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Measuring Medication Safety Across The Health Care System: A Scoping Review

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ADMINISTRATIVE INFORMATION

Support - NA.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 8 March 2026 and was last updated on 8 March 2026.

INTRODUCTION

Review question / Objective To describe methods used to measure avoidable medication-related harm at various levels of the healthcare system (e.g., locally by health care facilities and services, nationally by governments, and globally), with a sub-focus on methods used to measure patient identified avoidable medication-related harm. For each method, we will map the classes of information captured to the 10 high level classes of the World Health Organization's (WHO) International Classification for Patient Safety (ICPS) (2009).

Background Avoidable medication-related harm continues to impact the outcomes of patients and healthcare systems globally (WHO, 2017). Previous researchers have demonstrated the global burden of medication related harm. However, there is great variation in the definitions and methods to capture and understand avoidable medication-related harms (Panagioti et al., 2024; WHO, 2017; 2021). To make coordinated, timely improvements to medication safety, we must understand how medication-related harm is measured and reported at various levels of the healthcare system.

Rationale With this scoping review, we will contribute to global ambitions to address gaps on measuring medication safety. Further, this review is highly relevant as "Medication Without Harm" remains a global patient safety challenge (WHO, 2017). Additionally, the WHO (2021) Global Patient Safety Action Plan recognizes the need to learn from the experiences of patients and identify all potential sources of patient safety data across health care systems to develop a comprehensive understanding of safety, and strengthen synergies between data to support improvement.

METHODS

Strategy of data synthesis The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews (JBI manual for evidence synthesis, 2020). A preliminary literature search will be conducted in

MEDLINE, and a full search strategy developed and completed with a Health Sciences Librarian in MEDLINE, Epistemonikos, Health and Psychosocial Instruments, and CINAHL. The reference list of all included sources of evidence will be screened for additional studies.

Eligibility criteria Quantitative, mixed-methods, and qualitative studies reporting on measures of avoidable medication-related harm (i.e., incidence, prevalence, and rate) occurring at any stage of the medication-use process will be considered. Studies published in any language since January 2010 meeting the inclusion criteria will be included.

Specific inclusion and exclusion criteria have been developed in alignment with the Population-Concept-Context framework.

Population: Studies examining avoidable medication-related harm occurring in humans and studies where avoidable medication-related harm is captured from patients, caregivers, family members, parents of patients or health care workers will be included. Studies including non-human subjects will be excluded.

Concept: Studies describing methods to measure avoidable medication-related harm will be included. The term "measure" is defined as: measures of frequency, specifically the occurrence of avoidable medication-related harm in a population, prevalence, and rate (Lash & ORotham, 2021). The term "avoidable medication-related harm" is defined as: instances where there is harm to a human that can be linked to an avoidable error occurring in the medication-use process. The term "harm" is defined as a, "temporary or permanent impairment of the physical, emotional, or psychological function or structure of the body and/or pain resulting therefrom requiring intervention" (NCC MERP, n.d., p.6) and results in varying degrees (e.g. mild, moderate, severe or result in death) (NCC MERP, 1998; WHO, 2009). Medication-related harm will be considered avoidable if: the harm was the cause was identifiable and had a modifiable cause; and or a reasonable adaption to process could prevent reoccurrence; and or there was non-adherence to guidelines; and/or the harm would have been treatable if given access to timely and effective health care interventions (Nabhan et al., 2012). Studies capturing other types of avoidable health care harms will be excluded and studies capturing harm from clinical trials will be excluded.

Context: Any stage of the medication-use process will be considered in any setting (WHO, 2009). Studies of harm in a specific population (i.e., patients with a specific condition; or side effects of a specific medication) will be excluded. Studies of avoidable medication related harm in the veterinary setting or simulated learning environment will be excluded.

Source of evidence screening and selection Covidence will be used to manage references during the screening process. The data will be extracted from the included papers by two independent reviewers (LP and KP) by using the JBI SUMMARI System (JBI, Adelaide, Australia) (Munn et al., 2019). Extracted data will include: study setting (country and healthcare sector); participants and sample size; participant demographics; avoidable medication-related harm definition; method(s) to measure the harm; data source(s) for method(s); WHO (209) ICPS concept(s) measured; definition(s) of concept(s) measured; and stage(s) of medication-use process captured through measurement. The data extraction fields may evolve as the review progresses.

Language restriction No language restrictions.

Country(ies) involved Canada, United Kingdom, and Australia.

Keywords Medication Safety; Patient Safety; Medication Errors.

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