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A survey study identified global research priorities for decreasing maternal mortality

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Abstract

Objectives: The aim of this study was to identify and prioritize research gaps to help decrease maternal mortality.

Study Design and Setting: We conducted a two-stage survey. We provided participants (Cochrane Collaboration experts) with a list of 319 problem/population, intervention, comparison, and outcome questions built from 178 Cochrane systematic reviews. Questions were classified according to causes of maternal death. Respondents of the first round refined the research questions and prioritized them by eliminating those that were considered of low priority, according to four criteria. They also included additional questions. In the second round, respondents prioritized 62 questions.

Results: The overall response rates for the first and second rounds were 47% (73 of 155) and 17% (363 of 2,121), respectively. Participants ranked 62 of the research questions as “very relevant.” Approximately 20% of all questions that were identified in Cochrane reviews and two-third of questions of the second round were considered of “very high priority.” More women (235) than men (128) participated in the survey. We did not find statistically significant differences when comparing the groups of very relevant questions by the type of respondent, income, country, and round.

Conclusion: We identified research priorities by mapping and improving the understanding of research needs in low- and middle-income settings internationally. © 2013 Elsevier Inc. All rights reserved.

Keywords: Prioritization; Maternal mortality; Research; Survey; MDGs; Systematic review

1. Introduction

Although maternal mortality has declined approximately one-third from 1990 to 2011, for most low- and middle-income countries, achieving the targets of the Millennium Development Goals (MDGs) will take longer than expected [1,2]. Although most cases of maternal deaths can potentially be avoided if some of the well-known interventions

that were proved to be effective are available to women, it is essential to discern the effects of those different clinical and public health interventions in different contexts to understand the best way of delivering those interventions and address barriers to implementation [2–7]. Making informed decisions to achieve the MDG5 (reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio) depends on not only the access to the best available evidence but also how to incorporate this knowledge into the complexity of the health systems, often with limited resources [8,9].

More research from low- and middle-income countries is needed to better understand and address all the circumstances around maternal deaths, including further review of the impact that health systems and policies have on them. To reduce these knowledge gaps, research priorities must be identified, prioritized, and addressed, and research

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What is new?

- Cochrane reviews can be systematically used to identify research questions for priority settings; Cochrane Collaborators from 29 countries participated in this prioritization exercise to identify global research needs.
- Relevant research needs in maternal health were identified from Cochrane systematic reviews and prioritized by Cochrane collaborators from low, middle and high-income countries.
- This exercise allowed identifying health policies and systems research as an important determinant for improving maternal health.
- Although the “implication for research” section of Cochrane reviews were useful to identify research questions for any health topic, authors of Cochrane and non-Cochrane systematic reviews should ensure that they include the EPICOT format for reporting research recommendations (Evidence; Population; Intervention; Comparison; Outcome; Time stamp) in their reviews.
- More research is needed to assess its usefulness to researchers and research funders and to define and evaluate strategies to implement global research agendas.

findings must be made visible, available, and accessible for appropriate and timely implementation [10–14].

In a previous article, we have identified gaps in maternal health research through the evaluation of the section “implications for research” of 178 Cochrane systematic reviews (SRs) in which the authors stated that the available evidence to guide clinical practice was insufficient and further research was needed. This study identified 319 research problem/population, intervention, comparison, and outcome (PICO) format questions that were classified into 12 different categories based on the causes of maternal deaths [15].

The aim of this study was to prioritize these research needs, to contribute with the building of a global research agenda for better use of resources to reduce maternal mortality.

2. Methods*2.1. Design*

Our approach includes a number of phases that were described in a previous article [15] (Fig. 1). For the prioritization exercise, we conducted a two-round survey using as the main input the questions previously identified as research gaps related with MDG5. The first round had the objective of refine (or redefine) the research questions, and the second round was the proper prioritization exercise.

2.1.1. Round 1: refining research questions

2.1.1.1. Questionnaire. As mentioned, we provided participants with an initial list of 319 questions (in a PICO format) built from 178 Cochrane SRs [15]. The specific objective of the first round was to refine the proposed research questions and include additional ones to be used in the prioritization exercise (round 2). We grouped these questions into 12 different groups, according to the causes of maternal deaths; 10 were directly or indirectly related to the main causes of maternal mortality and morbidity; another group included interventions for pregnancy prevention, and the last one was related to health systems and policy interventions as defined by the Health System Evidence Web site taxonomy (ie, governance, financial and delivery arrangements, and implementation considerations; Table 1). Given the large number of questions found in some groups, a decision was made to create two separate surveys for the “labor group” and “health policies and systems group.” Thus, a total of 14 surveys were created using SurveyMonkey Data Analysis tool.

