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# **BMJ Open**

#### Equity and access to skilled birth attendant globally: protocol for a systematic review

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#### ABSTRACT

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#### Introduction:

Equity is a cross cutting theme within the Sustainable Development Goals (SDGs) and central to the effort to improve maternal and child health globally. One key strategy to prevent maternal death, especially in low- and middle-income countries, set out in SDG 3 is assistance by a skilled birth attendant (SBA) at childbirth (Indicator 3.1.2). However, the increased coverage of SBAs globally has not been reflected by a decrease in maternal mortality. There is a need to evaluate the extent of inequity in access to SBAs and evaluate themes in determinants of inequity across regions and specific country characteristics.

#### Methods and Analysis:

- The protocol for this review follows The Cochrane Handbook for Systematic Reviews and
- PRISMA-E 2012 guidelines. Studies of all languages and from all countries from 2004, the year
- of the WHO/ICM/FIGO joint statement on SBAs, and onwards will be included.
- PubMed/MEDLINE, CINAHL Complete, Cochrane Database of Systematic Reviews, POPLINE and
- the WHO Global Index Medicus will be searched, in addition to manual searches of references and grey literature. Our primary outcome is access to SBA services. Studies will be included if
- they evaluate equity and determinants of inequity adapted from the Progress-Plus grouping of
- characteristics affecting health outcomes. Results will be stratified based on WHO, World Bank
- Group income and SDG regional groupings.

#### **Ethics and dissemination:**

- This review is a secondary analysis of published literature and does not require ethics review.
- Results will provide information regarding equity and determinants of inequity in access to
- SBAs globally and will inform development of indicators for monitoring of inequity as well as
- global policy related to SBA access and maternal mortality. Results will be disseminated via
- peer-reviewed manuscript, international conferences and stakeholder websites.

#### **Trial registration:**

- This review protocol was registered with the Prospero database (registration number:
- CRD42017069021; date of registration: 26/06/2017).

#### Word Count: 300

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3	73	STRENGTHS AND LIMITATIONS OF THIS STUDY
4 5	74	- This systematic review aims to evaluate equity in access to skilled birth attendants globally,
6	75	which will include specific determinants of inequity. No previous review of quantitative
7	76	studies has evaluated equity/inequity in access to SBAs during childbirth across the globe.
8	77	- This work will help to inform health policy at country level and within the global
9	78	community by providing the necessary evidence on the current state of equity in the
10	79	area of reproductive health for an individual country and globally.
11 12	80	- The search strategy for this review is broad and comprehensive including studies in all
12	81	languages and from all countries from multiple electronic databases, grey literature and
14	82	websites.
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16		- Existing literature on health equity in reproductive health describes an array of different
17	84	measures of equity/inequity in reproductive health. Our data extraction sheet and analysis
18 10	85	plan will therefore be finalized only after the review has been completed.
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#### INTRODUCTION

Equity is a cross cutting theme within the Sustainable Development Goals (SDGs) and central to the effort to move towards improved global maternal, child and adolescent health [1, 2]. Despite Millennium Development Goals 4 and 5, and modest progress, preventable maternal mortality especially in low- and middle-income countries (LMIC) has remained high [3, 4]. There is a need to focus on inequity and underlying social and structural determinants that contribute indirectly to maternal mortality. Special attention also needs to be paid to maternal mortality among high risk groups such as adolescents and young women, particularly in humanitarian settings and in countries with armed conflict [5]. 

Factors associated with inequity across all countries include sex, age, economic status, education, and place of residence. In specific regions or countries, migrant status, race, ethnicity, caste, religion can also be sources of inequity [2]. SDG 3.1 sets the target to reduce global mortality ratio to less than 70 per 100,000 live births by 2030 and one of the key strategies to prevent maternal deaths is assistance by a skilled birth attendant (SBA) at the time of delivery, which is also reflected in the SDG Indicator 3.1.2 "Births attended by skilled health personnel (%)" [1, 6, 7]. The SBA is defined in the joint statement by the World Health Organization (WHO), the International Confederation of Midwives (ICM) and the International Federation of Gynaecology and Obstetrics (FIGO) as a "midwife, doctor or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" [8]. However, while the coverage of SBAs has increased globally, this has not been reflected in a proportional decrease in the global burden of maternal deaths. Skilled birth attendants have been found to have a variable amount of knowledge and skills and, due to inconsistencies in data reporting, the definition of a SBA is currently under review [9-12]. Nevertheless, around 50% of low- and middle- income countries report that at least 80% rate of births are attended by SBAs. This number varies across countries [12]. Inequity in SBA coverage has been found to be associated with economic status, education and place of residence [12]. This disparity is especially seen in LMICs where women in disadvantaged groups have SBA coverage rates of less than 50% [2]. 

The definition of health inequity by Margaret Whitehead described disparities in health that are "not only unnecessary and avoidable but, in addition [...] unfair and unjust" and that have adverse effects on already disadvantaged groups within a population [13, 14]. In addition, these health differences are systematic and not occasional or sporadic [14]. In evaluating preventable maternal mortality and access to SBAs globally as an indicator for maternal health, it is therefore important to assess the characteristics of women who are and who are not attended by an SBA at childbirth. This will allow for identification of possible determinants of inequity, development of potential interventions to address disadvantages and progress towards increased equity in maternal health. 

