used to assess the quality of care in key areas. KPIs cannot improve quality by themselves but used as an alert to highlight the opportunities for improvement and benchmarking (54). The KPIs for measuring the quality of ED care need to be more balanced. KPI sets should ideally reflect quality of care and clinical outcomes, not just timeliness. One of the recognised scientific methods for developing such indicators is obtaining consensus from relevant experts, such as through Delphi techniques (54).

Commonly used KPIs in EDs include the length of stay (LOS), waiting time, overcrowding metrics, and time treatment interval (50,55,56). Several studies have emphasized the significance of KPIs in monitoring ED performance. For instance, a study by Kusumawati and colleagues (2019) found that prolonged ED LOS was linked to increased patient mortality and lower satisfaction, emphasizing the need to minimize delays in emergency care (55). Additionally, a study by Berg (2018) indicated that overcrowding and long waiting times negatively impact clinical decision-making, increasing the risk of misdiagnoses and delayed treatments (50).

While useful, KPIs have weaknesses in fully capturing ED quality. Research shows that KPIs mainly focus on efficiency metrics such as timeliness and throughput, often overlooking broader quality aspects like clinical effectiveness, patient safety, and provider

performance (55,56). Thus, a balanced ED quality and safety framework should combine both KPIs and qualitative safety assessments for a more comprehensive evaluation.

Additionally, developing reliable, valid, and feasible KPIs presents challenges (20). Studies indicate that creating objective, easily measurable performance indicators requires significant expert consensus, often using methodologies like the Delphi technique (54). This highlights the need for context-specific adaptations of KPIs to ensure their relevance across various healthcare settings, including resource-limited environments like Palestine.

2.3.3 Standardised Performance Measures and Accreditation Tools

One review found that out of 55 performance measures, the time interval in EDs is one of the most recommended measures, followed by safety and patient-centred care standards; it was rare to mention performance measures related to health providers in the ED. The study recommended the need to develop standardised performance measures (standards and indicators) across the ED (57). In another study, it was found that the hospital emergency assessment tool (HEAT) issued by the WHO, a unified tool that helps assess the capacity of healthcare facilities to provide services in emergencies, can help identify gaps, highlight strengths and weaknesses to improve health care, and target interventions like training, improvement in the chain of supply, and implementation of protocols and guidelines for the ED (58). The literature review did not find any study on quality standards and accreditation in EDs, the majority of which are about quality and performance indicators that are used to measure continuous improvement. There were no studies on intentional quality standards used proactively to build the quality system, or on evaluation, benchmarking, or accreditation.

A standard is defined as "*expectations and/or structures or functions that must be in place for an organization to be accredited and to provide safe, high-quality care, treatment, and services*" (59). A standard is "*a statement of excellence or an explicit predetermined expectation that defines the key functions, activities, processes, and structures required for healthcare facilities to assure the provision of safe and quality care and services*" (60).

Quality standards in EDs have been implemented globally with varying outcomes based on the healthcare system's resources, staffing levels, and existing protocols. EDQS aims to provide a structured framework that prioritizes patient safety, efficiency, and continuous quality improvement. In developed healthcare systems, standards like those from the Joint

Commission International (JCI) for Hospital Accreditation standards (59), including ED, and Australian standards for ED (61).

One of the most common hospital accreditation standards globally comes from the JCI. It is a set of hospital accreditation standards: any hospital that wants to obtain accreditation should comply with these standards. The enrolment in the accreditation process is voluntary, to improve the quality of health services provided by the hospital or to attract patients and insurance companies (59). These standards include a section on the ED under the heading of Access to Care and Continuity of Care. This section contains six main standards, and the structure of these standards consists of several elements, the most important of which are the text of the standard, the intent of the standard, and the measurable elements. One of the limitations of obtaining accreditation is the inability of hospitals to cover costs, especially in public sector hospitals (59,62).

JCI accreditation is a strategic goal for many healthcare facilities in the Arab Gulf countries, supported by national health authorities. Key benefits include improved infection control, enhanced patient safety, standardised processes, and alignment with international standards, contributing to a world-class healthcare system in the region, as highlighted in the visions of Gulf states like the United Arab Emirates (63).In other countries in the region, such as Saudi Arabia, while JCI plays a positive role in improving hospital service quality, staff find that implementing standards adds an extra workload (64).

They are another specific standard for ED, developed by the Australian College of Emergency Medicine, to guide to improve the quality of care provided in the ED and hospital-based emergency services. Implementation of these standards is not mandatory, and they may be adapted according to the circumstances of different countries. Such standards often serve as benchmarks for improving access, patient flow, and care effectiveness (61).

2.4 EDQS in Developing and Resource-Limited Settings

Studies indicate that applying these standards to other contexts without adaptation may result in gaps in implementation and effectiveness. In resource-limited settings, staffing shortages, infrastructural limitations, and inconsistent funding hinder the adaptation of EDQS. This literature indicates the necessity for context-specific adaptations to ensure that EDQS is feasible and applicable across various healthcare environments (65).

2.4.1 Accreditation Standards in the Arab Region

An accreditation standard used in the Arab region is the Central Board for Accreditation of Healthcare Institute (CBAHI), which is the official body that grants accreditation to all governmental and private healthcare facilities operating in the Kingdom of Saudi Arabia, based on a set of quality and patient safety standards designed for accreditation and continuous improvement which called national hospital standards (60). CBAHI standards are distributed into 23 chapters which are concentrated on the main services and functions provided by general hospitals in Saudi Arabia. One of these chapters is centred around emergency care and consists of 15 standards that address 6 domains (60).

A study by Alshamari (2020) evaluated the effects of CBAHI accreditation in Saudi hospitals, revealing improved adherence to safety protocols and enhanced clinical performance. However, it did not assess patient outcomes, raising concerns about the long-term effects of accreditation on EDs (6).

Another hospital accreditation standard in the Arab region is the Healthcare Accreditation Council (HCAC), it is the authorised body that grants accreditation to health institutions in Jordan, including hospitals, and based on special standards for that (66). The hospital standards package consists of 15 clusters that crosscut with various services and functions in the hospital, including emergency services (66). Each cluster has an intent statement, and the required documents, followed by measurable elements, and the survey process. Standards are also classified into critical, core, and stretch. The standards for emergency services come under the Patient Care Cluster and consist of 14 standards (66).

A study by Algunmeeyn and colleagues (2020), assessed HCAC accreditation outcomes in Jordanian hospitals, revealing enhancements in infection control, patient safety culture, and compliance with ED protocols. Nonetheless, it identified barriers to implementation, such as high accreditation costs, heavy workloads, and staff shortages (62).

The Arab tool for Accreditation of Healthcare facilities was issued in 2008 by the League of Arab States – Social Affairs - Council of Arab Health Ministers, and it consists of a set of quality standards for hospitals, including ED, and was circulated to all Arab countries to be applied voluntarily, but it was not applied because there is no official body to follow it (Arab Accreditation Body) and has not been updated (67). These standards have limitations, and there is no proof of strength due to the absence of studies on their use and patient outcomes.

The Patient Safety Friendly Hospital Initiative (PSFHI) is an initiative launched by the WHO office in the Eastern Mediterranean Region in 2011, and the first version of the assessment manual was issued in the same year (68); the second version was issued in 2016 (68). The third version is currently being issued. This initiative includes a set of standards for patient safety in hospitals. It consists of 134 standards distributed in five patient safety domains: leadership and management, patient and public involvement, safe evidence-based clinical practices, safe environment, and lifelong learning. It aims to enhance administrative and clinical practices in support of patient safety in all services and functions of the hospital, including the ED. The hospital is considered patient safety friendly if it meets the requirements of the fourth level of initiative standards which is the highest level obtainable.

2.4.2 Barriers to Implementing EDQS in LMICs

Previous studies emphasize that healthcare systems including EDs in LMICs face distinct challenges when implementing healthcare quality standards including EDQS. Studies from LMICs highlight barriers such as limited infrastructure, frequent staff turnover, lack of continuous training, and reliance on external funding sources (69). Additionally, the variability in patient demographics, high patient volumes, and limited emergency preparedness contribute to the quality of care and difficulties in maintaining consistent quality standards (21,70).

A review of the literature on low- and middle-income countries identified various quality and accreditation standards aimed at enhancing healthcare quality and patient safety. However, a Jordanian study highlighted significant barriers to implementing these standards, including low salaries, inadequate incentives, excessive workloads, and high accreditation costs. Additionally, staff shortages and high turnover rates further complicate these issues. Consequently, there is a need to develop context-specific standards accompanied by incentive strategies to address these challenges (62).

2.5 Specific Issues in the Palestinian Healthcare System

The Palestinian healthcare system presents unique contextual challenges that impact the feasibility of implementing ED quality standards. Like other resource-limited settings,

Palestinian hospitals face constraints in infrastructure, staffing, and funding, which affect the delivery of timely and effective emergency care. Specific to Palestine, however, political instability and conflict further strain healthcare resources and complicate long-term planning for ED improvements (38).

Research and reports on Palestinian health care reveal challenges in recruiting and retaining emergency care professionals, burnout due to workload in EDs, and quality improvement (47). In addition, budget constraints, particularly in the EDs of the MoH, limit their ability to meet the needs of local EDs. A flexible and context-specific approach to EDQS is essential to address these issues (37).

Mitwalli et al. 2019 emphasized that healthcare in Palestine faces unique challenges. These challenges include fragmentation among government, UNRWA, and private healthcare providers, as well as restricted access to consistent medical supplies due to border limitations and economic conditions. Additionally, there are issues related to service delivery and overall poor quality of care (71).

The study (Manuscript one in this thesis) (41), emphasizes the importance of customizing quality standards to meet Palestine's unique healthcare challenges while maintaining alignment with international benchmarks. This approach enhances relevance, improves emergency care effectiveness, and establishes a framework that can be applied to other regions facing similar healthcare delivery issues. The same study confirmed that there is a lack of measurement systems and standards for assessing the quality of emergency healthcare in Palestine. This research aims to develop contextual quality standards tailored to the Palestinian environment. It is expected that these standards will facilitate the institutionalization of a quality system in all EDs across Palestine. A key factor supporting the development and implementation of these contextual standards is the backing of the Palestinian MoH. This support is crucial for addressing the gap caused by the absence of suitable standards, ultimately enhancing the quality of services provided by EDs.

2.6 Theoretical and Conceptual Frameworks for EDQS Development

The final set of validated EDQS intersects with various theoretical frameworks and principles related to quality improvement and patient safety in EDs, for example not limited to, the International Federation of Emergency Medicine (IFEM) (72), the WHO (19,58), the Institute of Medicine (IOM) (21), accreditation standards (59–61,66,73), the

International Society for Quality in Healthcare principle (ISQua) (74), and the Donabedian Framework to evaluate and improve quality (8,65). The Donabedian model of healthcare quality, extensively discussed across various contexts, focuses on three key lenses of quality: structure, process, and outcome (SPO) (75,76).

The development and validation of ED quality standards are often grounded in frameworks that guide quality improvement in healthcare. Donabedian's model of SPO is widely used for assessing healthcare quality and has been used in EDQS development to evaluate how structural factors, care processes, and patient outcomes interact (Donabedian, 1988) (21). Furthermore, the Plan-Do-Study-Act (PDSA) cycle is often utilized and recommended to test improvement interventions and refine quality standards in practical settings (6).

The Donabedian model has been chosen as the primary framework for evaluating the quality of healthcare systems for over 50 years. This model is widely recognised in the field of public health research, and Donabedian's works are frequently cited in publications (6).

In the Palestinian context, these frameworks provide a foundation for understanding quality standards, though they may require adaptation due to specific challenges posed by limited resources, political instability, and population needs. This thesis aims to enhance outcomes by adopting an SPO model or similar approaches, focusing on structural and process factors that can be improved despite the constraints of the Palestinian healthcare system.

2.7 Gaps in Existing Literature and Rationale for this Research

The existing literature highlights several gaps that this thesis aims to address.

First, while global and regional studies emphasize the importance of quality standards in EDs, few have specifically examined the feasibility of implementing these standards in politically and economically unstable environments, such as Palestine. Second, the lack of standardised quality frameworks is evident, as most research focuses on KPIs and accreditation rather than developing comprehensive quality systems that are proactive instead of reactive. Third, many studies in LMICs highlight staff shortages and inadequate training; however, few address how EDQS can be integrated into workforce education and capacity-building programs. Additionally, although frameworks like Donabedian's SPO model and the PDSA cycle provide general guidance for quality improvement, there is limited research on their application in settings with highly constrained resources.

This gap emphasizes the need for EDQS that adhere to best practices in emergency care and are adapted to the unique operational and structural challenges of the Palestinian healthcare system. The findings from this review support the rationale for the current study's three-part approach: (1) developing EDQS specific to Palestine through expert consensus and this aim of manuscript one, (2) validating these standards through the Delphi technique the aim of manuscript two, and (3) evaluating their feasibility and acceptability among ED staff the aim of manuscript three. Addressing these gaps will contribute to a more effective and context-sensitive model for quality standards in Palestinian healthcare. The table below summarizes the strengths and weaknesses of the literature reviewed in Table 1.

Table 1: Summary of strengths and weaknesses of the literature reviewed.

Category	Strengths	Weaknesses
Approach to ED Quality Assessment	Comprehensive frameworks (safety culture, KPIs, accreditation) provide multi-dimensional insights.	Most studies focus on quality measurement rather than developing proactive ED quality frameworks for continuous improvement
Use of Standardised Quality Models	Donabedian SPO, JCI, ACEM, HCAC, and CBAHI provide structured assessment benchmarks.	Accreditation models must be adapted to suit resource-limited and politically unstable environments, such as Palestine.
Recognition of Context-Specific Challenges	Studies highlight barriers in low-resource settings, such as financial constraints, staffing shortages, and infrastructure limitations, reinforcing the need for contextual adaptation.	Limited research on ED quality in conflict-affected regions; most studies focus on LMICs without considering political instability and occupation-related barriers.
KPIs and Performance Indicators	KPIs, such as LOS wait times, and overcrowding metrics, provide quantifiable performance measures for ED operations.	Overemphasis on efficiency and time-based metrics rather than clinical effectiveness, patient safety, and workforce competency. KPIs alone do not drive quality improvement without structured intervention strategies.
Safety Culture Assessments	Aims to identify organizational attitudes toward patient safety, teamwork, and communication in ED settings.	Reliance on self-reported data can introduce bias, and safety culture assessments lack standardisation across healthcare settings.
Integration of Workforce Development	Some studies acknowledge staff shortages and high burnout rates in EDs, recognising the need for workforce support.	Minimal research on integrating workforce training programs into ED quality frameworks; most studies do not address structured professional development for ED personnel.
Application to the Palestinian Context	Manuscript one identifies critical ED quality gaps in Palestine.	No existing studies validating international ED standards in Palestine.

2.8 Summary

This chapter provides an overview of the Palestinian healthcare system and examines key literature related to EDQS. It highlights the global context, the challenges faced in resource-limited settings, and specific issues affecting the Palestinian healthcare system. Additionally, the review explores theoretical frameworks for healthcare quality standards. The identified gaps emphasize the need for a context-specific approach to developing EDQS, guiding the research objectives and methods described in subsequent chapters. The following chapter details the methodological approach taken in this thesis to address these gaps and develop, validate, and assess the feasibility of implementing EDQS in Palestine.

Chapter 3: Methodology

3.1 Introduction

This chapter presents a comprehensive overview of the research methods utilized to achieve the objectives of this PhD thesis. The research adopts a multi-method approach, combining literature analysis, expert consensus procedures, and qualitative data collection to develop, validate, and assess the feasibility of EDQS within the Palestinian setting. This chapter outlines the research design, data collection methods, sampling strategies, data analysis techniques, and ethical considerations related to the three interrelated publications. Additionally, a summary of the chapter is included.

3.2 General Overview of the Research Design and Methods

The research design of this PhD thesis consists of three sequential phases and employs a multi-methods approach, each detailed in a separate manuscript, as shown below framework in Figure 2.

3.2.1 Manuscript One: Development of EDQS through Literature Review and Expert Input, entitled *"Consensus-Based Quality Standards for Emergency Departments in Palestine"*. This phase involved an extensive review of existing literature to identify global and regional quality standards for EDs. The findings were further enhanced by consultations with experts, developing a preliminary set of standards tailored to the Palestinian context.

3.2.2 Manuscript Two: Validation of EDQS Using the Delphi Technique, entitled *"Validating Quality Standards in Palestinian Emergency Departments: An e-Delphi Survey Approach"*. In the second phase, a two-round Delphi was implemented to validate the EDQS. This method gathered consensus from a panel of healthcare professionals, ensuring the standards were relevant, readable, clear, and comprehensive.

3.2.3 Manuscript Three: The concluding phase included qualitative interviews with frontline ED staff to explore the feasibility of applying the validated EDQS. Data from nine hospitals in the WB, involving public as well as private hospitals, was analysed to evaluate employee perspectives regarding the feasibility and acceptability of the EDQS.

This multi-method approach ensures a rigorous evidence-based development of EDQS in Palestine considering the unique challenges facing the Palestinian healthcare system and achieving the objectives of this thesis.

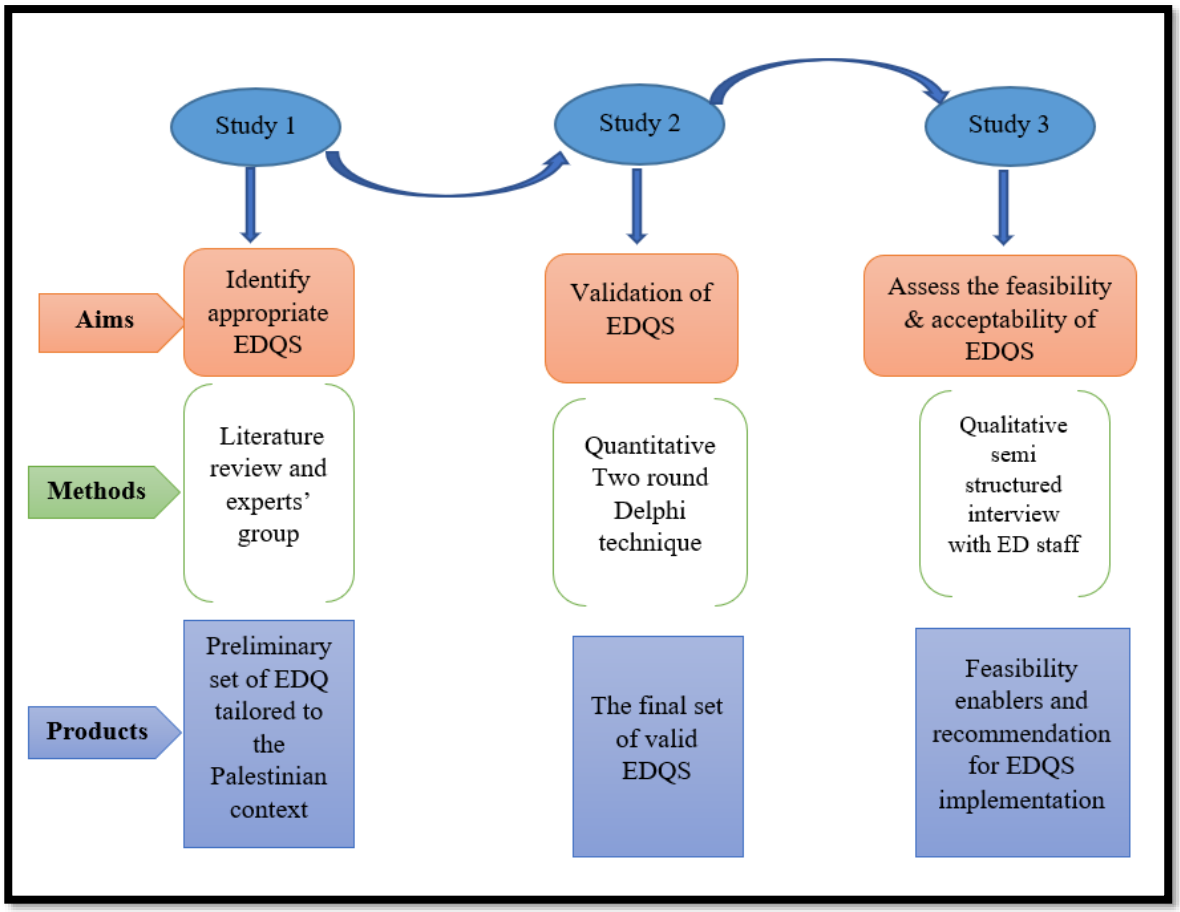

Figure 2: Framework and procedures for all PhD studies.

3.3 Data Collection

The data collection techniques in this thesis were specifically designed to meet the objectives of each research phase, resulting in a robust approach to developing and assessing EDQS. By employing both quantitative and qualitative methodologies, the research obtained a comprehensive understanding of the standards' development, validation, and feasibility in the Palestinian healthcare context.

The chosen methods balanced rigorous scientific inquiry with practical considerations, addressing resource limitations and the complexities of emergency care. The following subsections outline the specific techniques used in the three manuscripts, including a systematic literature review, the Delphi technique for expert consensus, and semi-structured interviews for qualitative insights. These complementary methods ensured that

the research addressed both the theoretical foundations of EDQS and the practical challenges of implementation, providing a solid basis for the conclusions and recommendations in this thesis.

3.3.1 Literature review and expert discussion for manuscript One: A comprehensive literature review on EDQS and relevant topics was conducted at global, regional, and local levels. A search strategy was developed using keywords such as "Emergency Department," "Emergency Services," "Quality," "Standards," "Assessment," "Evaluation," "Performance Indicators," "Measures," "Accreditation," "Patient Safety," and "Method Validation." The literature search was performed across multiple research databases, including PubMed, Google Scholar, WHO, AHRQ, IHI, and various international and regional standards agencies. This was complemented by discussions and consultation meetings with experts in the field. Details for data collection are in the manuscript one.

3.3.2 Delphi method for manuscript Two: Two rounds of Delphi surveys were designed and administered electronically using LimeSurvey for data collection. These surveys were distributed to a panel of 61 experts, of whom 53 completed both rounds. The panel included ED physicians, nurses, and quality managers. The experts rated the validation criteria for each Emergency Department Quality Score (EDQS) using a Likert scale.

3.3.3 Qualitative interviews for manuscript Three: Data were collected using a semi-structured interview with 10 participants from the ED front disk, including ED physicians, ED nurses, quality and patient safety coordinators, and ED administrators. Interviews explored perceptions of the EDQS feasibility and acceptability of implementation. Interviews were conducted either in person or virtually and were audio-recorded. Participation was optional, with participants providing either a written consent form or oral recorded consent. The primary language used during the interviews was Arabic, and the recordings were subsequently transcribed and translated into English.

3.4 Sampling Strategies

Each phase of the study employed a unique sampling methodology designed for its particular objectives. Purposeful and selected sampling methods were mostly utilized to choose participants and data sources that corresponded with the study's emphasis on the

development, validation, and feasibility assessment of EDQS. The following subsections outline the specific sampling strategies used in the three manuscripts.

3.4.1 Manuscript One: Purposive sampling was utilized to identify experts who contributed to the development of the EDQS. To enhance both the diversity and the size of the sample, snowball sampling was also employed. Two local expert groups were chosen based on their experience in hospital-based emergency care and healthcare quality. Additionally, key individuals representing emergency services within the MoH, including doctors and nurses, were included. Further details can be found in the manuscript.

3.4.2 Manuscript Two: A purposive sampling method was used to identify experts who actively participated in the validation process. Two groups of experts were selected based on their experience in hospital emergency care and healthcare quality at local, regional, and international levels. Further details can be found in Manuscript Two.

3.4.3 Manuscript Three: Respondents were selected using a purposive sample of medical and nursing staff, ensuring that the participants have relevant experience and personal characteristics in the field of EM and are experts in the quality of health services. A stratified sampling method included representation from nine hospitals (seven public and two private) across northern, central, and southern districts of the WB, reflecting diversity in hospital size, patient volume, and resources. The sample involved 10 interviews with ED front desk personnel. Further details are included in Manuscript Three.

3.5 Data Analysis Methods

The data analysis methods in this research were tailored to the diverse data types and objectives of each study phase, employing both qualitative and quantitative approaches to provide a comprehensive understanding of the EDQS and their relevance, validity, and feasibility.

Each manuscript used specific analysis methods to enrich the findings. The literature review utilized thematic synthesis to identify recurring themes and gaps in existing ED standards. The Delphi study applied descriptive and inferential statistics to evaluate expert ratings and consensus levels. The qualitative interviews underwent thematic analysis to gain insights into the feasibility and acceptability of the EDQS within the Palestinian

context. The following subsections outline the analytical frameworks and techniques employed in each manuscript.

3.5.1 Manuscript One: A set of EDQS identified from the literature review were classified and analysed based on their scope, applicability, evidence base, and level of implementation across various EDs at regional and international levels. For the expert discussions, a deductive-dominant content analysis approach was employed, referencing comments and information related to each guided question, standard, or domain gathered during the sessions. The analysis was systematic, emphasizing the study's objectives, and involved a careful review and understanding of the comments and data.

3.5.2 Manuscript Two: For the Delphi study, descriptive statistics were used to calculate the mean, median, and interquartile range (IQR) of expert ratings, while consensus thresholds were defined at ≥ 80% agreement (strongly agree or agree) and IQR ≤1.

3.5.3 Manuscript Three: Content analysis for each interview was conducted manually following the steps outlined by Graneheim and Lundman (2004) (77). This method is flexible, addressing both the manifest and the interpretation of the latent content of texts which includes coding and thematic analysis for identifying key themes and subthemes. Further details regarding data analysis can be found in each manuscript.

3.6 Ethical Considerations

Ethical approval from the Human Research Ethics Committee (HREC) at the University of Cape Town, and approval from the Palestinian MoH to conduct the three studies were obtained. The studies adhered to ethical principles outlined in the Declaration of Helsinki for medical research with human participants, including respect for autonomy, beneficence, and confidentiality (78).

3.6.1 Informed consent: All participants provided written consent after a thorough explanation of the study’s purpose, procedures, and potential risks. They were assured that they could withdraw at any time without facing any consequences.

3.6.2 Confidentiality: Data were anonymized during transcription, and identifiers were replaced with unique codes. Only the principal researcher had access to the raw data.

3.6.3 Voluntary Participation: Participants were recruited voluntarily, and no incentives were provided to prevent any form of coercion.

3.6.4 Minimizing Harm: Interviews were conducted in a safe, secure environment to ensure participants felt comfortable sharing their perspectives.

3.6.5 Concerns about safety measures in the Palestine study amidst war and genocide were carefully addressed. The researcher highlighted the importance of protecting both participants and researchers, especially during the third study amid the period of escalating military activities. Consequently, interviews were conducted remotely to ensure the safety of all involved.

3.7 Summary

This chapter describes the methodological framework used in the three manuscripts of this thesis. A multi-method approach, including literature review, Delphi consensus, and qualitative interviews, ensured a detailed exploration of EDQS development, validation, and feasibility. Ethical principles were strictly maintained to protect participant rights and ensure data integrity. The next chapter will present the first study / full manuscript.

Chapter 4: Consensus-based quality standard for emergency departments in Palestine

4.1 Declaration from author and co-authors

The following authors contributed to this manuscript: Abed, LW, MH, and WS.

The authors' contributions were as follows: Abed led the conception and study design, analysis and interpretation of data, and drafting and revising the manuscript. WS contributed to the analysis and interpretation of the dat

a and critically revised the manuscript. LW and MH contributed to the manuscript's revision, offered comments, and helped interpret the data.

All authors have read and approved the final manuscript and are accountable for its content.

The percentage of contributions of each author is as follows:

- Abed: 60%
- WS: 30%
- MH: 5%
- LW: 5%

21 December 2024

Abed Alra'oof Bani Odeh	Date
Signed by candidate	21 December 2024
Willem Stassen	Date
Signed by supervisor	21 December 2024
Lee Wallis	Date
Signed by supervisor	21 December 2024
Motasem Hamdan	Date

4.2 Introduction

This chapter introduces the first manuscript of the thesis, entitled *"Consensus-based Quality Standard for Emergency Departments in Palestine"* (41). The manuscript outlines developing a comprehensive structure of quality standards specifically designed to address the unique needs of EDs in Palestine. This study addresses the significant deficiency in quality standards by systematically reviewing regional and international ED quality standards and refining them with expert feedback to enhance their applicability to the local context.

This manuscript establishes the foundation for the validation and feasibility studies in Chapters Five and Six, supporting the overarching goal of improving healthcare quality and patient safety in resource-limited settings.

This manuscript, originally submitted and published in BMJ Open Quality, is presented in full of minor formatting adjustments for consistency with the thesis structure.

4.3 The Manuscript of the First Study

4.3.1 Abstract

Objectives: The present study aimed to establish appropriate quality standards for emergency departments (EDQS) in Palestine.

Methods: The study comprised four phases. Firstly, a comprehensive literature review was conducted to develop a framework for assessing healthcare services in EDs. Secondly, the initial set of EDQS was developed based on the review findings. Thirdly, local experts provided feedback on the EDQS, suggesting additional standards, and giving recommendations. This feedback was analysed to create a preliminary set of EDQS. Finally, an expanded group of local emergency care experts evaluated the preliminary set, providing feedback on content and structure to contribute to the final set of EDQS.

Findings: We identified quality domains in EDs and categorized them into clinical and administrative pathways. The clinical pathway comprises 39 standards across seven sub-domains: triage, treatment, transportation, medication safety, patient flow, and medical diagnostic services. Expert consensus was achieved on 87.5% of these standards. The

administrative domain includes 64 consensus-based standards across nine sub-domains: documentation, information management systems, access location, design, leadership, management, workforce staffing, training, equipment, supplies, capacity-resuscitation rooms, resources for a safe working environment, performance indicators, and patient safety-infection prevention and control programs.

Conclusion: This study employed a rigorous approach to identify quality standards for EDs in Palestine. The multiphase consensus process ensured the appropriateness of the developed EDQS. The inclusion of diverse perspectives enriched the content. Future studies will validate and refine the standards based on feedback. The EDQS has the potential to enhance emergency care in Palestine and serve as a model for other regions facing similar challenges.

Keywords: "Emergency Department," "Quality Standards," and "Patient Safety.

Key Messages

Prior to this study, there was a lack of quality standards for EDs in Palestine.

This study adds a rigorous and comprehensive set of quality standards (EDQS) for emergency departments in Palestine.

The establishment of evidence-based EDQS in Palestine has significant implications for research, practice, and policy. The identified standards provide a benchmark for assessing and improving emergency care services in the region.

4.3.2 Background

The quality of care in healthcare organizations can be greatly impacted by effective management, given the complexity of these systems (6). According to healthcare quality pioneers, quality of care comprises technical, interpersonal, and organizational factors (8). The definition of quality of care is challenging and more than 100 definitions have been presented in the literature (9), but the most broadly applied definition for quality of care according to the WHO is "*the degree to which health services for individuals and populations are effective, safe and people-ed*", and based on this definition, quality indicators are defined as "*quantitative measures that provide information about the effectiveness, safety, and/or people-centeredness of care"* (10). Furthermore, they outlined six domains of quality care, which are: safety, effectiveness, patient-centredness, timeliness, efficiency, and equity (7). Standards, which are the "*optimum levels of performance*" (66), are essential for evaluating the quality of healthcare and its dimensions. Fundamentally, healthcare quality principles are the same for all healthcare systems, including emergency care (7).

The role of emergency care systems in preventing a significant proportion of death and disability is increasingly acknowledged (3,13). However, in many regions, the provision of high-quality, coordinated emergency care is still in the early stages, including in many LMICs (13). Emergency care is defined as "*an integrated platform to deliver time-sensitive healthcare services for acute illness and injury across the life course*" (3). Improving emergency care in low- and middle-income countries can be done with few resources through simple interventions like clinical protocols and standards, helping guide providers effectively (3). Global concerns about healthcare quality are rising. In low- and middle-income countries, inadequate care results in more deaths than lack of access, with up to 60% of fatalities potentially linked to poor quality healthcare (12). Therefore, measuring the quality of emergency care delivery is essential to improving the overall quality of healthcare in this context (13).

Emergency care services in Palestine are a priority due to the high burden of non-communicable diseases and injuries, both routine and those associated with the protracted conflict related to the territory's occupation (79). For many years, work within the area of quality of care and quality improvement (QI) has been a continuous process in healthcare, both nationally and internationally. In Palestine, for many years, governmental efforts have been focused on improving the quality of the health service delivery system. Their focus

has been mainly given to hospital care delivery through the implementation of several internationally recognised standards-based initiatives, including the Patient Safety Friendly Hospital Initiative, Baby Friendly Hospital Initiative (BFHI), Safe Surgery Saves Lives, Infection Prevention and Control, Antimicrobial Stewardship, PHC Quality and ISO 15189:2012 for medical laboratories (34).

There are limited studies in the Eastern Mediterranean region on issues of continuous quality improvement and patient safety in the EDs. In the Palestinian context, there is a lack of research on emergency care quality and patient safety. Some studies have focused on the occupational safety of ED workers including burnout among workers in EDs (47), violence towards workers in EDs (46), and another study on the knowledge about the administration and regulation of high-alert medications among nurses(80). The MoH has focused a randomized evaluation process on the infrastructure, equipment, and staff, and evaluation using the WHO standards for the patient safety-friendly hospital initiative (79,81). There is a need for further research into quality in the EDs, including developing contextual quality standards to suit the EDs setting in Palestine.

The literature review did not find any study on quality standards and accreditation in EDs, the majority of which are about quality and performance indicators that are used to measure continuous improvement. There were no studies on intentional quality standards being used proactively to build a quality emergency care system or on evaluation, benchmarking, or accreditation. There is also a lack of measurement systems and standards to determine the quality of emergency healthcare in Palestine. This study aimed to develop contextual quality standards appropriate to the Palestinian setting. It is expected to pave the way for the institutionalization of the quality system across EDs in Palestine. The MoH has provided support for this study, which will ensure the sustainability of these standards. The MoH recognizes the importance of these standards as a reference tool for evaluation and improvement.