Questionnaires had three sections. Section A contained questions about the participant’s gender, main role in the Cochrane Collaboration (CC; author, consumer coordinator, consumer referee, or external referee), and “income country” (further classified as high, middle, or low level).

Section B presented a list of questions (according to the prespecified category) to be evaluated for magnitude and urgency, potential to maximize the reduction of maternal mortality and morbidity, feasibility, and future impact by

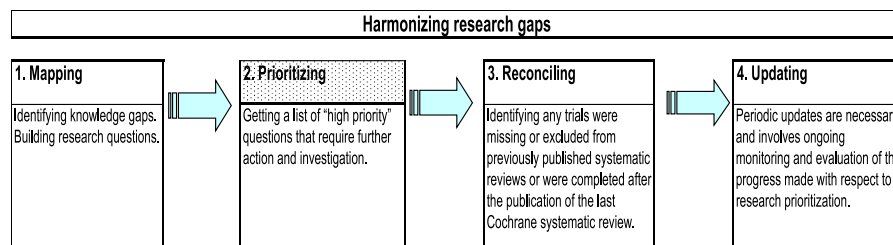


Fig. 1. Description of the mapping–prioritizing–reconciling–updating (MPRA) approach phases.

Table 1. Number of PICO classified according to the causes of maternal death

Category	Total	%
Labor	57	17.9
Health policies and systems	40	12.5
Infection	28	8.8
Indirect causes	27	8.5
Postpartum hemorrhage	26	8.2
Hypertensive disorders	26	8.2
Cesarean section	24	7.5
Abortion	24	7.4
Unplanned pregnancy	23	7.2
Preterm birth	23	7.2
Diabetes	13	4.1
Other direct causes	8	2.5
	319	100

Abbreviation: PICO, problem/population, intervention, comparison, and outcome.

ranking each criterion on a Likert-type scale of 1 to 5 (where 1 indicates not important at all and 5 indicates very important). Three epidemiologists and a public health nurse evaluated the face validity of the instrument in July 2011 stating that the questions were clear, unambiguous, logical, and free of excess wording. Besides that, free-text fields for open responses were also provided in section C for participants to comment on any aspect of the survey and make suggestions for additional research questions. See the sample in Fig. 2.

2.1.1.2. Sampling. Participants were selected from the CC's database of Cochrane review authors of the Pregnancy and Childbirth Group, the Public Health Group, the Fertility Regulation Group, and the Effective Practice and Organization of Care Cochrane Group. Reviewers having published more than one Cochrane review related to maternal health were selected. A list of Cochrane participants with a valid e-mail address was created with the following information: name, Cochrane group, role (author, consumer coordinator, consumer referee, and external referee as defined in the Cochrane handbook) [16], e-mail, affiliation, country, and gender.

2.1.2. Round 2: prioritizing highly relevant research questions

2.1.2.1. Questionnaire. The aim of the second round was to prioritize the most relevant research questions according to their potential of implementation. The research questions identified as "important" or "very important" in the first round and all new questions suggested by experts were grouped into five new categories according to causes/determinants of maternal mortality (Table 2) using four criteria (acceptable, deliverable, equitable, and feasible). According to its perceived importance, each of the questions was scored independently by evaluators using a Likert-type scale of 1 to 5 varying from "very relevant" to "not relevant" with a fifth judgment—"can't answer"—for those research questions that could not be answered because of

uncertainty or lack of sufficient knowledge from the respondent. See sample in Fig. 2.

2.1.2.2. Sampling. In the second round, an invitation to contribute was sent to the CC review authors who had participated in the first round. As we anticipated a low response rate, all other CC authors, consumer coordinators, consumer referees, and external referees identified from the same Cochrane Groups were contacted [16].

2.2. Analysis

2.2.1. First round

All four criteria were equally weighted (25% each). We sorted scores in ascending order and calculated their distribution by quartiles. This allowed us to generate four strata grading the questions in the following categories: "low" and "intermediate" importance for those in the first and second quartiles and "high" and "very high" importance for the upper quartiles. Only those having high or very high importance were included in the second round.

2.2.2. Second round

All four criteria were equally weighted, each one being worth 25%. Scores were sorted in ascending order, and distributions were calculated and expressed in quartiles, grading questions as follows: "not very relevant" and "slightly relevant" for those in the first and second quartiles and "highly relevant" and "very relevant" for those in the upper quartiles. A question was considered to be "most relevant" when 75% or more of the participants scored the question as "very relevant."

2.2.3. Statistical data analysis

Data were analyzed with Stata (version 12; STATA Corporation) Fisher's exact test at level <0.05 was performed for statistical significance to evaluate whether relevance score was associated with respondent's role, type of country of residence, and gender.