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	53 54		Comparison		
	57 58				

Protocol 6

Outcome	Evaluation of inequity in access to SBA at the time of childbirth with quantitative evaluation of determinants of inequity.
Study design	All observational quantitative studies (including but not limited to prospective and retrospective cohort studies, cross-sectional studies, mix-methods studies).
Context	All countries with health facility and/or community-based services offering childbirth care. Years of publication ranging from 1/1/2004 to the time of this study.
Population	
The population selecte	d for this review include women of reproductive age who experienc
	cope of each individual research study. Surrogate search terms for th
population centre on n	naternity care, pregnancy, childbirth, intrapartum care and obstetrie
Intervention/Comparis	on
	ss to SBA with or without comparison to utilization of non-skilled or
	lants will be included in this review. Institutional delivery may be us ce the concept of SBA and their skill level, competency, education a
-	ently inconsistent across countries [9, 11]. For the purposes of this st
	led health professional who is qualified by education and training ar
	ide intrapartum and immediate postpartum interventions with the
	and newborn health [8]. The purpose of this study, however, is not
	ions, competency or skills of specific SBA cadres in each study.
Outcome	
	evaluating inequity in access to SBA care. Alternative search terms
	ited to disparities, inequality and barriers to care. Given the moral
•	equity, additional search terms such as social justice will also be ut
	views of inequity in maternal care, determinants of inequity are
	e demographic, socioeconomic, reproductive and geographic factor
	ac at this rayiow, studios will be included it they compare at least ty
20-22]. For the purpose	
20-22]. For the purpose populations by one or	more indicators. PROGRESS Plus, an established framework for soci
20-22]. For the purpose populations by one or demographic factors th	es of this review, studies will be included if they compare at least tw more indicators. PROGRESS Plus, an established framework for socio nat may contribute to inequity in health, is an acronym that stands f e/ethnicity/culture and language, occupation, gender/sex, religion,

2		
3	203	specific factors including personal characteristics that attract discrimination, features of
4	204	relationships, and time-dependent relationships [23-25]. The PROGRESS Plus framework has
5 6	205	been adapted for the purposes of this project to include indicators specific to gender, sexual
7	206	and reproductive health, including key indicators of the Global strategy for Women's, Children's
8	207	and Adolescents' Health (2016-2030), and Strategies towards Ending Preventable Maternal
9	208	Mortality (EPMM) core maternal health indicators [26-33].
10	200	
11 12	210	
12	210	Study design
14	211	Study design
15	212	All observational quantitative or semi-quantitative studies of any design will be included if they
16		
17	214	evaluate inequity in access to SBAs which includes barriers to care, disparities, or similar.
18 19	215	
20	216	
21	217	Context
22	218	
23	219	Studies of all languages and across all settings will be eligible for inclusion. Studies published
24 25	220	from 2004 until the time of this review will be considered given the increased global interest in
25 26	221	maternal health and SBAs after the United Nations' Millennium Declaration in 2000 and
27	222	establishment of the Millennium Development Goals and WHO, ICM and FIGO's joint statement
28	223	on the importance of SBAs in 2004 [8, 34].
29	224	
30	225	
31 32	226	Exclusion Criteria
33	227	
34	228	Articles will not be eligible for inclusion if:
35	229	1. There are no details regarding determinants that may indicate inequity (e.g.
36	230	demographic factors, socioeconomic factors, reproductive history, geography, etc.)
37 38	231	2. Only qualitative data is collected
39	232	3. They are systematic reviews
40	233	4. The sample selection and size does not provide results generalizable to the general
41	234	population or a significant subgroup of the population (e.g. a country's second-level
42	235	administrative division).
43 44	236	
45	237	
46	238	Search strategy
47	239	
48	240	In order to answer our research questions, a search for all literature based on related search
49 50	241	terms will be conducted using the following online bibliographic databases: PubMed/MEDLINE,
50 51	242	CINAHL Complete, POPLINE, the Cochrane Database of Systematic Reviews and the WHO Global
52	243	Index Medicus (GIM). In addition, a manual search of bibliographic references of retrieved
53	244	studies and systematic reviews as well as gray literature of international organizations and
54	245	websites relevant to the field of maternal and child health will be conducted, including, but not
55 56	245	limited, to National Institute for Health and Clinical Excellence (NICE); National Institute of
56 57	270	
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60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

Health (NIH); United Nations Children's Fund (UNICEF); United Nations Population Fund
(UNFPA); WHO. The search will be inclusive of all languages and will be conducted with specific
search terms related to 1) Childbirth; 2) SBA, non-SBA, facility and non-facility deliveries; 3)
Equity; 4) Access or utilization of care. Please see Supplementary File 2 for the detailed search

strategy for PubMed/Medline and the Cochrane Database of Systematic Reviews.

### 254 Study Selection

 Following a comprehensive and detailed literature search, all duplicate articles will be removed. A team of two (AK/ABM) will screen titles and abstracts of retrieved studies for relevance and eligibility for inclusion. Disagreements will be resolved by an additional reviewer (DC). All study abstracts selected for inclusion will then undergo an independent full-text review with similar methodology. All chosen full-text articles will then be evaluated again for inclusion based on inclusion and exclusion criteria by all co-authors and studies that do not meet the criteria will be eliminated from the study. Disagreements will be resolved by mutual agreement. The authors of studies with unclear data will be contacted in order to evaluate the study for inclusion. Full-text articles in languages other than English will be translated. 

### 267 Data Extraction

A standardized data collection form was used as a template for development of a data extraction form for this review [35]. Study details collected include but are not limited to study characteristics (country, year and journal of publication, study design and dates), population and setting (population description, setting description, inclusion/exclusion criteria, sample size), intervention (SBA and non-SBA cadres, facility description), equity measures (primary outcome, determinants, results, study quality and conclusions). During the review additional fields on the data extraction form will allow for flexibility for additional data points or determinants as needed. Two reviewers will independently extract data from the selected studies and discrepancies will be discussed with a third reviewer. Please see Supplementary File 3 for the data extraction form. Results will be stratified based on WHO, World Bank Group income and SDG regional groupings [36-38].

### 282 Scientific Quality Assessment

The risk for study bias will be assessed based on STROBE statement criteria for observational studies [39, 40]. Study methodology will be classified as strong, moderate, or weak. Two reviewers (AK/ABM) will independently evaluate each study and will resolve conflicts by reviewing the articles together. Degree of study bias will be reported in the results.