4.3.3 Methods

Study design

The study was conducted in four distinct phases: 1) A comprehensive review was conducted to develop a framework of standards from the literature; 2) Generate a first draft of EDQS; 3) Stakeholder engagement with a limited set of local experts to refine and

expand the draft of EDQS; 4) Expanded stakeholder engagement and finalization of the EDQS. The below figure summarizes the procedure of this study, Figure 3.

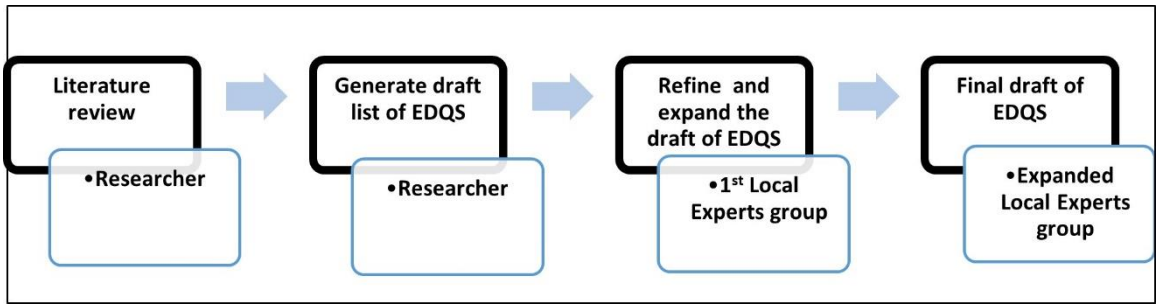

Figure 3: Summary of the study procedure. EDQS, emergency department quality standards.

Phase 1: Literature Review

We conducted a literature review on a global, regional, and local scale. A search strategy was developed using keywords that centred on: "*Emergency Department," "Emergency Services," "Quality," "Standards," "Assessment," "Evaluation," "Performance Indicators," "Measures," "Accreditation," "Patient Safety,"* and *"Method Validation."* The literature search was performed using multiple research databases, including PubMed, Google Scholar, WHO Site, AHRQ, IHI, and International and regional standards agencies, Figure 4.

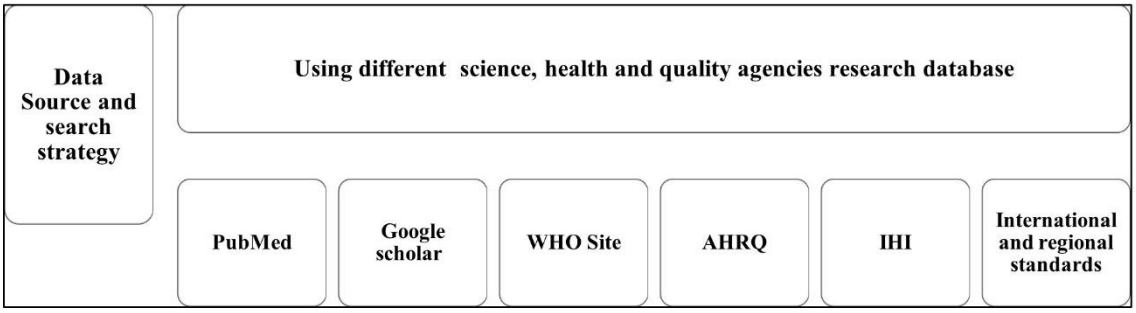

Figure 4: Literature Data Source and Search Strategy.

Inclusion and exclusion criteria

Strict criteria were utilized to select relevant literature for this study on the selection of quality standards for EDs. The inclusion criteria involved choosing studies published within the last two decades, written in English and specifically focused on ED quality standards. To ensure the credibility and reliability of the findings, primary research articles, systematic reviews, and published accreditation standards for EDs were included.

Conversely, studies that solely focused on non-emergency healthcare settings or did not directly address quality standards in the ED were excluded.

Through database searching, a total of 127 articles and chapters from related books were identified. Out of these, 87 articles were found to be relevant and were reviewed whereas 40 irrelevant articles were excluded. The research yielded the following results: 13 articles assessed patient safety culture among workers in the ED, 50 articles discussed methods of measuring service quality and indicators for improving performance in EDs, 4 articles concerned the LoS and overcrowding, 3 articles focused on data quality, and 11 articles were about assessment methods validation. In addition, 5 books on accreditation standards and re-engineering of the ED were found, and 30 articles were cited in the study, Figure 5.

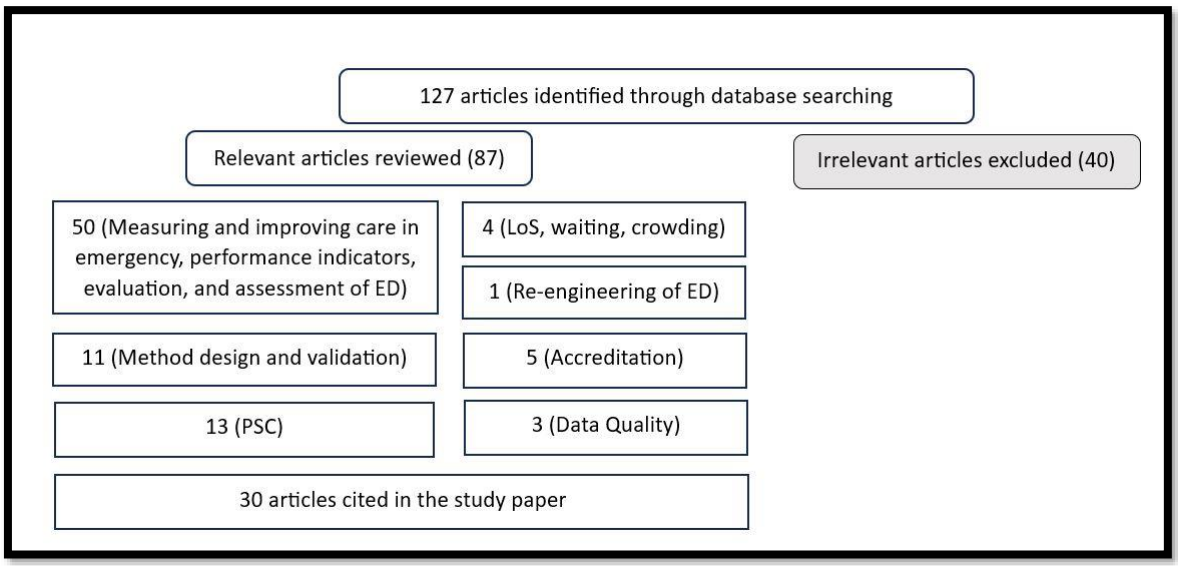

Figure 5: Summary of Literature Review. ED, emergency department; LoS, length of stay; PSC, patient safety culture.

Data analysis

Key quality standards identified from the literature review are classified and analysed according to their scope, applicability, evidence base, and level of implementation across different EDs on the regional, and international levels.

Phase 2: Generate a first draft of EDQS

After being generated from the literature review, the set of EDQS was processed and organised into 16 relevant subdomains. The initial phase of this process involved

identifying two standard domains, clinical and administrative, along with 115 specific standards that were subsequently categorized into these subdomains.

Phases 3 and 4: Stakeholder engagement

In the first round, a purposive sample of four local experts, selected based on predetermined inclusion criteria, reviewed the EDQS to assess their appropriateness, suggest additional standards, and provide other recommendations for change. The feedback received from the experts was processed and analysed to develop a preliminary set of EDQS. In the second round, an expanded group of up to 11 local emergency care experts, including those from the first group, reviewed the preliminary set of EDQS to evaluate their coverage of all domains of quality in the ED, provide feedback on content and structure of the QS, and contribute to the final draft of the EDQS.

Sample and sampling

Purposive sampling was used to identify experts who were consulted in the development of the EDQS. To improve the diversity of the sample and the sample size, snowball sampling was employed (82).

Two local expert groups were selected based on their experience in the field of hospital-based emergency care and healthcare quality, as well as key persons who represent emergency services in the MoH (doctors and nurses). In the first round, the first group of experts was comprised of four emergency doctors and nurses from the MoH's directorate of emergency services who have more than ten years of experience in the field of emergency care in Palestine.

Eleven experts were selected for the second round of discussion based on inclusion criteria from ED doctors and nurses at MoH and private hospitals with at least five years of experience, including the initial set of experts (82).

Study Instrument

A list of the quality standards for EDs generated from the literature review was used for the first experts' meeting (Appendices

Appendix **1**). Then a modified list of quality standards and a set of guiding questions were used to collect data and conduct the discussion of the second group of experts (Appendix

2). All comments, discussions, verbal, and written feedback were documented. In-person meetings were conducted where the discussion sessions were conducted in Arabic and the participants' responses were collected and translated later.

4.3.4 Data Analysis

The content analysis process began by generating a verbatim transcript of the complete expert group discussion. This data was then analysed using a deductive-dominant content analysis approach that involved referencing comments and information related to each guided question, standard, or domain that were obtained during the discussion sessions (83). The analysis was conducted systematically, with a strong focus on fulfilling the study's objectives, and involved meticulous review and comprehension of the comments and data. The analysis results were articulated clearly and concisely while ensuring the original intended meaning was retained. This rigorous process was essential to ensure the accuracy and dependability of the outcomes obtained (83,84).

All comments and recommendations were collated in a Microsoft Excel sheet (Microsoft, Redmond, Washington, USA) for categorization and interpretation (27). Data were limited to what was said in the discussion sessions by group participants and reflected in the findings of the appropriate standards. Additionally, a series of consensus statements were developed by analysing responses to guided questions.

Quantitative data was analysed by calculating the percentage of experts who agreed on the appropriateness of each standard. The consensus rate was set at 75%, and every standard that did not obtain consensus was excluded from the list of standards.

4.3.5 Ethics Approval

The study received approval from the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee (reference number 014/2022) (Appendix 3), and local approval from the Palestinian MoH (Appendix 4).

4.3.6 Results

Characteristics of Participants

In the first round, 4 local experts from the Emergency General Directorate at the MoH were invited, and they all responded (100%). In the second round, 12 local experts were also invited, of whom 11 out of 12 (92%) responded.

The expert group was made up of five nurse cadres with competence in emergency nursing, quality, and patient safety, representing 45.5% of the participants; five physicians, representing 45.5% of the participants; and one from an administration background, representing around 12.59% of the participants, **Table 2**

Table 2: Characteristics of study participants

No.	Title / Profession	Workplace / Organization	Field / Work experience
Experts Panel - Group 1			
E 1	Doctor	MoH	Emergency Medicine for more than 15 years
E 2	Nurse	MoH	Emergency departments and ambulance services for more than 15 years
E 3	Nurse	MoH	Emergency departments for more than 10 years
E 4	Administration	MoH	More than 20 years
Experts Panel - Group 2			
E 1	Doctor	MoH	Emergency Medicine for more than 15 years
E 2	Nurse	MoH	Emergency departments and ambulance services for more than 15 years
E 3	Nurse	MoH	Emergency departments for more than 10 years
E 4	Administration	MoH	More than 20 years
E 5	Doctor	MoH-Hospital	Emergency Medicine for more than 18 years
E 6	Doctor	MoH – Hospital	Emergency Medicine for more than 10 years
E 7	Doctor	Private Hospital	Emergency Medicine for more than 10 years
E 8	Nurse	MoH – Hospital	Emergency Departments for more than 15 years
E 9	Nurse	MoH – Hospital	Emergency Departments for more than 20 years
E 10	Nurse	MoH – Hospital	ICU, Quality, patient safety, and IPC for more than 18 years
E 11	Doctor	MoH – Hospital	Hospital management and Quality improvement for more than 25 years

ICU, intensive care unit; IPC, infection prevention and control; MoH, Ministry of Health.

Consensus statements regarding quality standards in the Palestinian context

All guided questions used for opening the second round were answered by experts, and there was consensus on the importance of developing quality standards for EDs, as it is important to unify concepts and work mechanisms. They also suggested clear examples of some standards needed by EDs, such as, but not limited to, documentation, the necessity of protocols, human resource development, and others. The experts also highlighted

opportunities for improvement, obstacles, challenges, and needs, the role of the local community, and the impact of the political situation and crises on the services provided in EDs. Appendix 5 summarizes the expert group's consensus answers.

Emergency department's quality standards

In the first round of discussion, the quality standards for EDs that were derived from the literature review were presented and agreed upon with the first group of experts, which consisted of 4 experts (Table 2). These standards were organised into two primary domains: the clinical pathway domain (A) and the administration pathway domain (B).

The clinical pathway domain (A) is comprised of 8 sub-domains, namely patient triage, treatment and transfer of patients, documentation and information system, guidelines, policies and procedures, medication safety, ambulance services, patient flow and waiting time, and diagnostic services. These sub-domains were labeled A.1 to A.8 and consisted of 51 standards.

The group of experts unanimously agreed on the appropriateness of the 8 sub-domains within the administrative pathway domain. These sub-domains were design and access, management and leadership, workforce and training, equipment and supplies, recovery room, work environment safety, performance indicators, patient safety, and infection control.

In the second round of discussions with a larger group of 11 experts (Table 2), a set of guided questions was used to facilitate the discussion (Appendix 5).

The experts unanimously agreed on the appropriateness of seven out of the eight sub-domains within the clinical pathway domain (i.e., the proportion of appropriateness is 87.5%), and recommended that the documentation and information systems sub-domain be transferred to the administrative pathway domain. The resulting modifications, mergers, and reformulations led to a total of 39 standards within the clinical domain, as presented in (Table 3). The response rate for the second round of discussions was 92%.

The sub-domain of documentation and information management was transferred from the clinical pathway domain to the administrative pathway domain, resulting in a total of 9 sub-domains in the administrative pathway and a total of 64 standards. Therefore, the combined total number of standards in the clinical and administrative pathways is now 103, as shown in **Table 3**.

Table 3: Standards and subdomains within clinical and administration pathway domains.			
Domain code	**Subdomains Code**	**Subdomains**	**No. of Standards**
Clinical Pathway Domain (A)			
A	A.1	Triage	7
A	A.2	Treat or transfer emergency patients	9
A	A.3	Guidelines, Protocols, and Policies.	5
A	A.4	Medication Safety	6
A	A.5	Ambulance Services	6
A	A.6	Patient flow and LoS	3
A	A.7	Medical diagnostic services	3
Total	**7**	/	**39**
Administration Pathway Domain (B)			
B	B.1	Documentation and information management system	7
B	B.2	Access, location, and design	13
B	B.3	Leadership and management	5
B	B.4	Workforce staffing and training	9
B	B.5	Equipment and supplies	8
B	B.6	Capacity - resuscitation rooms	5
B	B.7	Resources to support a safe working environment	7
B	B.8	Performance indicators	3
B	B.9	Patient safety - infection prevention and control program (PSIPC)	7
Total	**9**	/	**64**
Grand Total	**16**	/	**103**

A summary of the domains, sub-domains, and standards for emergency departments was extracted from the literature and discussed in round one and round two, as in Table *4*.

Table 4: Number of domains, sub-domains, and standards before and after consensus by experts.

	First Round -before consensus			**Second Round– after consensus**		
Domains	Subdomains code	Subdomains No.	Standards No.	Subdomains code	Subdomains No.	Standards No.
Clinical Pathway (A)	A.1 - A.8	8	51	A.1 – A.7	7	39
Administration Pathway (B)	B.1 - B.8	8	64	B.1 – B.9	9	64
Total	/	16	115	/	16	103

4.3.7 Discussion

This study aimed to develop appropriate quality standards for EDs in Palestine, guided by a comprehensive literature review and consensus from experts (85). The results show that the experts agreed on 39 standards for the clinical pathway domain and 64 standards for the administration pathway domain, distributed into seven and nine subdomains,

respectively. These findings highlight the importance of establishing context-specific standards for EDs that encompass both clinical and administrative processes.

The consensus among experts on the identified standards reflects the urgent need to improve the quality of emergency healthcare services in Palestine. These standards can serve as a valuable tool for healthcare organizations in Palestine to monitor and evaluate their performance, identify areas for improvement, and ultimately enhance the quality of care provided to patients.

The established standards align with the current literature on global and regional ED standards, including those formulated by reputable organizations such as the WHO (58), Joint Commission International (JCI) (59), and other entities (60,61,66,73). These standards share many similarities with the developed standards, such as patient triage, treatment and transfer, documentation and information systems, medication safety, patient safety, and infection control.

However, the developed standards were designed to address the specific needs and challenges of the Palestinian healthcare system, encompassing ambulance services, patient flow, waiting time, and diagnostic services. In contrast, regional and international standards for EDs are usually embedded in hospital quality or accreditation standards, lacking in-depth coverage of ED areas, unlike the developed standards. Therefore, the developed standards are expected to be more effective because they are well-suited to the Palestinian context.

This study's findings have significant implications for enhancing the quality of emergency care in Palestine, where local experts unanimously endorse the necessity of implementing ED standards. To determine the impact of these standards on the quality of ED care in Palestine, future research should focus on their application and evaluation.

The clinical pathway domain in EDs is composed of seven sub-domains, including triage, assessment, diagnosis, treatment, referral, transfer, and discharge. The 39 quality standards identified in this domain cover a wide range of clinical processes, such as the timely assessment of patients, the use of evidence-based clinical protocols, the appropriate use of medications and diagnostic tests, and the provision of appropriate referrals and transfers.

One example of a quality standard in the clinical pathway domain is the availability of trained and qualified staff to provide emergency care (86). This standard is particularly important in the Palestinian context, where access to healthcare services can be

challenging, and where there is a shortage of healthcare professionals (87). This highlights the critical need for a substantial team of healthcare professionals with diverse specialties to operate around the clock, 24 hours a day, seven days a week in the ED (88). Another example is the use of evidence-based protocols for the management of common emergency conditions such as chest pain management and stroke. The implementation of these protocols can improve patient outcomes and reduce the length of hospital stays (61). Symptoms concerning acute coronary syndromes (ACS) such as chest pain and dyspnea are some of the most common reasons for presenting to an ED, so there are pieces of evidence about improving the outcome of patients through the adoption of a HEART score-based protocol (history, electrocardiogram, age, risk factors, and troponin), discharges from the ED increased with a corresponding decrease in admissions for cardiac evaluations as well as cost (89).

The administration pathway domain is composed of nine sub-domains, including leadership and management, human resources, infrastructure, supplies, information management, quality management, risk management, and patient safety. The 64 quality standards identified in this domain cover a range of administrative processes, such as the development of policies and procedures, the availability of essential medical supplies, the implementation of quality improvement programs, and the management of risks and patient safety.

An example of a quality standard in the administration pathway domain is the availability of a functioning continuous improvement program that includes ongoing monitoring and evaluation of clinical processes and patient outcomes through specific indicators (13). This standard is particularly important in the Palestinian context, where there are limited resources and where it can be challenging to ensure consistent quality in healthcare delivery. The implementation of the Patient Safety Initiative standards in government hospitals in the WB - Palestine has resulted in positive outcomes, including a culture of patient safety among hospital staff and continuous improvement, as demonstrated through interventions from 2011-2016. This suggests that adhering to these standards has had a significant impact on promoting continuous improvement in hospital services in Palestine (90).

In terms of impact, the implementation of these quality standards has the potential to improve the quality of ED services in Palestine. By providing a benchmark for evaluating and improving ED services, these standards might help to reduce patient morbidity and

mortality, improve patient satisfaction, and enhance the overall quality of healthcare services in the country.

However, the implementation of quality standards in Palestinian EDs faces many barriers that require targeted strategies for effective resolution. A key contextual factor is the prevalent conflict and security concerns, including frequent Israeli attacks on healthcare facilities and staff, require collaborative efforts with local authorities and international organizations to enhance security measures (87). Resource limitations, including shortages of healthcare professionals and medical supplies, can be mitigated through regional, and international partnerships, increased advocacy for funding, and investments in training programs to address staff shortages. Furthermore, language barrier related to disparities between staff members in terms of their ability to understand standards that are written in English that can be addressed by translating the standards and providing language proficiency training. Workplace violence impacting patient care and staff safety can be minimized through the implementation of security measures and training programs on conflict resolution (46). Additionally, job burnout and high work pressure among ED personnel in Palestine can negatively impact service quality and patient safety (91). This would require prioritizing the well-being of staff, implementing programs that support mental health, and advocating for work-life balance (47,86). Limited access to training programs requires the development of accessible online modules and collaborations with international organizations. Overcoming cultural sensitivity requires actively involving local communities in developing standards that meet their needs. Addressing economic challenges involves advocating for increasing healthcare funding, exploring collaborations with all relevant sectors, and prioritizing impactful initiatives. A collaborative, adaptable approach involving continuous monitoring and evaluation is essential to navigate and effectively address these barriers.

4.3.8 Limitations

This study has a limitation in terms of the number of experts who participated in the consensus process. While the experts who participated in this study were selected based on their high qualifications and experience, the small number of experts may limit the comprehensiveness and diversity of the identified standards. Future studies may consider engaging a larger and more diverse group of experts to develop a more robust set of quality

standards for EDs in Palestine. This is also essential in order to be more representative of the national context.

Furthermore, this study only developed quality standards and did not assess their implementation or impact on the quality of care provided in EDs. Thus, future research should focus on evaluating the feasibility and effectiveness of implementing these standards in the Palestinian healthcare system. Such evaluations could provide valuable insights into the challenges and opportunities associated with implementing quality standards and inform efforts to improve emergency care services in Palestine.

4.3.9 Conclusion

The developed standards in this study provide a crucial step toward improving the quality of emergency care in Palestine. The context-specific nature of the standards can better address the unique challenges faced by the Palestinian healthcare system. The use of expert consensus provides a practical and cost-effective approach to developing standards that can be used by healthcare organizations to monitor and improve their performance. Further studies are needed to validate and pilot these standards in EDs in Palestine. In conclusion, the results of this study provide a valuable resource for ED administrators, clinicians, and policymakers in Palestine. The quality standards identified can serve as a roadmap for improving ED services and can help to ensure that patients receive high-quality care. While there are challenges to implementing these standards in the Palestinian context, the potential benefits of doing so are significant and warrant further attention and investment.

4.4 Summary

This manuscript establishes a foundational framework for EDQS designed for the Palestinian healthcare system, emphasizing the need for context-specific quality standards and the importance of validation for practical application. In Chapter Five, these EDQS are validated using the Delphi technique, with experts evaluating their relevance, readability, clarity, and comprehensiveness to ensure the proposed standards are practical and robust.

Chapter 5: Validating Quality Standards in Palestinian Emergency Departments: An e-Delphi Survey Approach

5.1 Declaration from author and co-authors

The following authors contributed to this manuscript: Abed, LW, MH, and WS.

The authors' contributions were as follows: Abed led the conception and study design, analysis and interpretation of data, and drafting and revising the manuscript. WS contributed to the analysis and interpretation of the data and critically revised the manuscript. LW and MH contributed to the manuscript's revision, offered comments, and helped interpret the data.

All authors have read and approved the final manuscript and are accountable for its content.

The percentage of contributions of each author is as follows:

- Abed: 60%
- MH: 5%
- WS: 30%
- LW: 5%

Signed by candidate	21 December 2024
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5.2 Introduction

This chapter introduces the second manuscript of the thesis, titled *"Validating Quality Standards in Palestinian EDs: An Electronic Delphi Survey Approach"* (42). It builds on the previous chapter by focusing on validating quality standards for Palestinian EDs using the Delphi technique.

The validation aimed to ensure the standards were appropriate for the Palestinian context by evaluating their readability, clarity, and comprehensiveness. The study involved various experts from emergency medicine and healthcare quality, employing a structured consensus methodology over two Delphi rounds to refine these standards.

This chapter addresses the second research objective: validating the standards to align with international best practices while considering the Palestinian healthcare challenges. This manuscript provides crucial insights for assessing implementation feasibility, which will be discussed in Chapter Six.

5.3 The Manuscript of the Second Study

5.3.1 Abstract

To validate Palestine's previously derived emergency department quality standards (EDQS) using an e-Delphi survey. A two-round e-Delphi survey validated the EDQS, developed in an earlier study through a literature review and consensus-building among Palestinian emergency medicine and healthcare quality experts. The study purposively sampled 53 ED and healthcare quality experts with over 5 years of experience. A Likert scale was used to rate the standards on readability, clarity, and comprehensiveness in the initial round to reach a consensus on the EDQS, with detailed feedback. An expanded expert group refined the shortlisted standards in the next phase. Lime Survey collected data anonymously.

A set of 100 EDQS was validated through a two-round e-Delphi survey. In the initial round, 103 standards were presented, and consensus was achieved, resulting in a refined list of 100 standards. Among these, 39 standards fell under the clinical pathway domain, and 61 under the administrative pathway domain. In the second round, the validity of these standards was affirmed, with 96.4% consensus for clinical standards and 97.3% for administrative standards. Additionally, seven subdomains of EDQS were associated with

the clinical pathway domain: triage, treatment, transportation, medication safety, patient flow, and medical diagnostic services, and nine subdomains were linked to the administration pathway domain: documentation, information management systems, access-location, design, leadership, management, workforce staffing, training, equipment, supplies, capacity-resuscitation rooms, resources for a safe working environment, performance indicators, and patient safety-infection prevention and control programs. The study validated context EDQS in Palestine, with over 97% consensus indicating a commitment to quality care. Experts suggest further research on implementation feasibility. Validated standards can aid healthcare leaders in resource allocation, staff training, and enhancing patient care, potentially leading to significant improvements in emergency healthcare in Palestine.

Keywords: "Emergency Department," "Quality Standards," "Validation", and "Delphi".

5.3.2 Introduction

The quality of healthcare provided in EDs is extremely important, as it directly impacts patient outcomes, safety, and satisfaction (6). In the unique context of Palestinian EDs, establishing and validating quality standards is crucial to improving healthcare delivery and patient safety.

The quality of care for individual patients is determined by their ability to access effective care to maximize health benefits while addressing their needs (9). Among numerous definitions, the quality of healthcare for individuals is defined as "*whether individuals can access the health structures and processes of care which they need and whether the care received is effective"* (9).

In the last ten years, numerous governmental and professional bodies have developed quality measures, like indicators or standards, to enhance healthcare quality (HCQ) and pinpoint poor-quality care across structural, procedural, and outcome aspects (25). Furthermore, six dimensions of quality care have been identified, encompassing safety, effectiveness, patient-centredness, timeliness, efficiency, and equity (7).

Quality indicators are "*quantitative measures that provide information about the effectiveness, safety, and/or people-centeredness of care"* (10). Quality standards, defined as "*optimum levels of performance*" (66), play a crucial role in assessing HCQ and its dimensions, including ED services (7).

An emergency healthcare system is crucial for saving lives and protecting patient well-being, making it a cornerstone of any healthcare system. (3,13). Moreover, it is essential for universal health coverage, dealing with acute conditions in children and adults, such as injuries, infections, exacerbations of diseases, and obstetric emergencies. It's the first link to the health system for many, identifying urgent conditions, resuscitating, and referring severely ill patients while providing definitive care for others (3).

The increase in trauma and non-communicable diseases in LMICs underscores the critical importance of effective emergency care. Global entities such as the World Bank, and the WHO are focusing on enhancing emergency care systems in areas with limited resources (65). However, the progress of its development is still in its nascent phase in numerous areas (13). Therefore, assessing the quality of emergency care delivery is essential to improving the overall quality of healthcare in this context (13).

The Palestinian healthcare setting is characteristic in its requirements and challenges (87). It must address not only the traditional medical and clinical demands but also those imposed by the socio-political and economic conditions unique to the region. The frequent disruptions and resource limitations further complicate providing reliable, efficient, and equitable emergency healthcare in this context (79). To improve care delivery and patient outcomes in Palestinian EDs, it's important to establish quality standards designed for this setting. Validating these standards is crucial to ensure they accurately measure what they are intended to measure (92).

The EDQS subjected to validation, were previously identified through a literature review, yielding 115 quality standards. Subsequently, a panel of local experts in Palestinian EDs and HCQ assessed these standards, resulting in a refined list of 103. These standards have been organised into two main domains and 16 sub-domains (41). Through an e-Delphi survey, this study seeks to validate the quality standards of Palestinian EDs, aiming to enhance emergency care and patient safety in the country. The research aligns with ongoing healthcare system enhancements, highlighting the importance of standardised quality measures in EDs.

The EDQS were established through a thorough literature review to ensure they are based on solid evidence and best practices. For example, previous research identified key dimensions of emergency care, highlighting the importance of organised triage systems to improve patient flow and reduce waiting times through systematic approaches and standardised criteria that prioritize health issues. Accurate triage aims to deliver the right treatment at the right time to the right patient, making it a critical standard(73,93). Other studies have emphasized that effective leadership and management are crucial for coordinating and sustaining emergency services, which directly influences the quality standards of emergency care leadership (61). Similarly, The patient safety standards, based on the WHO Patient Safety Framework, prioritize error prevention and risk management (19). By incorporating these principles, the standards were designed to reflect the core dimensions of good care identified across diverse healthcare systems, ensuring their relevance and adaptability to the Palestinian context.

Research on quality improvement and patient safety in Eastern Mediterranean EDs, particularly in Palestine, is limited (47). While some studies address ED worker safety, burnout, violence, and medication (46,47,90), the MoH assesses infrastructure, equipment, and staff based on WHO standards (94). However, a notable gap in validated quality standards, accreditation, or proactive use in EDs indicates a lack of validated measurement

systems and standards for emergency healthcare in Palestine. The study aims to fill this gap by validating Palestinian contextual EDQS.

Conventional methods for HCQ standards sometimes depend on generic frameworks developed with limited stakeholder involvement, rendering them inappropriate for low-resource environments. Efforts to implement international emergency care standards in Palestinian healthcare have faced challenges due to poor contextual alignment. This study adopts an innovative methodology by creating EDQS customized to local requirements and thoroughly validating them using the Delphi technique and stakeholder feedback. This guarantees that the standards are both relevant and feasible for execution in resource-limited settings (41,72).

This study aimed to validate the Palestinian standards for the quality of ED services. This supports the validity of assessment processes based on these standards, and the results can be relied upon "*True measure*" (92), and used for improvement and comparison. The involvement of experts from the public, private, and academic sectors in validating Palestinian ED standards is crucial for their successful application and long-term sustainability. This includes the support of the MoH leadership.

5.3.3 Methods

Study design

This study employed a two-round e-Delphi survey methodology to validate quality standards for EDs in Palestine. Utilizing an iterative approach, this technique aimed to foster consensus by collecting data from a carefully selected panel of experts (25,95). Experts with at least five years of experience in emergency medicine (EM), health care quality, or both, were invited to validate contextual EDQS for Palestine.

To ensure respondent anonymity, a quasi-anonymous method was implemented, allowing survey responses to remain confidential while being known to the researcher (96). A similar approach was employed to establish quality standards (96). The chosen methodology was considered highly suitable for achieving the research objectives. This manuscript is presented in accordance with the Conducting and Reporting Delphi Studies (CREDES) reporting standards (97), (Figure 6). Furthermore, this research was carried out with ethical approval from the Human Research Ethics Committee (HREC) at the

University of Cape Town, reference number (015/2022) (Appendix 6), and approval from the Palestinian MoH (DHM220367), Appendix 4.

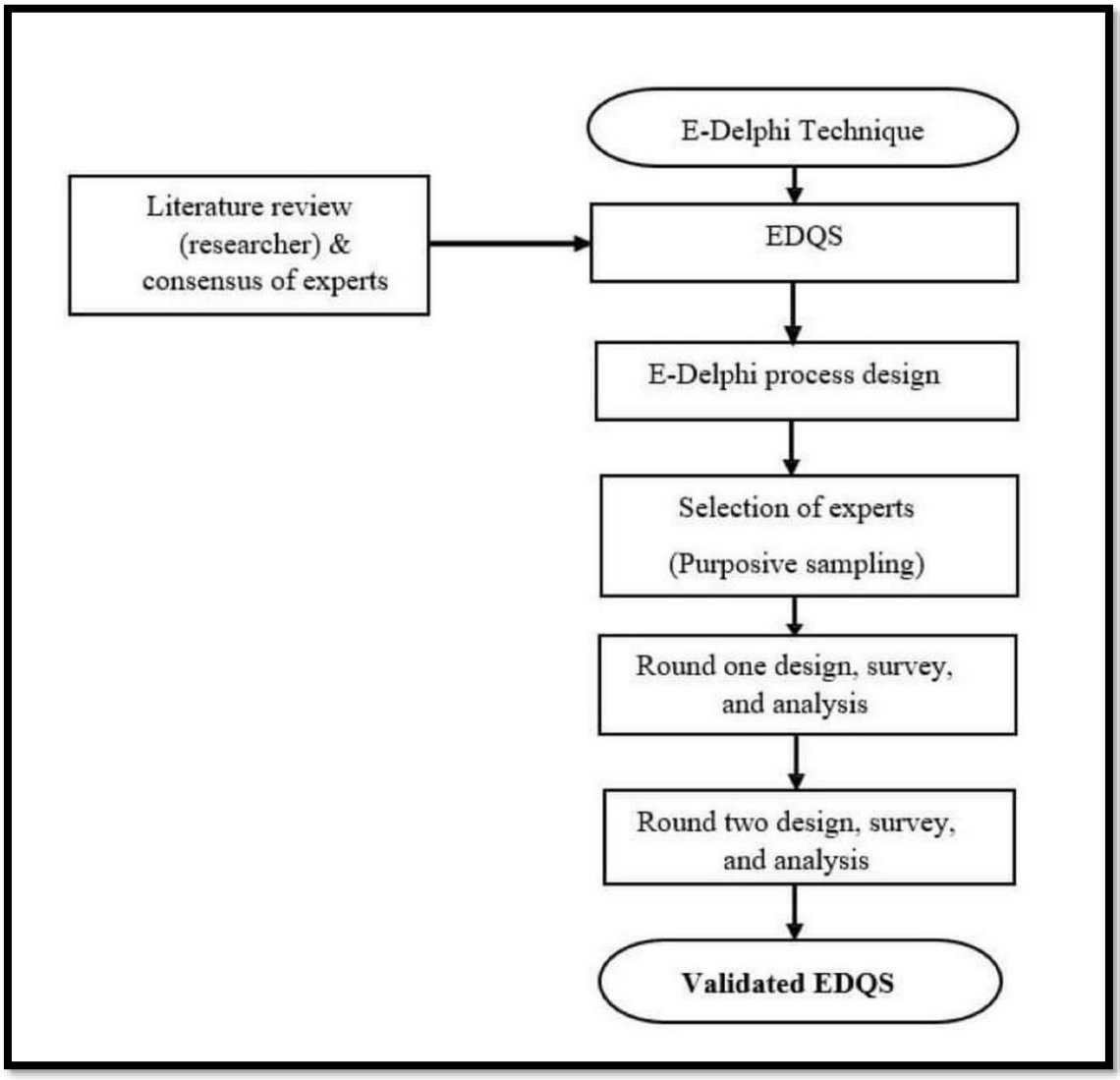

Figure 6. Two rounds of the E-Delphi process to validate EDQS.