3. Results

3.1. First round

One hundred fifty-five Cochrane review authors were contacted and four reminders were sent. The overall response rate was 47% (73 of 155) with some differences between groups that were categorized according to causes/determinants of maternal death. From these, 60% (44 of 73) completed the whole questionnaire. The "postpartum hemorrhage" group had the highest response rate (67%; 8 of 12), whereas the "preterm delivery" group had the lowest response rate (23%; 3 of 13). Regarding the evaluation of the research questions, 29.5% (94 of 319) were ranked as "important" or "very important," and six additional questions were suggested (Fig. 3).

Round 1

Instructions

Below are a set of four "criteria" we have developed for determining priority research questions. Please rank, on a scale of 1 to 5 (1=not important at all; 5=very important), the importance of each research question according to these criteria. You must complete a score for every criteria of each question.

I. Magnitude & Urgency
The research question addresses problems that are significant due to the scale and/or nature of their health consequences.

II. Potential to maximize the reduction of maternal mortality and morbidity
The research question has the potential to maximize the reduction of death and/or disease through interventions which are effective in improving health outcomes.

III. Feasible
The research question can be investigated ethically and with the available resources within the appropriate cultural, legal, political, socioeconomic, and technological context.

IV. Future Impact
The outcome of the research will be acceptable, deliverable, affordable, sustainable, and equitable for the producers and users of the research.

+ Add Question ▼

Q4 Edit Question ▼ Move Copy Delete

***1. What is the effectiveness, cost-effectiveness, and safety of alternative treatment regimens for malaria in improving maternal health outcomes for pregnant women?**

Criteria	Magnitude & Urgency	Potential to Maximize Reduction of Death/Disease	Feasible	Future Impact
	<input type="text" value=""/>	<input checked="" type="radio"/> 5 <input type="radio"/> 4 <input type="radio"/> 3 <input type="radio"/> 2 <input type="radio"/> 1	<input type="text" value=""/>	<input type="text" value=""/>

+ Add Question ▼ End Page Here

Fig. 2. Sample of two rounds in SurveyMonkey.

3.2. Second round

Finally, 2,165 individuals were invited to participate (44 e-mails were bounded); three reminders were sent. The summary of rounds is shown in Fig. 3 and summary description of participants is shown in Table 3. The overall response rate was 17% (363 of 2,121), and 69% (253 of 363) of participants answered the whole questionnaire. The groups categorized by causes/determinants of maternal death having the highest rate of complete responses were the "health systems and services" (24.2%; 88 of 253), "diabetes and other causes" (12.7%; 46 of 253), and "labor and cesarean" (12.9%; 47 of 253).

Two-third (62 of 100) of the questions from the second round were considered to be of very high priority (for the complete list of research questions see Appendix). Most questions of the "health policy and systems," "abortion and unplanned pregnancy," and "postpartum hemorrhage and hypertensive disorders" were highly ranked in the second round (Fig. 4). The interventions involved drugs (31%) health systems (27%), behavior modification, education, and counseling (16%), mixed (13%), and others such as devices, nutrition, and diagnostic tests (13%).

More women (235) than men (128) responded in the survey; however women more frequently provided incomplete

Round 2

Instructions

Below are a set of five items developed to prioritize research questions. Only ONE answer is strictly required for each question.

The first four items represent a range of relevance status for each question from those that can significantly reduce maternal deaths (Very relevant) to those which do not have the potential to bring about any improvement to maternal health or reduce maternal death and/or disease ratios in any way (Not relevant).

The fifth item "Can't Answer" is a slot for research question that cannot be answered because it is unknown or insufficient knowledge of the subject, or uncertainty.

Please rank the importance of each research question according to the following a priori criteria for the term "relevance"

Acceptable
Buy-in: To recognize importance of implementing changes that are relevant to and appropriate for all stakeholders, especially marginalized groups; to facilitate buy-in and avoid rejection or backlash from end users/consumers.

Deliverable, affordable, sustainable
Service delivery: To ensure that local health research system has the infrastructure, resources, and capacity to produce, implement, and maintain changes resulting from research activity.

Equitable
Ethical resource allocation: To emphasize need for wide distribution of products and services so that the neediest groups are able to receive the benefits of research activity.

Feasible
Answerability: To recognize importance of selecting research priorities that can actually be investigated with the available resources; considering the context (cultural, legal, political socioeconomic, technological).

+ Add Question ▼

Q4 Edit Question ▼ Move Copy Delete

*1. What are the effects of dietary advice Interventions on gestational diabetes mellitus prevention in healthy pregnant women and overweight or obese pregnant women?