291	DISSEMINATION AND ETHICS
292	

This systematic review will provide information regarding equity and determinants of inequity in access to SBAs globally. It will inform the development of indicators for monitoring and evaluation of inequity in access to SBA globally, which is especially pertinent given the current effort to revise the definition for SBA and measuring tools by collaborating international and professional organizations. This work will also guide establishment of global policy on health equity specifically related to access to SBA and maternal mortality. The provision of SBAs and access to their services is essential in decreasing maternal mortality globally.

Final study results will be disseminated via a peer-reviewed publication, which will include all supplemental materials on search strategy, data extraction, compilation and analysis. This systematic review is a secondary analysis of previously published literature and therefore does not require ethics review and approval.

### **307 LIST OF ABREVIATIONS:**

FIGO: International Federation of Gynaecology and Obstetrics; EPMM: Strategies towards Ending Preventable Maternal Mortality; GIM: WHO Global Index Medicus; ICM: International Confederation of Midwives; LMICs: Low- and middle-income countries; MeSH: Medical subject headings; MDGs: Millennium Development Goals; NICE: National Institute for Health and Clinical Excellence; NIH: National Institute of Health; PRISMA: Preferred reporting items for systematic reviews and meta-analyses; PRISMA-E: Preferred reporting items for systematic reviews and meta-analyses with equity extension; SBA: Skilled birth attendant; SDGs: Sustainable Development Goals; STROBE: Strengthening the reporting of observational studies in epidemiology; UNICEF: United Nations Children's Fund; UNFPA: United Nations Population Fund; WHO: World Health Organization. 

### 321 AUTHORS CONTRIBUTIONS

322 DC is the guarantor of this review. AK, ABM, DC and LS contributed to the initial conception and 323 design of this systematic review. AK, ABM, TA and DC developed the search strategies. AK 324 drafted the proposal manuscript. All authors participated in critically revising the protocol for 325 intellectual content. All authors read and approved the final manuscript.

46 326 47 327

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9 10	340	COMPETING INTERESTS STATEMENT
11	341	Next declared. The outhous class are recreatible for the views overseed in this atticle and
12 13	342 343	None declared. The authors alone are responsible for the views expressed in this article and they do not necessarily represent the views, decisions or policies of the funding bodies or
14	344	institutions with which they are affiliated.
15 16	345	
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18	347	DATA SHARING STATEMENT
19 20	348	
20 21	349	All data generated or analyzed during this study will be included in the published article and its
22	350	supplementary information files.
23 24	351 352	
24 25	352 353	
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27 28	355	Supplementary File 1:
29	356	- File name: SUPPLEMENTARY FILE 1
30	357	- File format: .pdf
31 32	358	<ul> <li>Title of data: PRISMA-E 2012 Checklist - Equity and access to skilled birth attendant</li> </ul>
33	359	globally: protocol for a systematic review
34	360	<ul> <li>Description of data: PRISMA-E 2012 Checklist for this systematic literature review</li> </ul>
35 36	361	proposal.
37	362	Supplementary File 2
38	363 364	Supplementary File 2: - File name: SUPPLEMENTARY FILE 2
39 40	365	- File format: .pdf
41	366	<ul> <li>Title of data: Equity and access to skilled birth attendant globally: search strategy for</li> </ul>
42	367	PubMed/Medline and the Cochrane Database of Systematic Reviews
43 44	368	- Description of data: Search strategies for Pubmed/Medline and the Cochrane Database
45	369	of Systematic Reviews.
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47 48	371	Supplementary File 3:
49	372	- File name: SUPPLEMENTARY FILE 3
50 51	373 374	<ul> <li>File format: .pdf</li> <li>Title of data: Equity and access to skilled birth attendant globally: data extraction form</li> </ul>
52	374	<ul> <li>Title of data: Equity and access to skilled birth attendant globally: data extraction form</li> <li>Description of data: Data extraction form for this systematic review.</li> </ul>
53	376	Description of data. Data extraction form for this systematic review.
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### PRISMA-E 2012 Checklist - Equity and access to skilled birth attendant globally: protocol for a systematic review

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		cklist - Equity and access to skilled birth attendant globa	lly: protocol for a systematic review	
		Reporting Equity-Focused Systematic Reviews Standard PRISMA Item	Fotossian for Fruity Formed Devices	De #
Section	Item	Standard PRISMA Item	Extension for Equity-Focused Reviews	Pg #
Title				
Title	1	Identify the report as a systematic review, meta-analysis, or both.	dentify equity as a focus of the review, if relevant, using tig term equity	1
Abstract	-		State research question(s) related to health equity N	
Structured summary	2	2. Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.		5
	2A		Present results of health equity analyses (e.g. subgroup an∉yses or meta-regression). ≥	Not applicable for protocol
	2B		Describe extent and limits of applicability to disadvantaged populations of interest.	Not applicable for protocol
troduction				
Rationale	3		Describe assumptions about mechanism(s) by which the ingervention is assumed to have an impact on health equity.	4
	3A		Provide the logic model/analytical framework, if done, to so the pathways through which the intervention is assumed to affect health equity and how it was developed.	
Objectives	4		Describe how disadvantage was defined if used as criterior; in the review (e.g. for selecting studies, conducting analyses or judging applicabi	5-7
	4A		State the research questions being addressed with referen $\overline{E}$ to health equity	5
Methods			<b>P</b> : <u>\</u>	
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	/bmjop	5
Eligibility criteria	6		Describe the rationale for including particular study designer related to equity research questions.	n 5-7
	6A		Describe the rationale for including the outcomes - e.g. how these are relevant to reducing inequity.	6-7
Information sources	7		Describe information sources (e.g. health, non-health, and grey literature sources) the were searched that are of specific relevance to address the equity questions of the review.	at 7-8
Search	8		Describe the broad search strategy and terms used to add the sequity questions of the review.	See Supplementa File 2
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	2024	5-7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	by gues	8 See Supplementa File 3
Data items	11		List and define data items related to equity,where such data were sought (e.g. using PROGRESS-Plus or other criteria, context).	6-8 See Supplementa File 3
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	cted by	8 See Supplementa File 3
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	сору	See Supplementa File 2
Synthesis of	14	Describe the methods of handling data and combining results of studies, if done,	Describe methods of synthesizing findings on health inequates (e.g. presenting both	8