Quality standards for validation

A total of 103 quality standards specific to Palestinian EDs were presented to the panel of experts for validation (98). These standards were compiled through a combination of literature review and consensus among Palestinian experts in the field of EM and HCQ experts with more than five years of experience in each discipline (Bani Odeh et al., 2024). Among these standards, 39 related to the clinical domain, while the remaining 64 fell under the administrative domain (Appendix 7).

Delphi panel recruitment and sample

A total of 61 experts received invitations to participate in the e-Delphi survey. Participants received information about the study's objectives and data handling through a LimeSurvey link sent via email. They provided informed consent by completing an online Delphi Study Consent Form, which detailed the study's purpose, procedures, and potential risks, and was documented electronically on the LimeSurvey (26). By filling out the survey, participants approved their involvement, and all data were analysed anonymously to ensure confidentiality. They were informed that their responses would remain confidential and used only for research purposes.

A purposive sampling method was utilized to identify experts who had actively contributed to the validation process (54,95). Two expert groups were selected based on their experience in hospital emergency care and HCQ at local, regional, and international levels. In the two rounds, only 53 (87%) experts completed the survey. Most of the experts who did not complete the survey apologized and provided various reasons such as busy schedules and too long a survey to complete. The experts who participated in the survey were from various institutions and organizations. These included: MoH hospital EDs, private hospital EDs, doctor syndicates, nursing syndicates, and experts from various universities (95,99).

Study instrument

The instrument used for the validation of EDQS in this research is a two-round e-Delphi survey, designed and administered through the LimeSurvey (26) (LimeSurvey GmbH, Hamburg, Germany) platform hosted by Cape Town University. In the first round, experts in the field of emergency care were presented with a comprehensive list of 103 candidate quality standards. These experts were asked to rate each standard's readability, clarity, and comprehensiveness in general using a Likert scale, allowing them to express their level of agreement or disagreement. The experts were also encouraged to provide detailed feedback, comments, and suggestions for further refinement, this round was conducted from 15 to 30 May 2023. In the second round, the shortlisted quality standards, which had passed the consensus threshold in the first round, were presented to the expanded expert panel including those who participated in the first round. This round aimed at further refinement, specifically focusing on three key validation criteria: readability, clarity, and comprehensiveness, this round was conducted from 15 – 30 October 2023. **Table *5*** provides clear definitions for these criteria, aiming to establish a common understanding and highlight enhancements made during the refinement process.

These three criteria have proven effective in validation studies across healthcare and align with ISQua principles for developing health standards as well. The consensus on clarity, readability, and comprehensiveness ensures that the standards are relevant, understandable, measurable, beneficial, and achievable (RUMBA) (74,92).

The use of LimeSurvey as the data collection tool facilitated the systematic and anonymous gathering of expert opinions, ensuring that the resulting quality standards would be grounded in both consensus and expert feedback. This method was pivotal in tailoring the standards to the specific context of emergency care in Palestine (99,100).

Table 5: Validation Criteria Definitions.

Criteria	*Definition / Meaning*
Readability	• **To what extent the statement of the quality standard can be read and understood?**
Clarity	• **To what extent is the statement of quality standard worded carefully to be understandable and have maximum obviousness?**
Comprehensiveness	• **To what extent does the quality standard statement provide a complete detailed description of requirements?**

5.3.4 Delphi rounds

Round 1: evaluation and shortlisting

In the first round of the e-Delphi survey, the panel of experts received a list of 103 candidate quality standards (98). Each expert was asked to read and assess each standard, aiming to identify the most pertinent and applicable ones for inclusion in the ultimate set of quality standards for EDs. The experts utilized a 5-point Likert scale to rate each standard, indicating their level of agreement, which ranged from "strongly agree" to "strongly disagree". Additionally, experts were invited to give feedback and suggestions for improving each standard without introducing new ones (101).

Responses from the first round were reviewed and categorized, then transferred from the Lime Survey to a Statistical Package for Social Science version 26 (SPSS) for descriptive analysis (frequencies and percentages) (26,102). This analysis aimed to determine consensus for each domain, subdomain, and associated standards, defined as $\geq$ 80% agreement and an IQR of $\leq$ 1, where IQR measures dispersion around the median. This consensus threshold was established following Delphi study practices to ensure high reliability and minimal variability in expert evaluations (100).

Based on the feedback and comments received in the first round, specific standards underwent modifications and merging 2 standards, resulting in a renumbering of the list to 100 standards. A summary table was prepared to provide a clear overview of the expert's ratings and comments, (100) (Appendix 8).

Round 2: Refinement and validation

In the second round, experts were presented with a shortlist of 100 standards that had passed the consensus threshold in the first round (99). Experts were asked to re-evaluate these standards, considering their readability, clarity, and comprehensiveness. They were also encouraged to provide additional feedback and suggestions for refinement (99,100).

Final analysis and consensus

The responses from the second round were analysed to assess the standards' validity and to determine if there was consensus among the experts regarding their suitability for the Palestinian emergency care context. The final list of validated domains, subdomains, and associated quality standards was derived from the standards that met the consensus threshold defined at ≥ 80% agreement (strongly agree or agree) (25,99,100).

5.3.5 Ethical consideration

The research was carried out with ethical approval from the Human Research Ethics Committee (HREC) at the University of Cape Town, reference number (015/2022) (Appendix 6), and approval from the Palestinian MoH (DHM220367) (Appendix 4)**.** Participants were provided with detailed information about the study's objectives and data handling through a LimeSurvey link. The online Delphi Study Informed Consent Form enabled them to review the study details and consent to participate. Consent was indicated by reading the provided information and completing the survey, which was considered formal approval for their participation. And the data were analysed anonymously.

5.3.6 Results

Characteristics of participants

In the first round, 22 out of 26 invited experts fully participated, yielding an 85% response rate. These respondents comprised 86% local, 9% regional, and 5% international experts

with backgrounds in EM, HCQ, or both, ensuring a diverse and comprehensive approach to standard validation.

In the second round, 35 experts were invited, including 22 from the initial round and the rest were new invitees. 31 experts participated fully, resulting in an 89% response rate. Among these participants, 87% were local Palestinian healthcare experts, 6.5% were from the eastern Mediterranean region, and another 6.5% were international experts. The overall number of respondents in both rounds was 53.

Table ***6*** presents participant characteristics, response rate, geographical distribution, and professional backgrounds in both rounds.

Table 6: Characteristics of the respondents in the two e-Delphi survey rounds.

The first round of e-Delphi survey							
Invited Experts number	Respondents number and %	Respondent background			Respondents by location		
		EM	HCQ	Both field	Local	Regional	International
n = 26	n = 22, 85%	n = 8	n = 8	n = 6	(n = 27), 87%	(n = 2), 6.5%	(n = 2), 6.5%
The second round of e-Delphi survey							
Invited Experts number	Respondents number and %	Respondent background			Respondents by location		
		EM	HCQ	Both field	Local	Regional	International
n = 35	n = 31, 89%	n = 21	n = 20	n = 17	(n = 27), 87%	(n = 2), 6.5%	(n = 2), 6.5%

Delphi results

Results of the first round

In the first round of the e-Delphi survey, 2 domains, 16 subdomains, and 103 associated EDQS were presented to the expert panel for their opinions and validation of the standards, (Appendix 7).

Consensus achievement

In the first round of the e-Delphi survey, 103 standards were evaluated by the experts. Among these, 22 standards received a consensus rate of over 80%. However, they were slightly modified and reworded based on the recommendations of the experts. In addition, 4 standards related to workforce staffing and training subdomain were combined into one standard, with B4003 and B4006 being merged with B4001, and B7003 being merged with B7001. Moreover, one of the standards was split into two. Finally, 77 standards were agreed upon by the experts without any modifications, as listed in (Appendix 8).

According to the results, experts have reached a consensus on the two main domains of EDQS. It was found that the clinical domain (A) standards achieved a level of consensus of 94.2%, whereas the administration domain (B) standards achieved 94.3% consensus. Furthermore, all sub-domains reached a consensus among the experts, including seven sub-domains of clinical standards (A1-A7) and nine sub-domains of administrative standards (B1-B9). Overall, 100 (94.2%) of EDQS met the cut-off point of ≥ 80%.

During the validation process, standards that had an average rating equal to or above the 80% consensus threshold proceeded to the next round. 100 out of the 100 EDQS met the level of agreement, along with two relevant domains and 16 subdomains, (Appendix 9**).**

Results of the second round

Shortlisted standards

In the second round of the e-Delphi survey, 2 domains, 16 subdomains, and 100 shortlisted EDQS were moved from e-Delphi one and presented to the expert panel for validation.

Final consensus:

In the second round of the survey, all 100 EDQS were included and achieved a consensus level of 80% or more among experts without any comments.

All 39 clinical domain standards (A) achieved a consensus level of 96.7% for readability, 96.3% for clarity, and 96.3% for comprehensiveness. There were no comments or recommendations for changes, and the overall level of consensus for this domain was 96.4%.

Furthermore, all 61 standards related to administration (B) achieved a high level of agreement, with 97.3% consensus for readability, 97.2% for clarity, and 97.3% for comprehensiveness. No comments or recommendations for modifications were received, and the overall level of consensus for this domain remained unchanged at 97.3%, **(**Appendix 10**).** Consensus is achieved when 100 EDQS reach an agreement of 80% or more, and IQR is ≤ 1. In such cases, no additional rounds are required, and the standards are deemed valid (100), Table 7 summarizes the e-Delphi survey results, showing expert consensus for clinical and administrative domains and each sub-domain. It also displays the percentage of disagreement with the standards within the subdomains.

(Appendix 11**)** presents the final list of 100 validated EDQS across two main domains—clinical and administrative, and 16 subdomains.

Table 7: Summary of consensus results for two rounds of e-Delphi for EDQS.

Clinical Domain	**Delphi 1**			**Delphi 2**			
Subdomains	**[a] %**	**Disagreement**	**Mean**	**[a] %**	**Disagreement**	**Mean**	**[a] IQR**
A1	93.5	6.5	4.7	96.4	3.6	4.8	≤ 1
A2	94.2	5.8	4.7	96.4	3.6	4.8	≤ 1
A3	92.5	7.5	4.6	94.2	5.8	4.7	≤ 1
A4	95.3	4.7	4.8	96.8	3.2	4.8	≤ 1
A5	93.2	6.8	4.7	96.8	3.2	4.8	≤ 1
A6	94.8	5.2	4.7	96.9	3.1	4.8	≤ 1
A7	95.5	4.5	4.8	97.3	2.7	4.9	≤ 1
A	94.1	5.9	4.7	96.4	3.6	4.8	≤ 1
Admin. Domain	**Delphi 1**			**Delphi 2**			
Subdomains	**[a] %**	**Disagreement**	**Mean**	**[a] %**	**Disagreement**	**Mean**	**[a] IQR**
B1	93.5	6.5	4.7	97.3	2.7	4.9	≤ 1
B2	94.6	5.4	4.7	97.5	2.5	4.9	≤ 1
B3	94.7	5.3	4.7	97.2	2.8	4.9	≤ 1
B4	93.6	6.4	4.7	97.3	2.7	4.9	≤ 1
B5	95	5.0	4.8	97.2	2.8	4.9	≤ 1
B6	95.1	4.9	4.8	97.7	2.3	4.9	≤ 1
B7	95.1	4.9	4.8	96.8	3.2	4.8	≤ 1
B8	93	7.0	4.7	96.5	3.5	4.8	≤ 1
B9	94	6.0	4.7	98.1	1.9	4.9	≤ 1
B	94.3	5.7	4.7	97.3	2.7	4.9	≤ 1

[a] Threshold of consensus ≥ 80% and IQR ≤ 1.

5.3.7 Discussion

This study aimed to validate EDQS in Palestine to improve emergency services and patient safety. The final 100 standards were validated through consensus-building and expert input (99,100). These validated standards are essential for Palestinian EDs to monitor performance, identify areas for improvement, and enhance overall care quality (96). Consensus through two iterative rounds of the e-Delphi survey is crucial for validating standards, as it helps minimize bias and noise, offers controlled feedback for modifying judgments, and ensures stability in standards (100,103).

Our study revealed that most EDQS received strong support from experts, indicating their validity and robustness. Despite the high level of agreement, our panel consisted of diverse experts with different backgrounds, expertise, and geographic locations, ensuring a comprehensive assessment. This diversity enhanced the credibility and applicability of our findings, affirming that the EDQS were thoroughly and inclusively evaluated (97).

The validated EDQS in Palestine, identified through the e-Delphi survey, aligns with existing literature on crucial aspects such as triage, patient assessment, treatment protocols, referral processes, leadership, management, and patient safety. These standards reflect the dimensions of quality care emphasized in previous studies (16,19), which highlight the importance of comprehensive clinical, organizational, and safety considerations in emergency services. This alignment confirms the adherence of Palestinian EDQS to established quality care principles in emergency medicine, affirming their relevance in both local and global healthcare contexts (74). Furthermore, this research supports ongoing efforts to improve emergency care in Palestine by providing context-specific standards that guide healthcare providers in enhancing service quality, addressing care gaps, and facilitating broader national healthcare reform initiatives.

However, there are also differences and innovations introduced through the study. The standards were validated with input from national, regional, and international experts and are context-specific, meaning that they are specifically designed to address the particular difficulties that the Palestinian healthcare system faces (87,95,101). Unlike traditional methods of setting quality standards, this approach considers unique aspects specific to Palestine, including cultural differences and security concerns, which results in a more effective and sustainable solution for improving emergency care in the region (87,99,100). Additionally, the study's focus on achieving consensus through a rigorous e-Delphi survey approach, involving multiple rounds of expert input and feedback, demonstrates a commitment to developing standards that are widely accepted and validated by a diverse group of stakeholders (54,95,99).

The validated EDQS in Palestine has significant implications for improving the quality of emergency care services in Palestinian EDs. By providing a benchmark for evaluating and improving ED services, these standards might help to reduce patient morbidity and mortality, improve patient satisfaction, and enhance the overall quality of healthcare services in the country. Firstly, they guide administrators, clinicians, and policymakers in Palestine to improve ED services and provide high-quality patient care. By offering clear directives, they streamline clinical processes, promoting efficiency and effectiveness (20,21).

Secondly, adherence to these quality standards can improve patient outcomes by ensuring the use of evidence-based clinical protocols, appropriate medications, diagnostic tests, and timely patient assessment and treatment. This adherence promotes better clinical outcomes,

reduces complications, enhances overall patient safety in EDs, and reduces unnecessary costs (21,104).

Moreover, the standards contribute to enhancing overall efficiency by promoting effective leadership and management, ensuring adequate staffing, and training, and optimizing resource utilization. Addressing administrative processes, such as documentation and performance indicators, streamlines operations, improving overall emergency care efficiency. These implications underscore the potential of these standards to positively transform emergency care delivery in Palestine (21,61).

The validated EDQS in Palestine serves practical purposes, including guiding the implementation of clinical pathways, staff training, and education. As a result, they provide a foundation for quality improvement efforts, aiding in resource allocation and facilitating performance measurement and monitoring. Additionally, integrating the standards enhances patient safety practices and initiatives aimed at improving satisfaction in emergency care (21).

The validated EDQS may face difficulties during implementation, including conflict, limited resources, and workplace violence. Violence against workers in Palestinian EDs is widespread, with younger and less experienced health workers who have direct patient contact being the most vulnerable. Additionally, frequent episodes of violent conflict with Israel hinder any improvements (46). Strategies include cooperating with local and international partners, advocating for funding, and providing staff training. Prioritizing staff well-being, mental health support, and work-life balance are crucial. Developing user-friendly online training modules and engaging local communities in standard development are necessary. Advocating for increased healthcare funding, partnerships with relevant sectors, and impactful initiatives are essential for addressing economic challenges. Continuous senior management commitment to establishing an organizational culture dedicated to improvement, along with continuous monitoring and evaluation, is vital to overcoming these challenges (21,41).

This study aimed to validate EDQS but did not assess their implementation or impact on the quality of care provided. Therefore, future research should explore the feasibility and acceptability of adapting the validated standards to different Palestinian EDs, as well as conducting pilot testing in Palestinian EDs. This should consider factors such as cultural differences, patient demographics, and organizational characteristics.

5.3.8 Limitations

While the EDQS were previously developed using available literature, their validation was based on subjective expert opinions via the e-Delphi method. This method, although beneficial, can be influenced by individual biases and limited expertise among the panel. Although attempts were made to have a diverse expert group, differences in knowledge and viewpoints could have affected the consensus. Moreover, not including stakeholders like patients and frontline ED staff in the Delphi process may have limited the range of perspectives, potentially impacting the thoroughness of the validated EDQS. Technological issues and internet access for some participants were also challenges.

5.3.9 Conclusion

This study successfully validated 100 EDQS specific to the Palestinian context. The validated standards in this study are a crucial step toward enhancing quality and patient safety practice in Palestinian EDs. Despite challenges in implementing these standards, such as insufficient resources, political instability, and frequent attacks on hospitals by the Israeli occupation, the potential benefits are significant and deserve further attention and investment.

5.4 Summary

This chapter established the validity of the EDQS by reaching expert consensus on their clarity, readability, comprehensiveness, and relevance to Palestinian EDs. The findings emphasize the significance of stakeholder involvement in adapting quality standards to specific contexts.

Building on this validation, Chapter Six assesses the feasibility of implementing these standards in the EDs. It explores perspectives from front-desk ED staff on its benefits, enablers, challenges, practical considerations, and strategies for integrating the EDQS into existing workflows, offering insights into their real-world application.

Chapter 6: Assessing the Feasibility and Acceptability of Implementing Emergency Department Quality Standards in Palestine: A Qualitative Study

6.1 Declaration from author and co-authors

The following authors contributed to this manuscript: Abed, LW, MH, and WS.

The authors' contributions were as follows: Abed led the conception and study design, analysis and interpretation of data, and drafting and revising the manuscript. WS contributed to the analysis and interpretation of the data and critically revised the manuscript. LW and MH contributed to the manuscript's revision, offered comments, and helped interpret the data.

All authors have read and approved the final manuscript and are accountable for its content.

The percentage of contributions of each author is as follows:

- Abed: 60%
- WS: 30%
- MH: 5%
- LW: 5%

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6.2 Introduction

This chapter presents the third manuscript, *"Assessing the Feasibility and Acceptability of Implementing Emergency Department Quality Standards in Palestine: A Qualitative Study."* It examines the feasibility of implementing EDQS from the perspective of ED staff, building on their development and validation discussed in Chapters 4 and 5.

Focusing on front desk personnel, the chapter highlights challenges, facilitators, and strategies for integrating EDQS into existing workflows. Through qualitative interviews, it identifies barriers and enablers to implementation, offering insights for adapting these standards to enhance emergency care quality in Palestine.

This chapter addresses the third research objective by assessing the feasibility and acceptability of EDQS to inform future policy and practice. The manuscript is presented in full of minor formatting adjustments for thesis submission and is prepared for publication.

6.3 The Manuscript of the Third Study

6.3.1 Abstract

Objectives: To assess the feasibility and acceptability of implementing Palestine's previously validated EDQS from the perspectives of frontline ED staff.

Methods: This study employs a qualitative design to assess the feasibility and acceptability of context-specific EDQS in Palestine, focusing on the perspectives of experienced ED staff regarding these standards and their potential impact on healthcare quality. Ten semi-structured interviews were conducted with key informants, followed by thematic content analysis to identify key themes and subthemes related to staff experiences, perceptions, and expectations for implementing EDQS in Palestinian EDs.

Findings: Participants identified four main themes and 16 sub-themes. The first theme addressed feasibility enablers for implementing the EDQS, with sub-themes on integration into ED workflow, the legal environment, staff willingness, and organizational norms and culture. The second theme outlined the benefits of the standards, including improved quality, workflow optimization, better patient outcomes, and enhanced safety. The third theme highlighted key challenges to implementation, such as knowledge gaps, resource

inadequacies, commitment and resistance to change, political situations, and workload issues. The fourth theme focused on vital recommendations, encompassing capacity building, resource allocation, gradual implementation, and continuous improvement.

Conclusion: The study revealed a favourable perspective among ED staff on the feasibility and acceptability of implementing EDQS in Palestine, despite challenges like knowledge gaps, resource limits, and resistance to change. Informants are willing to support implementation and recommend capacity building and gradual implementation. They believe these standards could improve ED services.

Keywords: "Emergency Department", "Quality Standards", "Feasibility", and "Acceptability".

6.3.2 Background

Emergency departments play a vital role in healthcare by being the primary point of contact for patients in need of urgent medical attention (3). Quality of care in these settings is crucial, as it directly impacts patient outcomes and satisfaction, reduces avoidable deaths and disabilities, and fosters trust in the healthcare system (105). In resource-limited regions like Palestine, providing consistent, high-quality care in EDs is both challenging and essential (1). EDs in Palestine face significant challenges due to limited resources, political instability, and high healthcare demand. This leads to overcrowding and long wait times, putting pressure on staff and potentially compromising patient care quality (47,48).

Variances or absence of quality standards in the ED can result in disparities in patient care. Factors such as facility infrastructure, staffing levels, personnel training, and adherence to best practices all play a role in these disparities. As a result, the quality of care can vary significantly, impacting patient outcomes and experiences (41). Given these challenges, there has been an increased emphasis on developing standardised quality measures that can be implemented in various settings to ensure equitable and effective care. These standards aim to improve patient outcomes and optimize the efficiency and responsiveness of EDs (72).

In a previous study, a comprehensive set of quality standards for EDs was developed specifically for the Palestinian context (41). These standards were developed carefully, including an extensive literature review and the consensus of experts in emergency medicine (EM) and healthcare quality. This approach ensured that the standards were evidence-based and relevant to the specific needs and challenges of the Palestinian healthcare system (41). To further validate these standards, two rounds of the Delphi technique were employed, involving multiple rounds of expert feedback to achieve consensus on the standards' clarity, comprehensiveness, and understandability (42).

The intended EDQS underwent a feasibility study comprising 100 standards divided into two main domains: clinical, which includes seven sub-domains—triage, treatment, transportation, medication safety, patient flow, and medical diagnostic services—and administrative, consisting of nine sub-domains—documentation, access, leadership, workforce, equipment, capacities, resources, indicators, and patient safety, all developed in a prior study (41).

Despite the rigorous development process, successfully implementing these quality standards in real-world settings remains a complex task. The feasibility and acceptability of these standards among ED staff are critical factors that determine their adoption and

sustainability (106). Frontline healthcare workers, who are directly involved in patient care, play a crucial role in translating these standards into practice. Their perspectives, including perceived barriers and facilitators, are essential for understanding the practical implications of implementing these standards in the unique context of Palestinian EDs (107). Furthermore, engaging with frontline staff through structured feedback mechanisms can identify the specific challenges they face when adapting to new quality standards. Identifying organizational factors such as resource availability, training adequacy, and organizational culture is pivotal in shaping an environment conducive to change (106).

This study aims to explore the feasibility and acceptability of implementing the newly developed quality standards for EDs in Palestine. This research seeks to gain in-depth insights into ED frontline staff experiences, perceptions, and attitudes toward these standards. By understanding the views of those on the front lines, this study will provide valuable information on the practicality of these standards and identify potential challenges and opportunities for improvement. The findings will contribute to developing strategies that enhance the adoption and sustainability of quality improvements in EDs, ultimately aiming to elevate the standard of emergency care across the country.

6.3.3 Methods

Study design

This study employs a qualitative design to assess the feasibility and acceptability of implementing context-specific EDQS in Palestine among experienced ED staff and understand their perspectives on the quality of healthcare services. The study gathers in-depth feedback through semi-structured interviews with open-ended questions, allowing participants to share their experiences and insights. Data was analysed using thematic analysis to identify key themes and subthemes reflecting participants' views on the EDQS implementation (106–108). EDQS included in this study had been developed and validated in previous studies, totalling 100 standards (41).

Research process

The research process was initiated with orientation sessions for participants and ED leadership. Following these sessions, informed consent was obtained from respondents (Appendix 12), and semi-structured interviews were carried out with ED staff utilizing an open-ended question format conducted either virtually or in person. Probing techniques were used to better understand perspectives on the feasibility and acceptability of

implementing the EDQS in Palestinian EDs, allowing the researcher to gather essential responses from participants through interviews (109), Figure 7.

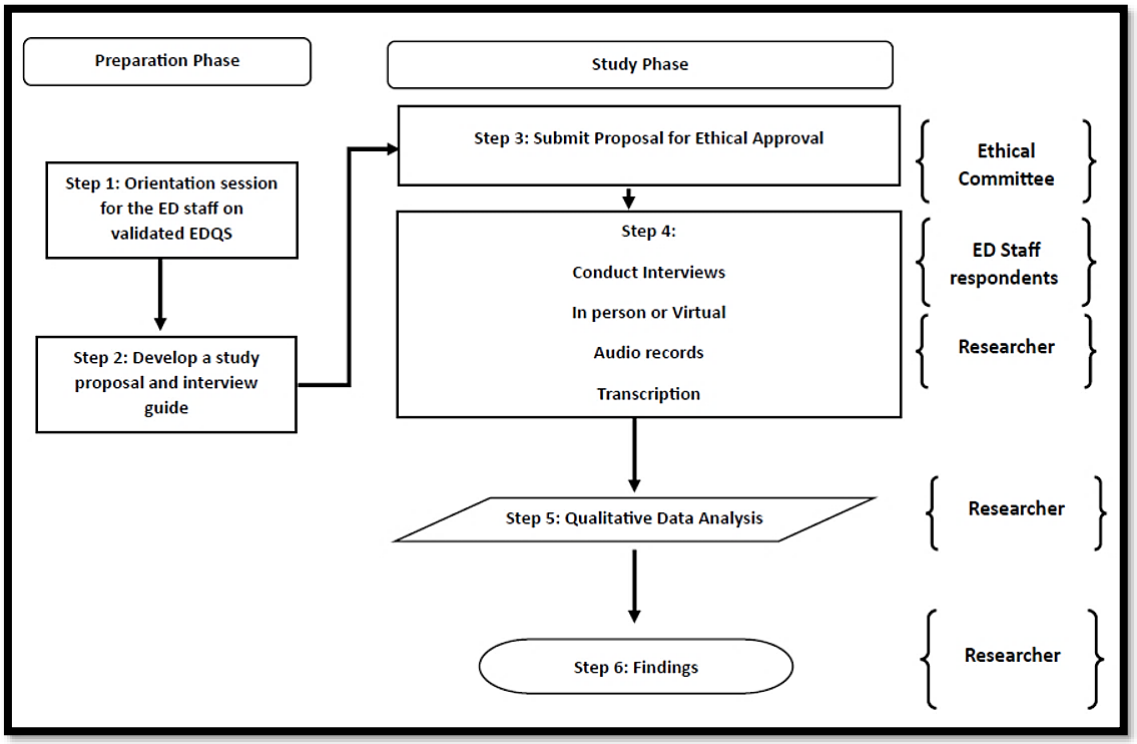

Figure 7: Research Execution Process.

Study population

Respondents were selected using a purposive sample of medical and nursing staff, ensuring that the participants have relevant experience and personal characteristics in the field of EM and are experts in the quality of health services (110). ED staff, including physicians, nurses, healthcare quality managers, and administrators, from nine hospitals in the WB, including both public and private EDs, were chosen to represent the northern, central, and southern regions. These hospitals, which handle high patient volumes, are suitable for assessing the feasibility and acceptability of implementing quality standards in challenging conditions (82). This study's sample design was flexible enough to include relevant staff who arose throughout the study and more than one ED representative. The sample size consists of 10 interviewees determined based on data saturation (28).

Recruitment and enrolment

Participants were invited to participate in this study voluntarily, facilitated by the needed official communications with their respective hospital management. Communication was

established with the director of selected hospitals to coordinate the feasibility and acceptability of their ED staff participation and to conduct interviews (28).

Data collection

Data were collected using a semi-structured interview guide (Appendix 13); interviews were conducted with respondents from governmental and private EDs (28,82). Interviews were conducted either in person or virtually and were audio recorded. The primary language used was Arabic, and the interview recordings were transcribed and translated into English.

An interview guide was developed, including primary questions, follow-ups, and probing inquiries, with an estimated average interview duration of 35 minutes. The guide comprises the following sections: understanding of EDQS, expected benefits and challenges, feasibility assessment, acceptability perspectives, and overall satisfaction. The interviews were conducted from August 18th to September 4th, 2024.

The interview process started with greetings and an introduction, followed by the researcher clarifying the study's aim, obtaining participants' consent by approving the informed consent form, and initiating the recording. The interviewee's background data and demographic information were subsequently gathered, followed by the predetermined interview questions and sections. Permission was obtained as well for the interview to be audio-recorded and for further utilization of the transcripts. Besides, the participants were informed that they had the right to withdraw from the study at any time.

The interview guide was validated by a panel of experts, including healthcare quality specialists, research supervisors, and professionals from organizations such as WHO, PMoH, and academic institutions. Their expertise ensured the guide adhered to best practices in qualitative research, met the study's objectives, and remained relevant to the Palestinian healthcare system. Feedback from these experts was integrated to refine the guide for meaningful discussions and comprehensive data collection (104).

Additionally, the guide underwent a thorough testing process to confirm its clarity and effectiveness. Two pilot interviews were conducted to evaluate the suitability and consistency of the questions, revealing a need for more probing questions to elicit detailed responses. Minor adjustments were made to enhance the depth and precision of the interviews based on these perceptions (28).

6.3.4 Data Analysis

Content analysis for ten interviews was conducted manually, following the steps outlined by Graneheim and Lundman (72). This method is flexible, addressing both the manifest and the interpretation of the latent content of texts, which includes coding and thematic analysis for identifying key themes and subthemes.

Following each interview, the researcher revised the flow and their impression, covered and uncovered questions, interview dynamics, and general information such as date, time, organization, position, gender, and contact details. A unique code was given to each interview based on order and organization. This code and general information are documented on each page of the transcript.

Verbatim transcripts were produced for each interview. The transcripts were reviewed several times to gain a comprehensive sense of the participants' perceptions and thoughts, followed by deep analysis (110). The interviews were divided into meaning units of sentences, or paragraphs. These meaning units were then condensed into shorter statements, abstracted, and labeled with a code (111). Finally, through reflective and collaborative discussions among the authors, the codes were grouped into subthemes and themes. To enhance trustworthiness and to decrease personal bias, the authors analysed the transcripts individually and then discussed the analysis together until an agreement was reached to ensure the proper selection of the meaning units, subthemes, and themes (77,83). The main themes and sub-themes context concerning the research question and the study context, are summarized.

Table 8 provides an illustrative example of content data analysis.

Trustworthiness

To ensure the rigor of the qualitative analysis, this study followed Lincoln and Guba's (1985) criteria for trustworthiness, specifically focusing on credibility and confirmability (77). Credibility was achieved through investigator triangulation, where a second researcher independently reviewed the coding and thematic analysis to enhance reliability. Confirmability was addressed through reflexive analysis and the inclusion of direct quotes from participants to support the interpretations (77,83).

Table 8: Illustrative example of content data analysis

Meaning unit	Meaning unit Condensed	Code	Subtheme	Theme
I think implementing these standards is feasible and can seamlessly integrate into daily workflows.	EDQS integrates seamlessly into workflows.	Seamless integration	Workflow integration	Feasibility Enablers
Implementing EDQS is feasible and may improve health services for patients by reducing misdiagnoses in overloaded EDs.	EDQS can reduce misdiagnoses in overloaded EDs.	Feasibility and improvement	Workflow improvement	Benefits

6.3.5 Ethical considerations

This study adheres to the Consolidated Criteria for Reporting Qualitative Research (COREQ) to ensure rigorous and transparent reporting of the research process and findings (28).

Ethical approval from the Human Research Ethics Committee (HREC) at the University of Cape Town (HREC reference number 318/2024) (Appendix 14), and permission from the Palestinian MoH to conduct the study were obtained (MoH reference number (01/01-407 / DHM240407), (Appendix 15).

6.3.6 Results

Characteristics of the interviewees

The selected interviewees for both in-person and virtual interviews included experienced staff from public and private Palestinian hospitals in the WB, specifically physicians, nurses, and quality leaders from EDs. **Table *9*** provides a profile of the participants, detailing their roles and responsibilities, years of experience in emergency care, background, qualifications, and gender.

Four leaders in the ED included a resident doctor, an ED head nurse, an ED nurse, and three QPS Directors, with experience ranging from 5 to 20 years. The diverse participants' backgrounds offered an extensive perspective on the operational, managerial, and clinical dimensions relevant to the study.

Of all those who were contacted for interviews related to the study, no one refused, but they were referring to many commitments and a lack of time; however, the time was determined to suit their situation. This group of interviewees was chosen from those who attended the initial introductory session provided by the researcher.

Table 9: Participants (Interviewees) profile.

Participant No.	Roles and Responsibilities	Experience Years	Background	Qualification	Gender
P1	Residence Doctor	5	MD	Bachelor	M
P2	Head of ED	18	MD	EM Specialist	M
P3	Head of ED	7	MD	EM Specialist	M
P4	QPS Director	17	Nurse	Master	M
P5	ED Head Nurse	12	Nurse	Bachelor	M
P6	QPS Director	12	Medical Imaging	Master	M
P7	QPS Director	20	Nurse	Master	F
P8	ED Nurse	20	Nurse	Master	M
P9	Head of ED	17	MD	EM Specialist	M
P10	Head of ED	8	MD	Bachelor	M

Main Findings

The data analysis identified four key themes and 16 subthemes regarding the feasibility and acceptability of implementing EDQS in Palestinian EDs, as expressed by the interview respondents. These are summarized in Figure 8, with illustrative quotes for each subtheme provided in Appendix 16.