Very Relevant Quite Relevant Low Relevance Not Relevant Can't Answer

Criteria	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Fig. 2. continued

responses than men (49% vs. 35%, $P = 0.01$; Table 4). We did not find statistically significant differences when comparing the group of very relevant questions by the type of respondent (author, consumer, or external referees), the country's income level, and between rounds (rounds 1 and 2). However, a significant difference was found when comparing a small number of the "very relevant" questions according to the respondent's gender (Table 5).

4. Discussion

We conducted an explicit exercise of prioritization, guided by a broader analysis of the research gaps drawn from the most up-to-date evidence (or lack of) from SRs. Our previous work consisted in mapping research gaps, from unanswered questions about interventions reviewed in Cochrane SRs, which helped us build 319 questions

Table 2. Number of PICO-formatted questions categorized according to the cause of maternal mortality used for Delphi round 2

Category	Total	%
Abortion and unplanned pregnancy	23	23
Diabetes and other causes ^a	19	19
Labor and cesarean	18	18
Postpartum hemorrhage and hypertensive disorders	15	15
Health policy and system	25	25
	100	100

Abbreviation: PICO, problem/population, intervention, comparison, and outcome.

^a Include obesity, HIV, malaria, anemia, violence, and so on.

(research needs) in a systematic manner [15]. The prioritization process of these research questions was the main objective of this article to inform the maternal health research agenda at a global level.

Although previous prioritization exercises have looked for research gaps in maternal mortality, the approach described in this study is, to our knowledge, one of the first attempts to use an important number of Cochrane SRs to identify research questions and obtain expert opinion from multiple stakeholders groups [17]. Saldanha et al. [18] recently published a pilot study to identify research needs using a SR in gestational diabetes mellitus. Although the pilot study only used one SR, the authors developed a conceptual model that included a number of steps: the identification of research gaps; feedback from authors of SR; translation of research gaps into researchable questions; feedback from local stakeholders and online, in-person and external stakeholder feedback; Delphi rounds;

prioritization of outcomes; and refinement of final research questions. One of their conclusions was that the authors of SRs should include the identification of specific research needs as a primary objective of the SR process. Our exercise included a larger number of SRs and focused on prioritizing research questions at the global level.

Although there is an increasing consensus that stronger health systems are the key for achieving better health outcomes, there is much less agreement on how it works [19]. We found that the gap (unanswered questions) about interventions related to health systems and policy remained the top priority over the two rounds in our prioritization exercise. This also could reflect that experts have incorporated this issue as a determinant for maternal health that needs to be explored.

Many countries have established that maternal health and, specifically, the decrease of maternal mortality is a priority in their national health research agendas [20,21]. However, the insufficient production of relevant research in low-resource areas [12,22,23] and the poor transferability of available evidence from high resource settings are contributing factors to the existing research gaps [9]. Health research prioritization is a dynamic process that is influenced by multiple factors. It was found to be context dependent, which was consistent with findings in the literature [24,25]. For instance, our prioritization process depended on external factors such as participant's gender, role, and country of residence as well as internal factors such as the length of the survey, the readability of the survey questions, and incidents of technical difficulties with the survey's electronic format.

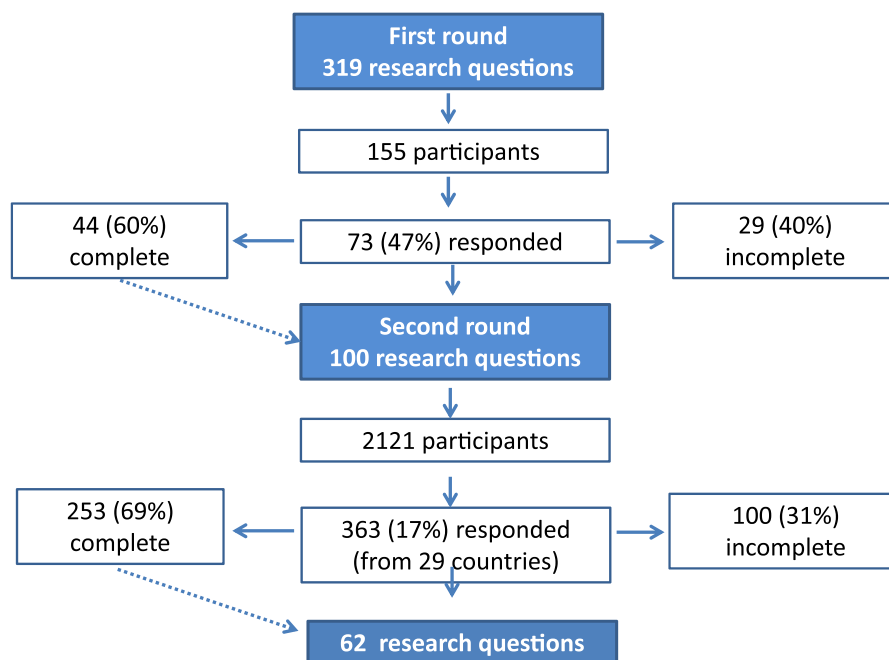
**Fig. 3.** Summary of the two rounds.