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(e.g., Desc meta Give revie For e size,	Specify any assessment of risk of bias that may affect the cumulative evidence ., publication bias, selective reporting within studies). cribe methods of additional analyses (e.g., sensitivity or subgroup analyses, ta-regression), if done, indicating which were pre-specified. e numbers of studies screened, assessed for eligibility, and included in the ew, with reasons for exclusions at each stage, ideally with a flow diagram. each study, present characteristics for which data were extracted (e.g., study , PICOS, follow-up period) and provide the citations.	Ily: protocol for a systematic review       9         relative and absolute differences between groups).       70         Pescribe methods of additional synthesis approaches related to equity questions, it done, indicating which were pre-specified       9         Describe methods of additional synthesis approaches related to equity questions, it done, indicating which were pre-specified       9         Present the population characteristics that relate to the edity questions across the       9	(protocol) Not applicable (protocol)
(e.g., Desc meta Give revie For e size,	<ul> <li>publication bias, selective reporting within studies).</li> <li>cribe methods of additional analyses (e.g., sensitivity or subgroup analyses, ta-regression), if done, indicating which were pre-specified.</li> <li>e numbers of studies screened, assessed for eligibility, and included in the ew, with reasons for exclusions at each stage, ideally with a flow diagram.</li> <li>each study, present characteristics for which data were extracted (e.g., study</li> </ul>	Describe methods of <u>additional</u> synthesis approaches related to equity questions, in done, indicating which were pre-specified	See Supplementa File 3 Not applicable (protocol) Not applicable (protocol)
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	sent data on risk of bias of each study and, if available, any outcome level	1.8.	Not applicable
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		Present the results of synthesizing findings on inequities (see 14).	Not applicable
			(protocol)
Prese	sent results of any assessment of risk of bias across studies (see item 15).	Official off	Not applicable
Cive	a resulte of additional analyzes, if done (o.g., consitivity or subgroup analyzes	Cive the results of additional supposed approaches related to assuit chiestives if	(protocol)
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supp	ply of data); role of funders for the systematic review.	g g	
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#### SUPPLEMENTARY FILE 2: Equity and access to skilled birth attendant globally: search strategy for PubMed/Medline and the Cochrane Database of Systematic Reviews 1. Pubmed / MEDLINE search Section Search Terms Childbirth "parturition" [MeSH] OR "Delivery, Obstetric" [MeSH] OR "Perinatal Care" [MeSH] OR "Pregnancy Outcome" [MeSH] OR "Pregnancy Complications" [MeSH] OR "Labor, Obstetric" [MeSH] OR "Obstetrics" [MeSH] OR "Postpartum Period" [MeSH] OR "Maternal Health Services" [MeSH] OR "Women's Health Services" [Mesh] OR "Reproductive Health Services" [Mesh] OR "Pregnant Women" [Mesh] OR "Pregnancy" [Mesh] OR "Maternal Death" [Mesh] OR "Maternal-Fetal Relations" [Mesh] OR "Maternal Exposure" [Mesh] OR "Maternal Mortality" [Mesh] OR "Maternal Behavior" [Mesh] OR "maternal behaviour" [MeSH] OR "pregnant" [TIAB] OR "pregnancy" [TIAB] OR "Maternity" [TIAB] OR "perinatal"[TIAB] OR "peri-natal"[TIAB] OR "peri natal"[TIAB] OR "Postnatal"[TIAB] OR "post natal" [TIAB] OR "post-natal" [TIAB] OR "ante natal" [TIAB] OR "antenatal" [TIAB] OR "ante-natal" [TIAB] OR "Postpartum" [TIAB] OR "Post partum"[TIAB] "Post-partum"[TIAB] OR "puerperium"[TIAB] OR "childbirth care"[TIAB] OR "childbirth"[TIAB] OR "birth"[TIAB] OR "intrapartum"[TIAB] OR (labour[TI] AND delivery[TI]) OR (labor[TI] AND delivery[TI]) OR "maternal health"[TIAB] OR "maternal and child health"[TIAB] OR "maternity care"[TIAB] OR "c-section" [TIAB] OR "caesarean" [TIAB] OR "cesarean" [TIAB] OR "caesarean section"[TIAB] OR "cesarean section"[TIAB] OR "obstetric surgery"[TIAB] OR "signal functions" [TIAB] OR "obstetric interventions" [TIAB] OR "emergency obstetric care" [TIAB] OR "emergency obstetric" [TIAB] OR "emergency obstetrics" [TIAB] OR "EmOC" [TIAB] OR "emergency newborn care" [TIAB] OR "essential obstetric care" [TIAB] OR "vaginal delivery" [TIAB] or "normal delivery"[TIAB] "Health Personnel" [MeSH] OR Midwifery [MeSH] OR Obstetric Nursing [MeSH] OR "Professional Practice" [MeSH] OR "Emergency Responders" [MeSH] OR "Health Occupations"[Mesh] OR "Allied Health Occupations"[Mesh] OR "Students, Health Occupations" [Mesh] OR "Schools, Health Occupations" [Mesh] OR "Health Manpower"[Mesh] OR "health auxiliary"[TIAB] OR "health care manpower"[TIAB] OR "hospital personnel" [TIAB] OR "medical personnel" [TIAB] OR "health care personnel"[TIAB] OR "nursing home personnel"[TIAB] OR "paramedical personnel"[TIAB] OR "Health care workers"[TIAB] OR "Health care worker"[TIAB] OR "Medical Staff" [TIAB] OR "medical personnel" [TIAB] OR "General Practitioners" [TIAB] OR "General Practitioner" [TIAB] OR Caregiver\* [TIAB] OR Nurses[TIAB] OR Nurse[TIAB] OR Midwive[TIAB] OR midwives[TIAB] OR midwife[TIAB] OR "Nursing Staff" [TIAB] OR "nurse midwife" [TIAB] OR "nurse midwives" [TIAB] OR "nurse-midwife" [TIAB] OR "nurse-midwives" [TIAB] OR auxiliary[TIAB] OR "Medical students" [TIAB] OR "Nursing students" [TIAB] OR (health\*[TI] AND worker\*[TI]) OR "Community Health Workers"[TIAB] OR "Community Health Worker" [TIAB] OR "Dental Staff" [TIAB] OR doctor [TIAB] OR doctors[TIAB] OR obstetrician[TIAB] OR obstetricians[TIAB] OR "skilled health