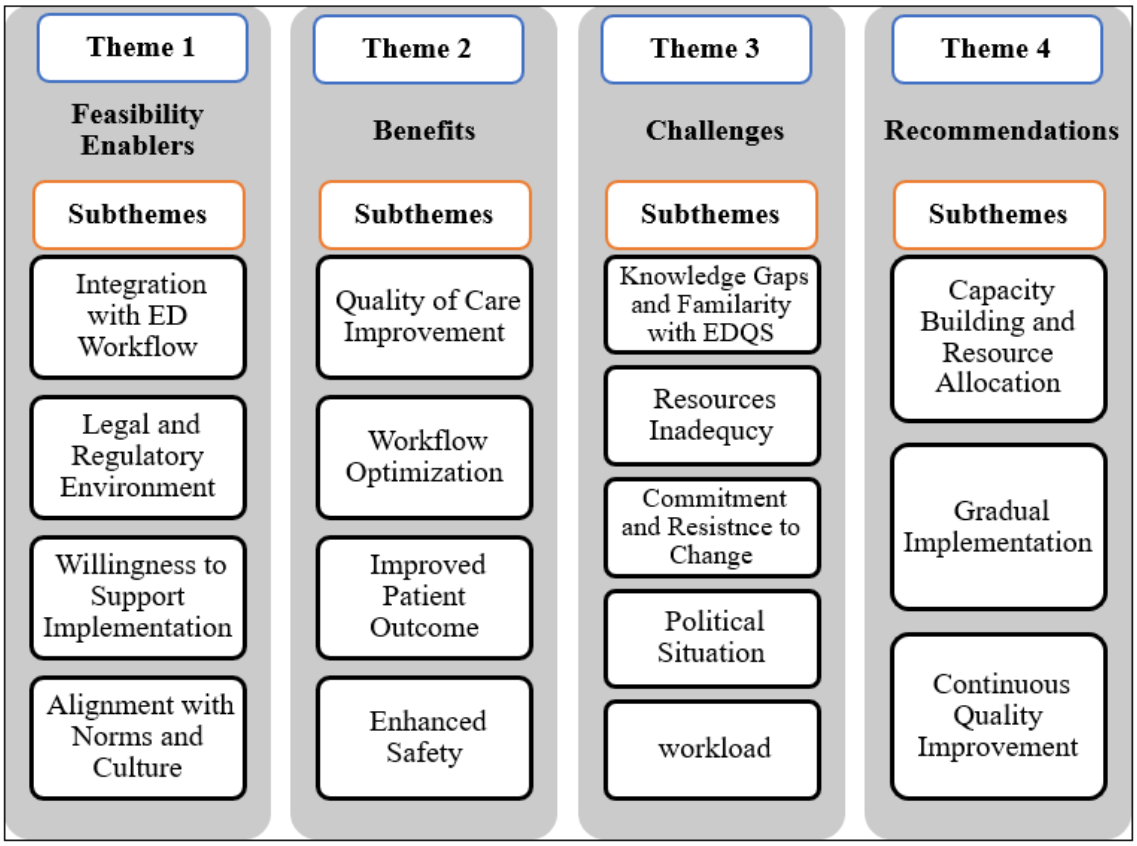

Figure 8: Summary of the main study findings' themes and subthemes.

1. Feasibility Enablers

Participants raised several issues perceived as facilitating or supporting elements for implementing EDQS, including four subthemes.

1.1. Integration with ED workflow

Based on the participant's responses in the interviews, there is a commonality among the participants that integrating EDQS into the daily workflow of Palestinian EDs is feasible and can significantly improve health services. The interviewees expressed confidence that EDQS would improve patient outcomes by reducing misdiagnosis and increasing consistency in care delivery, especially in overburdened EDs. The responses were positive in all interviews and indicated the feasibility of integrating these standards into EDs' daily workflow, thus improving health services.

"…, these standards are crucial and can be feasibly integrated into daily workflows, …". P4 P2L74. (P4 stands for participant number, P2 stands for page number for each interview transcript, and L74 stands for line number for the quotes).

Many interviewees confirmed that EDQS would have a positive impact on the efficiency of EDs.

"I believe these standards will impact positively and improve our workflow instead of hindering it…Thus, integrating these standards into the system is feasible". P2 P2L73.

By enhancing consistency and standardisation of procedures and processes, participants believed that EDQS would facilitate collaboration among staff and contribute to a more streamlined approach to patient care.

"Based on my experience, implementing EDQS is feasible. This will become evident once we measure the impact of the implementation on relevant policies and procedures. For example, compliance with hand hygiene policies will demonstrate the results and feasibility after a period of implementation…". P3 P3L85

Most participants believed the standards were feasible and could be easily integrated into existing workflows with the right infrastructure. Feedback indicates that EDQS can effectively enhance ED practices by aligning with current systems to improve clinical outcomes and save lives. While some participants noted that initial resistance to EDQS integration is expected, they believe it will become routine over time.

1.2. Legal and Regulatory Environment

Participants' responses demonstrate that there are no significant legal or regulatory obstacles preventing the implementation of EDQS in Palestine. Palestinian laws are viewed

as being in harmony with and supportive of the goals of these standards. Participants consistently highlighted the absence of any conflicting legal frameworks, with several noting that existing legislation, such as public health laws and medical waste management regulations, supports the implementation process. *"I believe there are no legal or regulatory barriers in Palestine against the implementation of EDQS". P1 P3L117.*

Others emphasized that current legislation is consistent with the EDQS, including essential legal frameworks like the Palestinian public health law.

"I believe that there is no Palestinian law that contradicts or prevents the implementation of these standards, whether it is the public health law, the medical waste management law…". P6 P3L137.

Participants emphasized that the laws not only prevent conflicts with the EDQS but also actively support improvement efforts.

"Based on my background and experience all laws support the implementation of EDQS and have no conflict with them". P8 P3L130.

Despite a favorable legal and regulatory environment, one participant highlighted that the successful implementation of EDQS relies more on leadership commitment and active engagement than on the legal framework.

"…It can support improvement tools, but the key factor is leadership commitment and active engagement for effective implementation". P3 P3L125.

1.3. Willingness to support implementation

Most participants viewed the EDQS positively, expressing a willingness to adopt the standards and recognising their importance for both patients and healthcare professionals. While a few noted potential challenges, the majority reiterated their commitment to the standards and believed their colleagues would provide similar support. One participant stated that:

"…, I personally accept these standards because they are for the benefit of both the patient and the doctor". P1 P3L127.

One of the participants expressed his willingness to support the implementation of quality standards distinctively, saying,

"On a personal level, I love quality and I love applying standards, so I am very ready to help apply and promote awareness about it…". P6 P4L161.

The participants also emphasized the leadership's willingness to support these standards and improvement initiatives, one stated,

"As the head of the ED department, I am willing to support its implementation to the best of my ability". P10 P3L116.

1.4. Alignment with Norms and Culture

The interview feedback mentioned that participants perceive that the EDQS are well-aligned with the norms and culture of healthcare institutes and the Palestinian community. Participants consecutively emphasized that the EDQS supports a culture of continuous improvement within health institutions, and they expressed no conflicts between the EDQS and existing cultural or organizational norms.

Participants emphasized that EDQS set seamlessly with the improvement-oriented concepts of health institutions in Palestine.

"From my experience, there is no conflict between these standards and the norms and culture of the health organizations and community; on the contrary, they are in line with the culture of improvement". P1 P4L150.

Most interviewees reported that no cultural or public sensitivities have been raised about the implementation of EDQS. *"There is no cultural sensitivity to the EDQS". P7 P4L160.*

Although participants generally felt no cultural hurdles, some did note that there may be infrequent sensitivity from patients or companions about specific aspects of EDQS, particularly related to triaging, as patients often feel their case is a priority.

"There may be some sensitivity among patients and their companions to the issue of triaging patients in the triage department because every patient considers himself a priority,…". P3 P4L174.

Participants emphasized that raising awareness among patients about the importance of these standards could address any concerns or misunderstandings.

"If the importance of applying the EDQS is explained to patients and their companions and raises awareness among them, and these standards become part of the system in the ED, I do not expect there to be any kind of sensitivity". P10 P4L143.

2. Benefits of Implementing EDQS

Responses from participants highlight the benefits of implementing EDQS. The findings, categorized into four relevant subthemes, offer insights into how effective implementation of EDQS can enhance ED performance.

2.1. Quality of Care Improvement

Participants emphasized that EDQS can potentially improve the quality of care and service delivery in EDs. Through standardising clinical and administrative processes, EDQS can result in a higher standard of care, increased efficiency, and better patient outcomes.

"There are numerous benefits to implementing EDQS. In general, it improves the quality of services in the EDs, especially regarding safety issues and clinical practices". P3 P2L63.

2.2. Workflow Optimization

Interviewees indicated that implementing EDQS would improve patient management and workflows, reduce wait times, reorganise the admission-to-discharge process, optimize resource use, and enhance patient care. The following statements reflect the perspectives of the respondents regarding these findings.

"Proper management and timely access to patients and their companions are facilitated, as well as the prioritization of cases and waiting through triage standards". P3 P2L69.

2.3. Improved Patient Outcome

Participants mentioned that EDQS standardises healthcare provided in the EDs to reduce treatment variability and improve patient outcomes through consistent, evidence-based practices.

"The primary expected benefit of implementing EDQS is the reduction of mortality rates in EDs due to malpractice. A secondary benefit is the establishment of standardised procedures among staff, leading to consistent practices across all EDs that adopt the EDQS. These benefits can be categorized into short-term advantages for patients and healthcare providers, and long-term benefits for the community, including lower mortality and morbidity rates and better resource management". P6 P2L69.

2.4. Enhanced Safety

Participants emphasized that compliance with safety measures may protect the staff and patients from harm, fostering a more secure healthcare environment and decreasing preventable errors.

"..., When enforced, they benefit both patients and doctors..., These standards protect the doctor by providing documented evidence, such as consent forms...". P1 P2L66-67.

3. Challenges of Implementing EDQS

The study also revealed a set of challenges highlighted during the interviews that may hinder the application of these standards and included four sub-themes.

3.1. Knowledge Gaps and Familiarity with EDQS

Interviews with front-desk staff in Palestinian EDs revealed gaps in their knowledge and uneven experience with EDQS, particularly about their understanding of associated standards and alignment with current ED practices.

Most of the participants said they were unfamiliar with the EDQS. The lack of thorough understanding is probably due to sporadic or limited exposure to the standards, many respondents mentioned insufficient orientation or training. *"I briefly learned about EDQS during a training session with the researcher and the hospital's quality and patient safety department". P4 P1L5.*

Participants showed awareness of some aspects of EDQS, like triage protocols and patient safety; however, they often revealed only a superficial understanding of the standards relevant to their roles.

"The standards address patient handling in the ED, including triaging and preparing patients for admission". P10 P1L38

Also, they reported that their understanding of the standards was insufficient, focusing on some elements such as patient admission but devoid of a comprehensive perspective on the utilization of EDQS throughout the emergency care spectrum.

Within the same context of knowledge, several respondents indicated possessing limited experience with certain international standards, including Joint Commission International (JCI), Advanced Life Support (ALS), and Basic Life Support (BLS). Nonetheless, their actual engagement with these standards was superficial; the majority of respondents reported either partial exposure or involvement in training that was infrequently updated.

"I am familiar with standards such as clinical and administrative standards. I am knowledgeable in performing CPR for arrested patients according to protocols, basic life support, advanced life support, coverage of the ED with needed staff around the clock, and training the staff. I also had a short session explaining EDQS standards' structure and requirements". P3 P2L44.

There were notable gaps in understanding the critical areas of infection control and patient safety, which are both crucial components of EDQS. Although respondents had witnessed colleagues in the quality departments executing infection prevention protocols, they frequently lacked direct, practical experience.

In addition, the participants showed a lack of formal training in the practical implementation of the Patient Safety Friendly Hospital Initiative (19), despite their seeming lack of awareness of it.

3.2. Resources inadequacy

A key challenge in implementing EDQS or any improvement initiative is ensuring the consistent availability of essential resources—financial, human, equipment, infrastructural, and staff training. This often relies on external support and is complicated by resistance to change and the need for strong leadership commitment to maintain these resources, as noted by interview participants.

"Training resources are limited internally and reliant on external funding and projects". P2 P3L86.

In addition, the financial crisis that is sweeping Palestine is affecting the infrastructure upgrades necessary to meet the health service quality standards, such as the redesign of triage and waiting areas, or areas that do not comply with the requirements of the standards, as one participant stated.

"Palestine faces major challenges, especially financial ones that affect all sectors, especially healthcare. These issues limit training and infrastructure in EDs…". P3 P3L102.

Participants emphasized that implementing some standards may not require costs, while others related to infrastructure specifically and redesign are associated with additional costs.

"…There may be additional costs to make some changes to the infrastructure as requirements for some standards, like redesigning for entrance, exit, triage, waiting area, or safety issues". P4 P3L93.

This view reflects an understanding that initial investments in quality improvement, although sometimes more expensive, may yield long-term benefits in terms of finance and quality. one participant stated that:

"...Implementing infrastructure standards may incur short-term costs, but long-term savings…". P6 P3L108.

Participants also highlighted that resources are available through the centralized governmental budget, especially in hospitals affiliated with the PMoH. Although this system enhances resource management, some participants stated that this system creates a discrepancy, while mentioning the advantages of the decentralized system in giving the hospital more authority to adapt to the requirements and achieve standards.

"The central budget seems unfair to some hospitals due to varying capacities and workloads. A decentralized budget could enhance quality improvement initiatives and make it easier for hospitals to manage their needs…". P6 P3L102.

However, others emphasized that we provide health services in EDs and seek to implement quality standards or other improvement initiatives through the available resources.

The analysis of interview data revealed that the infrastructure limitations and shortage of ED staff were frequently cited as barriers to implementing EDQS.

"The first challenge is often inadequate infrastructure, such as designated areas for CPR, triage, patient and staff waiting, and hand hygiene, which can result from poor design and construction. The second challenge includes staff shortages, …". P4 P2L65.

Despite the staff shortage challenge, all interview results showed that the available staff have qualifications ranging from basic to advanced. However, ongoing education and targeted training are important to maintain and enhance their competencies. *"…our staff is neither optimal nor overqualified and requires further training…". P1 P3L106.*

The importance of providing some basic training such as BLS and ACLS was repeatedly emphasized.

"The currently available staff is qualified but needs continuous training for doctors and nurses as refreshments, especially CPRC, and trauma management". P9 P3L98.

In addition to that, many participants emphasized that new staff, including those transferred from other departments, need specialized training specifically designed for ED work, as noted by one of the participants.

"...new employees must complete a dedicated induction program for the ED to effectively manage critical situations like bleeding, head trauma, falls, and accidents, as well as to communicate with families and the media…". P6 P3L120.

Despite the existence of an EM residency program and the increase in the number of EM specialists in Palestine, EDs still suffer from a shortage of EM specialists, in addition to nursing and allied health professionals, according to the participants' point of view, as most of them confirmed this.

"…Additionally, there is a shortage of emergency specialists". P10 P3L94.

Equipment availability in EDs varies. Most respondents indicated their departments are well-equipped and meet EDQS standards, though some reported challenges with equipment resources and quality. Participants generally confirmed the availability of essential equipment, such as emergency carts, ultrasound machines, advanced resuscitation tools, and medical imaging devices, all of which adequately meet EDQS standards. *"The essential equipment for ED in our hospital is available, like, monitors, DC shock, ultrasound, and camera laryngoscope. I think in this regard it is good and aligned with EDQS". P9 P3L103.*

Some respondents identified specific gaps and variability in technological resources among hospitals. Although ultrasound machines are typically accessible, concerns regarding the quality of certain provided items persist.

"There are some shortages in equipment, such as ultrasound, but they now provide us with low-quality portable ones, The X-ray machine is far away from the department, which does not align with the required standards and may be a constraint". P1 P3L111.

Another participant reinforced the availability of most equipment but mentioned the absence of advanced diagnostic equipment like MRI machines, stating:

"Most of the necessary equipment is available, …, however, we may need an MRI…". P8 P3L125

Interviewees identified leadership commitment as a critical barrier to securing resources for EDQS implementation. They noted that weak leadership hinders the enforcement of standards, accountability, and staff training. Additionally, other participants expressed concerns about inadequate leadership support and resource availability.

"The implementation faces several challenges. First, strong commitment from hospital leadership is crucial for effective monitoring and follow-up. Second, adequate staff training, availability of human resources, and clear role definitions are essential…". P3 P2L74.

3.3. Commitment and Resistance to Change

Interviewees said that a lack of real commitment and collaboration from staff could hinder the implementation phase, with some emphasizing the importance of serious commitment.

"The concerns arise from serious commitment and collaboration between staff". P1 P4L133.

While others pointed out another issue that might hinder implementation, which is resistance to change among technical or administrative cadres.

"Cultural resistance to change, …, hinders EDQS implementation". P9 P2L69.

In line with commitment, the sustainability of implementation was a key concern, especially regarding organizational long-term sustainability, participant stated that, *"Concerns about the sustainability of the implementation and the systematic monitoring of compliance with these standards arise from leadership turnover and strategic changes". P9 P3L123.*

One responder indicates an optimistic attitude toward the viability of EDQS implementation by expressing confidence that there are no significant obstacles.

"I don't think there is a significant concern in implementing the EDQS". P10 P3L120.

3.4. Political Situation

The data analysis revealed that several respondents highlighted national challenges, such as persistent political instability and recurrent emergencies caused by Israeli occupation aggressions, as significant obstacles that increase the burden and risk on ED patients and staff. Additionally, financial constraints severely limit the capacity of Palestinian EDs to implement and maintain EDQS.

"Challenges can arise at the national level, including political situations, military attacks by occupying forces, and financial crises…". P6 P2L78.

3.5. Workload

Although interviewees had assured common acceptance of the EDQS, a few concerns were revealed, mainly centred around workload. These fears reflect challenges that may arise during the implementation process.

Many respondents state concern about the additional workload from implementing the EDQS, especially in EDs, where staff are already overwhelmed. Extra tasks, such as documentation and administrative processes, add to this burden.

"Concerns primarily arise from the workload in EDs, the additional effort required for standard implementation, and the accompanying documentation process". P3 P3L147.

Several participants expressed concerns about increased workload due to EDQS requirements and emphasized the need for training and support to mitigate these fears.

"Fear of increased workload as a result of implementing these standards, but with training and guidance these fears can be reduced". P7 P4L137.

Ultimately, the results of the interview analysis showed that participants believed that EDQS is feasible, acceptable and could be implemented regardless of various challenges, whether related to resources or otherwise reasons.

"In my opinion, whatever the reasons or challenges, this should not conflict with or affect the feasibility of the implementation. Even if there is a lack of resources or infrastructure…". P5 P2L82.

For example, the lack of a negative pressure isolation room may be a challenge, but it does not justify not implementing EDQS, as a dedicated space with some safety precautions can be adapted to reduce the spread of infection.

Despite the challenges of the current political situation such as attacks on health facilities and logistical challenges in providing resources, participants stressed that essential services and life-saving care provided by EDs must receive attention to improve quality. One participant said

"The current situation may delay or make it unfeasible to implement due to attacks on healthcare facilities, ...As a result, our priorities should focus on providing essential services and life-saving emergency care". P3 P3L93

One participant mentioned an example, that emphasized the feasibility of implementing the standards despite potential challenges, was that if the computerized systems used to document a patient's medical record failed, it was possible to switch to a manual system, ensuring compliance with relevant standards.

"I believe these standards can be feasible despite potential challenges. We can document and manage medications safely, even if limited resources affect compliance. If the

computerized health information system fails, we can switch to a manual system, but documentation must persist and comply with relevant standards. So, I believe no reason could make implementing EDQS unfeasible". P8 P3L104.

The overall interviewees agree that no valid excuses make EDQS unfeasible while logistical and infrastructural barriers exist.

4. Recommendations

The analysis of the interviews revealed the satisfaction of respondents about the EDQS, and several recommendations were made to enhance the feasibility and acceptance of the application of the standards, as well as to overcome the challenges from the interviewees' point of view. These recommendations are categorized into three subthemes, as follows:

4.1. Capacity building and resource allocation

Training is one of the most critical components for capacity building and successful EDQS implementation. The workforce needs to be prepared through specialized induction and advanced training, ensuring that they are familiar with new protocols and quality standards. Effective training on standard implementation is crucial in helping staff transition smoothly to the new system.

Moreover, continuous education is needed to sustain these skills over time, with particular attention to clinical and communication training. This ensures staff can effectively interact with patients and colleagues, upholding the higher standards expected with EDQS. Furthermore, the education and awareness for patients and the public to be engaged and support the acceptance of the implementation of EDQS.

Numerous participants emphasized the necessity of creating customized training programs to guarantee that all personnel understand and implement EDQS according to their duties.

"...Develop a training program that aligns with the specific duties of each health profession…". P3 P4L131.

Resource allocation, addressing gaps in human resources, and ensuring that the infrastructure meets EDQS requirements.

"Filling the gap in human resources and redesigning the infrastructure to match the requirements of the standards". P5 P3L110.

Respondents indicate that centralized budgeting provides predictable resource flow, while flexibility and decentralization enable departments to address patient needs effectively. A strong infrastructure with modern facilities and accessible equipment is vital, as any deficiencies could threaten the system. Balancing short-term costs with long-term savings is crucial for the implementation and sustainability of EDQS.

"The central budget seems unfair to some hospitals due to varying capacities and workloads. A decentralized budget could enhance quality improvement initiatives and make it easier for hospitals to manage their needs…". P6 P3L102.

4.2. Gradual implementation

While acknowledging existing challenges such as limited infrastructure and resource constraints, many participants noted that these barriers should not prevent the gradual and partial integration of standards. They recommended adopting EDQS in phases at the ED level and gradually expanding it at the national level, allowing for adjustments and improvements as resources permit. As following quotes.

"Despite the challenges, these standards are crucial and can be feasibly integrated into daily workflows, even if their implementation is gradual and partial". P4 P2L74

Feedback indicates that EDQS can be gradually integrated into EDs to enhance outcomes and save lives. While initial resistance may occur, it will eventually become part of the system, as highlighted by one Participant:

"..., initial resistance may occur, but it will gradually become integrated into the system and daily workflow of the ED in Palestine". P10 P2L72.

4.3. Continuous Quality Improvement

After implementing EDQS, the process should continue with ongoing quality improvement to maintain standards over time. Continuous monitoring during and after implementation, along with assessments and feedback, helps identify gaps and areas for enhancement, allowing for sustainable improvement and adjustments to workflows, protocols, or training

"..., sustainability of the implementation and the systematic monitoring of compliance is crucial for improvement and sustainability". P9 P3L123.

6.3.7 Discussion

This study aimed to evaluate the feasibility and acceptability of implementing EDQS for EDs in Palestine. To gain a better understanding of the factors that support implementation, including feasibility, benefits, challenges, and key recommendations, from the perspective of frontline staff in EDs.

The analysis of the interviews demonstrated that integrating standards into the daily workflow of Palestinian EDs is feasible. Interviewees emphasized the potential of these standards to enhance service quality. This finding is consistent with the research by Goenka et al. 2024, which evaluated various interventions and improvement methodologies in a quality improvement project focused on performance indicators in EDs in low-income countries. Their study found that the interventions implemented led to improvements in ED performance. Similarly, the current study suggests that applying EDQS in Palestinian EDs could lead to positive performance improvements (112).

Participants' responses confirmed that there are no legal or regulatory obstacles preventing the implementation of EDQS in Palestine. Conversely, the legal framework governing the health sector aligns with and promotes improvement initiatives, particularly those aimed at ensuring the provision of safe health services, facilitating access to these services, and so on. Previous studies confirm that national regulatory and legislative requirements serve as motivating factors for the implementation of health quality standards (113). This also aligns with WHO publications, which assert that healthcare providers in health facilities have related accountability and responsibility to ensure that the healthcare services provided meet the expected quality standards (114).

Participants in this study generally expressed their acceptance of the EDQS and demonstrated a willingness and enthusiasm to implement them, along with leadership commitment, despite some knowledge gaps identified. These positive indicators may facilitate the implementation process in the future. This aligns with previous studies highlighting the importance of staff engagement to support the integration and implementation of such standards, in addition to leadership support, including Kelly et al. 2023 systematic review of factors that influence the implementation of similar international standards to EDQS (115). This systematic review highlighted key enablers and barriers to implementing internationally endorsed health and social care standards. Enablers included support tools (55%), training courses (52%), and knowledge sharing (45%), along with

staff engagement and leadership support. In contrast, barriers were a lack of knowledge about standards (63%), staffing constraints (46%), and insufficient funding (43%). Addressing these factors can improve the implementation of standards and enhance the quality of care in health and social services.

The study revealed commonalities among the participants, indicating that all the EDQS are acceptable and align with the norms and culture of Palestinian health organizations and society. There was no conflict or sensitivity observed; rather, both the culture of the institution and the individuals strongly support improvement initiatives. This finding contrasts with some studies that suggest concerns about cultural sensitivities. Claeys et al. (2020) study demonstrate that cultural factors negatively affect healthcare quality for minors and ethnic groups, leading to inferior care. This contrasts with the current study, which claims that no cultural conflicts impede the equitable application of medical standards and highlights the lack of ethnic diversity in Palestinian society (116). However, these findings motivate the feasibility of integrating the EDQS into EDs.

The interview results regarding the potential benefits of implementing EDQS in Palestine align with previous studies. Manu et al. (2022) highlight that applying quality standards and standardised procedures can improve health service quality and outcomes, potentially reducing mortality rates (117). This is what the current study emphasized which is that serious compliance with the EDQS, may lead to an improvement in the performance and health services provided in ED in Palestine, and this is considered one of the important benefits that this study may reflect.

Optimizing workflows in EDs according to established standards can improve patient management, reduce waiting times, and enhance overall performance. This aligns with previous studies, including Kaushik et al.'s study, which emphasized optimizing laboratory test turnaround times to minimize patient wait times in EDs (118). Another study confirms that using optimization techniques helps improve patient flow, optimize the order of treatment tasks, and reduce average treatment time while addressing fluctuating patient demands (119).

Additionally, implementing EDQS may foster a safer environment for both patients and healthcare providers, consistent with the WHO's patient safety-friendly hospital framework (19). A recent study by Mehreen et al. 2024 further supports that adherence to standards, such as international patient safety goals, enhances safety culture in EDs, reduces medical errors over time, and improves overall quality (120).

Respondents, including physicians, nurses, and specialists in quality and patient safety, confirmed that there are gaps in in-depth knowledge of these standards. They acknowledged both the benefits and challenges associated with implementation. Overall, they emphasized that implementation is feasible and acceptable despite the challenges.

This study reveals a knowledge gap regarding EDQS among frontline staff in Palestinian EDs. While some participants demonstrated a basic understanding of standards like patient safety and triage, their overall familiarity with EDQS was limited. These findings align with previous studies indicating that knowledge deficits hinder the implementation of quality standards, particularly in low-resource healthcare settings, and the necessity of structured and regular training for the successful implementation of EDQS and improvement (69,121).

Familiarity with EDQS is essential for EDs staff, given their responsibility for patient care, triage, and documentation. The notable variation in participants' knowledge emphasizes the need for purposeful training that integrates clinical and administrative domains of these standards. Previous studies recommend embedding quality improvement approaches like EDQS within routine professional development to address such gaps (122).

Experience with relevant standards emphasizes the challenges associated with integrating EDQS into routine practices. Despite familiarity with international standards such as BLS, ACLS, and the WHO's Patient Safety Friendly Hospital Initiative, the absence of practical implementation highlights significant limitations in training and infrastructure. ED personnel need continuous training programs to effectively implement these EDQS in practical contexts, thereby enhancing their understanding of the standards. This is aligned with previous studies that confirm the need for regular training and capacity building for human resources and face-to-face interaction related to EDQS and relevant quality improvement approaches (123).

The participants believed that EDQS were implementable without conflicts since they aligned with existing ED procedures and protocols. Nonetheless, insufficient resources, particularly the infrastructure and ED staff training might hinder full compliance. Implementation gaps will always persist; but, ensuring successful integration requires extra financial resources, effort, and structured training to address these gaps. This is inconsistent with previous studies that confirm that applying improvement and change tools such as standards and guidelines is cost-effective, especially in the long term (123,124).

Lack of training, staff shortages, and inadequate leadership commitment and infrastructure are challenges highlighted by respondents in this study, which may impact compliance with quality standards in EDs. This has been confirmed by studies in low-income settings, such as the study of Oleribe et al. 2019, which identified similar challenges and solutions to overcome them through staff training, capacity building, increased budgets for health, and advocacy for political support and commitment (69).

Respondents noted that a significant challenge to the implementation of EDQS is the resistance to change culture. This aligns with existing studies, which emphasize successful quality initiatives and maintaining the sustainability of the implementation depend on effective facilitation, employee involvement, and overcoming resistance through relationship-building, motivation, and flexibility. This will be essential during the implementation of quality improvement initiatives, such as the Palestinian EDQS (125).

Another challenge mentioned was the lack of a follow-up and evaluation process to measure the level of compliance with the standards on an ongoing basis, to drive the implementation process. Previous studies have emphasized the importance of continuous monitoring for improvement, as indicated by Schmutz et al. where using a special multidisciplinary huddle in the ED to monitor and ensure the implementation of various improvement initiatives, like EDQS was successful (126).

The political situation and instability in Palestine as a result of the Israeli occupation and the resulting financial crisis, affect all aspects of life, including the health sector in general and EDs in particular. This is what the study showed as one of the challenges that threaten the implementation of the EDQS and its sustainability. This is highlighted in the United Nations report on the economic situation in Palestine, as this report confirms the financial challenges that lead to a shortage of resources, the inability of the health system to provide health services, and its inability to develop and grow or implement improvement initiatives, including the implementation of EDQS (127).

The study found that the increased workload and high utilization of ED services for non-emergency cases is one of the challenges, likely resulting from a lack of awareness about the ED's role among patients. Raising this awareness is essential for implementing an effective quality system for emergency services. This is in line with other studies such as Alotaibi et al. 2023 and Abuljadail et al. 2024 and the need to develop solutions and interventions to improve utilization, including public awareness programs and directing

them to PHC centres instead of EDs (128,129). This suggests that increasing public engagement and education could help support quality improvement efforts and minimize the workload in the EDs.

The study results through the interviews show that there are no excuses despite the implementation challenges, meaning that implementing EDQS in Palestinian EDs is feasible, whether the challenges are in infrastructure, human resources, or politics. These results align with the updated framework developed by the International Federation of Emergency Medicine (IFEM) 2020, which detailed that every challenge is met with enablers. This is the role of healthcare leadership in creating a supportive environment for implementing the standards and overcoming challenges, as this framework also stated that *"the best quality hospitals were led by individuals who were never satisfied with the level of quality in their hospitals and were constantly seeking to make improvements"* (72).

The findings of previous studies suggest that successfully implementing various quality improvement initiatives, including these standards, requires several enabling elements. These include qualified and sufficient personnel, appropriate equipment and devices for EDs, leadership commitment, continuous follow-up and evaluation, and financial and political stability (72).

Moreover, previous studies highlight the need for developing effective and sustainable strategies that align with potential challenges to address issues related to these enabling elements (130). However, to gain a deeper understanding of the challenges, real feedback should be gathered through the implementation of the standards. This feedback will inform the development of appropriate strategies and interventions to tackle any identified challenges.

Participants expressed concerns about accepting the standards, mainly due to the potential for an increased workload, particularly regarding documentation requirements. These concerns align with findings from previous studies, which suggest that organizational leadership should acknowledge employees' efforts and take their time and workload into account. By doing so, leaders can enhance employee performance and foster a greater acceptance of the standards (115,130).

Leadership plays a crucial role in directing and leading the implementation process, including follow-up and evaluation, to ensure successful adherence to these standards and continuous quality improvement. A recent study emphasized the interactive role of effective leadership in promoting quality initiatives in healthcare. It categorizes different

leadership styles, noting that transformational leadership boosts motivation and participation, service leadership fosters teamwork and shared responsibility, and democratic leadership encourages comprehensive decision-making (131). This agrees with the study's interviewees.

The impact of external support, including collaboration and partnership, on the acceptance of EDQS implementation is consistent with the respondents' opinion that it is a positive factor for the sustainability of the implementation, improving performance, raising awareness, and exchanging knowledge and experiences (130).

Consequently, there are no suggestions for modification from their perspective, and they would benefit from being initially tested in EDs and gradually after that. This aligns with the process of developing and validating the standards and adheres to the principles of the International Society for Quality in Health Care (ISQua) to guarantee that the standards are relevant, understandable, measurable, beneficial, and achievable (RUMBA) (74,106).

The satisfaction among interviewees serves as a favorable sign of the acceptance and feasibility of their implementation, considering the enabling factors suggested by the participants to address the barriers to implementation.

This study highlights the feasibility of implementing EDQS in resource-limited settings like the Palestinian healthcare system. The findings stress the need to address challenges through various strategies and interventions, including capacity building, human resource development, gradual implementation, and maintaining quality emergency services amid political instability and crises.

6.3.8 Limitations

This study explored the perspectives of a purposive group of ED staff from the WB, excluding those from the GS due to challenges in access and participation caused by ongoing war conditions. This limitation affects the transferability of the findings to all Palestinian EDs. Additionally, most interviews were conducted remotely, which may have compromised data credibility by limiting non-verbal signs and in-depth interactions. Furthermore, participants had limited prior training on the standards, which may have impacted the dependability of their responses, as their interpretations were influenced by unfamiliarity with the framework.

6.3.9 Implications of this study

The study assessed the feasibility of implementing the EDQS in Palestinian EDs by examining staff perceptions. However, the impact of these standards on healthcare delivery has not been assessed. Future research should evaluate the current state before implementation, gradually test and apply the standards, and refine them as needed. Policymakers should develop a systematic policy and strategies to enhance support for implementing these standards.