Table 3. Participants of Cochrane Collaboration

Name of the group	Number of participants			
	Number with e-mail	Consumer coordinators	Consumer referees	External referees
Pregnancy and Childbirth Group				
Total	1,075	2	66	338
With e-mail	987	2	24	98
Public Health Group				
Total	134	0	5	31
With e-mail	123	0	4	29
Effective Practice and Organization of Care Group				
Total	734	0	0	12
With e-mail	691	0	0	10
Fertility Regulation Group				
Total	140	0	0	98
With e-mail	121	0	0	96
Total with e-mail	1,922	2	28	233

E-mails were bounced in 64 participants. Hence, 2,121 were final participants.

Rate of response was another critical issue in our exercise. We had an average of 47% and 17% of responses in the first and second rounds, respectively. Participants of the first round were the most knowledgeable in the maternal health field (predefined as those with more publications in a specific area). They were the first filters in this effort to identify the most relevant questions. The lower response rate in the second round could be explained because it included all members of the four CC groups.

We had more answers for questions related to postpartum hemorrhage most likely because it is the leading cause of maternal death globally. Other priority research questions found to be relevant by participants were abortion and unplanned pregnancy and hypertensive disorders (Fig. 3) maybe because abortion is the leading cause of maternal death in many countries and adolescent childbearing is a public health concern [26].

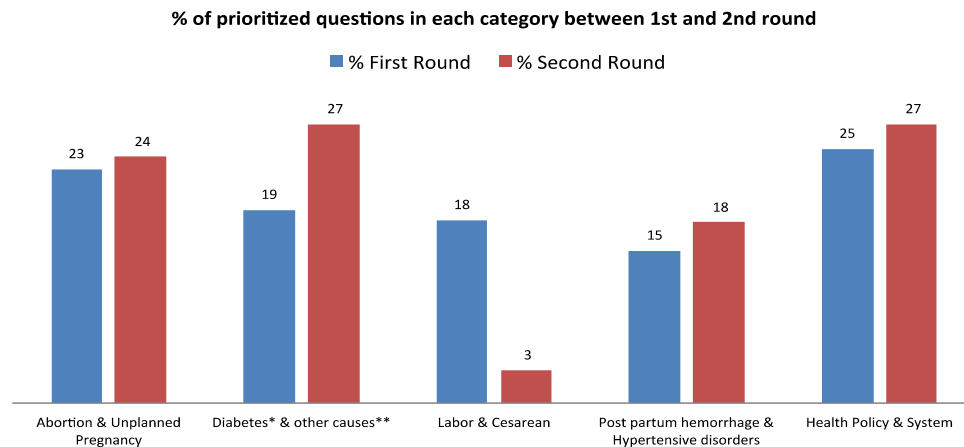
Stakeholders think that health systems and policy-related interventions are important determinants for maternal

health and also how to break them down into specific questions that need an urgent response in relation to the achievement of MDG5. All these findings are aligned with the growing consensus of taking into account the determinants of health related to systems, programs, and health policy in the field of maternal and child health [27–33].

We found no plausible explanation as to why nearly twice as many more women than men responded to the survey or why the responses of men were significantly more complete than those of women (65% vs. 51%). More research is needed to better understand why these differences exist. Future studies should explore prioritization from the perspective of different groups of individuals, particularly policy makers, politicians, economists, health-care administrators, health-care providers, and patients.

4.1. Limitation of the study

This study has a number of limitations. We contacted a sample of international experts from a range of countries. The response rate varied according to the round: it was higher on the first round in which the expertise of respondents, as per their publications in the field, was presumably stronger. It also varied according to the category or group of causes of maternal deaths, and we cannot exclude the possibility that some groups of interventions were underrepresented. As data of nonrespondents were not available, we could not perform any comparison with those responding to the survey. The time allocated to complete and submit the surveys was brief and possibly insufficient even with the use of reminders; some studies have found that reminder notifications have a positive effect on response rates for Web surveys [34]. There were also some technical questions, yet no reference text was included to provide background information. It was assumed that all participants had sufficient level of expertise to answer the questions accurately, although the complexity of the survey particularly for the first round was high. In addition, the balance



For 2nd round: * 10% and ** 17,5 % (Include HIV, Malaria, Anemia, Violence, etc)

Fig. 4. Summary of questions as results of Delphi round 2 (first and second rounds).