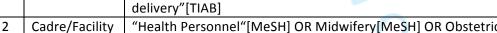
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		<ul> <li>OR "skilled attendants" [TIAB] OR "skilled birth attendant" [TIAB] OR "skilled health" [TIAB] OR "skilled assistance" [TIAB] OR "skilled assistant" [TIAB] OR "skilled birth attendant" [TIAB] OR "skilled birth gersonnel" [TIAB] OR "skilled assistant" [TIAB] OR "skilled birth gersonnel" [TIAB] OR "skilled health care workers" [TIAB] OR "skilled birth gerson" [TIAB] OR "skilled or "care provider" [TIAB] OR "SBA" [TIAB] OR "care providers" [TIAB] OR "health care provider" [TIAB] OR "care provider" [TIAB] OR "health care workers" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "health aides" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "health aides" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "feldsher" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "feldsher" [TIAB] OR "care provider" [TIAB] OR "care provider" [TIAB] OR "medical officers" [TIAB] OR "medical officers" [TIAB] OR "mid-level provider" [TIAB] OR "medical officers" [TIAB] OR "mid-level provider" [TIAB] OR "medical officers" [TIAB] OR "mid-level provider" [TIAB] OR "mid-level cadres" [TIAB] OR "mid-level health care workers" [TIAB] OR "mid-level health care workers" [TIAB] OR "mon-physicians" [TIAB] OR "non-physicians" [TIAB] OR "normity health services" [MeSH] OR "non-physicians" [TI</li></ul>
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<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	5 6 7	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	8 9 10	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	12 13 14	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	15 16 17	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	18 19 20	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	22 23 24	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	25 26 27	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	28 29 30 31	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	32 33 34	
<ol> <li>39</li> <li>40</li> <li>41</li> <li>42</li> <li>43</li> <li>44</li> <li>45</li> <li>46</li> <li>47</li> <li>48</li> <li>49</li> <li>50</li> <li>51</li> <li>52</li> <li>53</li> <li>54</li> <li>55</li> <li>56</li> <li>57</li> <li>58</li> <li>59</li> </ol>	35 36 37 38	
43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59	39 40	
46 47 48 49 50 51 52 53 54 55 56 57 58 59	43 44	
49 50 51 52 53 54 55 56 57 58 59	46 47	
53 54 55 56 57 58 59	49 50	
56 57 58 59	53 54	
59	56 57	
	59	

	care"[MeSH Terms] OR "Health services needs and demand"[MeSH Terms] OR
	"Primary health care" [Mesh] OR "patient acceptance of health care" [Mesh] OR
	"Health knowledge attitudes practice" [Mesh] OR "health promotion" [Mesh] OR
	"delivery of health care" [Mesh] OR "health behavior" [Mesh] OR "health
	behaviour"[MeSH] OR "attitude to health"[Mesh] OR "personal autonomy"[Mesh]
	OR "attitude of health personnel" [Mesh] OR access [All Fields] OR accessibility [All
	Fields] OR "utilization" [Subheading] OR "utilisation" [Subheading] OR
	"utilization"[All Fields] OR "utilisation"[All Fields] OR "use"[All Fields]) OR
	"coverage"[All Fields] OR "health services"[MeSH Terms] OR "access to health
	care"[All Fields]) OR "delivery of health care"[MeSH Terms] OR "health
	services"[All Fields] OR "health facilities"[All Fields] OR "obstetric delivery"[All
	Fields] OR "delivery"[All Fields] OR "health care surveys"[Mesh] OR "needs
	assessment"[Mesh] OR "health care costs"[Mesh] OR "mental health
	services"[Mesh] OR "mental disorders"[Mesh] OR "health services
	research"[Mesh] OR "outcome assessment health care"[Mesh] OR "quality
	assurance health care"[Mesh] OR "rural health services"[Mesh] OR "social
	support"[Mesh] OR "insurance coverage"[Mesh] OR "community health
	services"[Mesh] OR "health education"[Mesh]
5	1 AND 2 AND 3 AND 4 AND Filter: Publication date from 2004/01/01 to present.
2 (	Cochrane Central search
2. (	