6.3.10 Conclusion

The study explored four primary themes: enablers of feasibility, benefits, challenges, and recommendations, along with 16 relevant sub-themes. Despite existing knowledge gaps and resource challenges, respondents indicated a favorable perspective regarding the feasibility and acceptability of implementing EDQS in Palestine. Their satisfaction and willingness to support implementation were also expressed. This belief stemmed from the expectation that these standards would enhance ED services in Palestine. The study identifies several enablers for the implementation of standards, including the legal environment, alignment with norms, integration into daily practices, and the willingness of personnel. These factors are viewed as significant strengths in facilitating the implementation process. The study recommendations emphasized the provision of essential resources and infrastructure, a phased implementation approach, and the importance of sustainability and ongoing improvement. Consequently, an additional study is necessary to evaluate the current situation before implementation, followed by the implementation phase, to measure these standards' actual impact. This study should also provide insights into the challenges and opportunities for improvement regarding the standards and ED services.

6.4 Summary

This chapter explored the feasibility and acceptability of implementing the validated EDQS in EDs in Palestine. Significant challenges comprised resource limitations, staff workload, and infrastructure constraints, whereas staff commitment, leadership support, and policy alignment served as facilitators. The findings highlight the necessity of customizing

implementation strategies to align with the specific needs and capabilities of EDs in resource-constrained settings.

Chapter Seven will synthesize the findings from all three manuscripts, offering a comprehensive discussion of the study's contributions. It will integrate the development, validation, and feasibility of the EDQS, explore broader implications for emergency care improvement, and provide limitations of research.

Chapter 7: Integrated results and discussion

7.1 Introduction

This chapter synthesizes the findings from all three manuscripts to provide a comprehensive discussion of the study's contributions to developing, validating, and implementing EDQS in Palestine. By integrating the key results, this chapter highlights the doctoral thesis' overall significance, contextualizes the findings within global and local healthcare challenges, and offers implications for emergency care improvement. Additionally, the limitations of the research are addressed.

7.2 Key Contributions of the Study

This section provides an overview of the major contributions of the thesis.

- **Development of Context-Specific EDQS:** The study presented a rigorous process for designing EDQS tailored to the Palestinian context by combining literature review and expert consensus.
- **Validation of Standards Using the Delphi Technique:** By engaging a diverse panel of experts, the research validated the relevance, clarity, and feasibility of the proposed standards. This contributed to establishing a robust and practical framework for improving emergency care.
- **Feasibility and Acceptability of EDQS Implementation:** Insights from qualitative interviews highlighted the readiness of ED staff to adopt the standards and emphasized the importance of addressing systemic barriers for successful integration.

7.3 Findings and discussions across manuscripts

This section provides a summary of the findings included in the three manuscripts and the discussion, and it connects those findings to the objectives of the research:

7.3.1 Development of Quality Standards for Palestinian EDs

The systematic literature review and expert consensus identified a set of EDQS ensuring relevance to the Palestinian context, considering political, cultural, and economic challenges, and resource instability. In comparison to international standards for stable,

high-income countries, 103 initial quality standards were established, organised into two main domains and 16 sub-domains: Clinical domain, comprising seven sub-domains (triage, treatment or transfer of emergency patients, guidelines, protocols and policies, medication safety, ambulance services, patient flow, LoS, and medical diagnostic services) with a total of 39 standards. The administrative domain consists of nine sub-domains (documentation and information management system, access, location, and design, leadership and management, workforce staffing and training, equipment and supplies, capacity-resuscitation rooms, resources for a safe working environment, performance indicators, and patient safety- infection prevention and control program (PSIPC)) with a total of 64 standards.

In two rounds of discussions, a local panel of experts confirmed the appropriateness of a comprehensive set of quality standards designed for EDs in Palestine. These standards align with international frameworks such as the WHO and JCI but specifically address the unique challenges of the Palestinian healthcare system, including limited resources, service disruptions from conflict, and workforce shortages. Key areas of focus include ambulance services, patient flow, diagnostic efficiency, and the adoption of evidence-based protocols tailored to local needs (41).

The implementation of these standards is expected to significantly improve the quality of emergency care in Palestine, enhancing patient outcomes, reducing morbidity and mortality, and fostering a culture of continuous improvement. For example, adherence to evidence-based protocols, such as the HEART score for chest pain management, has been shown to improve efficiency, reduce unnecessary hospital admissions, and lower costs (89). Similarly, administrative standards, such as ongoing quality monitoring and risk management, are essential in mitigating resource constraints and promoting patient safety (13). Evidence from initiatives like the Patient Safety Initiative in Palestinian hospitals highlights the transformative impact of adhering to such standards, resulting in measurable improvements in service quality and safety culture (90).

Implementing these standards may face challenges like resource shortages, work interruptions due to conflict, staff burnout, and workplace violence, as previous studies indicate (46,47). While essential for enhancing ED care in Palestine, effective strategic planning, continuous monitoring, and stakeholder engagement are vital for sustainable success. Future research should validate these standards and evaluate their implementation and impact on emergency care reforms in comparable contexts.

7.3.2 Validation of EDQS through e-Delphi

The second research phase validated 100 out of 103 standards, achieving over 80% consensus on the majority of them. This validation came after two rounds of validation by 53 local, regional, and international experts using the Delphi technique. Expert feedback prompted minor wording and modification of some standards. Similar standards, particularly those related to workforce recruitment and training, were merged, but the two main domains; clinical and administrative along with their sixteen sub-domains were retained. The consensus rating reached 97.3% for administrative standards and 96.4% for clinical standards.

The validation process for the developed EDQS demonstrated a remarkable level of agreement among experts engaged through the Delphi technique. The high consensus rates; 97.3% for administrative standards and 96.4% for clinical standards affirm the relevance and appropriateness of these standards for the Palestinian healthcare context. The minor modifications and rewording suggested by the experts reflect their alignment with the standards' intent and reinforce their applicability. Combining some overlapping standards, particularly those related to workforce recruitment and training, streamlined the framework without compromising its comprehensiveness (97).

The retention of the two main domains; clinical and administrative and their 16 sub-domains emphasize the robustness of the original structure, ensuring a balanced approach to addressing both the clinical and operational aspects of ED management. This process highlights the importance of integrating diverse expert insights to refine and enhance context-specific standards. The successful validation not only ensures that the standards are comprehensive and practical but also strengthens their credibility and acceptability among stakeholders. These findings suggest that the validated standards provide a solid foundation for improving emergency care quality in Palestine and serve as a model for developing similar frameworks in other low-resource and conflict-affected settings. Assessing feasibility and readiness for implementation, as well as conducting pilot tests, will be vital for evaluating impact and refining practical applications. These standards align with the quality care dimensions identified in prior studies (16,19).

7.3.3 Feasibility and Acceptance of EDQS

The feasibility and acceptance of EDQS in Palestinian EDs were influenced by several enabling factors, including integration with workflow, supportive legal and regulatory frameworks, leadership commitment, and cultural alignment.

Participants acknowledged that EDQS could enhance healthcare, streamline patient flow, and reduce misdiagnoses, expressing confidence in integrating these standards with minimal disruption. *"..., these standards are crucial and can be feasibly integrated into daily workflows, ...". P4 P2L74.* This finding aligns with previous studies showing that integrated policies, procedures, work instructions, and interventions such as EDQS positively impact emergency care efficiency and patient outcomes (112). A study by Naz et al. 2022 confirms that standardising workflows in obstetric triage reduced the LoS from 97 to 82 minutes within 10 months (75). Additionally, research shows that healthcare staff often face challenges with new quality measures without adequate orientation and guidance, so staff awareness and training strategies are essential to the sustainability and effective integration of improvement initiatives (122).

A key subtheme of feasibility enablers is the legal and regulatory environment in Palestine, which participants viewed positively. They highlighted that Palestinian laws, including public health law, licensing regulations for Palestinian private hospitals, and licensing regulations for emergency centres and ambulances support the implementation of EDQS (132–134). *"I believe there are no legal or regulatory barriers in Palestine against the implementation of EDQS". P1 P3L117.* Sharma et al. (2023) emphasize that regulatory compliance is crucial for patient safety and confidence in healthcare, fosters a culture of excellence in health institutions, and improves health outcomes. In contrast, non-compliance can lead to patient harm, inconsistency, and confusion among healthcare providers (135).

Leadership willingness to support was another crucial enabler, with department heads and senior ED staff showing a strong commitment to adopting and advocating for EDQS. Their commitment was evident in statements such as, *"As the head of the ED department, I am willing to support its implementation to the best of my ability". P10 P3L116.* This perspective supports the feasibility of integrating standards in EDs. It aligns with previous research by Alshamari, 2020, which emphasizes that leadership commitment through effective planning, consistent follow-up, and daily evaluation is essential for improving healthcare quality in these environments and ensuring the sustainability of such improvements (6).

Participants identified crucial subthemes supporting the feasibility of implementing and integrating the EDQS into EDs in Palestine: there are no cultural conflicts with these standards, both within the institutions and in society at large. *"There is no cultural sensitivity to the EDQS". P7 P4L160.* The standards align well with the community's cultural values, particularly regarding privacy and respect, as outlined in Article 60 of the Palestinian Public Health Law No. 20 of 2004, which addresses patient rights (134). In contrast, a study by Beverley et al. 2022 proposes a strategy that engages patients to mitigate cultural insensitivity and inequity. This approach is especially relevant in societies where race, religion, gender, and language can create barriers (136). However, Palestine does not have to contend with these specific cultural sensitivities.

Theme one reveals that the absence of cultural or legal barriers supports implementation; however, international research indicates that ongoing adherence to quality standards requires continuous support, collaborative stakeholder involvement, oversight, and adaptation to local healthcare needs (137).

The findings revealed mixed perceptions: some were optimistic about implementing EDQS, while others acknowledged its feasibility but emphasized the need to address challenges and consider recommendations.

The findings are consistent with global research on healthcare quality standards and indicate that integrating EDQS into daily workflows is feasible and has the potential to enhance service quality and performance. Participants expressed general acceptance and enthusiasm for the standards, emphasizing alignment with institutional and societal norms and a supportive legal framework (115).

Participants identified several key benefits of the EDQS, including improved care quality, optimized workflows, better outcomes, and enhanced safety, with the most common benefit being improved service quality in EDs. *"There are numerous benefits to implementing EDQS. In general, it improves the quality of services in the EDs, especially regarding safety issues and clinical practices". P3 P2L63.*

The interviewees confirm that applying quality standards effectively improves healthcare outcomes, aligning with previous studies. For example, research by Hamdan and Saleem (2018) on the patient safety culture in Palestinian government hospitals showed significant positive changes in various aspects of patient safety following the implementation of WHO patient safety standards between 2011 and 2016 (90). These findings support earlier research, including Lorenzetti et al. (2018), which showed that quality initiatives like audits, feedback, standardised templates, and reminders enhance physician documentation.

Improved documentation is crucial, as poor records can hinder the continuity of care and treatment (138).

However, challenges such as insufficient resources, training gaps, staff shortages, and political instability were highlighted (69). Participants stressed the need for structured training programs and continuous leadership support to overcome these barriers.

A significant knowledge gap among ED staff was noted, with variations in familiarity with EDQS. This underlines the need for capacity-building initiatives and the integration of quality improvement approaches into routine professional development. While respondents voiced concerns about increased workload, particularly with documentation, they emphasized the importance of leadership acknowledgment of staff efforts to foster acceptance, this is what previous studies recommend embedding quality improvement initiatives within routine professional development to overcome such gaps (122).

In line with earlier research, the study also highlighted the crucial role that leadership plays in directing implementation, guaranteeing follow-up and evaluation, and encouraging cooperative partnerships to overcome resource constraints (69). External support, including training and resources from international organizations, was deemed essential for successful implementation and sustainability (130).

Despite the challenges, respondents were satisfied with the rigor of EDQS development and validation, advocating for early testing and gradual rollout. The results show that EDQS can be used in places with few resources, like Palestine, if strategies like gradual implementation, building up people's skills, and getting help from outside sources are used. The study concludes that EDQS have the potential to significantly improve emergency service quality, despite political and resource constraints.

7.4 Overarching Synthesis of Findings

The research highlights the complex relationship between EDQS, resource availability, and stakeholder engagement, emphasizing the need for a balanced approach that takes structural limitations and operational feasibility into account. While the development and validation process confirmed the appropriateness of the EDQS for Palestinian EDs, feasibility assessments revealed ongoing challenges that may impede their full implementation in resource-constrained settings. Challenges like inadequate infrastructure, workforce shortages, and inconsistent access to essential medical supplies are common in conflict-affected and low-resource healthcare settings.

Resource availability is crucial for the sustainability of EDQS. Insufficient financial, human, and material resources can hinder even well-designed standards. Research indicates that successful healthcare quality initiatives necessitate strategic investments in staff training, facility upgrades, and ongoing monitoring (122). Thus, aligning EDQS implementation with effective resource allocation and prioritizing high-impact, low-cost interventions can improve feasibility and maximize the benefits of standardisation.
Additionally, the study highlights the essential role of stakeholder engagement in effective EDQS implementation. Collaboration among hospital leaders, providers, policymakers, and partners is key to tackling ED challenges. Engaging stakeholders early promotes ownership and commitment, leading to improved compliance with standards and improved problem-solving in resource constraints. Previous research indicates that inclusive decision-making and participatory governance facilitate the adoption of healthcare quality policies in challenging contexts (137).

The findings provide practical insights for improving emergency care in Palestine and other similar contexts by thoroughly addressing these concerns, hence increasing the feasibility and sustainability of EDQS. Figure 9 illustrates the overarching synthesis of the findings

7.5 Implications

This section highlights the broader significance of the study beyond the Palestinian context, emphasizing its relevance to policy, practice, and healthcare systems in resource-limited or politically unstable environments. The findings provide strategies for enhancing the implementation of EDQS and include recommendations supported by relevant literature.

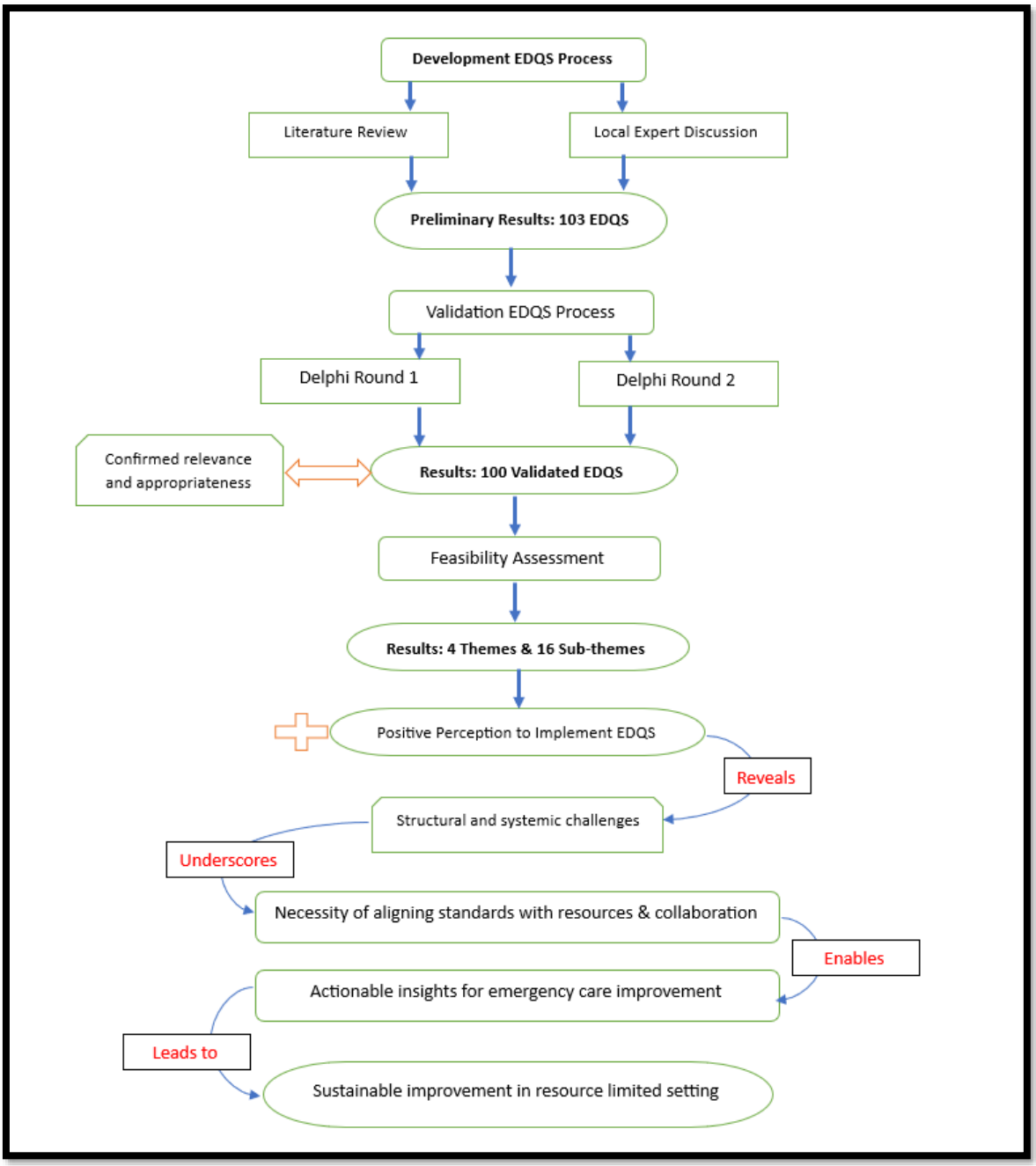

Figure 9: Overarching synthesis of PhD research findings

7.5.1 Policy Implications

The study highlights the importance of prioritizing EDQS as a national healthcare focus. Incorporating EDQS into national health strategies is essential for achieving sustainable quality improvements in emergency care. Existing research indicates that adopting structured quality improvement approaches like EDQS leads to better patient outcomes and increased healthcare efficiency (90,112,138). However, without formal integration into

policy, EDQS may be applied inconsistently, which could limit its effectiveness in improving healthcare.

Improving resource allocation and funding for ED infrastructure is a critical policy recommendation. Studies show that investments from government and health ministries enhance the quality of ED services, especially in resource-limited settings (139). Given the financial constraints in Palestine, targeted funding mechanisms like international collaborations, public-private partnerships, and designated government funds could effectively bridge gaps in ED capacity and service delivery.

Furthermore, decentralizing hospital budgets can improve flexibility in addressing emergency department needs and enhancing quality. Research shows that centralized budgeting can restrict hospitals' ability to tackle local challenges and allocate resources efficiently (140). However, decentralization requires strong oversight and governance to ensure equitable resource distribution and prevent inefficiencies.

7.5.2 Practice Implications

From a practical perspective, Palestinian EDs should focus on implementing priority and achievable standards that can achieve a quick success story, such as enhancing communication, adhering to clinical protocols, improving workflow, developing policies and procedures, and training staff on EDQS and procedures. So, quick wins in implementation science foster buy-in and compliance, especially among late adopters. Early successes in organizational change build trust, promote collaboration, reduce ambiguity, and showcase benefits, ultimately driving adherence (141).

While broader systemic reforms are essential, small improvements in these areas can significantly enhance the quality of care during implementation and testing phases, with a focus on incremental progress (142).

Investing in targeted training programs is vital for enhancing ED performance. Research demonstrates that structured training improves staff competency and patient outcomes (122). In resource-limited settings, ongoing professional development, including simulation-based training and peer education, can lead to sustainable quality improvements (121).

Healthcare facilities should establish continuous assessment and feedback mechanisms to ensure effective implementation of EDQS. Research shows that regular audits, performance monitoring, and stakeholder engagement in quality improvement initiatives

enhance standard adherence and patient care (40,137). Implementing structured assessment tools can simplify evaluation, reporting, and comparison processes (41).

7.5.3 Broader Implications

Beyond Palestine, this study adds to the existing literature on quality improvement in EDs that operate in politically unstable and resource-limited settings. Previous research has identified that emergency care in conflict-affected regions encounters specific challenges, such as workforce shortages, disruptions in the supply chain, and damage to infrastructure (62,124). The findings reinforce the importance of adaptable, context-specific quality standards in such environments.

The study also underscores the critical role of healthcare professionals and leadership in driving successful implementation. Leadership commitment and frontline staff engagement are key enablers of quality improvement initiatives (130). In resource-limited settings, fostering a culture of continuous learning and quality improvement among healthcare workers can mitigate some of the structural challenges affecting ED performance (122).

Finally, the successful implementation of EDQS has the potential to improve patient care and public health outcomes not only in Palestine but also in other regions facing similar challenges. Strengthening ED capacity and resilience contributes to broader health system preparedness, enabling healthcare facilities to respond effectively to crises such as conflicts, pandemics, or resource shortages (143). The adoption of context-specific quality standards could serve as a model for other low- and middle-income countries seeking to enhance emergency care despite systemic constraints.

7.6 Research Limitations

This section acknowledges the limitations of the study and their potential impact on the findings. While the study included a diverse group of emergency department (ED) staff from both public and private hospitals, its focus on the West Bank may limit the generalizability of the results to other regions in Palestine. In particular, the Gaza Strip faces unique challenges that were not addressed in this study, such as severe resource constraints due to ongoing occupation, a blockade, and wartime conditions; limited access to ED staff; and the destruction of the majority of healthcare facilities.

While the Delphi method has strong methodological advantages, its reliance on consensus may unintentionally exclude alternative viewpoints from stakeholders who are not part of the expert panel. Consequently, certain perspectives that could enhance the understanding of EDQS may be overlooked.

Another limitation of this study is the challenge of generalizing its findings to other resource-limited settings that have different healthcare structures and policy environments. Given the wide variation in healthcare systems across regions and strategic priorities for the countries, the applicability of the study's conclusions may be restricted in contexts that face unique regulatory, financial, and infrastructural challenges.

Moreover, the study did not engage patient and community feedback, which might have given important new perspectives on how ED users see the quality of healthcare. Providing a more complete picture of quality improvement requirements in EDs, including the perspectives of patients and their families, may have improved the results of the study.

Finally, while the study assessed the feasibility and acceptance of the ED quality standards, it did not include actual implementation and long-term evaluation of their impact on ED performance and patient outcomes over time. Long-term evaluations should be taken into account in future studies to find out whether putting these EDQS into practice results in long-term enhancements in the provision of emergency care and patient health outcomes.

7.7 Summary

This chapter offered the findings and discussions of three manuscripts, highlighting their policy, practical, and broader implications for improving emergency department services, along with the research limitations. Chapter eight will summarize these manuscripts and offer actionable recommendations for future research.

Chapter 8: Conclusion and Recommendations for Future Research

8.1 Introduction

This chapter provides a comprehensive conclusion based on the insights from all three manuscripts. It summarizes key points and highlights the significance of the doctoral thesis as a whole. Additionally, it offers recommendations for future research that can build on this study, aiming to inspire further exploration and a deeper understanding of the discussed topics.

8.2 Conclusion

This study has contributed to the development, validation, and feasibility assessment of Emergency Department Quality Standards (EDQS) in Palestine. By involving key stakeholders from both public and private hospitals, the research established a structured framework for evaluating the quality of emergency departments while also identifying practical challenges to implementation. The findings emphasize the importance of incorporating EDQS into national healthcare strategies, which can enhance resource allocation and ensure ongoing staff training to improve the delivery of emergency care. Despite facing challenges related to infrastructure, budget constraints, and stakeholder engagement, the study highlights the feasibility of implementing EDQS in resource-limited settings with appropriate strategic adaptations.

The study has offered valuable insights but also highlighted several limitations. These include the exclusion of hospitals in GS, the lack of a long-term impact evaluation, and the absence of feedback from patients and the community. Future research must address these gaps to enhance and expand the EDQS in Palestine and similar contexts.

8.3 Recommendations for Future Research

To improve the development, application, and impact of EDQS, future research should focus on both relevant topics and appropriate study designs that can build upon the findings and limitations of this study. The following research directions are recommended:

Expanding Geographic Scope:

Future studies should include hospitals in GS, where healthcare systems encounter significant challenges due to limited resources and prolonged exposure to conflict. Conducting comparative studies between the WB and the GS could offer deeper insights into the specific needs of each region.

Pilot and Comparative Studies:

Future research should evaluate EDQS standards in various ED settings, both locally and internationally, to refine and validate them. Multi-centre studies can test adaptability and identify necessary contextual adjustments for broader implementation.

Comparative Implementation Studies:

Research should investigate the implementation of EDQS in diverse healthcare facility settings, including public, private, and specialized hospitals. Comparative case studies using mixed methods can identify best practices and challenges for effective adoption.

Community and Patient Engagement Research:

Investigating the impact of community and patient awareness, education, and engagement on emergency care quality and EDQS acceptability is essential. Qualitative studies, such as focus groups and participatory action research, can offer important insights into patient and caregiver expectations.

Longitudinal Impact Studies:

Future research should utilize longitudinal study designs to assess the long-term effects of EDQS implementation on patient outcomes, hospital efficiency, and healthcare worker performance. Prospective cohort studies and controlled before-and-after studies would be valuable for measuring these impacts.

Economic Evaluations:

Cost-effectiveness and cost-benefit analyses should be used in research to evaluate the financial effects of EDQS implementation. Economic modelling studies could estimate potential savings from improved patient outcomes, reduced emergency transfers, and enhanced operational efficiency.

Innovative Resource Optimization Approaches:

Future research should aim to create and test affordable and appropriate new ideas, like digital health tools, artificial intelligence (AI), telemedicine, and community programs, that can help effectively implement EDQS in Palestine. These technologies have the potential to address systemic challenges, including staff shortages, infrastructure deficiencies, and unequal access to emergency services.

AI-driven clinical decision support systems can enhance early risk assessment, improve triage accuracy, and optimize patient flow efficiency in high-demand environments. Similarly, telemedicine can connect isolated areas by enabling virtual consultations, reducing unnecessary referrals, and providing professional assistance to communities in need.

Community initiatives and digital platforms can improve prehospital care and patient engagement. Implementation science methods are crucial for evaluating the acceptability, feasibility, effectiveness, and sustainability of these solutions within the Palestinian ED's complex context. This ensures solutions are theoretically sound and practically viable within fragile, resource-constrained health systems.

8.4 Summary

This chapter provided the conclusion of the study, summarizing its key findings on the feasibility and importance of implementing EDQS. It also outlined recommendations for future research, highlighting areas such as expanding geographic coverage, evaluating EDQS in different healthcare settings, assessing financial implications, and exploring innovative, low-cost solutions to address resource challenges. These recommendations aim to strengthen the development, application, and sustainability of EDQS in Palestine and similar contexts.

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10 Appendices

Appendix 1: *List of Emergency Department Standards Generated from Literature.*

A. Clinical Pathway (Domain)

A	Clinical Pathway	Appropriate	Not Appropriate / why?	Comment
A.1	**Triage**			
A.1.1	There is an effective evidence-based triage system to prioritize emergency patients (66).			
A.1.2	There is a triage process for identifying patients who have urgent or emergency care needs (60).			
A.1.3	Urgent or emergency patients are given priority for timely assessment and appropriate care (60) .			
A.1.4	Patients who have any change in their medical condition or have been waiting for a long period of time are reassessed periodically (66).			
A.1.5	The emergency department triage team triages patients according to local or international approved guidelines (61).			
A.1.6	All clinical staff in the triage area must be trained in the triage process and available around the clock (61,73).			

A.1.7	The triage area should be easily accessible and visible (61).			
A.1.8	The triage system is implemented in a clear, consistent and non-discriminatory manner for all patients and vulnerable groups (61).			

A	**Clinical Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
A.2	**Treat or transfer emergency patients**			
A.2.1	There is a process in the emergency department to treat or refer emergency patients depending on their needs (66).			
A.2.2	There is an approved written policy and procedure for treating emergency patients who present themselves (66).			
A.2.3	Emergency patient treatment policy and procedure is implemented and monitored (66).			
A.2.4	Stabilization therapy is provided to a patient who needs emergency care or a patient in labor (66).			
A.2.5	The emergency department has a written and implemented policy to arrange the patient's transfer to another hospital, whether the patient or his accompanying person requests the transfer or the hospital has no capacity for treatment (66).			

A.2.6	The hospital has an ambulance to transport patients or there is a permanent transfer agreement with a facility that can provide the required level of care while the patient is being transported (60,66).			
A.2.7	The emergency department team ensures that the patient is informed of the reasons, risks, and benefits of transfer to another hospital (61).			
A.2.8	The emergency department team is trained on the policy to prepare patients for transport (61).			
A.2.9	The emergency department team ensures that all patient referral documents contain sufficient information to facilitate ongoing care when transferring to another hospital (61).			

A	**Clinical Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
A.3	**Documentation and Information Management System**			
A.3.1	Patient demographic details are recorded in the Patient Information Record with the date and time of access to the emergency department (60,66,73) .			
A.3.2	Complete patient information should be maintained either in an electronic information system or in the form of a paper record (66).			
A.3.3	Details regarding patient's full name and ID, medical record (file) number, arrival date and time, departure date and time, ambulance or			

	other means of transport name, name(s) of treating medical staff, main complaint and / or diagnosis, disposition of the patient (e.g., home, transfer, admit) (60,66,73).			
A.3.4	The registry clerk available all the time to register emergency patients (73).			
A.3.5	The emergency department has a written policy and procedures for documentation requirements including protection against loss or damage, backup, retention, and alternative systems in case of system failure or crisis (73).			
A.3.6	The emergency department should have a standard list of agreed abbreviations for clinical documentation (73).			
A.3.7	There should be a process in the laboratory and radiology department to inform the emergency department of critical patient results and document them (73).			
A.3.8	The emergency department has a written document control policy that includes the preparation, approval, and distribution of documents (73).			
A.3.9	Emergency department staff can access information and data that will support the treatment of patients who present to the emergency department (61).			

A	**Clinical Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
A.4	**Guidelines, Protocols and Policies.**			

A.4.1	Emergency department patient care is guided by clinical practice guidelines that have been adopted or developed and implemented for the most common emergencies and the top emergency diagnoses (66).			
A.4.2	There are policies and procedures in the emergency department for all clinical and management pathways include but not limited to (60): a. Chest Pain management b. Management of medico-legal cases such as alcohol and narcotic abuse and criminal acts. c. Management of suspected victims of abuse, neglect, and domestic violence. d. Management of suicidal patients e. Care of trauma patients. f. Care of patients not competent to care for themselves. g. Care of minors (underage). h. Patient transfer from emergency department to inpatient areas or to another healthcare facility. i. Patients who leave against medical advice. j. Patients who leave without being seen.			
A.4.3	The guidelines, policies and procedures are developed under supervision of emergency department head and in collaboration with qualified relevant staff and departments (60).			

A.4.4	The emergency department staff are trained on the guidelines, policies and procedures (60,66).			
A.4.5	There is a compliance with the approved emergency department guidelines, policies and procedures (60,66).			

A	**Clinical Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
A.5	**Medication Safety**			
A.5.1	There is a policy and procedure for medication management and use in the emergency department (73).			
A.5.2	The medications are stored safely and securely in the emergency department (61).			
A.5.3	Life-saving medicines are available in the emergency department at all times and are regularly checked for stock availability, expiration date and storage conditions (61,73).			
A.5.4	The crash cart contents are well organised, standardised and contain all special needs including pediatrics cases (73).			
A.5.5	The emergency department has processes in place to ensure that medications are prescribed, administered and recorded correctly and safely (61).			
A.5.6	Patients in the emergency department are monitored after medications are administered (61).			

A	Clinical Pathway	Appropriate	Not Appropriate / why?	Comment
A.6	**Ambulance Service**			
A.6.1	Ambulance services are available at all time to transport emergency patients (66).			
A.6.2	The emergency department has effective channels for cooperation and communication with the Palestinian Red Crescent services about transferring patients (60,73).			
A.6.3	Ambulance services are under the supervision of the Emergency Department director or the Nursing director (60).			
A.6.4	Ambulances have necessary equipment and supplies to be ready to transport patients 24/7 (60).			
A.6.5	All medical, cleaning, disinfection and mechanical requirements of the ambulance are checked and documented on a daily basis (60).			
A.6.6	Ambulance equipment maintenance is carried out and documented regularly (60).			

A	Clinical Pathway	Appropriate	Not Appropriate / why?	Comment
A.7	**Patients flow and length of stay**			
A.7.1	Emergency department processes are implemented to reduce length of stay and improve patients flow (66).			
A.7.2	Analyse emergency department processes regularly to reduce length of stay and improve patient flow (66).			

A.7.3	The length of stay indicator is measured regularly in the emergency department for continuous improvement (66).			
A.7.4	Patients who need to wait for treatment are informed about waiting times (61).			

A	**Clinical Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
A.8	**Medical diagnostic services**			
A.8.1	The medical diagnostic services are available at the emergency department or located nearby (60).			
A.8.2	Emergency diagnostic tests (medical imaging and laboratories) are available and performed all the time (60).			
A.8.3	The results communicated with relevant clinician in a timely manner (60).			
A.8.4	The emergency department has a process or subcontractor to provide all unavailable examinations (60).			

B	**Administration Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
B.1	**Access, Location and design**			
B.1.1	The emergency department location is easily accessed, visible and well –remarkable (61,66).			
B.1.2	The access to emergency department entrance is easy, whether by ambulance or car, and patients (61,66).			

B.1.3	The emergency entrance is defined by visible signs (61,66).			
B.1.4	Medical imaging and laboratory services are available at all times and located near the emergency department when possible (61).			
B.1.5	Patients can get in and out the emergency department without going through other areas of the hospital (61).			
B.1.6	The entrance to the emergency department is suitable for patients with special needs and is equipped with the necessary tools for them (61).			
B.1.7	The emergency department layout allows easy access to equipment and resources by the emergency department team (61).			
B.1.8	The emergency department has safe ways to evacuate in case of emergency (61).			
B.1.9	Emergency department leadership ensure that waiting areas are comfortable (61).			
B.1.10	The emergency department ensures availability of running water for cleaning, hand washing and drinking around the clock (73).			
B.1.11	The emergency department ensure availability of electricity around the clock (73).			