Table 4. Complete and incomplete responses for Delphi round 2, by participant sex

Category	Female			Male		
	Complete	Incomplete	% Incomplete	Complete	Incomplete	% Incomplete
Diabetes and other causes	30	11	37	16	1	0.6
Labor and cesarean section	24	14	58	23	7	30
Health policies and systems	53	25	47	35	14	40
Postpartum hemorrhage and hypertensive disorders	26	15	58	10	5	50
Abortion and pregnancy prevention	25	12	48	11	6	55
Total	158	77	49	95	33	35

on the role of participants and the interest the topic might have for them could affect the response, as all were Cochrane experts in different fields.

Although the CC is an international network of more than 31,000 dedicated people from over 120 countries, we did not include non-Cochrane participants (ie, stakeholders or attending physicians); this fact might decrease the external validity of our findings. Another technical issue would be related to misclassifications of some questions, or research questions that could be applicable to more than one group and, arbitrarily, were allocated to one only.

4.2. Strengths

Strengths of the study include the selection of research questions that were based on the structured “implication for research” section of Cochrane SRs, the utilization of feedback based on expert opinion from a variety of stakeholder groups, and the application of a specific selection procedure to identify experts and verify their expertise. The main advantage of this approach is that experts from all over the world were able to participate anonymously and meaningfully in the prioritization exercise without incurring additional expenses, which proved to be a well-structured mean of effective communication and group decision making;

Table 5. Example of relevant questions with statistical difference by the sex of the participant

1. Do interventions to reduce weight and obesity in pregnant women have any effect on improving maternal health outcomes?
2. What is the effectiveness of maternity waiting home (MWH) facilities in improving maternal health outcomes in low-resource countries?
3. What are the indicators to better assess the short- and long-term outcomes of caesarean section and vaginal birth?
4. Which are the best strategies for management of gestational diabetes, including alternative management strategies?
5. What is the effectiveness and safety of various interventions (such as administration of oral anti-diabetics drugs, combined nutrition and glucose self-monitoring, and continuous glucose monitoring) in improving maternal health outcomes in pregnant women with pre-existing diabetes type 2?
6. Compared with insulin or dietary and lifestyle control, what is the effectiveness and safety of various oral anti-diabetic agents in improving maternal health outcomes and glycaemic control parameters for women with pre-existing diabetes mellitus, impaired glucose tolerance, or previous gestational diabetes mellitus, who are pregnant or who are planning a pregnancy?

furthermore, no significant differences were found when comparing high-, medium-, and low-income level countries. In addition, the implementation of continuous monitoring and evaluation of the prioritization exercise by the research team provided the following advantages: prompt identification and resolution of technical problems and prompt and personalized response to participant feedback.

5. Conclusion

It is possible to select and rank maternal health research priorities using this approach, which was found to be innovative and useful in obtaining expert opinion from a variety of stakeholder groups using only one database. The highest priority research questions identified in this study can potentially have a major impact on maternal mortality if they are considered when new research is planned and produced. That could be innovative in the global research agenda, particularly for selected interventions on determinants related with health systems and policy.

This is especially important for governments and aid agencies supporting research efforts in developing countries, which are already overburdened and extremely resource limited. More research is needed to fine-tune this prioritization process to better serve the needs of not only researchers but also policy makers, funders, and consumers.

5.1. Ethical considerations

This prioritization exercise was considered a Public Health Practice aiming at monitoring public health research priorities [35]. All participants have consented to participate in the survey; responses were treated and analyzed anonymously.