#### 2. Cochrane Central search

ID	Search Hits
#1	MeSH descriptor: [Parturition] explode all trees 266
#2	MeSH descriptor: [Delivery, Obstetric] explode all trees 4852
#3	MeSH descriptor: [Pregnancy] explode all trees 5608
#4	MeSH descriptor: [Maternal-Fetal Relations] explode all trees 14
#5	MeSH descriptor: [Maternal Mortality] explode all trees 124
#6	MeSH descriptor: [Maternal Health Services] explode all trees 1994
#7	MeSH descriptor: [Postpartum Period] explode all trees 1349
#8	MeSH descriptor: [Cesarean Section] explode all trees 2839
#9	MeSH descriptor: [Emergency Medical Services] explode all trees 📃 3652
#10	MeSH descriptor: [Perinatal Mortality] explode all trees 45
#11	MeSH descriptor: [Vacuum Extraction, Obstetrical] explode all trees 81
#12	MeSH descriptor: [Obstetrical Forceps] explode all trees 53
#13	MeSH descriptor: [Vaginal Birth after Cesarean] explode all trees 58
#14	MeSH descriptor: [Labor, Obstetric] explode all trees 1945
#15	MeSH descriptor: [Obstetric Labor Complications] explode all trees 2697
#16	MeSH descriptor: [Prenatal Care] explode all trees 1302
#17	MeSH descriptor: [Prenatal Diagnosis] explode all trees 1071
#18	"maternal mortality":ti,ab,kw (Word variations have been searched) 435
#19	delivery:ti,ab,kw (Word variations have been searched) 25934
#20	pregnancy:ti,ab,kw (Word variations have been searched) 33283
#21	"maternal health services":ti,ab,kw (Word variations have been searched) 247
#22	vaginal delivery:ti,ab,kw (Word variations have been searched) 2532
#23	postpartum or prenatal or antenatal or antepartum:ti,ab,kw (Word variations have been
search	ned) 10362
#24	"birth":ti,ab,kw (Word variations have been searched) 16054
#25	obstetrics:ti,ab,kw (Word variations have been searched) 2287

#26	c*sarean section:ti,ab,kw (Word variations have been searched) 6986
#27	"emergency obstetric*":ti,ab,kw (Word variations have been searched) 43
#28	lab*r:ti,ab,kw (Word variations have been searched)10228
#29	childbirth*:ti,ab,kw (Word variations have been searched) 1739
#30	{or #1-#29} 69723
#31	MeSH descriptor: [Health Personnel] explode all trees 7620
#32 #33	MeSH descriptor: [Community Health Workers] explode all trees 339
#35 #34	MeSH descriptor: [Nurses] explode all trees 1158
#34 #35	MeSH descriptor: [Allied Health Personnel] explode all trees 978 MeSH descriptor: [Midwifery] explode all trees 324
#35 #36	MeSH descriptor: [Midwifery] explode all trees 324 MeSH descriptor: [Emergency Responders] explode all trees 251
#30	MeSH descriptor: [Allied Health Occupations] explode all trees 1000
#38	MeSH descriptor: [Obstetric Nursing] explode all trees 41
#39	MeSH descriptor: [Health Occupations] explode all trees 20897
#40	MeSH descriptor: [Skilled Nursing Facilities] explode all trees 60
#41	MeSH descriptor: [Physicians] explode all trees 1686
#42	MeSH descriptor: [Nurse Clinicians] explode all trees 153
#43	MeSH descriptor: [Ambulatory Care Facilities] explode all trees 1886
#44	MeSH descriptor: [Maternal-Child Health Centers] explode all trees 49
#45	MeSH descriptor: [Rural Health Services] explode all trees 336
#46	MeSH descriptor: [Community Health Centers] explode all trees 572
#47	MeSH descriptor: [Birthing Centers] explode all trees 23
#48	MeSH descriptor: [Hospitals] explode all trees 3658
#49	nurse* or doctor* or physician* or midwife or midwives:ti,ab,kw (Word variations have been
searche	
#50	"health worker*":ti,ab,kw (Word variations have been searched) 1215
#51	"birth attendant*":ti,ab,kw (Word variations have been searched) 127
#52	"skilled attendant*":ti,ab,kw (Word variations have been searched) 5
#53	"skilled assistant*":ti,ab,kw (Word variations have been searched) 1
#54	obstetrician*:ti,ab,kw (Word variations have been searched) 921
#55	practicioner*:ti,ab,kw (Word variations have been searched) 3
#56	"clinical officer*":ti,ab,kw (Word variations have been searched) 23
#57	birth centre* or birth center*:ti,ab,kw (Word variations have been searched) 2023
#58	health centre* or health center*:ti,ab,kw (Word variations have been searched) 19565
#59	"health facilit*":ti,ab,kw (Word variations have been searched) 647
#60	"health provider*":ti,ab,kw (Word variations have been searched) 253
#61	"health institution*":ti,ab,kw (Word variations have been searched) 61
#62	clinic?:ti,ab,kw (Word variations have been searched) 9489
#63	hospital?:ti,ab,kw (Word variations have been searched) 15683
#64	"birth centre?" or "birth center?":ti,ab,kw (Word variations have been searched) 31
#65	{or #31-#64} 96129
#66	MeSH descriptor: [Health Equity] explode all trees 2
#67	MeSH descriptor: [Human Rights] explode all trees 1262
#68	MeSH descriptor: [Social Justice] explode all trees 60
#69	MeSH descriptor: [Health Status Disparities] explode all trees 142
#70	MeSH descriptor: [Healthcare Disparities] explode all trees 176
#71	MeSH descriptor: [Social Responsibility] explode all trees 87
#72	MeSH descriptor: [Human Rights] explode all trees 1262
#73	MeSH descriptor: [Social Values] explode all trees 164
#74	MeSH descriptor: [Socioeconomic Factors] explode all trees 8582
#75	MeSH descriptor: [Health Status Indicators] explode all trees 19398
#76	MeSH descriptor: [Health Policy] explode all trees 724
#77	MeSH descriptor: [Social Determinants of Health] explode all trees 11
	For peer review only - http://bmionen.hmi.com/site/about/guidelines.yhtml

