INPLASY

Comprehending the Impacts of Enhanced Obstetrical Surveillance Systems Globally on Maternal Morbidity and Mortality: A Living Systematic Review

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ADMINISTRATIVE INFORMATION

Support - This project has not received financial support from any funding organization. Dr. D'Souza is the recipient of a Tier-II Canada Research Chair in Maternal Health.

Review Stage at time of this submission - The review has not yet started.

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 28 June 2023 and was last updated on 28 June 2023.

*Investigators from INOSS-member countries that provide critical data or feedback will additionally be included as authors.

INTRODUCTION

Review question / Objective The objective of this research is to compare in countries with EOSS, the incidence of relevant adverse pregnancy events and outcomes, before and after each EOSS study, to better understand the impact of these systems on improving maternal health.

Rationale Background: Many countries have not attained or are not on track to meet the World Health Organization's (WHO) millennium development target of a maternal death rate of <70 per 100,000 births by 2030.1 For every person that dies during pregnancy, childbirth, and the postpartum period, 85-100 nearly die,2 and an even greater number experience severe complications resulting in severe illness, prolonged hospitalization or lifelong disability – and are said to have experienced 'Severe maternal morbidity' (SMM).3 Reliance on national vital statistics results in serious underestimation of these severe pregnancy events,4 resulting in several cases not being reviewed, many root causes not being identified, suggested recommendations not being comprehensive, and a potentially smaller reduction in preventable severe pregnancy events. Several high-income countries have developed enhanced obstetric survey systems (EOSS), which have enabled better case identification, methodical reviews, and the publication of specific, measurable, achievable, relevant and time-bound (SMART) recommendations, with a view to reducing severe adverse pregnancy events. However, the impact of EOSS in reducing the incidence of mortality and morbidity has not yet been summarized.
Rationale: Several countries have recognized the benefits of EOSS in reducing pregnancy related mortality and morbidity. However, these benefits have not been summarized through a systematic

review of the literature. This systematic review will comprehensively evaluate the existing literature to synthesize data demonstrating the impacts of EOSS over time by evaluating trends from different data collection periods. These methods will help to compare the incidence, outcomes and clinical practice changes related to severe adverse maternal events following the index study in countries with an EOSS. This is critical to quantify the magnitude of impact, and to encourage local and federal governments to fund the establishment and maintenance of EOSS not only in high-income countries (HICs) but also in low- and middle-income countries (LMICs), where the incidence of these events is disproportionately high.

Since the establishment and maintenance of EOSS is likely to be resource-intensive, it is also critical to continually evaluate the impact of EOSS to justify this health-care spending. To this end, we propose conducting a living systematic review which will publish results every 3-5 years. A living systematic review will account for the evolving state of SMM and maternal deaths to better direct future research and clinical care guidelines to improve pregnancy care. The study of the impact of EOSS on pregnancy outcomes fulfills the three pre-requisites for conducting a living systematic review – (1) the review question is a priority for clinical or policy level decision making.(2) There is ongoing uncertainty in evidence and (3) emerging evidence is likely to impact results.5,6.

Condition being studied Pregnancy-related adverse events which may include condition-specific SMM, maternal near-miss events, and maternal mortality.

METHODS

Search strategy The literature search will be completed based on the search strategy being developed by members of an international research team, with the help of a medical librarian with experience in the conduct of reviews for pregnancy-related conditions, in keeping with the Peer Review of Electronic Search Strategies (PRESS) guidelines.7

The search will include controlled vocabulary terms and keywords related to maternal mortality, near-miss maternal deaths, morbidity, surveillance systems and EOSS. We will use the Canada's Drug and Health Technology Agency (CADTH) search filter for observational studies8 in the seven bibliographic databases listed in the Information Sources section (Item 17).

EOSS as we currently understand them are a relatively new concept, first introduce.

Participant or population N/A.

Intervention The use of an EOSS for case-identification, methodical reviews and making targeted recommendations to reduce pregnancy-related mortality and morbidity.

Comparator N/A.

Study designs to be included Most studies are expected to be population-based cohort studies. However, any study presenting original data on pregnancy-related morbidity and mortality before and after an EOSS-study will be included.