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Appendix

List of 62 prioritized research questions

- 1 Compared to the conventional start of hormonal contraceptives, what is the effectiveness and safety of immediate start of hormonal contraceptives in reducing unintended pregnancies?
- 2 What behavioral issues contribute to the failure of women of reproductive age to use emergency contraception to prevent unwanted pregnancy, even if emergency contraception is readily available?
- 3 What are the behavioral issues surrounding the failure to use emergency contraception when needed, even when it is readily available?
- 4 What is the effectiveness and cost-effectiveness of enhanced counseling, use of intensive reminders (for one's next appointment), and dosing in improving adherence and acceptability of hormonal contraceptive use, among women of reproductive age, without medical contraindications to hormonal methods of contraception?
- 5 What strategies are most effective in increasing adherence to different methods of contraception according to consumers?
- 6 What is the effectiveness and safety of immediate postpartum insertion (within ten minutes of delivery of the placenta), vs. delayed postpartum or interval insertion, of an intrauterine device (IUD) to prevent pregnancy and/or spontaneous expulsion?
- 7 Which interventions based in theory (such as the social cognitive theory) are most effective in preventing unwanted pregnancy in low-resource areas and in clinical settings?
- 8 Should antibiotics be routinely used in cases of incomplete abortion?
- 9 When used in combination with misoprostol for induction of a mid-trimester abortion, what is the additional value, safety, optimal dose, and timing of mifepristone?
- 10 What is the effectiveness and safety of misoprostol for medical treatment of early fetal death?
- 11 What is the optimal route of administration and optimal dose, as well as the potential side effects, of misoprostol during medical treatment of early fetal death?
- 12 What is the optimal dose, frequency, and route of administration of misoprostol for induction of labour to terminate pregnancy in the second or third trimester for women with a fetal anomaly or after intrauterine fetal death?
- 13 What is the effectiveness and safety of various medical interventions (such as misoprostol, expectant care, and surgery) for the treatment of incomplete miscarriage for pregnant women between 13 to 24 weeks gestation?
- 14 What is the comparative effectiveness and safety of the use of medical treatments (by the various routes) with expectant care versus surgery in women with incomplete abortion between 13 and 24 weeks?
- 15 What is the most effective and safe method for preventing and/or controlling pain in conscious women having uterine interventions without general anaesthesia?
- 16 Compared with a policy of delayed delivery (expectant management), what is the effectiveness of a policy of early delivery by induction of labour or by caesarean section for women with severe preeclampsia in improving maternal and neonatal outcomes?
- 17 Compared with all three components of active management of the third stage of labor (Controlled cord traction, uterine massage of the placenta after delivery, and administration of an uterotonic soon after delivery of the baby) what is the effectiveness, cost-effectiveness, and safety of administering various uterotonic drugs in order to reduce bleeding in the mother?
- 18 Compared with routine active management of the third stage of labor (Controlled cord traction, uterine massage of the placenta after delivery, and administration of an uterotonic soon after delivery of the baby), is management by a single uterotonic drug effective in reducing bleeding and improving health outcomes for women after delivery?
- 19 What is the effectiveness and safety of sustained uterine massage after delivery of the placenta (with or without the use of uterotics) for the prevention of postpartum haemorrhage in pregnant women in the third stage of labour?
- 20 What are effective interventions for control of primary postpartum haemorrhage (PPH) following home deliveries, particularly in developing countries?
- 21 What is the optimum method of expectant management of the third stage of labor that results in the lowest rates of PPH?
- 22 Should a loading dose of magnesium sulphate be used for women with pre-eclampsia at primary care level before they are transferred to hospital?
- 23 What is the minimum effective dose of magnesium sulphate for women with pre-eclampsia?
- 24 What is the optimal duration of magnesium sulphate therapy for women with pre-eclampsia?
- 25 When is the optimal time to give magnesium sulphate to women with pre-eclampsia?
- 26 What is the effectiveness, safety, lowest effective dose for routine use, and optimal route of administration of misoprostol for routine third stage of labour management when conventional uterotonics are not available?
- 27 What is the effectiveness of partogram use in the first stage of labor on health outcomes (of women with singleton pregnancies and cephalic presentations who are in spontaneous labour at term), stratifying participants according to parity, use of services associated with low and high perinatal mortality, and use of interventions (low vs. high intervention rates), compared to no partogram use?
- 28 Within the context of common medical and obstetrical practices, such as epidurals and oxytocin stimulation; is it effective and safe to give women during labor foods and fluids such as water and carbohydrate drinks compared to restricting them?
- 29 What are the effects of dietary advice interventions on gestational diabetes mellitus prevention in healthy pregnant women and overweight or obese pregnant women?
- 30 What is the effectiveness and safety of various interventions (such as administration of oral antidiabetics drugs, combined nutrition and glucose self-monitoring, and continuous glucose monitoring) in improving maternal health outcomes in pregnant women with pre-existing type 2 diabetes?