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2			
3	#78	MeSH descriptor: [Quality of Health Care] explode all trees 424055	
4	#79	MeSH descriptor: [Public Health] explode all trees 408036	
5	#80	MeSH descriptor: [Global Health] explode all trees 212	
6	#81	MeSH descriptor: [Sex Factors] explode all trees 5525	
7	#82	MeSH descriptor: [Sex Distribution] explode all trees 783	
8	#83	MeSH descriptor: [Public Policy] explode all trees 784	
9	#84	MeSH descriptor: [Women's Rights] explode all trees 6	
10	#85	MeSH descriptor: [Age Factors] explode all trees 9847	
11	#86	MeSH descriptor: [Age Distribution] explode all trees 845	
12	#87	MeSH descriptor: [Adolescent] explode all trees 90431	
13	#88	MeSH descriptor: [Young Adult] explode all trees 266	
14	#89	MeSH descriptor: [Policy Making] explode all trees 86	
15	#90	MeSH descriptor: [Resource Allocation] explode all trees 145	
16	#91	MeSH descriptor: [Social Welfare] explode all trees 845	
17	#92	MeSH descriptor: [Patient Advocacy] explode all trees 75	
18	#93	MeSH descriptor: [Socioeconomic Factors] explode all trees 8582	
19	#94	MeSH descriptor: [Income] explode all trees 931	
20 21	#95	MeSH descriptor: [Poverty] explode all trees1377	
21	#96	MeSH descriptor: [Poverty Areas] explode all trees 240	
22	#97	MeSH descriptor: [Vulnerable Populations] explode all trees 220	
23	#98	MeSH descriptor: [Social Distance] explode all trees 113	
25	#99	MeSH descriptor: [Risk Factors] explode all trees 24525	
26	#100	MeSH descriptor: [Ethnic Groups] explode all trees 3695	
27	#101	MeSH descriptor: [Emigration and Immigration] explode all trees 79	
28	#102	MeSH descriptor: [Minority Groups] explode all trees316	
29	#103	MeSH descriptor: [Developing Countries] explode all trees 1011	
30	#104	MeSH descriptor: [Social Class] explode all trees 589	
31	#105	MeSH descriptor: [Health Care Rationing] explode all trees 77	
32	#106	MeSH descriptor: [Insurance, Long-Term Care] explode all trees 5	
33	#107	MeSH descriptor: [Politics] explode all trees 48	
34	#108	MeSH descriptor: [Health Expenditures] explode all trees 332	
35	#109	MeSH descriptor: [Urban Population] explode all trees 1204	
36	#110	MeSH descriptor: [Rural Population] explode all trees 1249	
37	#111	MeSH descriptor: [Universal Coverage] explode all trees 7	
38	#112	MeSH descriptor: [Health Resources] explode all trees 593	
39	#113	MeSH descriptor: [Educational Status] explode all trees 1347	
40	#114	MeSH descriptor: [Residence Characteristics] explode all trees1179	
41	#115	MeSH descriptor: [Time Factors] explode all trees 59415	
42	#116	MeSH descriptor: [Religion and Medicine] explode all trees 59	
43	#117	MeSH descriptor: [Cultural Characteristics] explode all trees 157	
44	#118	MeSH descriptor: [Cultural Diversity] explode all trees 83	
45	#119	equit* or inequit*:ti,ab,kw (Word variations have been searched) 544	
46	#120	equal* or inequal*:ti,ab,kw (Word variations have been searched) 32042	
47	#121	socio-economic? or socioeconomic?:ti,ab,kw (Word variations have been searched)	559
48	#122	"unmet need?":ti,ab,kw (Word variations have been searched) 232	
49	#123	barrier?:ti,ab,kw (Word variations have been searched) 4561	
50	#124	determinant?:ti,ab,kw (Word variations have been searched) 3279	
51	#125	geographic:ti,ab,kw (Word variations have been searched) 1798	
52 53	#126	"risk factor?":ti,ab,kw (Word variations have been searched) 38428	
53 54	#127	"determinant* of health":ti,ab,kw (Word variations have been searched) 100	
54 55	#128 #120	marginali*ation:ti,ab,kw (Word variations have been searched) 22	
55 56	#129 #120	{or #66-#128} 498594	420222
57	#130	MeSH descriptor: [Health Care Quality, Access, and Evaluation] explode all trees	430323
58			
59			
~ ~			

#131	MeSH descriptor: [Health Services Accessibility] explode all trees 1084
#132	MeSH descriptor: [Health Promotion] explode all trees 5485
#133	MeSH descriptor: [Culturally Competent Care] explode all trees 30
#134	MeSH descriptor: [Maternal Health Services] explode all trees 1994
#135	MeSH descriptor: [Quality of Health Care] explode all trees 424055
#136	MeSH descriptor: [Medically Underserved Area] explode all trees 112
#137	MeSH descriptor: [Health Services Needs and Demand] explode all trees 532
#138	MeSH descriptor: [Delivery of Health Care] explode all trees 45744
#139	MeSH descriptor: [Primary Health Care] explode all trees 6730
#140	MeSH descriptor: [Patient Acceptance of Health Care] explode all trees25535
#141	MeSH descriptor: [Health Knowledge, Attitudes, Practice] explode all trees 5020
#142	MeSH descriptor: [Health Promotion] explode all trees 5485
#143	MeSH descriptor: [Health Behavior] explode all trees 19176
#144	MeSH descriptor: [Attitude of Health Personnel] explode all trees 2095
#145	MeSH descriptor: [Attitude to Health] explode all trees 31755
#146	MeSH descriptor: [Personal Autonomy] explode all trees 170
#147	MeSH descriptor: [Health Services] explode all trees 90269
#148	MeSH descriptor: [Health Services Accessibility] explode all trees 1084
#149	MeSH descriptor: [Rural Health Services] explode all trees 336
#150	access:ti,ab,kw (Word variations have been searched) 12815
#151	utili*ation:ti,ab,kw (Word variations have been searched) 11183
#152	coverage:ti,ab,kw (Word variations have been searched) 3228
#153	"health service?":ti,ab,kw (Word variations have been searched) 10578
#154	{or #130-#153} 461529
#155	#30 and #65 and #129 and #154 Online Publication Date from Jan 2004 to Jun 2017 654

#### SUPPLEMENTARY FILE 3:

Equity and access to skilled birth attendant globally: data extraction form

#### Notes:

- Please be consistent in the order and style used to enter information for each item.
- Please record missing data as unclear or missing in the study report.
- If an item is not applicable, please mark as NA.