B.1.12	There should be adequate toilets for emergency department users with privacy for collecting samples, especially urine and stool (73).			
B.1.13	There are special places for employees to take a break, change clothes and keep their things (73).			
B.1.14	There is a special place or tent for triage respiratory infections and a special place for isolation (61).			
B.1.15	There is a room equipped for the treatment of fractures and gypsum (88).			

B	**Administration Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
B.2	**Leadership and management**			
B.2.1	Responsibilities and duties are defined by approved job description for key leadership functions in the emergency department (73).			
B.2.2	The emergency department is managed and directed by a qualified physician (66)			
B.2.3	An emergency department manager is a qualified physician by means of education, training, and experience in managing emergency patients (60).			
B.2.4	The emergency department manager oversee the development and implementation of all policies and			

	procedures related to managing emergency patients (60).			
B.2.5	Emergency department nursing procedures are managed and supervised by a qualified nurse (60).			
B.2.6	The emergency department nursing manager is a qualified stuff nurse by education, training, and experience in emergency patients (60).			
B.2.7	The emergency department nursing manager oversee the development and implementation of all nursing policies and procedures related to managing emergency patients (60,66).			

B	**Administration Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
B.3	**Workforce staffing and training**			
B.3.1	The emergency department is covered by all the required qualified cadres at all shifts and times (60,66).			
B.3.2	Emergency department staffing plan is based on historical workload (60,66).			
B.3.3	The emergency department is covered around at all times and shifts by sufficient numbers of qualified emergency physicians (60,66).			

B.3.4	There is an approved policy and procedure on how consultants are called for their opinions (60,66).			
B.3.5	A registered nurse is available over time to triage patients as they come in to determine the urgency of their care (66).			
B.3.6	There is a plan to provide additional staff in case of overload (patients overflow) (66).			
B.3.7	All staff members in the emergency department are qualified and experienced in emergency patients (60).			
B.3.8	All Clinical staff in the emergency department must be certified in basic life support (BLS) and advanced cardiovascular life support (ACLS) as appropriate to the ages of the patients served (including Advanced Trauma Life Support) and are available on site or at least one certified individual is assigned on all shifts (60,73).			
B.3.9	The non-clinical support staff must be trained in CPR (73).			
B.3.10	Emergency department staff receive continuous education with competency assessment (60).			

B	**Administration Pathway**	**Appropriate**	**Not Appropriate / why?**	**Comment**
B.4	**Equipment and Supplies**			

B.4.1	The emergency department has necessary and sufficient equipment and supplies at all times (61,73).			
B.4.2	There is an up-to-date list of all functioning equipment and supplies needed for the emergency department (61,73).			
B.4.3	The emergency department equipment and supplies are available in sufficient quantity, proper for special needs, tidy and well organised (61,73).			
B.4.4	There is an active curative and preventive maintenance program for the equipment (61,73).			
B.4.5	There are spare equipment and tools in case they break down (73).			
B.4.6	The emergency department staff are trained to use the available equipment (61,73).			
B.4.7	The resuscitation / trauma rooms have all the necessary equipment and supplies, and their work is checked daily on all shifts (60,61).			
B.4.8	There are a documented procedures in place to ensure the availability of medical gases around the clock to include procurement, safe handling, storage, distribution, regular inspection, use and renewal (73).			
B.4.9	Infection prevention and control supplies are available around clock, including cleaning materials, disinfectant, liquid soap and personal protective equipment (73).			

B	Administration Pathway	Appropriate	Not Appropriate / why?	Comment
B.5	**Capacity - Resuscitation rooms**			
B.5.1	In the emergency department there is a room(s) equipped for resuscitation emergencies (60,61,66).			
B.5.2	Resuscitation / trauma rooms are suitable and have sufficient space to perform resuscitation (60,61,66).			
B.5.3	All essential resuscitation medications are available (60,61,66).			
B.5.4	The emergency department has policies and procedures to deal with cases that need resuscitation (66).			
B.5.5	The emergency department has a plan to respond to resuscitation cases at any time and any place in the hospital and includes at least (66): a. Define the team, its responsibilities and the way of communications b. Training the team of resuscitation. c. Emergency medicines, where they are located, and how to secure them d. Required equipment and ensuring its effectiveness e. Evaluate the effectiveness of the plan periodically			

B	Administration Pathway	Appropriate	Not Appropriate / why?	Comment
B.6	**Resources to support a safe working environment**			
B.6.1	Adequate security personnel are provided to the emergency department (66).			
B.6.2	Security and safety measures are planned and taken to protect emergency department patients and staff (73).			
B.6.3	The emergency department has a safety and security plan based on identified safety and security threats, for example, natural and man-made disasters (73).			
B.6.4	The plan provides a safe and secure environment for patients, staff and visitors (73).			
B.6.5	Adequate and well trained security personnel are provided to protect emergency department patients and staff (60,61,66).			
B.6.6	Evaluate the effectiveness of the security and safety system for the emergency department on annual basis (66).			
B.6.7	There is a warning mechanism in place to alert the security team if any security issue occurs (66,73).			
B.6.8	There are a safety warning signs posted internally and externally in the emergency department in a language that the patient, family and community understand (73).			

B	Administration Pathway	Appropriate	Not Appropriate / why?	Comment
B.7	**Performance Indicators**			
B.7.1	A set of quality indicators in the emergency department is monitored and reported (60).			
B.7.2	Clinical and managerial quality indicators are defined and measured in relation to structure, process and outcome of the emergency department (73).			
B.7.3	Some of the emergency department indications identified may include, but are not limited to, the following: a. Time to ECG in chest pain patients (60). b. Time to antibiotics in sepsis patients (60). c. Triage to physician time (60). d. Time to enzyme diagnosis (21). e. patient risk of falls (61). f. Adequate assessment spaces (72). g. Reporting system for safety concerns (without fear of reprisal) (72). h. Analysis of incident reports (72). i. Sufficient equipment (72). j. Quality improvement (activity being conducted) (72). k. Morbidity / Mortality (general or specified conditions) (72).			

B	**Administration Pathway**			
B.8	**Patient Safety - infection prevention and control program (PSIPC)**			
B.8.1	There is a policies and procedures for most relevant PSIPC issue in emergency department for example, but not limited (Incidence reporting, medication safety, falling down, patient identification, critical result reporting, hand hygiene, waste management, cleaning, disinfection, sterilization, and communication…etc.) (61,73).			
B.8.2	The emergency department staff are trained on the PSIPC policies and procedures (61,73).			
B.8.3	All policies and procedures of PSIPC are implemented and monitored regularly (61,73).			
B.8.4	Patient safety attitude are measured regularly among the staff of emergency department (61).			
B.8.5	All morbidity and mortality in the emergency department are reviewed by a multidisciplinary team on a regular basis (73).			
B.8.6	A regular audit is conducted in the emergency department for continuous improvement (61).			
B.8.7	A proactive risk assessment is conducted in the emergency department and mitigation actions are taken (73).			

أسئلة إفتتاحية لحلقة النقاش:

Guided questions for discussion**:**

1. هل وجود معايير خاصة بأقسام الطوارىء مهمة حسب وجهة نظرك لتحسين جودة الخدمات المقدمة؟ وهل بالإمكان تحديد بعض هذه المعايير؟

1- To improve the service quality provided by emergency departments, do you think standards are important**?** Is it possible to define some of these standards?

2. ما هي الفرص المتوفرة التي تساعد على تطبيق هذه المعايير في أقسام الطوارىء في فلسطين؟

2- What are the available opportunities to implement these standards in emergency departments in Palestine**?**

3. ما هي التحديات أمام تطبيق مثل هذه المعايير في أقسام الطوارىء في فلسطين؟

3- What are the challenges to implementing such standards in Palestine's emergency departments**?**

4. ما هي الجوانب التي بحاجة إلى تطوير في أقسام الطوارىء؟

4- What aspects of emergency departments need to be improved**?**

5. هل الوضع السياسي يعتبر أحد الأخطار التي يهدد تطبيق المعايير وتطوير أقسام الطوارىء؟

5- Are political conditions one of the dangers that threaten the implementation of standards and the development of emergency departments, in your opinion**?**

6. هل إشراك المجتمع المحلي له دور في تطور أقسام الطوارىء؟

6- How important is the involvement of the local community in developing emergency departments**?**

7. هل هناك نقص في الكوادر العاملة في أقسام الطوارىء؟ وإذا كان نعم هل سيؤثر على فرصة تطبيق هذه المعايير؟

7- Is there a shortage of cadres working in the emergency departments? If yes, will it affect the chance of applying these standards**?**

Appendix 2: *List of consensus emergency department quality standards (EDQS).*

Triage (A.1)

Overview

The triage process in the emergency department (ED) is a powerful tool for managing emergency patients through a systematic approach and standardised criteria, it identifies and prioritizes people's health problems (93). By triaging patients properly, we are aiming to provide the right treatment at the right time and for the right patient (73). As part of a triage process, trained staff determines which patients require immediate care and how their care is prioritized based on their emergent, urgent, or immediate needs (59).

Domain	A	Clinical Pathway
Subdomain	**A.1**	**Triage**
Standards	A.1.1	There is an effective evidence-based triage system (process) to prioritize emergency patients (60,66).
	A.1.2	Urgent or emergency patients are given priority for timely assessment and appropriate care (60).
	A.1.3	Patients who have any change in their medical condition or have been waiting for a long period are reassessed periodically (66).
	A.1.4	The emergency department triage team triages patients using local or international approved guidelines such as Emergency severity index ESI, or WHO triage tool (61).
	A.1.5	All clinical staff in the triage area must be trained in the triage process and available around the clock (61,73).
	A.1.6	The triage area should be easily accessible and visible (61).
	A.1.7	The triage system is implemented in a clear, consistent and non-discriminatory manner for all patients and vulnerable groups (61).

Triage subdomain and relevant standards.

Treat or transfer emergency patients (A.2)

Overview

When the diagnostic and therapeutic interventions required for a patient cannot be found at a given hospital, an inter-hospital transfer (IHT) is necessary (144). There is little knowledge about how the inter-hospital transport team manages critical incidents that occur during inter-hospital transport. In fact, inter-hospital transport is one of the most risky procedures for critically ill patients (145) . It is the transferring hospital's responsibility to provide stabilization treatment and document it within its capacity before transporting the patient (73).

Domain	A	Clinical Pathway
Subdomain	**A.2**	**Treat or transfer emergency patients**
Standards	A.2.1	There is a process in the emergency department to treat or refer emergency patients depending on their needs (66).
	A.2.2	There is a written policy and procedure for treating emergency patients (66).
	A.2.3	Emergency patient treatment policy and procedure is implemented and monitored (66).
	A.2.4	Stabilization therapy is provided to a patient who needs emergency care (66).
	A.2.5	The emergency department has a written and implemented policy to arrange the patient's transfer to another hospital, whether the patient or his accompanying person requests the transfer or the hospital has no capacity for treatment (66).
	A.2.6	The hospital has an ambulance to transport patients or there is a permanent transfer agreement with a facility that can provide the required level of care while the patient is being transported (60,66).
	A.2.7	The emergency department team ensures that the patient is informed of the reasons, risks, and benefits of transfer to another hospital. (61).
	A.2.8	The emergency department team is trained on the policy to prepare patients for transport (61).

	A.2.9	The emergency department team ensures that all patient referral documents contain sufficient information to facilitate ongoing care when transferring to another hospital (61).

Treat or transfer emergency patient's subdomain and relevant standards.

Guidelines, Protocols and Policies (A.3)

Overview

Organizations use protocols, guidelines, policies, and procedures to provide uniform knowledge about clinical and nonclinical functions (59). Policies, protocols, and guidelines should be in place in emergency departments to mitigate and equitably share risks to patient safety, and should be updated based on current evidence (61).

Domain	A	Clinical Pathway
Subdomain	**A.3**	**Guidelines, Protocols and Policies.**
Standards	A.3.1	For the most common emergencies and the top emergency diagnoses, clinical practice guidelines have been adopted or developed for patient care in emergency departments (66).
	A.3.2	There are policies and procedures in the emergency department for all clinical and management pathways include but not limited to (60): k. Chest Pain management l. Management of medico-legal cases such as alcohol and narcotic abuse and criminal acts. m. Management of suspected victims of abuse, neglect, and domestic violence. n. Management of suicidal patients

		o. Care of trauma patients. p. Care of patients not competent to care for themselves. q. Management airway obstruction. r. Sepsis. s. Stroke and t-PA. t. Care of minors (underage). u. Patient transfer from emergency department to inpatient areas or to another healthcare facility. v. Patients who leave against medical advice. w. Patients who leave without being seen.
	A.3.3	The guidelines, policies and procedures are developed under supervision of emergency department head and in collaboration with qualified relevant staff and departments (60).
	A.3.4	The emergency department staff are trained on the guidelines, policies and procedures (60,66).
	A.3.5	There is a compliance with the approved emergency department guidelines, policies and procedures (60,66).

Guidelines, Protocols and Policies subdomain and relevant standards

Medication Safety (A.4)

Overview

In hospital environments, such as critical care units and emergency departments, medication errors are reported with alarming frequency. An estimated 4%-14% of medication errors occur in these settings (146). Medication Management is intended to provide an effective and safe system for managing medications, including storage, prescribing, transcribing, preparing, dispensing, and administering (73).

Domain	A	Clinical Pathway
Subdomain	**A.4**	**Medication Safety**
Standards	A.4.1	There is a policy and procedure for medication management and use in the emergency department (73).
	A.4.2	The medications are stored safely and securely in the emergency department (61).
	A.4.3	Life-saving medicines are available in the emergency department at all times and are regularly checked for stock availability, expiration date and storage conditions (61,73).
	A.4.4	The crash cart contents are well organised, standardised and contain all special needs including pediatrics cases (73).
	A.4.5	The emergency department has processes in place to ensure that medications are prescribed, administered and recorded correctly and safely (61)
	A.4.6	Patients in the emergency department are monitored after medications are administered (61).

Medication safety subdomain and relevant standards

Ambulance Service (A.5)

Overview

Ambulance services are important to save lives, and this requires a system that controls this service, with trained staff, adequate equipment, documentation, and effective coordination with emergency departments (144). Transport emergency patients or handling accidents is one of the most important functions of ambulance services in the healthcare system (147). A successful patient transfer depends on the exchange of accurate and complete information between ambulance and hospital personnel (111).

Domain	A	Clinical Pathway
Subdomain	**A.5**	**Ambulance Service**
Standards	A.5.1	Ambulance services are available at all time to transport emergency patients (66).
	A.5.2	The emergency department has effective channels for cooperation and communication with the Palestinian Red Crescent services about transferring patients (60,73).
	A.5.3	Ambulance services are under the supervision of the Emergency Department director or the Nursing director (60).
	A.5.4	Ambulances have necessary equipment and supplies to be ready to transport patients 24/7 (60).
	A.5.5	All medical, cleaning, disinfection and mechanical requirements of the ambulance are checked and documented on a daily basis (60).
	A.5.6	Ambulance equipment maintenance is carried out and documented regularly (60).

Ambulance service subdomain and relevant standards

Patients flow and length of stay (A.6)

Overview

Crowding in emergency departments is a significant public health concern (55), Patients in Emergency Departments may experience prolonged waiting times and length of stay (LOS) due to the increasing demand for care and more complex management procedures. The flow of patients through an organization should be seamless, allowing them to move quickly from one episode of care to another (56). Patient flow and staff turnover are both important factors in determining the working conditions of an emergency department, so poor patient flow and high staff turnover may compromise patient safety (148).

Domain	A	Clinical Pathway
Subdomain	**A.6**	**Patients flow and length of stay**
Standards	A.6.1	Patient flow and emergency department processes are monitored and analysed regularly to reduce length of stay for patients (66)
	A.6.2	A quality improvement plan and strategies are developed and implemented to minimize the length of stay in the emergency department and improve patient flow in the emergency department based upon an analysis of emergency department processes (66).
	A.6.3	Patients who need to wait for treatment are informed about waiting times (61).

Patient flow and length of stay subdomain and relevant standards.

Medical diagnostic services (A.7)

Overview

Medical imaging and laboratory tests ordered in the EDs are important factors in patient management. Improved patient outcomes and a shorter length of stay can both be achieved through rapid turnaround of laboratory tests and medical imaging in the ED (118).

Diagnostic tests results (such as laboratory, imaging, and cardiac diagnostics) should be communicated in a timely, accurate, complete, unambiguous, and understandable manner reduce errors and improve patient safety (59).

Domain	A	Clinical Pathway
Subdomain	**A.7**	**Medical diagnostic services**
Standards	A.7.1	Emergency diagnostic tests (medical imaging and laboratories) are available and performed all the time (60).
	A.7.2	The results communicated with relevant clinician in a timely manner (60).
	A.7.3	The emergency department has a process or subcontractor to provide all unavailable examinations (60).

Medical diagnostic services subdomain and relevant standards.

Documentation and Information Management System (B.1)

Overview

Medical records accuracy and completeness is both a measure and a means of ensuring the quality of the care that patients receive. Having accurate information in patient medical record can facilitate and enhance communication between healthcare professionals, both within the hospital and when patients are discharged, on the other hand, poor documentation may lead to delays or errors in patient care, especially during care transitions (138).

Domain	B	Administration Pathway
Subdomain	**B.1**	**Documentation and Information Management System**
Standards	B.1.1	A complete patient record should be kept, including the patient's full name, ID number, arrival date and time, departure date and time, name of ambulance or other form of transport, name(s) of treating medical staff, main complaint and/or diagnosis, and disposition (e.g., home, transfer, admit) of the patient (60,66,73).
	B.1.2	The registry clerk available all the time to register emergency patients (73).
	B.1.3	The emergency department has a written policy and procedures for documentation requirements including protection against loss or damage, backup, retention, and alternative systems in case of system failure or crisis (73)
	B.1.4	The emergency department should have a standard list of agreed abbreviations for clinical documentation (73).
	B.1.5	There should be a process in the laboratory and radiology department to inform the emergency department of critical patient results and document them (73).
	B.1.6	The emergency department has a written document control policy that includes the preparation, approval, and distribution of documents (73).
	B.1.7	Emergency department staff can access information and data that will support the treatment of patients who present to the emergency department (61).

Documentation and Information Management System.

Access, location, and design (B.2)

Overview

The physical structure of emergency departments is one of the important enabling factors for the quality of the health service, in terms of the size and capacity of the place and the number of rooms that include patient triage, diagnosis, waiting and reception, in addition to the appropriate environment in terms of hygiene, clean running water, staff facilities, ventilation and lighting, as the appropriate design helps in the flow of patients and staff comfortably It prevents overcrowding in emergency departments. In addition, easy access to the entrance to the emergency department and places of diagnostic service such as laboratories and medical imaging (72).

Domain	B	Administration Pathway
subdomain	**B.2**	**Access, location, and design**
Standards	B.2.1	The emergency department location is easily accessed, visible and well – remarkable (61,66)
	B.2.2	The emergency entrance is defined by visible signs and easy access, whether by ambulance or car, and patients (61,66).
	B.2.3	Patients can get in and out the emergency department without going through other areas of the hospital (61,66).
	B.2.4	The entrance to the emergency department is suitable for patients with special needs and is equipped with the necessary tools for them (61,66).
	B.2.5	The emergency department layout allows easy access to equipment and resources by the emergency department team. (61)
	B.2.6	The emergency department has safe ways to evacuate in case of emergency (61).
	B.2.7	Emergency department leadership ensure that waiting areas are comfortable (61).

	B.2.8	The emergency department ensures availability of running water for cleaning, hand washing and drinking around the clock (73).
	B.2.9	The emergency department ensure availability of electricity around the clock (73).
	B.2.10	There should be adequate toilets for emergency department users with privacy for collecting samples, especially urine and stool (73)
	B.2.11	There are special places for employees to take a break, change clothes and keep their things (73).
	B.2.12	There is a special place or tent for triage respiratory infections and a special place for isolation (61).
	B.2.13	There must be at least 1 ED bed per 5000 annual patient visits (88).

Access, location, and design subdomain and relevant standards.

Leadership and management (B.3)

Overview

Emergency departments must have their own organizational structure, whether they are part of the hospital or independent, and be responsible for providing the service and ensuring its quality and safety, according to the regulations and laws. Proper leadership of emergency departments invests in available resources, and provides an effective team committed to continuous improvement and able to serve the emergency patient based on quality and safety standards (61,73,149).

Domain	B	Administration Pathway
Subdomain	**B.3**	**Leadership and management**
Standards	B.3.1	Responsibilities and duties are defined by approved job description for key leadership functions in the emergency department (73).
	B.3.2	An emergency department manager is a qualified physician by means of education, training, and experience in managing emergency patients (60,66).
	B.3.3	The emergency department manager oversee the development and implementation of all policies and procedures related to managing emergency patients (60,66).
	B.3.4	The emergency department nursing manager is a qualified stuff nurse by education, training, and experience in emergency patients (60).
	B.3.5	The emergency department nursing manager oversee the development and implementation of all nursing policies and procedures related to managing emergency patients (60,66).

Leadership and management subdomain and relevant standards.

Workforce staffing and training (B.4)

Overview

"The heart and soul of any organization is its people" (86). It is important for emergency departments to have competent, multi-skilled, well-trained, qualified, and motivated staff to deliver efficient, effective, and timely patient centreed care, compliant with local or international requirements regarding staffing numbers, including nurses, doctors, and other professionals, as well as teamwork and communication between the departments (72,73,86).

Domain	B	Administration Pathway
Subdomain	**B.4**	**Workforce staffing and training**
Standards	B.4.1	The emergency department is covered by all the required qualified cadres at all shifts and times (60,66).
	B.4.2	Emergency department staffing plan is based on historical workload (60,66).
	B.4.3	The emergency department is covered around at all times and shifts by sufficient numbers of qualified emergency physicians (60,66).
	B.4.4	There is an approved policy and procedure on how consultants are called for their opinions (60,66).
	B.4.5	There is a plan to provide additional staff in case of overload (patients overflow) (66).
	B.4.6	All staff members in the emergency department are qualified and experienced in emergency patients (60).
	B.4.7	All Clinical staff in the emergency department must be certified in basic life support (BLS) and advanced cardiovascular life support (ACLS) as appropriate to the ages of the patients served (including Advanced Trauma Life Support) and are available on site or at least one certified individual is assigned on all shifts (60,73).
	B.4.8	The non-clinical support staff must be trained in CPR (73).
	B.4.9	Emergency department staff receive continuous education with competency assessment (60).

Workforce staffing and training subdomain and relevant standards.

Equipment and Supplies (B.5)

Overview

Having access to equipment, tools, and consumables around the clock is one of the most essential resources for providing safe, effective, and sustainable health care in emergency departments. Staff training and effective maintenance programmes are essential for maintaining the functionality of these devices (61,72,73).

Domain	B	Administration Pathway
Subdomain	**B.5**	**Equipment and Supplies**
Standards	B.5.1	There is an up-to-date list of all functioning equipment and supplies needed for the emergency department (61,73).
	B.5.2	The emergency department equipment and supplies are available in sufficient quantity, proper for special needs, tidy and well organised (61,73).
	B.5.3	There is an active curative and preventive maintenance program for the equipment (61,73).
	B.5.4	There are spare equipment and tools in case they break down (73).
	B.5.5	The emergency department staff are trained to use the available equipment (61,73).
	B.5.6	The resuscitation / trauma rooms have all the necessary equipment and supplies, and their functioning is checked daily on all shifts (60,61).
	B.5.7	There are a documented procedures in place to ensure the availability of medical gases around the clock to include procurement, safe handling, storage, distribution, regular inspection, use and renewal (60,73).
	B.5.8	Infection prevention and control supplies are available around clock, including cleaning materials, disinfectant, liquid soap and personal protective equipment (73).

Equipment and supplies subdomain and relevant standards.

Capacity - Resuscitation rooms (B.6)

Overview

Each Emergency Department should have an adequate Resuscitation Room, for an ED with an average case mix of 20,000 patients per year, two resuscitation bays are recommended, with one bay per 10,000 patients. In the design of resuscitation rooms, radiation safety measures should be taken into consideration, and the room should be easily accessible and close to the ambulance entrance, as well as the environment of the place should be suitable in terms of climate and lighting (88).

Domain	B	Administration Pathway
Subdomain	**B.6**	**Capacity - Resuscitation rooms**
Standards	B.6.1	In the emergency department there is a room(s) equipped for resuscitation emergencies (60,61,66).
	B.6.2	Resuscitation / trauma rooms are suitable and have sufficient space to perform resuscitation (60,61,66).
	B.6.3	All essential resuscitation medications are available (60,61,66).
	B.6.4	The emergency department has policies and procedures to deal with cases that need resuscitation (66).
	B.6.5	The emergency department has a plan to respond to resuscitation cases at any time and any place in the hospital and includes at least (66): f. Define the team, its responsibilities, and the way of communications. g. Training the team of resuscitation. h. Emergency medicines, where they are located, and how to secure them. i. Required equipment and ensuring its effectiveness. j. Evaluate the effectiveness of the plan periodically

Capacity - Resuscitation room's subdomain and relevant standards.

Resources to support a safe working environment (B.7)

Overview

Throughout the world and in Palestine, workplace violence against healthcare workers (HCWs) in emergency departments is a major threat to their workplace safety and health. The victims, patients, and healthcare organizations all suffer significant consequences as a result (46,150). To safeguard everyone in the hospital against personal harm and loss or damage to property, a written security program should be implemented effectively (59).

Domain	B	Administration Pathway
Subdomain	**B.7**	**Resources to support a safe working environment**
Standards	B.7.1	Security and safety measures are planned and taken to protect emergency department patients and staff (73).
	B.7.2	The emergency department has a safety and security plan based on identified safety and security threats, for example, natural and manmade disasters, mass causality management, and evacuation plan (73).
	B.7.3	The plan provides a safe and secure environment for patients, staff and visitors (73).
	B.7.4	Adequate and well trained security personnel are provided to protect emergency department patients and staff (60,61,66).
	B.7.5	Evaluate the effectiveness of the security and safety system for the emergency department on annual basis (66).
	B.7.6	There is a warning mechanism in place to alert the security team if any security issue occurs (66,73).
	B.7.7	The emergency department posts safety warning signs in a language that patients, families, and community members understand (73).

Resources to support a safe working environment subdomain and relevant standards.

Performance Indicators (B.8)

Overview

Quality assessment of emergency department is very important for continuous improvement (13). The purpose of performance indicators monitoring is to determine whether the emergency department services meets its goals and standards through the collection of data (54)**.**

Domain	B	Administration Pathway
Subdomain	**B.8**	**Performance Indicators**
Standards	B.8.1	A set of quality indicators in the emergency department is monitored and reported (60,73).
	B.8.2	Clinical and managerial quality indicators are defined and measured in relation to structure, process and outcome of the emergency department (73).
	B.8.3	Some of the emergency department indicators identified may include, but are not limited to, the following: l. Time to ECG in chest pain patients (60). m. Time to antibiotics in sepsis patients (60). n. Triage to physician time (60). o. Time to enzyme diagnosis (21). p. patient risk of falls (59). q. Adequate assessment spaces (72). r. Reporting system for safety concerns (without fear of reprisal) (72). s. Analysis of incident reports (72). t. Sufficient equipment (72). u. Quality improvement (activity being conducted) (72).

		v. Morbidity / Mortality (general or specified conditions) (72). w. Total length of stay (72). x. Re admission within 48 hrs. (54).

Performance indicators subdomain and relevant standards.

Patient Safety - infection prevention and control program (PSIPC) (B.9)

Overview

The commitment to patient safety is both a human right and an important component of quality in healthcare, as well as a concept that covers all processes within the healthcare system (52,68). The studies found that around 10% of all inpatient admissions result in some level of unintended harm to the patient. Up to 75% of these lapses are preventable (68). Therefore, it is necessary to have an effective program to ensure patient safety including IPC in emergency departments. The leadership of emergency departments is responsible for developing, implementing, monitoring and controlling strategies for preventing, managing, and controlling infections and antimicrobial resistance; reducing harm to patients, visitors, staff, and visitors; and achieving good patient outcomes (149).

Domain	B	Administration Pathway
Subdomain	**B.9**	**Patient Safety - infection prevention and control program (PSIPC)**
Standards	B.9.1	There is a policies and procedures for most relevant PSIPC issue in emergency department for example, but not limited (Incidence reporting, medication safety, falling down, patient identification, critical result reporting, hand hygiene, waste management, cleaning, disinfection, sterilization, and communication…etc.) (61,73).
	B.9.2	The emergency department staff are trained on the PSIPC policies and procedures (61,73).
	B.9.3	All policies and procedures of PSIPC are implemented and monitored regularly (61,73).
	B.9.4	Patient safety attitude are measured regularly among the staff of emergency department (61).
	B.9.5	All morbidity and mortality in the emergency department are reviewed by a multidisciplinary team on a regular basis (73).
	B.9.6	A regular audit is conducted in the emergency department for continuous improvement (73).
	B.9.7	A proactive risk assessment is conducted in the emergency department and mitigation actions are taken (73).

Patient Safety - infection prevention and control program (PSIPC) subdomain and relevant standards.

Appendix 3*: *Study one /* UCT *Ethics committee approval - HREC – 014/2022

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

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Website: www.health.uct.ac.za/fhs/research/humanethics/forms

18 February 2022

HREC REF: 014/2022

Prof L Wallis
Division of Emergency Medicine
F51 OMB
Email: Lee.wallis@uct.ac.za
Student: abedsaleem@yahoo.com

Dear Prof Wallis

PROJECT TITLE: STUDY 1: IDENTIFY APPROPRIATE QUALITY STANDARDS FOR EDS IN PALESTINE THROUGH A CONSENSUS-BASED DECISION – MAKING PROCESS IN DEVELOPING CONTEXTUAL QUALITY STANDARDS FOR EMERGENCY DEPARTMENTS IN PALESTINE (PHD DEGREE – MR ABED ODEH)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study, subject to approval from an appropriate Palestinian ethics/regulatory committee.

This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19, our letter dated 02 February 2022 provides guidance found on our website:
http://www.health.uct.ac.za/fhs/research/humanethics/forms

Approval is granted for one year until the 28 February 2023.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: Mr Abed Odeh will also be involved in this study.

Please quote the HREC REF 014/2022 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007
This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2020), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

***Appendix 4*:** PhD Research Local Approval Ministry of Health, Palestine.

State of Palestine
Ministry of Health
Deputy Health Minister's Office

دولـــــــة فلســـــــــــــطين
وزارة الصـــــــحة
مكتب وكيل وزارة الصحة

Ref.: DHM220367.docx

Date:21/04/2022

Dear Prof. Lee Wallis,
Dear Abed Alra'oof Bani Odeh

After greetings.

Subject: Request approval for PhD research

We thank you for submitting this request for approval to conduct this important research and associated series of studies, under the title "Development of Contextual Quality Standards for Care in Emergency Departments in Palestine".
After reviewing the mentioned request, I am pleased to inform you of our official approval to conduct these studies by the PhD student affiliated with the University of Cape Town "Abed Alra'oof Bani Odeh" under university number BNDABE001", and we will provide him with the facilities and cooperation necessary to fulfil the study requirements.

Minister of Health Deputy
Dr. Wael Al Sheikh

دولة فلسطين - وزارة الصحة
الدكتور وائل الشيخ

State Of Palestine - Ministryof Health
Deputy Minister of Health
Dr.Wael AL Shaikh

دولة فلسطين - وزارة الصحة
مكتب وكيل وزارة الصحة
صادر رقم: 01/01/367
التاريخ: 21/04/2022

- Attached your request.

Tel.: 02 2989373
Fax: 02 2964185

الرمز البريدي – رام الله :P6008303
الرمز البريدي – نابلس: P4070298

هاتف: 02 2989373
فاكس: 02 2964185

Appendix 5: *Summarizes the expert group's consensus answers.*

Consensus responses to guided questions	
Question 1	To improve the service quality provided by emergency departments, do you think standards are important? Is it possible to define some of these standards?
Consensus Response	Standards are very important for improving emergency departments and can help to organise work and standardise processes. There are a number of standards that should be included, such as protocols, documentation, time management, medical information control, performance indicators, accessibility, human resources capacity, and better communications.
Question 2	What are the available opportunities to implement these standards in emergency departments in Palestine**?**
Consensus Response	There are a lot of things that could support the implementation, like digital medical records, qualified staff, leadership commitment, a quality culture, and adaptable staff.
Question 3	What are the challenges to implementing such standards in Palestine's emergency departments**?**
Consensus Response	Staff turnover, a lack of monitoring systems, fluctuations in support and resources, workload, political instability, a lack of community awareness about healthcare quality, incomplete medical files, and incompetent health records are some of the challenges facing the implementation of emergency department quality standards.
Question 4	What aspects of emergency departments need to be improved**?**
Consensus Response	The most important issues that need improvement in the emergency departments are the alignment of infrastructure according to standards, improving the mechanism of communication between the different departments in the hospital and primary health care, and improving the flow of patients to the emergency departments to reduce waiting times, improving triage area, waiting area, resuscitation rooms, transfer patients to hospital departments and other hospitals, and promoting a continuing education program.

Question 5	Are political conditions (Occupation policies and measures) one of the challenges that threaten the implementation of standards and the development of emergency departments, in your opinion**?**
Consensus Response	Several factors may affect the sustainability of improvement processes in emergency departments in Palestine, for example, restrictions imposed on the movement of patients and health staff and their access to hospitals, and attacks on health institutions and health staff, and this may distract the leadership's commitment to implementing quality standards and directing attention to other priorities.
Question 6	How important is the involvement of the local community in developing emergency departments**?**
Consensus Response	The local community in Palestine has an active and strong role in the development of emergency departments and is considered one of the important partners in developing health services and employing support (financial, equipment, and infrastructure investments), and is also considered a supporter of improvement initiatives by promoting them in front of the people and by participating in improvement committees.
Question 7	Is there a shortage of cadres working in the emergency departments? If yes, will it affect the chance of applying these standards**?**
Consensus Response	There are shortages of staff and sometimes mismanagement of available human resources, which adversely affect the possibility of implementing new systems or standards.

