

Systematic Review Protocol

Title: Global Interventions to Improve Healthcare Quality and Patient Safety: A Systematic Review and Meta-Analysis (2020–2024)

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PROSPERO Registration

Date Registered 9th July, 2025

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1. Abstract

This systematic review and meta-analysis will evaluate the effectiveness of healthcare quality and patient safety interventions implemented globally between January 2020 and May 2024. Building on previous reviews limited to pre-pandemic evidence, we will synthesize data from randomized controlled trials (RCTs), quasi-experimental studies, and observational comparative studies across eight representative countries stratified by World Bank income levels (2 high-income, 2 upper-middle, 2 lower-middle, and 2 low-income countries). Primary outcomes will include: (1) reduction in preventable adverse events, (2) mortality rate changes, and (3) compliance improvement metrics. Secondary outcomes will analyze cost-effectiveness, implementation barriers, and staff satisfaction. Following PRISMA-P guidelines, we will search MEDLINE, EMBASE, CINAHL, Cochrane Library, and WHO IRIS using a predefined search strategy. Two independent reviewers will conduct study selection, data extraction, and risk of bias assessment using Cochrane RoB 2.0 and ROBINS-I tools. Quantitative synthesis will employ random-effects meta-analysis with subgroup analyses by intervention type and country income level. Qualitative findings will be thematically analyzed using NVivo 12. The GRADE approach will assess evidence certainty. Results will inform the WHO Patient Safety Action Plan 2021-2030 implementation, particularly for low-resource settings.

2. Background and Rationale

Despite significant advancements in medical science, the WHO estimates that 1 in 10 patients experience harm while receiving hospital care, with 50% of these incidents being preventable. The

COVID-19 pandemic has further strained healthcare systems, making quality and safety interventions more crucial than ever. This review will build upon previous work by focusing exclusively on post-2020 interventions, capturing innovations developed during the pandemic era.

3. Objectives

Primary Objective:

To evaluate the effectiveness of healthcare quality and patient safety interventions implemented globally between January 2020 and May 2024

Secondary Objectives:

1. To systematically review and synthesize evidence on interventions to improve patient safety and quality in healthcare systems.
2. To quantify the effectiveness of such interventions via meta-analysis.
3. To explore differences in outcomes across high-income and low- and middle-income countries (LMICs).
4. To identify critical success factors and challenges in implementation.

4. Methods

4.1 Study Design

Systematic review with meta-analysis of quantitative studies and thematic synthesis of qualitative evidence

4.2 Eligibility Criteria

Inclusion:

- Randomized controlled trials
- Quasi-experimental studies
- Observational comparative studies
- Published January 2020-May 2024
- English language publications

Exclusion:

- Animal/in-vitro studies
- Narrative/scoping reviews
- Conference abstracts without full text

4.3 Search Strategy

Databases:

- MEDLINE (via PubMed)
- EMBASE
- CINAHL
- Cochrane Library
- WHO IRIS

Search Terms:

("patient safety" OR "healthcare quality") AND ("intervention" OR "program")

4.4 Data Management

Flowchart showing PRISMA selection process

4.5 Risk of Bias Assessment

- Cochrane RoB 2.0 for RCTs
- ROBINS-I for non-randomized studies

4.6 Data Synthesis

- Random-effects meta-analysis
- Thematic analysis for qualitative data

5. Ethical Considerations

- No primary data collection
- All data from published sources
- No commercial conflicts of interest

6. Timeline

Phase	Dates
Literature search	Aug 2025
Data extraction	Sep-Oct 2025
Analysis	Nov 2025
Manuscript preparation	Dec 2025-Jan 2026

7. Dissemination Plan

- Publication in open-access journal
- Policy brief for Ministry of Health
- Presentation at international conferences