- 31 Compared with insulin or dietary and lifestyle control, what is the effectiveness and safety of various oral anti-diabetic agents in improving maternal health outcomes and glycaemic control parameters for women with pre-existing diabetes mellitus, impaired glucose tolerance, or previous gestational diabetes mellitus, who are pregnant or who are planning a pregnancy?
- 32 What are the effects of screening and subsequent management of gestational diabetes?
- 33 Which are the best strategies for management of gestational diabetes, including alternative management strategies?
- 34 What is the safety and effectiveness of exercise in preventing long-term diabetes complications for women with gestational diabetes and possibly type 2 diabetes?
- 35 What is the effectiveness, cost-effectiveness, and safety of alternative treatment regimens for malaria in improving maternal health outcomes for pregnant women?
- 36 What are the benefits of combining intermittent preventive treatment (IPT) and insecticide-treated nets (ITNs) in a multipronged approach to prevent malaria in pregnant women (especially in Asia and Latin America)?
- 37 What is the effectiveness, cost-effectiveness and safety of various antiretroviral regimens (ZDV, 3TC, NVP, Zidovudine monotherapy) aimed at preventing mother-to-child transmission and improving maternal health outcomes for pregnant women with HIV?
- 38 What is the effectiveness, cost-effectiveness and safety of different doses, regimens, and routes of administration for commonly-used treatments for anemia in improving short- and long-term maternal and neonatal health outcomes in pregnant women with severe and moderate anemia in poorly-resourced settings?
- 39 What is the effectiveness, cost-effectiveness and safety of various psychological and/or educational interventions in reducing consumption of alcohol among pregnant women, or women planning a pregnancy, and improving maternal and neonatal health outcomes?
- 40 What is the effectiveness of preconception counseling, delivered at different reproductive life stages, in influencing pregnancy planning behavior and improving pregnancy outcomes for women with epilepsy (WWE)?
- 41 Do interventions to reduce weight and obesity in pregnant women have any effect on improving maternal health outcomes?
- 42 What is the effectiveness and cost effectiveness of interventions to reduce weight gain before second or subsequent pregnancies to reduce maternal mortality?
- 43 What is the effectiveness of advocacy interventions to reduce violence and abuse on pregnant women conducted within healthcare settings?
- 44 What is the effectiveness of advocacy interventions to reduce violence and abuse on pregnant women conducted outside healthcare settings?
- 45 What is the effectiveness of advocacy interventions to reduce violence and abuse on pregnant women compared with usual care or no care at all?
- 46 Compared with traditional delivery of health care services, what is the effectiveness and costeffectiveness of conditional cash transfer (CCT) programs in helping overcome barriers (financial, cultural) in access to maternal health services, including services that are not free?
- 47 What are the effects of different interventions on increasing the proportion of health care professionals practicing in rural and other under-served areas?
- 48 What models of training for providers of labour support are most effective and cost-effective in resource-poor settings?
- 49 What are the benefits of alternative models of antenatal care compared to standard models of antenatal care for high risk vs. low risk populations?
- 50 Compared with routine provision of services, does integration of health services at the point of delivery improve health care delivery (in relation to outputs, service quality, and cost), improve health status of users (in relation to nutritional status, morbidity, and mortality), and make it easier for communities to access and use health services?
- 51 What are the effects of alternative settings vs. conventional settings on birth outcomes?
- 52 What is the effectiveness of maternity waiting home (MWH) facilities in improving maternal health outcomes in low-resource countries?
- 53 Compared with planned hospital birth, what is the effectiveness and safety of planned home birth? (in reducing prepartum, intrapartum, and postpartum complications, the number of interventions, and mortality among pregnant women)?
- 54 What is the effectiveness of various methods to improve initial home-based management (first aid stabilization), safe referral to care, and maternal health outcomes for pregnant women?
- 55 What is the effectiveness and cost-effectiveness of various methods of training traditional birth attendants (TBAs) in improving maternal health behaviors, thought to mediate positive pregnancy outcomes, and in improving maternal health outcomes for mothers cared for by TBAs?
- 56 Compared to usual care, what is the safety, effectiveness, and cost-effectiveness of interventions involving lay health workers (LHWs) in improving maternal health outcomes?
- 57 Compared with professional healthcare providers, what is the effectiveness, safety, and costeffectiveness of having lay health workers (LHWs) provide interventions in the fields of health education, promotion, and disease management in improving maternal health outcomes?
- 58 Is critical incident audit and feedback effective in reducing the perinatal mortality rate, the maternal mortality ratio, and severe neonatal and maternal morbidity?
- 59 What are the indicators to better assess the short- and long-term outcomes of caesarean section and vaginal birth?
- 60 Compared with other models of care for childbearing women and their infants, what is the effectiveness of midwife-led models of care in improving access to care, continuity of care, and improving maternal health outcomes, among pregnant women classified as low- or high-risk for complications?
- 61 Compared with other models of midwife-led care, what is the effectiveness and cost-effectiveness of the community-based “case load model” of midwife-led care in improving maternal health outcomes, continuity of care, and satisfaction among pregnant women?
- 62 What is the most effective and cost-effective way to organize midwife-led care to improve maternal health outcomes under varying conditions?