Appendix 6: *Study two /* UCT *Ethics committee approval - HREC – 015/2022*

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room 45 E-52-E-Floor- Old Main Building
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Website: www.health.uct.ac.za/fhs/research/humanethics/forms

18 February 2022

HREC REF: 015/2022

Prof L Wallis
Division of Emergency Medicine
F51 OMB
Email: Lee.wallis@uct.ac.za
Student: abedsaleem@yahoo.com

Dear Prof Wallis

PROJECT TITLE: STUDY 2 - VALIDATE THE DEVELOPED LIST OF QUALITY STANDARDS IN DEVELOPING CONTEXTUAL QUALITY STANDARDS FOR EMERGENCY DEPARTMENTS IN PALESTINE (PHD DEGREE – MR ABED ODEH)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study, subject to approval from an appropriate Palestinian ethics/regulatory committee.

This approval is subject to strict adherence to the HREC recommendations regarding research involving human participants during COVID -19, our letter dated 02 February 2022 provides guidance found on our website:
http://www.health.uct.ac.za/fhs/research/humanethics/forms

Approval is granted for one year until the 28 February 2023.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: Mr Abed Odeh will also be involved in this study.

Please quote the HREC REF 015/2022 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007
This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2020), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

Appendix 7: *Validation results of contextual EDQS in Palestine (e-Delphi Survey)*

Consensus-based quality standards for emergency departments in Palestine (CBQSEDP) were presented for validation and outcome of using two rounds of e- Delphi technique.

Clinical Pathway Domain (A)			
Subdomains	**No. of CBQSEDP**	**The outcome of round 1 e- Delphi**	**The outcome of round 2 e-Delphi**
A.1 Triage	7	7	7
A.2 Treat or transfer emergency patients	9	9	9
A.3 Guidelines, Protocols, and Policies.	5	5	5
A.4 Medication Safety	6	6	6
A.5 Ambulance Services	6	6	6
A.6 Patient flow and length of stay	3	3	3
A.7 Medical diagnostic services	3	3	3
Seven Subdomains (A1 – A7)	**39**	**39**	**39**
Administration Pathway Domain (B)			
Subdomains	**No. of CBQSEDP**	**The outcome of round 1 e- Delphi**	**The outcome of round 2 e-Delphi**
B.1 Documentation and information management system	7	7	7
B.2 Access, location, and design	13	13	13
B.3 Leadership and management	5	5	5
B.4 Workforce staffing and training	9	8	8
B.5 Equipment and supplies	8	8	8
B.6 Capacity - resuscitation rooms	5	5	5
B.7 Resources to support a safe working environment	7	6	6
B.8 Performance indicators	3	2	2
B.9 Patient safety - infection prevention and control program (PSIPC)	7	7	7
Nine Subdomains (B1 – B9)	**64**	**61**	**61**
Total of Subdomains = 16	**103**	**100**	**100**

Appendix 8:*Consensus level and modified EDQS after e-Delphi round 1.*

Validation results of contextual EDQS in Palestine (e-Delphi Survey)

Consensus level and modified EDQS after e-Delphi round 1.

EDQS - Delphi 1	Consensus level	Code	Code	Modified EDQS moved to Delphi 2**
There is an effective evidence-based triage system (process) to prioritize emergency patients (4,5).	90.9	A.1.1	A.1.1	A triage system is in place to determine priority of healthcare for patients in emergency situations.
The hospital has an ambulance to transport patients or there is a permanent transfer agreement with a facility that can provide the required level of care while the patient is being transported (4,5).	91.8	A.2.6	A.2.6	The emergency department has an ambulance to transport patients or there is a permanent transfer agreement with a facility that can provide the required level of care while the patient is being transported.
Ambulance services are under the supervision of the Emergency Department director or the Nursing director (5).	88.2	A.5.3	A.5.3	The emergency department maintains effective channel of communication ambulance services under the supervision of emergency department director or nursing director.
A quality improvement plan and strategies are developed and implemented to minimize the length of stay in the emergency department and improve patient flow in the emergency department based upon an analysis of emergency department processes (4).	92.7	A.6.2	A.6.2	A quality improvement plan and strategies are developed and implemented to minimize the length of stay and improve patient flow in the emergency department based upon an analysis of emergency department processes.
A complete patient record should be kept, including the patient's full name, ID number, arrival date and time, departure date and time, name of ambulance or other form of transport, name(s) of treating medical staff, main complaint and/or diagnosis, and disposition (e.g., home, transfer, admit) of the patient (2,4,5).	91.8	B.1.1	B.1.1	A complete patient record should be kept, including the patient's full name, unique identifier, arrival and departure date and time, name of ambulance or other form of transport, name(s) of treating medical staff, main complaint, gender, contact information, medical history, allergies, medications, vital signs, physical exam, test results, treatment and interventions, monitoring sheet, informed consent, diagnosis, and disposition of the patient (home, transfer, admit).
The registry clerk available all the time to register emergency patients (2).	95.5	B.1.2	B.1.2	The registry clerk is available all the time to register emergency patients
The emergency department has a written policy and procedures for documentation requirements including protection against loss or damage, backup, retention, and alternative systems in case of system failure or crisis (2)	91.8	B.1.3	B.1.3	The emergency department maintains documented policies and procedures for documentation, safeguards against loss or damage, backup protocols, retention, access control measures, confidentiality, alternative plan in case of system failure or crisis.
The emergency department has a written document control policy that includes the preparation, approval, and distribution of documents (2).	90.9	B.1.6	B.1.6	The emergency department has a written document control policy that includes the preparation, approval, distribution, coding, and change of documents.
Emergency department leadership ensure that waiting areas are comfortable (6).	90.9	B.2.7	B.2.7	Comfortable waiting areas are available in the Emergency Department.
There are special places for employees to take a break, change clothes and keep their things (2).	95.5	B.2.11	B.2.11	There are designated areas within the emergency department where employees can take breaks, change clothes, and store their personal belongings.
There is a special place or tent for triage respiratory infections and a special place for isolation (6).	95.5	B.2.12	B.2.12	There is a dedicated area for triage and isolation respiratory infections.

An emergency department manager is a qualified physician by means of education, training, and experience in managing emergency patients (4,5).	95.5	B.3.2	B.3.2	An emergency department manager is a qualified physician in emergency medicine by means of education, training, and experience.
The emergency department is covered by all the required qualified cadres at all shifts and times (4,5).	94.5	B.4.1	B.4.1	The emergency department is staffed with the necessary qualified personnel during all shifts and hours including doctors, nurses, paramedics, and workers.
Emergency department staffing plan is based on historical workload (4,5).	92.7	B.4.2	B.4.2	Emergency department staffing plan is based on past workload patterns.
All Clinical staff in the emergency department must be certified in basic life support (BLS) and advanced cardiovascular life support (ACLS) as appropriate to the ages of the patients served (including Advanced Trauma Life Support) and are available on site or at least one certified individual is assigned on all shifts (2,5).	93.6	B.4.7	B.4.5*	Every Clinical staff working in the emergency department must be certified in basic life support (BLS) and advanced cardiovascular life support (ACLS) as appropriate to the ages of the patients served (including Advanced Trauma Life Support).
Infection prevention and control supplies are available around clock, including cleaning materials, disinfectant, liquid soap and personal protective equipment (2).	95.5	B.5.8	B.5.8	Infection prevention and control supplies are available around the clock, including cleaning materials, disinfectant, liquid soap, and personal protective equipment.
In the emergency department there is a room(s) equipped for resuscitation emergencies (4–6).	95.5	B.6.1	B.6.1	In the emergency department there is a dedicated and equipped room(s) equipped for resuscitation.
Security and safety measures are planned and taken to protect emergency department patients and staff (2).	95.5	B.7.1	B.7.1	Security and safety measures are planned and taken to protect emergency department including patients, staff, and visitors.
Adequate and well-trained security personnel are provided to protect emergency department patients and staff (4–6).	97.3	B.7.4	B.7.3*	Adequate and well-trained security personnel are provided to protect emergency department patients, staff, and visitors.
Evaluate the effectiveness of the security and safety system for the emergency department on annual basis (4).	95.5	B.7.5	B.7.4*	The security and safety system's effectiveness for the emergency department is assessed annually.
Some of the emergency department indicators identified may include, but are not limited to, the following: **a. Time to ECG in chest pain patients** (60). **b. Time to antibiotics in sepsis patients** (60). **c. Triage to physician time** (60). **d. Time to enzyme diagnosis (21).** **e. patient risk of falls** (59). **f. Adequate assessment spaces** (72). **g. Reporting system for safety concerns (without fear of reprisal)** (72). **h. Analysis of incident reports** (72). **i. Sufficient equipment** (72). **j. Quality improvement (activity being conducted)** (72). **k. Morbidity / Mortality (general or specified conditions)** (72). **l. Total length of stay** (72). **m. Re admission within 48 hrs.** (54)	89.1	B.8.3	B.8.2*	There are various indicators that can be used to measure the performance of emergency departments. Some of these indicators include but are not limited to: a. Time to ECG in chest pain patients. b. Time to antibiotics in sepsis patients(60). c. Triage to physician time. d. Time to enzyme diagnosis. e. patient risk of falls. f. Adequate assessment spaces. g. Reporting system for safety concerns (without fear of reprisal). h. Analysis of incident reports. i. Sufficient equipment. j. Quality improvement (activity being conducted). k. Morbidity / Mortality (general or specified conditions) (72). l. Total length of stay (72). m. Re admission within 48 hrs. (54).

There is a policies and procedures for most relevant PSIPC issue in emergency department for example, but not limited (Incidence reporting, medication safety, falling down, patient identification, critical result reporting, hand hygiene, waste management, cleaning, disinfection, sterilization, and communication…etc.) (2,6).	92.7	B.9.1	B.9.1	There are a policies and procedures for most relevant PSIPC issue in emergency department for example, but not limited (Incidence reporting, medication safety, falling down, patient identification, critical result reporting, hand hygiene, waste management, cleaning, disinfection, sterilization, and communication…etc.)

- * Renumbering the standards, ** Modified standards

Appendix 9: *EDQS validation results / e-Delphi 1.*

Clinical Domain Standards (A) Validation e-Delphi 1 – Data (n=22)				
Subdomain (SD)	**Standards**	**Mean**	**a Consensus Level %**	**Disagreement level %**
Triage (A.1)	A.1.1	4.55	90.9	9.1
	A.1.2	4.59	91.8	8.2
	A.1.3	4.73	94.5	5.5
	A.1.4	4.68	93.6	6.4
	A.1.5	4.73	94.5	5.5
	A.1.6	4.86	97.3	2.7
	A.1.7	4.59	91.8	8.2
	A.1		**93.5**	**6.5**
Treat or transfer emergency patients (A.2)	A.2.1	4.73	94.5	5.5
	A.2.2	4.82	96.4	3.6
	A.2.3	4.68	93.6	6.4
	A.2.4	4.82	96.4	3.6
	A.2.5	4.64	92.7	7.3
	A.2.6	4.59	91.8	8.2
	A.2.7	4.73	94.5	5.5
	A.2.8	4.68	93.6	6.4
	A.2.9	4.73	94.5	5.5
	A2		**94.2**	**5.8**
Guidelines, Protocols and Policies (A.3)	A.3.1	4.50	90.0	10.0
	A.3.2	4.59	91.8	8.2
	A.3.3	4.68	93.6	6.4
	A.3.4	4.77	95.5	4.5
	A.3.5	4.59	91.8	8.2
	A3		**92.5**	**7.5**
Medication Safety (A.4)	A.4.1	4.82	96.4	3.6
	A.4.2	4.82	96.4	3.6
	A.4.3	4.91	98.2	1.8
	A.4.4	4.59	91.8	8.2
	A.4.5	4.59	91.8	8.2
	A.4.6	4.86	97.3	2.7
	A4		**95.3**	**4.7**
Ambulance Service (A.5)	A.5.1	4.73	94.5	5.5
	A.5.2	4.68	93.6	6.4
	A.5.3	4.41	88.2	11.8
	A.5.4	4.73	94.5	5.5
	A.5.5	4.68	93.6	6.4
	A.5.6	4.73	94.5	5.5
	A5		93.2	6.8
Patients flow and length of stay (A.6)	A.6.1	4.82	96.4	3.6
	A.6.2	4.64	92.7	7.3
	A.6.3	4.77	95.5	4.5
	A6		**94.8**	**5.2**

Medical diagnostic services (A.7)	A.7.1	4.82	96.4	3.6
	A.7.2	4.77	95.5	4.5
	A.7.3	4.73	94.5	5.5
	A7		95.5	4.5
Overall Results (A)			**94.2**	**5.8**

Administration Domain Standards (B) Validation e-Delphi 1 – Data (n=22)				
Subdomain (SD)	**Standards**	**Mean**	**[a] Consensus Level %**	**Disagreement level %**
Documentation and Information Management System (B.1)	B.1.1	4.59	91.8	8.2
	B.1.2	4.77	95.5	4.5
	B.1.3	4.59	91.8	8.2
	B.1.4	4.77	95.5	4.5
	B.1.5	4.77	95.5	4.5
	B.1.6	4.55	90.9	9.1
	B.1.7	4.68	93.6	6.4
	B1		**93.5**	**6.5**
Access, location, and design (B.2)	B.2.1	4.86	97.3	2.7
	B.2.2	4.73	94.5	5.5
	B.2.3	4.77	95.5	4.5
	B.2.4	4.77	95.5	4.5
	B.2.5	4.68	93.6	6.4
	B.2.6	4.68	93.6	6.4
	B.2.7	4.55	90.9	9.1
	B.2.8	4.73	94.5	5.5
	B.2.9	4.82	96.4	3.6
	B.2.10	4.73	94.5	5.5
	B.2.11	4.77	95.5	4.5
	B.2.12	4.77	95.5	4.5
	B.2.13	4.64	92.7	7.3
	B2		**94.6**	**5.4**
Leadership and management (B.3)	B.3.1	4.68	93.6	6.4
	B.3.2	4.77	95.5	4.5
	B.3.3	4.73	94.5	5.5
	B.3.4	4.77	95.5	4.5
	B.3.5	4.73	94.5	5.5
	B3		**94.7**	**5.3**
Workforce staffing and training (B.4)	B.4.1	4.73	94.5	5.5
	B.4.2	4.64	92.7	7.3
	B.4.3	4.73	94.5	5.5
	B.4.4	4.68	93.6	6.4
	B.4.5	4.77	95.5	4.5
	B.4.6	4.68	93.6	6.4
	B.4.7	4.68	93.6	6.4
	B.4.8	4.50	90.0	10.0
	B.4.9	4.73	94.5	5.5
	B4		**93.6**	**6.4**
Equipment and Supplies (B.5)	B.5.1	4.77	95.5	4.5
	B.5.2	4.64	92.7	7.3
	B.5.3	4.77	95.5	4.5

	B.5.4	4.82	96.4	3.6
	B.5.5	4.77	95.5	4.5
	B.5.6	4.73	94.5	5.5
	B.5.7	4.73	94.5	5.5
	B.5.8	4.77	95.5	4.5
	B5		**95.0**	**5.0**
Capacity - Resuscitation rooms (B.6)	B.6.1	4.77	95.5	4.5
	B.6.2	4.77	95.5	4.5
	B.6.3	4.73	94.5	5.5
	B.6.4	4.77	95.5	4.5
	B.6.5	4.73	94.5	5.5
	B6		**95.1**	**4.9**
Resources to support a safe working environment (B.7)	B.7.1	4.77	95.5	4.5
	B.7.2	4.68	93.6	6.4
	B.7.3	4.68	93.6	6.4
	B.7.4	4.86	97.3	2.7
	B.7.5	4.77	95.5	4.5
	B.7.6	4.73	94.5	5.5
	B.7.7	4.77	95.5	4.5
	B7		**95.1**	**4.9**
Performance Indicators (B.8)	B.8.1	4.82	96.4	3.6
	B.8.2	4.68	93.6	6.4
	B.8.3	4.45	89.1	10.9
	B8		**93.0**	**7.0**
Patient Safety - infection prevention and control program (PSIPC) (B.9)	B.9.1	4.64	92.7	7.3
	B.9.2	4.73	94.5	5.5
	B.9.3	4.68	93.6	6.4
	B.9.4	4.59	91.8	8.2
	B.9.5	4.73	94.5	5.5
	B.9.6	4.82	96.4	3.6
	B.9.7	4.73	94.5	5.5
	B9		94.0	6.0
Overall results (B)			**94.3**	**5.7**
Overall results			**94.2**	

[a] Threshold of consensus ≥ 80%.

Appendix 10: *EDQS validation results / e-Delphi 2.*

Clinical Domain Standards (A) Validation e-Delphi 2 – Data (n=31)										
a: Readability Rating					**b: Clarity Rating**				**c: Comprehensives Rating**	
S.D.	EDQS	Consensus %	Mean		EDQS	Consensus %	Mean		EDQS	Consensus %	Mean
Triage (A.1)	A1001a	98.1	4.9		A1001b	94.8	4.7		A1001c	96.1	4.8
	A1002a	97.4	4.9		A1002b	96.1	4.8		A1002c	94.8	4.7
	A1003a	98.1	4.9		A1003b	95.5	4.8		A1003c	94.8	4.7
	A1004a	96.8	4.8		A1004b	94.2	4.7		A1004c	95.5	4.8
	A1005a	98.7	4.9		A1005b	97.4	4.9		A1005c	96.1	4.8
	A1006a	98.7	4.9		A1006b	98.1	4.9		A1006c	98.7	4.9
	A1007a	95.5	4.8		A1007b	93.5	4.7		A1007c	94.8	4.7
	A1a	**97.6**	**4.9**		**A1b**	**95.7**	**4.8**		**A1c**	**95.9**	**4.8**
	A1	**96.4**	**4.8**		**A1**	**96.4**	**4.8**		**A1**	**96.4**	**4.8**
Treat or transfer emergency patients (A.2)	A2001a	96.8	4.8		A2001b	96.8	4.8		A2001c	95.5	4.8
	A2002a	95.5	4.8		A2002b	95.5	4.8		A2002c	95.5	4.8
	A2003a	95.5	4.8		A2003b	96.8	4.8		A2003c	95.5	4.8
	A2004a	97.4	4.9		A2004b	93.5	4.7		A2004c	96.1	4.8
	A2005a	96.8	4.8		A2005b	95.5	4.8		A2005c	94.8	4.7
	A2006a	97.4	4.9		A2006b	98.1	4.9		A2006c	96.8	4.8
	A2007a	98.1	4.9		A2007b	98.1	4.9		A2007c	98.1	4.9
	A2008a	97.4	4.9		A2008b	96.8	4.8		A2008c	98.1	4.9
	A2009a	96.1	4.8		A2009b	96.1	4.8		A2009c	94.8	4.7
	A2a	**96.8**	**4.8**		**A2b**	**96.3**	**4.8**		**A2c**	**96.1**	**4.8**
	A2	**96.4**	**4.8**		**A2**	**96.4**	**4.8**		**A2**	**96.4**	**4.8**
Guidelines, Protocols and Policies (A.3)	A3001a	94.2	4.7		A3001b	96.1	4.8		A3001c	95.5	4.8
	A3002a	93.5	4.7		A3002b	92.9	4.6		A3002c	93.5	4.7
	A3003a	93.5	4.7		A3003b	92.9	4.6		A3003c	92.3	4.6
	A3004a	96.1	4.8		A3004b	96.1	4.8		A3004c	94.8	4.7
	A3005a	94.8	4.7		A3005b	92.9	4.6		A3005c	92.9	4.6
	A3a	**94.5**	**4.7**		**A3b**	**94.2**	**4.7**		**A3c**	**93.8**	**4.7**
	A3	**94.2**	**4.7**		**A3**	**94.2**	**4.7**		**A3**	**94.2**	**4.7**
Medication Safety (A.4)	A4001a	94.8	4.7		A4001b	96.1	4.8		A4001c	95.5	4.8
	A4002a	98.1	4.9		A4002b	98.7	4.9		A4002c	98.7	4.9
	A4003a	95.5	4.8		A4003b	96.8	4.8		A4003c	95.5	4.8
	A4004a	98.7	4.9		A4004b	96.1	4.8		A4004c	94.8	4.7
	A4005a	97.4	4.9		A4005b	96.1	4.8		A4005c	96.1	4.8
	A4006a	98.7	4.9		A4006b	98.1	4.9		A4006c	97.4	4.9
	A4a	**97.2**	**4.9**		**A4b**	**97.0**	**4.8**		**A4c**	**96.3**	**4.8**
	A4	**96.8**	**4.8**		**A4**	**96.8**	**4.8**		**A4**	**96.8**	**4.8**
Ambulance Service (A.5)	A5001a	97.4	4.9		A5001b	97.4	4.9		A5001c	98.1	4.9
	A5002a	97.4	4.9		A5002b	98.1	4.9		A5002c	97.4	4.9
	A5003a	97.4	4.9		A5003b	96.8	4.8		A5003c	96.8	4.8
	A5004a	95.5	4.8		A5004b	95.5	4.8		A5004c	95.5	4.8
	A5005a	96.1	4.8		A5005b	96.1	4.8		A5005c	96.1	4.8
	A5006a	97.4	4.9		A5006b	96.8	4.8		A5006c	97.4	4.9

	A5a	**96.9**	**4.8**		**A5b**	**96.8**	**4.8**		**A5c**	**96.9**	**4.8**
	A5	**96.8**	**4.8**		**A5**	**96.8**	**4.8**		**A5**	**96.8**	**4.8**
Patients flow and length of stay (A.6)	A6001a	97.4	4.9		A6001b	96.8	4.8		A6001c	96.8	4.8
	A6002a	96.8	4.8		A6002b	96.8	4.8		A6002c	98.1	4.9
	A6003a	95.5	4.8		A6003b	96.8	4.8		A6003c	97.4	4.9
	A6a	**96.6**	**4.8**		**A6b**	**96.8**	4.8		**A6c**	**97.4**	4.9
	A6	**96.9**	**4.8**		**A6**	**96.9**	4.8		**A6**	**96.9**	4.8
Medical diagnostic services (A.7)	A7001a	97.4	4.9		A7001b	97.4	4.9		A7001c	97.4	4.9
	A7002a	97.4	4.9		A7002b	97.4	4.9		A7002c	98.1	4.9
	A7003a	96.8	4.8		A7003b	96.8	4.8		A7003c	96.8	4.8
	A7a	**97.2**	**4.9**		**A7b**	**97.2**	**4.9**		**A7c**	**97.4**	**4.9**
	A7	**97.3**	**4.9**		**A7**	**97.3**	**4.9**		**A7**	**97.3**	**4.9**
Overall Aa		**96.7**		**Overall Ab**		**96.3**		**Overall Ac**		**96.3**	
Overall A	**96.4**										

[a] Threshold of consensus ≥ 80%.

Administration Domain Standards (B) Validation e-Delphi 2 – Data (n=31)										
	a: Readability Rating				b: Clarity Rating				c: Comprehensives Rating	
S.D.	EDQS	Consensus %	Mean		EDQS	Consensus %	Mean		EDQS	Consensus %	Mean
Documentation and Information Management System (B.1)	B1001a	96.1	4.8		B1001b	96.8	4.8		B1001c	96.1	4.8
	B1002a	98.1	4.9		B1002b	98.1	4.9		B1002c	97.4	4.9
	B1003a	96.1	4.8		B1003b	96.8	4.8		B1003c	95.5	4.8
	B1004a	97.4	4.9		B1004b	98.1	4.9		B1004c	97.4	4.9
	B1005a	98.7	4.9		B1005b	98.7	4.9		B1005c	98.7	4.9
	B1006a	95.5	4.8		B1006b	96.8	4.8		B1006c	94.8	4.7
	B1007a	98.7	4.9		B1007b	98.7	4.9		B1007c	98.1	4.9
	B1a	**97.2**	4.9		**B1b**	**97.7**	**4.9**		**B1c**	**96.9**	**4.8**
	B1	**97.3**	4.9		**B1**	**97.3**	**4.9**		**B1**	**97.3**	**4.9**
Access, location, and design (B.2)	B2001a	97.4	4.9		B2001b	98.1	4.9		B2001c	97.4	4.9
	B2002a	98.1	4.9		B2002b	97.4	4.9		B2002c	96.8	4.8
	B2003a	96.8	4.8		B2003b	96.8	4.8		B2003c	97.4	4.9
	B2004a	96.1	4.8		B2004b	96.1	4.8		B2004c	97.4	4.9
	B2005a	96.8	4.8		B2005b	97.4	4.9		B2005c	97.4	4.9
	B2006a	96.8	4.8		B2006b	96.8	4.8		B2006c	97.4	4.9
	B2007a	98.1	4.9		B2007b	96.8	4.8		B2007c	97.4	4.9
	B2008a	98.7	4.9		B2008b	98.1	4.9		B2008c	98.7	4.9
	B2009a	98.1	4.9		B2009b	96.8	4.8		B2009c	97.4	4.9
	B2010a	98.7	4.9		B2010b	97.4	4.9		B2010c	99.4	5.0
	B2011a	98.7	4.9		B2011b	98.1	4.9		B2011c	98.1	4.9
	B2012a	96.8	4.8		B2012b	97.4	4.9		B2012c	97.4	4.9
	B2013a	97.4	4.9		B2013b	96.1	4.8		B2013c	96.8	4.8
	B2a	**97.6**	4.9		**B2b**	**97.2**	**4.9**		**B2c**	**97.6**	**4.9**
	B2	**97.5**	4.9		**B2**	**97.5**	**4.9**		**B2**	**97.5**	**4.9**
Leadership and management (B.3)	B3001a	97.4	4.9		B3001b	96.1	4.8		B3001c	96.8	4.8
	B3002a	98.7	4.9		B3002b	98.1	4.9		B3002c	98.7	4.9
	B3003a	96.8	4.8		B3003b	96.8	4.8		B3003c	97.4	4.9
	B3004a	94.8	4.7		B3004b	98.1	4.9		B3004c	96.8	4.8
	B3005a	96.8	4.8		B3005b	97.4	4.9		B3005c	96.8	4.8
	B3a	**96.9**	4.8		**B3b**	**97.3**	**4.9**		**B3c**	**97.3**	**4.9**
	B3	**97.2**	4.9		**B3**	**97.2**	**4.9**		**B3**	**97.2**	**4.9**
Workforce staffing and training (B.4)	B4001a	95.5	4.8		B4001b	94.8	4.7		B4001c	96.1	4.8
	B4002a	96.8	4.8		B4002b	96.1	4.8		B4002c	94.8	4.7
	B4003a	97.4	4.9		B4003b	97.4	4.9		B4003c	97.4	4.9
	B4004a	97.4	4.9		B4004b	97.4	4.9		B4004c	97.4	4.9
	B4005a	98.1	4.9		B4005b	98.1	4.9		B4005c	98.7	4.9
	B4006a	98.1	4.9		B4006b	96.1	4.8		B4006c	98.1	4.9
	B4007a	98.1	4.9		B4007b	96.8	4.8		B4007c	97.4	4.9
	B4008a	99.4	5.0		B4008b	98.7	4.9		B4008c	100.0	5.0
	B4a	**97.6**	4.9		**B4b**	**96.9**	**4.8**		**B4c**	**97.5**	**4.9**
	B4	**97.3**	4.9		**B4**	**97.3**	**4.9**		**B4**	**97.3**	**4.9**
Equip ment and	B5001a	97.4	4.9		B5001b	97.4	4.9		B5001c	98.1	4.9
	B5002a	96.1	4.8		B5002b	96.8	4.8		B5002c	96.1	4.8
	B5003a	96.1	4.8		B5003b	96.8	4.8		B5003c	96.8	4.8

	B5004a	96.1	4.8		B5004b	96.1	4.8		B5004c	97.4	4.9
	B5005a	98.1	4.9		B5005b	96.8	4.8		B5005c	96.8	4.8
	B5006a	97.4	4.9		B5006b	97.4	4.9		B5006c	97.4	4.9
	B5007a	98.7	4.9		B5007b	97.4	4.9		B5007c	98.1	4.9
	B5008a	97.4	4.9		B5008b	97.4	4.9		B5008c	97.4	4.9
	B5a	**97.2**	4.9		**B5b**	**97.0**	**4.9**		**B5c**	**97.3**	**4.9**
	B5	**97.2**	4.9		**B5**	**97.2**	**4.9**		**B5**	**97.2**	**4.9**
Capacity - Resuscitation rooms (B.6)	B6001a	98.1	4.9		B6001b	97.4	4.9		B6001c	97.4	4.9
	B6002a	97.4	4.9		B6002b	98.7	4.9		B6002c	98.1	4.9
	B6003a	98.7	4.9		B6003b	98.7	4.9		B6003c	98.7	4.9
	B6004a	98.1	4.9		B6004b	98.7	4.9		B6004c	97.4	4.9
	B6005a	95.5	4.8		B6005b	96.1	4.8		B6005c	96.1	4.8
	B6a	**97.5**	4.9		**B6b**	**97.9**	**4.9**		**B6c**	**97.5**	**4.9**
	B6	**97.7**	4.9		**B6**	**97.7**	**4.9**		**B6**	**97.7**	**4.9**
Resources to support a safe working environment (B.7)	B7001a	97.4	4.9		B7001b	97.4	4.9		B7001c	97.4	4.9
	B7002a	96.1	4.8		B7002b	96.8	4.8		B7002c	97.4	4.9
	B7003a	97.4	4.9		B7003b	96.1	4.8		B7003c	96.8	4.8
	B7004a	96.8	4.8		B7004b	96.8	4.8		B7004c	96.1	4.8
	B7005a	96.1	4.8		B7005b	96.8	4.8		B7005c	96.8	4.8
	B7006a	97.4	4.9		B7006b	96.1	4.8		B7006c	96.8	4.8
	B7a	**96.9**	**4.8**		**B7b**	**96.7**	**4.8**		**B7c**	**96.9**	**4.8**
	B7	**96.8**	**4.8**		**B7**	**96.8**	**4.8**		**B7**	**96.8**	**4.8**
Performance Indicators	B8001a	96.8	4.8		B8001b	96.8	4.8		B8001c	96.8	4.8
	B8002a	96.8	4.8		B8002b	95.5	4.8		B8002c	96.1	4.8
	B8a	**96.8**	**4.8**		**B8b**	**96.1**	**4.8**		**B8c**	**96.5**	**4.8**
	B8	**96.5**	**4.8**		**B8**	**96.5**	**4.8**		**B8**	**96.5**	**4.8**
Patient Safety - infection prevention and control program (PSIPC) (B.9)	B9001a	98.1	4.9		B9001b	96.8	4.8		B9001c	98.1	4.9
	B9002a	98.7	4.9		B9002b	98.1	4.9		B9002c	98.7	4.9
	B9003a	98.7	4.9		B9003b	98.1	4.9		B9003c	98.1	4.9
	B9004a	98.1	4.9		B9004b	97.4	4.9		B9004c	98.1	4.9
	B9005a	97.4	4.9		B9005b	98.1	4.9		B9005c	98.1	4.9
	B9006a	98.7	4.9		B9006b	98.1	4.9		B9006c	97.4	4.9
	B9007a	98.7	4.9		B9007b	98.1	4.9		B9007c	98.7	4.9
	B9a	**98.3**	**4.9**		**B9b**	**97.8**	**4.9**		**B9c**	**98.2**	**4.9**
	B9	**98.1**	**4.9**		**B9**	**98.1**	**4.9**		**B9**	**98.1**	**4.9**
Overall Ba		**97.3**		**Overall Bb**		**97.2**		**Overall Bc**		**97.3**	
Overall B	**97.3**										

[a] Threshold of consensus ≥ 80%.

Appendix 11: *List of validated emergency departments quality standards (EDQS) – e-Delphi.*

Triage (A.1)

Overview

The triage process in the emergency department (ED) is a powerful tool for managing emergency patients through a systematic approach and standardised criteria, it identifies and prioritizes people's health problems (93). By triaging patients properly, we are aiming to provide the right treatment at the right time and for the right patient (73). As part of a triage process, trained staff determines which patients require immediate care and how their care is prioritized based on their emergent, urgent, or immediate needs (59).

Domain	**A**	**Clinical Pathway**
Subdomain	**A.1**	**Triage**
Standards	A.1.1	A triage system is in place to determine priority of healthcare for patients in emergency situations. (60,66).
	A.1.2	Urgent or emergency patients are given priority for timely assessment and appropriate care (60).
	A.1.3	Patients who have any change in their medical condition or have been waiting for a long period are reassessed periodically (66).
	A.1.4	The emergency department triage team triages patients using local or international approved guidelines such as Emergency severity index ESI, or WHO triage tool (61).
	A.1.5	All clinical staff in the triage area must be trained in the triage process and available around the clock (61,73).
	A.1.6	The triage area should be easily accessible and visible (61).
	A.1.7	The triage system is implemented in a clear, consistent and non-discriminatory manner for all patients and vulnerable groups (61).

Triage subdomain and relevant standards.

Treat or transfer emergency patients (A.2)

Overview

When the diagnostic and therapeutic interventions required for a patient cannot be found at a given hospital, an inter-hospital transfer (IHT) is necessary (144). There is little knowledge about how the inter-hospital transport team manages critical incidents that occur during inter-hospital transport. In fact, inter-hospital transport is one of the most risky procedures for critically ill patients (145) . It is the transferring hospital's responsibility to provide stabilization treatment and document it within its capacity before transporting the patient (73).

Domain	**A**	**Clinical Pathway**
Subdomain	**A.2**	**Treat or transfer emergency patients**
Standards	A.2.1	There is a process in the emergency department to treat or refer emergency patients depending on their needs (66).
	A.2.2	There is a written policy and procedure for treating emergency patients (66).
	A.2.3	Emergency patient treatment policy and procedure is implemented and monitored (66).
	A.2.4	Stabilization therapy is provided to a patient who needs emergency care (66).
	A.2.5	The emergency department has a written and implemented policy to arrange the patient's transfer to another hospital, whether the patient or his accompanying person requests the transfer or the hospital has no capacity for treatment (66).
	A.2.6	The emergency department has an ambulance to transport patients or there is a permanent transfer agreement with a facility that can provide the required level of care while the patient is being transported (60,66).
	A.2.7	The emergency department team ensures that the patient is informed of the reasons, risks, and benefits of transfer to another hospital. (61).