Eligibility criteria Inclusion Criteria: 1) Publications on pregnancy-related morbidity and mortality from countries that have an EOSS and are members of the International Network of Obstetric Survey Systems.9 2) Original Research Articles that present data on pregnancy-related mortality and morbidity before and after the conduct of an EOSS study. These data do not necessarily need to be gathered through EOSS, but the before- and after studies should have gathered data through the similar source. 3) Conference abstracts that present original data will be included. Authors will be contacted for more details if required. Exclusion Criteria: 1) Articles that report on fetal and neonatal conditions, 2) Qualitative research studies that comment on benefits of EOSS but do not provide quantitative data on how the trends of SMM have changed over time. However, in creating a repository of INOSS studies, qualitative papers will be included in that. Screening: Two reviewers (BJ and LB) will screen titles and abstracts after duplicates have been removed based on the inclusion and exclusion criteria. Full texts for potentially eligible articles will be similarly reviewed in duplicate to identify articles that should be included. Discrepancies will be resolved through mutual discussion or adjudication by a senior reviewer (RD).

Information sources The following seven bibliographic databases will be searched: MEDLINE (Ovid), Embase (Ovid), Cochrane Database of Systematic Reviews (Ovid), Cochrane Central Register of Controlled Trials (Ovid), PubMed, Web of Science (Clarivate) and Dissertations and Theses Global (ProQuest). Additional searches will be done through Google and Google Scholar to capture articles that are not available in the aforementioned databases, such as local country journals.

The search will be supplemented by handsearching unpublished data using the CADTH Grey Matters,10 public health reports and other

sources of information made available through the INOSS member countries.

Main outcome(s) The overall outcome of interest is the change in the incidence of pregnancy-related morbidities and mortality after the conduct of an indexed EOSS-study.

Additional outcome(s) N/A.

Data management To aid in screening the articles, the software DistillerSR will be used.11

Quality assessment / Risk of bias analysis The quality of included studies will be assessed using the Risk Of Bias In Non-Randomised Studies - of Interventions (ROBINS-I) tool for non-randomized studies of interventions in the data extraction form, as included studies are likely observational.12 To assess the certainty of evidence, the GRADE (Grading of Recommendations, Assessment, Development, and Evaluations) will be used. The GRADE principles will be explicitly included into the data extraction form.13

Strategy of data synthesis We will extract data on the study design, year of publication, period of study, source of information, primary condition studied, incidence and outcomes presented, and recommendations made by the index EOSS study. As considerable methodological and clinical heterogeneity is anticipated, we may not be able to conduct any meaningful meta-analysis.14 For now, a descriptive analysis comparing findings before and after the index EOSS study is proposed.15 The findings will be presented based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses PRISMA guidelines,16 and any meta-analysis if possible, will be conducted in accordance with Meta-analysis Of Observational Studies in Epidemiology MOOSE guidelines.17

Subgroup analysis If data are available, sub-group analysis by specific condition studies, or by country/region may be conducted.

Sensitivity analysis N/A.

Language restriction No language restrictions will be included in this review.

Country(ies) involved Canada - Department of Obstetrics and Gynecology McMaster University.

Keywords Severe Maternal Morbidity, Near-Miss Events, Maternal Mortality, Obstetric Survey Systems, Pregnancy Complications.

Dissemination plans The results of this systematic review will be published in an open access academic journal with a global readership, and that supports the publication of living systematic reviews. They will also be presented at an international conference of Obstetrics & Gynecology. Summaries and editorials will be published in the World Health Organization Bulletin and journals with a global health and public health focus. In addition, findings will be posted on the INOSS website and on websites of all INOSS member countries.

Contributions of each author

Author 1 - Bronte K. Johnston - Bronte prepared the first draft of the study protocol and data extraction form. She will screen all titles and abstracts and full texts for inclusion as the primary reviewer, extract data and conduct quality assessments on all eligible articles, conduct the meta-analysis if appropriate, and prepare the first manuscript draft.
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Author 2 - Logan Barr - Logan will help develop the study protocol and data extraction form, independently screen all titles and abstracts and full texts for inclusion as the secondary reviewer, extract data from and perform risk-of-bias assessment on 10% of the included articles for quality assurance, and provide feedback on the manuscript.
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Author 3 - Michelle Hwang - Michelle will design the search strategy, conduct the search, contribute to the study protocol specific to search-related sections, and provide a search methodology write up for the manuscript.
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Author 4 - Rohan D'Souza - Rohan is the lead investigator who conceived this project and will be involved in all stages of its development and execution. In addition to being the adjudicator in case of discrepancies between reviewers, he will mentor on article screening, data extraction, quality assessment, certainty of evidence, analysis, and write up.
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