A.2.8	The emergency department team is trained on the policy to prepare patients for transport (61).
A.2.9	The emergency department team ensures that all patient referral documents contain sufficient information to facilitate ongoing care when transferring to another hospital (61).

Treat or transfer emergency patient's subdomain and relevant standards.

Guidelines, Protocols and Policies (A.3)

Overview

Organizations use protocols, guidelines, policies, and procedures to provide uniform knowledge about clinical and nonclinical functions (59). Policies, protocols, and guidelines should be in place in emergency departments to mitigate and equitably share risks to patient safety, and should be updated based on current evidence (61).

Domain	**A**	**Clinical Pathway**
Subdomain	**A.3**	**Guidelines, Protocols and Policies.**
Standards	A.3.1	For the most common emergencies and the top emergency diagnoses, clinical practice guidelines have been adopted or developed for patient care in emergency departments (66).
	A.3.2	There are policies and procedures in the emergency department for all clinical and management pathways include but not limited to (60): a. Chest Pain management b. Management of medico-legal cases such as alcohol and narcotic abuse and criminal acts. c. Management of suspected victims of abuse, neglect, and domestic violence.

	d. Management of suicidal patients e. Care of trauma patients. f. Care of patients not competent to care for themselves. g. Management airway obstruction. h. Sepsis. i. Stroke and t-PA. j. Care of minors (underage). k. Patient transfer from emergency department to inpatient areas or to another healthcare facility. l. Patients who leave against medical advice. m. Patients who leave without being seen.
A.3.3	The guidelines, policies and procedures are developed under supervision of emergency department head and in collaboration with qualified relevant staff and departments (60).
A.3.4	The emergency department staff are trained on the most common emergencies and the top emergency diagnoses guidelines, policies, and procedures. (60,66).
A.3.5	There is a compliance with the most common emergencies and the top emergency diagnoses emergency department guidelines, policies, and procedures. (60,66).

Guidelines, Protocols and Policies subdomain and relevant standards

Medication Safety (A.4)

Overview

In hospital environments, such as critical care units and emergency departments, medication errors are reported with alarming frequency. An estimated 4%-14% of medication errors occur in these settings (146). Medication Management is intended to provide an effective and safe system for managing medications, including storage, prescribing, transcribing, preparing, dispensing, and administering (73).

Domain	**A**	**Clinical Pathway**
Subdomain	**A.4**	**Medication Safety**
Standards	A.4.1	There is a policy and procedure for medication management and use in the emergency department (73).
	A.4.2	The medications are stored safely and securely in the emergency department (61).
	A.4.3	Life-saving medicines are available in the emergency department at all times and are regularly checked for stock availability, expiration date and storage conditions (61,73).
	A.4.4	The contents of the crash cart are standardised, well-organised, and inclusive of all necessary medications, including those required for pediatric cases (73).
	A.4.5	The emergency department has processes in place to ensure that medications are prescribed, administered and recorded correctly and safely (61)
	A.4.6	Patients in the emergency department are monitored after medications are administered (61).

Medication safety subdomain and relevant standards

Ambulance Service (A.5)

Overview

Ambulance services are important to save lives, and this requires a system that controls this service, with trained staff, adequate equipment, documentation, and effective coordination with emergency departments (144). Transport emergency patients or handling accidents is one of the most important functions of ambulance services in the healthcare system (147). A successful patient transfer depends on the exchange of accurate and complete information between ambulance and hospital personnel (111).

Domain	**A**	**Clinical Pathway**
Subdomain	**A.5**	**Ambulance Service**
Standards	A.5.1	Ambulance services are available at all time to transport emergency patients (66).
	A.5.2	The emergency department has effective channels for cooperation and communication with ambulance services about transferring patients (60,73).
	A.5.3	The emergency department maintains effective channel of communication ambulance services under the supervision of emergency department director or nursing director (60).
	A.5.4	Ambulances have necessary equipment and supplies to be ready to transport patients 24/7 (60).
	A.5.5	All medical, cleaning, disinfection and mechanical requirements of the ambulance are checked and documented on a daily basis (60).
	A.5.6	Ambulance equipment maintenance is carried out and documented regularly (60).

Ambulance service subdomain and relevant standards

Patients flow and length of stay (A.6)

Overview

Crowding in emergency departments is a significant public health concern (55), Patients in Emergency Departments may experience prolonged waiting times and length of stay (LOS) due to the increasing demand for care and more complex management procedures. The flow of patients through an organization should be seamless, allowing them to move quickly from one episode of care to another (56). Patient flow and staff turnover are both important factors in determining the working conditions of an emergency department, so poor patient flow and high staff turnover may compromise patient safety (148).

Domain	**A**	**Clinical Pathway**
Subdomain	**A.6**	**Patients flow and length of stay**
Standards	A.6.1	Patient flow and emergency department processes are monitored and analysed regularly to reduce length of stay for patients (66)
	A.6.2	A quality improvement plan and strategies are developed and implemented to minimize the length of stay and improve patient flow in the emergency department based upon an analysis of emergency department processes (66).
	A.6.3	Patients who need to wait for treatment are informed about waiting times (61).

Patient flow and length of stay subdomain and relevant standards.

Medical diagnostic services (A.7)

Overview

Medical imaging and laboratory tests ordered in the EDs are important factors in patient management. Improved patient outcomes and a shorter length of stay can both be achieved through rapid turnaround of laboratory tests and medical imaging in the ED (118). Diagnostic tests results (such as laboratory, imaging, and cardiac diagnostics) should be communicated in a timely, accurate, complete, unambiguous, and understandable manner reduce errors and improve patient safety (59).

Domain	**A**	**Clinical Pathway**
Subdomain	**A.7**	**Medical diagnostic services**
Standards	A.7.1	Emergency diagnostic tests (medical imaging and laboratories) are available and performed all the time (60).
	A.7.2	The results of emergency diagnostic tests are promptly communicated with relevant clinician in a timely manner (60).
	A.7.3	The emergency department has a process or subcontractor to provide all unavailable emergency diagnostic tests. (60).

Medical diagnostic services subdomain and relevant standards.

Documentation and Information Management System (B.1)

Overview

Medical records accuracy and completeness is both a measure and a means of ensuring the quality of the care that patients receive. Having accurate information in patient medical record can facilitate and enhance communication between healthcare professionals, both within the hospital and when patients are discharged, on the other hand, poor documentation may lead to delays or errors in patient care, especially during care transitions (138).

Domain	**B**	**Administration Pathway**
Subdomain	**B.1**	**Documentation and Information Management System**
Standards	B.1.1	A complete patient record should be kept, including the patient's full name, unique identifier, arrival and departure date and time, name of ambulance or other form of transport, name(s) of treating medical staff, main complaint, gender, contact information, medical history, allergies, medications, vital signs, physical exam, test results, treatment and interventions, monitoring sheet, informed consent, diagnosis, and disposition of the patient (home, transfer, admit) (60,66,73).
	B.1.2	The registry clerk is available all the time to register emergency patients (73).
	B.1.3	The emergency department maintains documented policies and procedures for documentation, safeguards against loss or damage, backup protocols, retention, access control measures, confidentiality, alternative plan in case of system failure or crisis (73).
	B.1.4	The emergency department should have a standard list of agreed abbreviations for clinical documentation (73).

	B.1.5	There should be a process in the laboratory and radiology department to inform the emergency department of critical patient results and document them (73).
	B.1.6	The emergency department has a written document control policy that includes the preparation, approval, distribution, coding, and change of documents (73).
	B.1.7	Emergency department staff can access information and data that will support the treatment of patients who present to the emergency department (61).

Documentation and Information Management System.

Access, location, and design (B.2)

Overview

The physical structure of emergency departments is one of the important enabling factors for the quality of the health service, in terms of the size and capacity of the place and the number of rooms that include patient triage, diagnosis, waiting and reception, in addition to the appropriate environment in terms of hygiene, clean running water, staff facilities, ventilation and lighting, as the appropriate design helps in the flow of patients and staff comfortably It prevents overcrowding in emergency departments. In addition, easy access to the entrance to the emergency department and places of diagnostic service such as laboratories and medical imaging (72).

Domain	**B**	**Administration Pathway**
subdomain	**B.2**	**Access, location, and design**
Standards	B.2.1	The Location of emergency department is easily accessible, visible and clearly identifiable. (61,66)
	B.2.2	The emergency entrance is defined by visible signs and easy access, whether by ambulance or car, and patients (61,66).

B.2.3	Patients can get in and out the emergency department without going through other areas of the hospital (61,66).
B.2.4	The entrance to the emergency department is suitable for patients with special needs and is equipped with the necessary tools for them (61,66).
B.2.5	The emergency department layout allows easy access to equipment and resources by the emergency department team. (61)
B.2.6	The emergency department has safe ways to evacuate in case of emergency (61).
B.2.7	Comfortable waiting areas are available in the Emergency Department (61).
B.2.8	The emergency department ensures availability of running water for cleaning, hand washing and drinking around the clock (73).
B.2.9	The emergency department ensures that electricity is available 24 hrs. a day, every day (73).
B.2.10	There should be adequate toilets for emergency department users with privacy for collecting samples, especially urine and stool (73)
B.2.11	There are designated areas within the emergency department where employees can take breaks, change clothes, and store their personal belongings (73).
B.2.12	There is a dedicated area for triage and isolation respiratory infections (61).
B.2.13	There must be at least 1 ED bed per 5000 annual patient visits (88).

Access, location, and design subdomain and relevant standards.

Leadership and management (B.3)

Overview

Emergency departments must have their own organizational structure, whether they are part of the hospital or independent, and be responsible for providing the service and ensuring its quality and safety, according to the regulations and laws. Proper leadership of emergency departments invests in available resources, and provides an effective team committed to continuous improvement and able to serve the emergency patient based on quality and safety standards (61,73,149).

Domain	**B**	**Administration Pathway**
Subdomain	**B.3**	**Leadership and management**
Standards	B.3.1	Responsibilities and duties are defined by approved job description for key leadership functions in the emergency department (73).
	B.3.2	An emergency department manager is a qualified physician in emergency medicine by means of education, training, and experience (60,66).
	B.3.3	The emergency department manager oversee the development and implementation of all policies and procedures related to managing emergency patients (60,66).
	B.3.4	The emergency department nursing manager is a qualified nurse by education, training, and experience specifically in emergency patient care (60).
	B.3.5	The emergency department nursing manager oversee the development and implementation of all nursing policies and procedures related to managing emergency patients (60,66).

Leadership and management subdomain and relevant standards.

Workforce staffing and training (B.4)

Overview

"The heart and soul of any organization is its people" (86). It is important for emergency departments to have competent, multi-skilled, well-trained, qualified, and motivated staff to deliver efficient, effective, and timely patient centreed care, compliant with local or international requirements regarding staffing numbers, including nurses, doctors, and other professionals, as well as teamwork and communication between the departments (72,73,86).

Domain	**B**	**Administration Pathway**
Subdomain	**B.4**	**Workforce staffing and training**
Standards	B.4.1	The emergency department is staffed with the necessary qualified personnel during all shifts and hours, including doctors, nurses, paramedics, and workers (60,66).
	B.4.2	The emergency department staffing plan is based on past workload patterns (60,66).
	B.4.3	There is an approved policy and procedure on how consultants are called for their opinions (60,66).
	B.4.4	There is a plan to provide additional staff in case of overload (patients overflow) (66).
	B.4.5	Every Clinical staff working in the emergency department must be certified in basic life support (BLS) and advanced cardiovascular life support (ACLS) as appropriate to the ages of the patients served (including Advanced Trauma Life Support) (60,73).
	B.4.6	The non-clinical support staff must be trained in CPR (73).
	B.4.7	Emergency department staff receive continuous education with competency assessment (60).
	B.4.8	Certified clinical staff with BLS, ACLS, and advanced trauma life support must be covered all shifts or at least one designated per shift (60,73).

Workforce staffing and training subdomain and relevant standards.

Equipment and Supplies (B.5)

Overview

Having access to equipment, tools, and consumables around the clock is one of the most essential resources for providing safe, effective, and sustainable health care in emergency departments. Staff training and effective maintenance programmes are essential for maintaining the functionality of these devices (61,72,73).

Domain	**B**	**Administration Pathway**
Subdomain	**B.5**	**Equipment and Supplies**
Standards	B.5.1	There is an up-to-date list of all functioning equipment and supplies needed for the emergency department (61,73).
	B.5.2	The emergency department equipment and supplies are available in sufficient quantity, proper for special needs, tidy and well organised (61,73).
	B.5.3	There is an effective equipment maintenance program in place for the emergency department (61,73).
	B.5.4	There are spare equipment and tools in case they break down (73).
	B.5.5	The emergency department staff are trained to use the available equipment (61,73).
	B.5.6	The resuscitation / trauma rooms have all the necessary equipment and supplies, and their functioning is checked daily on all shifts (60,61).
	B.5.7	There are a documented procedures in place to ensure the availability of medical gases around the clock to include procurement, safe handling, storage, distribution, regular inspection, use and renewal (60,73).
	B.5.8	Infection prevention and control supplies are available around clock, including cleaning materials, disinfectant, liquid soap and personal protective equipment (73).

Equipment and supplies subdomain and relevant standards.

Capacity - Resuscitation rooms (B.6)

Overview

Each Emergency Department should have an adequate Resuscitation Room, for an ED with an average case mix of 20,000 patients per year, two resuscitation bays are recommended, with one bay per 10,000 patients. In the design of resuscitation rooms, radiation safety measures should be taken into consideration, and the room should be easily accessible and close to the ambulance entrance, as well as the environment of the place should be suitable in terms of climate and lighting (88)**.**

Domain	**B**	**Administration Pathway**
Subdomain	**B.6**	**Capacity - Resuscitation rooms**
Standards	B.6.1	In the emergency department there is a dedicated and equipped room(s) equipped for resuscitation (60,61,66).
	B.6.2	Resuscitation / trauma rooms are suitable and have sufficient space to perform resuscitation (60,61,66).
	B.6.3	All essential resuscitation medications are available (60,61,66).
	B.6.4	The emergency department has policies and procedures to deal with cases that need resuscitation (66).
	B.6.5	The emergency department has a plan to respond to resuscitation cases at any time and any place in the hospital and includes at least (66): a. Define the team, its responsibilities, and the way of communications. b. Training the team of resuscitation. c. Emergency medicines, where they are located, and how to secure them. d. Required equipment and ensuring its effectiveness. e. Evaluate the effectiveness of the plan periodically

Capacity - Resuscitation room's subdomain and relevant standards.

Resources to support a safe working environment (B.7)

Overview

Throughout the world and in Palestine, workplace violence against healthcare workers (HCWs) in emergency departments is a major threat to their workplace safety and health. The victims, patients, and healthcare organizations all suffer significant consequences (46,150). To safeguard everyone in the hospital against personal harm and loss or damage to property, a written security program should be implemented effectively (59).

Domain	**B**	**Administration Pathway**
Subdomain	**B.7**	**Resources to support a safe working environment**
Standards	B.7.1	Security and safety measures are planned and taken to protect the emergency department including patients, staff, and visitors (73).
	B.7.2	The emergency department has a safety and security plan based on identified safety and security threats, such as natural and manmade disasters, mass causality management, and evacuation plans (73).
	B.7.3	Adequate and well-trained security personnel are provided to protect emergency department patients, staff, and visitors (60,61,66).
	B.7.4	The security and safety system's effectiveness for the emergency department is assessed annually (66).
	B.7.5	There is a warning mechanism in place to alert the security team if any security issue occurs (66,73).
	B.7.6	The emergency department posts safety warning signs in a language that patients, families, and community members understand (73).

Resources to support a safe working environment subdomain and relevant standards.

Performance Indicators (B.8)

Overview

Quality assessment of emergency department is very important for continuous improvement (13). The purpose of performance indicators monitoring is to determine whether the emergency department services meets its goals and standards through the collection of data (54).

Domain	**B**	**Administration Pathway**
Subdomain	**B.8**	**Performance Indicators**
Standards	B.8.1	Clinical and managerial quality indicators in relation to the emergency department's structure, processes, and outcomes, are defined, measured and reported regularly (73).
	B.8.2	There are various indicators that can be used to measure the performance of emergency departments. Some of these indicators include, but are not limited to: a. Time to ECG in chest pain patients (60). b. Time to antibiotics in sepsis patients (60). c. Triage to physician time (60). d. Time to enzyme diagnosis (21). e. patient risk of falls (59). f. Adequate assessment spaces (72). g. Reporting system for safety concerns (without fear of reprisal) (72). h. Analysis of incident reports (72). i. Sufficient equipment (72). j. Quality improvement (activity being conducted) (72).

k. Morbidity / Mortality (general or specified conditions) (72).
l. Total length of stay (72).
m. Re admission within 48 hrs. (54).

Performance indicators subdomain and relevant standards.

Patient Safety - infection prevention and control program (PSIPC) (B.9)

Overview

The commitment to patient safety is both a human right and an important component of quality in healthcare, as well as a concept that covers all processes within the healthcare system (52,68). The studies found that around 10% of all inpatient admissions result in some level of unintended harm to the patient. Up to 75% of these lapses are preventable (68). Therefore, it is necessary to have an effective program to ensure patient safety including IPC in emergency departments. The leadership of emergency departments is responsible for developing, implementing, monitoring and controlling strategies for preventing, managing, and controlling infections and antimicrobial resistance; reducing harm to patients, visitors, staff, and visitors; and achieving good patient outcomes (149).

Domain	**B**	**Administration Pathway**
Subdomain	**B.9**	**Patient Safety - infection prevention and control program (PSIPC)**
Standards	B.9.1	There are a policies and procedures for most relevant PSIPC issue in emergency department for example, but not limited (Incidence reporting, medication safety, falling down, patient identification, critical result reporting, hand hygiene, waste management, cleaning, disinfection, sterilization, and communication…etc.) (61,73).
	B.9.2	The emergency department staff are trained on the PSIPC policies and procedures (61,73).
	B.9.3	All policies and procedures of PSIPC are implemented and monitored regularly (61,73).
	B.9.4	Patient safety attitude are measured regularly among the staff of emergency department (61).
	B.9.5	All morbidity and mortality in the emergency department are reviewed by a multidisciplinary team on a regular basis (73).
	B.9.6	A regular audit is conducted in the emergency department for continuous improvement (73).
	B.9.7	A proactive risk assessment is conducted in the emergency department and mitigation actions are taken (73).

Patient Safety - infection prevention and control program (PSIPC) subdomain and relevant standards.

Appendix 12: *Study Three - Feasibility and Acceptability Study for Implementing EDQS - Consent Form*

Title of Study: Feasibility and Acceptability Study for Implementing Emergency Department Quality Standards (EDQS). **This aim of ethics application.**

in

Developing Contextual Quality Standards for Emergency Departments in Palestine

Researcher: Abed Alra'oof Mohammad Saleem Bani Odeh, MCLS, PhD candidate -Emergency Medicine in the Faculty of Health Sciences at the University of Cape Town.

Supervisor: Dr. Willem Stassen

Co-Supervisor: Professor Motasem Hamdan

Co-Supervisor: Professor Lee Wallis

Field of Research: Emergency Medicine

Participant / Expert Information Sheet

Contact Information: [ ] | [ ]

Introduction:
Thank you for considering participation in our research study. The purpose of this study is to assess the feasibility and acceptability of implementing Emergency Department Quality Systems (EDQS) in Palestinian emergency departments. Your expertise and insights are crucial in understanding the practical aspects and potential challenges associated with the implementation.

Study Overview:
Objective: To evaluate the feasibility and acceptability of introducing EDQS in Palestinian emergency departments.

Procedure: Participation involves engaging in an interview session to discuss your experiences and perspectives related to EDQS.

Participant / Expert Eligibility:
We are seeking participants who have expertise and experience in emergency medicine, healthcare administration, or related fields. Individuals familiar with the functioning of emergency departments and quality improvement initiatives are especially encouraged to participate.
Confidentiality:

- All information obtained during the study will be kept confidential.
- Participant names and any identifying information will be anonymized to ensure privacy.

Benefits of Participation:

- Contribute to the advancement of healthcare quality systems.
- Share valuable insights that may inform future EDQS implementations.

Risks and Discomforts:
Participation involves discussing professional experiences and opinions, and there are minimal anticipated risks. If at any point you feel uncomfortable, you may choose to withdraw from the study without consequences.

Informed Consent:
Participation is voluntary, and you have the right to withdraw at any time. Your decision will not impact your professional relationships. By agreeing to participate, you provide consent for the use of your insights in the study.

Contact Information:
If you have any questions or concerns, please feel free to contact the researcher at [Abed Alra'oof Bani Odeh], mobile No. [00970562402222].

Approval and Ethics:
This study has received ethical approval from [UCT Ethical Committee].

Your participation is highly valued, and we appreciate your time and willingness to contribute to this research endeavor.

Participant / Expert Agreement:
I have read and understood the information provided in this sheet. I voluntarily agree to participate in the feasibility and acceptability study for EDQS, understanding that I can withdraw at any time without consequences.

Participant / Expert Name : _____ Experience:_____

Date: _____

Appendix 13: *Interview guide for assessing the feasibility and acceptability of Emergency Department Quality Standards (EDQS) among experienced emergency department staff*

Title of Study: Feasibility and Acceptability Study for Implementing Emergency Department Quality Standards (EDQS). **This aim of ethics application.**

in

Developing Contextual Quality Standards for Emergency Departments in Palestine

Researcher: Abed Alra'oof Mohammad Saleem Bani Odeh, MCLS, PhD candidate -Emergency Medicine in the Faculty of Health Sciences at the University of Cape Town.

Supervisor: Dr. Willem Stassen

Co-Supervisor: Professor Motasem Hamdan

Co-Supervisor: Professor Lee Wallis

Field of Research: Emergency Medicine

Introduction

- Begin with a warm introduction and reassuring confidentiality.
- Confirm the participant's consent for audio recording.
- Briefly explain the purpose of the interview:

"We are conducting a pilot study to assess the feasibility and acceptability of implementing Emergency Department Quality Standards (EDQS) in emergency departments. Your insights as an experienced staff member are invaluable for this study".

- Can you please tell me about your role and responsibilities in the emergency department?
- How long have you been working in this department?
- Other issues to consider are gender and educational background (GP, emergency physician, nurse, etc.).

1. Section 1: Understanding of EDQS

1.1. Have you heard about the EDQS before?
1.2. Can you describe your understanding of what EDQS is?

1.3. Could you please let me know how familiar you are with EDQS and its associated domains and subdomains? Have you ever had any training in this regard?

1.4. Have you had any previous experience with similar quality standards in emergency departments?

1.5. How do you think EDQS aligns with current practices and protocols in the emergency department?

2. Section 2: Perceived Benefits and Challenges

2.1. What are the potential benefits of implementing EDQS in an emergency department from your point of view? Can you give me examples?

2.2. From your perspective, What challenges or obstacles do you expect in the implementation of EDQS? Can you please give me examples?

3. Section 3: Feasibility Assessment

3.1. In your opinion, how feasible is it to integrate EDQS into our daily workflow?

3.2. Is there any reason that could make implementing EDQS unfeasible, such as resource limitations, logistical issues, or operational challenges?

3.2.1. How would you evaluate the availability of financial resources, taking into account budget considerations for training, infrastructure improvements, and any potential additional costs associated with implementing the standard?

3.2.2. How would you evaluate the availability of qualified staff in your ED? Do you think additional training or hiring is necessary? What type of training or in what areas?

3.2.3. To what extent is the technological infrastructure and equipment in EDs available and aligned with the requirements of EDQS?

3.2.4. Do you believe that there are any legal or regulatory barriers to implementing the EDQS and identifying the steps needed for compliance? Explain?

3.3. What are the key factors or recommendations that would enable successful integration of EDQS into daily operations, in your opinion?

4. **Section 4: Acceptability and Stakeholder Perspectives**

4.1. To what extent do you and your colleagues in the emergency department accept the EDQS?

4.1.1. How willing are you to adopt and implement the EDQS?

4.2. Are there any concerns or reservations that you think your colleagues might have regarding EDQS?

4.3. How can be enhanced the acceptance of EDQS among the emergency department staff?

4.3.1. How would you describe the commitment of hospital administrators and ED to implementing the EDQS from your perspective?

4.3.2. Do you think that partnering with relevant healthcare organizations, governmental bodies, or international agencies can assist and guide the implementation of EDQS? If so, how?

4.4. How well do you think the EDQS aligns with the cultural norms and practices of our organization?

4.4.1. In your opinion, how culturally sensitive is the EDQS?

5. **Section 5: Suggestions for Improvement and overall satisfaction**

5.1. Based on your understanding and experience, do you have any suggestions for improving or refining EDQS? or modification to enhance its effectiveness?

5.2. On a scale from 1 to 5, how satisfied are you with the EDQS: 1 (Not satisfied at all) to 5 (Very satisfied)

Closing and conclusion:

- Is there anything else you would like to add or discuss regarding EDQS and its potential implementation in our emergency department?
- Thank you for your time and valuable insights during this interview.

Note: The semi-structured nature of the interview guide allows for flexibility in probing and exploring unexpected topics that may arise during the conversation. Listening actively and encouraging participants to share their experiences and perspectives openly is important.

Appendix 14: *Study 3 UCT ethical committee approval – HREC 318/2024.*

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room 45 E-52-E-Floor- Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492
Email: hrec-enquiries@uct.ac.za
Website: https://health.uct.ac.za/home/human-research-ethics

15 July 2024

HREC REF: 318/2024

A/Prof W Stassen
Division of Emergency Medicine
F-51 OMB
Email: willem.stassen@uct.ac.za
Student: BNDABE001@myuct.ac.za

Dear A/Prof Stassen

PROJECT TITLE: STUDY 3 – EMERGENCY DEPARTMENT QUALITY STANDARDS – ASSESS FEASIBILITY AND ACCEPTABILITY OF IMPLEMENTATION- (PHD EMERGENCY MEDICINE-ABED ALRA'OOF ODEH)

Thank you for your response letter dated 07 June 2024, addressing the issues raised by the Faculty of Health Sciences Human Research Ethics Committee (HREC) for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 July 2025.

You are required to submit a progress report form, using the standardised Annual Report Form (FHS016) or (FHS017) if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: Abed Alra'oof Odeh will also be involved in this study.

Please quote HREC REF 318/2024 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary for any research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2020), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

HREC REF 318/2024

Appendix 15: PhD Research Study Three Local Approval Ministry of Health, Palestine.

State of Palestine
Ministry of Health
Deputy Health Minister's Office

دولـــــة فلســـــــطين
وزارة الصـــــحة
مكتب وكيل وزارة الصحة

Ref.: DHM240407 **Date:**22/05/2024

Dear Prof. Willem Stassen,
Dear Abed Alra'oof Bani Odeh

دولة فلسطين - وزارة الصحة
مكتب وكيل وزارة الصحة
صادر رقم: ٤٥٦
تاريخ: 23/5/2024

Greetings.

Subject: Request approval for PhD research

DHM / Sent: 23/05/2024 /407

We thank you for submitting this request for approval to conduct this important research and associated series of studies, under the title "Developing Contextual Quality Standards for Emergency Departments in Palestine" and assess the feasibility and acceptability of implementing a context-specific EDQS in Palestine.

After reviewing the mentioned request, I am pleased to inform you of our official approval to conduct these studies by the PhD student affiliated with the University of Cape Town "Abed Alra'oof Bani Odeh" under university number BNDABE001", and we will give him the full facilitation and support he needs to finish his search work.

Minister of Health Deputy
Dr. Wael Al Sheikh

State of Palestine Ministry of Health Deputy Minister Office

- Attached your request.

Tel.: 02 2989373 P6008303: 02 2989373 :هاتف
Fax: 02 2964185 P4070298: 02 2964185 :فاكس

Appendix 16: *Illustrative quotes for subthemes.*

Title of Study: Feasibility and Acceptability Study for Implementing Emergency Department Quality Standards (EDQS). **This aim of ethics application.**

in

Developing Contextual Quality Standards for Emergency Departments in Palestine

Researcher: Abed Alra'oof Mohammad Saleem Bani Odeh, MCLS, PhD candidate -Emergency Medicine in the Faculty of Health Sciences at the University of Cape Town.

Supervisor: Dr. Willem Stassen

Co-Supervisor: Professor Motasem Hamdan

Co-Supervisor: Professor Lee Wallis

Field of Research: Emergency Medicine

Theme	Subtheme	Example on Illustrative Quotes
1. Feasibility Enablers	1.1. Integration with ED workflow	*"...the standards are applicable, feasible, and easy to integrate into the daily workflow, ...". P5 P2L77.*
		"I think implementing these standards is both feasible and can seamlessly integrate into daily workflows". P7 P2L85.
		"It is feasible; initial resistance may occur, but it will gradually become integrated into the system and daily workflow of the ED in Palestine". P10 P2L72.

	1.2. Legal and Regulatory Environment	*"To my knowledge, there are no Palestinian laws that conflict with the implementation of these standards". P4 P3L112*
		"Palestinian law aligns with these standards, including Palestinian public health law". P7 P3L119.
		"I believe the Palestinian laws facilitate the implementation of EDQS and improvements and have no conflict with them". P10 P3L104.
	1.3. Willingness to support implementation	*"as I mentioned at the beginning anything could contribute to improving the EDs services all of us will support as well as accept…". P2 P3L110.*
		"I am willing and fully support the implementation of these standard…". P3 P3L143.
		"we are willing and eager for implementation and support of the EDQS. because will simplify and organise the workflow". P7 P3L133.
	1.4. Alignment with Norms and Culture	*"...I think it fits very well with the culture and norms of both the community and the organizational level and nothing is conflicting". P6 P4L203.*
		"To my knowledge, there are no Palestinian laws that conflict with the application of these standards". P4 P3L112.
2. Benefits of Implementing EDQS	2.1. Quality of Care Improvement	*"..., Key benefits include enhanced patient satisfaction, improved performance, fewer medical errors, a positive hospital reputation, reduced infections, and shorter waiting times" P2 P2L60.*
	2.2. Workflow Optimization	*"Potential benefits include shorter patient stays in the ED through effective triaging and prioritization of urgent cases" P7 P2L68.*
		"organise the ED and patient flow and reduce patient waiting". P8 P2L74.

	2.3. Improved Patient Outcome	*"..., improves treatment outcomes, and decreases complications and mortality-morbidity rates through timely intervention in emergencies". P7 P2L71.*
	2.4. Enhanced Safety	*"..., the standards related to ED infrastructure and design affect the quality and safety of services provided to emergency patients…". P3 P2L67.*
		" ...EDQS enhanced patient safety, staff protection, reduced medical errors, and minimized patient harm and complication". P10 P2L60.
3. Challenges of Implementing EDQS	3.1. Knowledge Gaps and Familiarity with EDQS	*"I have some familiarity with the standards, but I need to explore their requirements further as the training was brief and general. P2 P2L45.*
		"I have some experience in this area by observing colleagues in the hospital's quality department and their efforts to implement patient safety and infection control standards". P9 P2L50.
		"I have little knowledge about hospital quality and WHO patient safety standards, including infection prevention and control". P5 P2L49.
	3.2. Resources inadequacy	*"Certainly, the availability of resources for implementing the standards is a challenge. Like many other hospitals, we encounter difficulties in providing specialized training, such as basic and advanced life support for nurses and doctors, due to limited resources, as well as meeting other standards related to infrastructure improvement…". P1 P3L96.*
		"...The additional costs I think are more related to redesigning the infrastructure to meet the standards requirements if the infrastructure is not suitable". P5 P3L9.
		"As a hospital affiliated with the Ministry of Health, most of the human and material resources are available centrally. Even if there are some of these resources, we work to

		provide health services in the EDs within what is available, and we can work to implement these standards within what is available…". P3 P3L87.
		"Among the obstacles and challenges is the infrastructure of the ED, which needs to be adapted according to the requirements of the standards, in addition to some shortages in human resources. For example, there is a small laboratory that only works in the morning shift, and the radiology department is in another area of the hospital and needs nursing or staff facilities, which is considered a challenge. There is also the lack of a suitable infrastructure close to the staff for hand hygiene". P5 P2L66.
		"Staff shortages, inadequate infrastructure—including the triage department's location, space, and design… are major challenges…". P7 P2L76
		"The staff in our ED possess basic qualifications but require further training in quality improvement, infection control, clinical practices, and EDQS tailored to the Palestinian context…". P10 P3L90.
		"…We also require specialized doctors in Emergency Medicine, as well as nurses and paramedical professionals like lab and radiology technicians". P8 P3L120.
	3.3. Commitment and resistance to change	*"My constant fear is the availability of real administrative support or shortage of personnel and other resources, but these fears can be overcome, for example, in shortage of resources, we sometimes resort to seeking external support…". P6 P4L166.*
		"My concern is about the commitment and support of leadership and management". P8 P4L147.
		"The cadres realize the importance of these standards, but there is a kind of resistance to any change. Another reason is the commitment of the senior management. Despite some

		resource and logistic challenges, their implementation is possible and has not been a reason to make them unfeasible for implementation". P4 P2L79.
	3.4. Political Situation	*"...Furthermore, the ongoing conflict in Palestine and the increasing injuries from occupation practices place additional pressure on EDs. P7 P2L78.*
	3.5. Workload	*"Our staff faces a heavy workload, which may be the primary concern regarding the additional implementation demands of these standards". P5 P3L123.*
4. Recommendations	4.1. Capacity building and resource allocation	*"The most important recommendation for me is to conduct the orientation and training of these standards for the cadres, ...". P7 P4L165.*
	4.2. Gradual implementation	*"..., I suggest that the experiment should be at the level of an emergency department or two and gradually expand." P6 P5L215.*
		"..., pilot the standards in one or two hospitals before they are widely disseminated or mandatory at the national level,...,". P6 P4L146.
	4.3. Continuous Quality Improvement	*"..., consistently monitoring implementation are crucial for compliance...,". P2 P2L65*