#### General information

General Data	
1. Study ID	
<ol> <li>Date form completed (dd/mm/yy)</li> </ol>	
3. Primary author	
4. Name of reviewer	
5. Study title	2
6. Year of publication	
7. Journal	
8. Country	
9. Study funding source	
10. Conflict of interest (reviewer)	□ Yes □ No

### Study Eligibility

Study characteristic	s Eligibility criteria	Eligibil	ity criteria	Location in text or source	
		Yes	Yes No Unc		or source (pg/fig/table)
1. Population	Women who experienced childbirth within the scope of the specific study.				
2. Interventio	n Access to skilled care with SBA or institutional deliveries				
3. Compariso	Utilization of non-SBA birth attendants or traditional birth attendants at the time of delivery.				
4. Outcome	Evaluation of inequity in access to SBA at the time of childbirth.				
5. Study desig	n All observational quantitative studies on human subjects (including but not limited to prospective and retrospective cohort studies, cross-sectional studies, mix- methods studies).				
6. Context	All countries with health facility and/or community- based services offering childbirth care.		0		
7. Results	Quantitative results of the association between potential determinants and access to SBA				
8. Decision	□ Include □ Exclude				
9. Reason for exclusion					
Notes:					

#### Methods

Study characteristics	
10. Aim of study	
11. Study design	$\Box$ cross-sectional $\Box$ cohort $\Box$ mixed-methods
	□ other:
12. Unit of allocation	
(part/person/group)	
13. Start date	
(dd/mm/yy)	
14. End date	
(dd/mm/yy)	
15. Duration of participation (from recruitment to last	
follow up)	
16. Ethics approval obtained?	
10. Ethics approval obtained:	□ yes □ no □ not needed
	·
Notes:	
	7
Deputation and estimat	
Population and setting	
17. Population description (from which study	
participants are drawn)	
18. Setting	
(including location and	
social context)	
19. Specific geographic region	
20. Inclusion criteria	
21. Exclusion criteria	
22. Method(s) of participant	
recruitment	
23. Informed consent?	
	□ yes □ no □ not needed

24. Participants (n)	
25. Subgroups (n)	SBA/institutional delivery
	TAB or other non-SBA birth attendant delivery
	Non institutional delivery
	Non-institutional delivery
	Other
lotes:	
ntervention	
Attendants at birth	
26. SBA cadre included	nurse nurse-midwife clinical officer/physician
(check all correct answers)	
	assistant 🗆 doctor 🗆 unspecified
	□ other:
27. Non-SBA cadre included (check all correct answers)	□ traditional birth attendant □ unspecified
	□ other:
28. Facility included	birth centre health centre district/local hospital
(check all correct answers)	
	referral/tertiary hospital unspecified
	□ other:



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#### Outcomes

Equity/inequity and Results	
29. Primary outcome	
30. Participant determinants	
included <sup>1</sup>	Place of residence:
(check all applicable)	Definition/stratification:
	🗌 Urban/rural/humanitarian
	□ Geographic distinction
	□ Transportation access
	Road access
	No.
	□ Race/Ethnicity/culture/language:
	Definition/stratification:
	Occupation:
	Definition/stratification:
	<u>Gender</u> :
	Employment in non-agricultural sector
	Children <15 years old working
	□ Gender/Sex:
	Definition/stratification:
	<u>Gender</u> :
	Intimate partner violence (recent/ever)

<sup>&</sup>lt;sup>1</sup> Adapted from the Progress-Plus framework; O'Neill J, Tabish H, Welch V, Petticrew M, Pottie K, Clarke M, et al. Applying an equity lens to interventions: using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. J Clin Epidemiol. 2014;67(1):56-64.

6
Power differential
Acceptability of suggesting condom use, refusing sex
□ Age difference of sex partner
Decision making about own health
□ Marriage/union
□ choice of spouse
$\Box$ age < 15 years old / < 18 years old
Sexual health:
□ Sex before age 15
History of sexual violence (recent/ever) and or by age 18 years
□ History of female genital cutting
Reproductive/maternal health:
Parity/grand-multiparity
□ Adolescent pregnancy
Obstetrical history
□ self – complications/adverse outcome
□ other – complications/adverse outcome
□ Four or more antenatal visits
Early postnatal/postpartum care (within 2 days)
$\Box$ Uterotonic immediately after birth (facility birth)
□ Contraception use
□ Religion:
Definition/stratification:
Education:
Definition/stratification:

Image: Socioeconomic status:         Definition/stratification:         Definition/stratification:         Definition/stratification:         Image: Socioeconomic status:         Definition/stratification:         Image: Socioeconomic status:         Definition/stratification:         Image: Socioeconomic status:         Image: Socioeconomic stat	Gender:
Image: Social control in the service of	Primary/secondary/tertiary education
Socioeconomic status:         Definition/stratification:         Image: Access to safely managed sanitation services (e.g. hand-washing with water and soap)         Image: Children with stunting < 5 years of age	
Definition/stratification:         Access to safely managed sanitation services (e.g. hand-washing with water and soap)         Children with stunting < 5 years of age	□ Literacy
Definition/stratification:         Access to safely managed sanitation services (e.g. hand-washing with water and soap)         Children with stunting < 5 years of age	
Definition/stratification:         Access to safely managed sanitation services (e.g.         hand-washing with water and soap)         Children with stunting < 5 years of age	
<ul> <li>Access to safely managed sanitation services (e.g. hand-washing with water and soap)</li> <li>Children with stunting &lt; 5 years of age</li> <li>Primary reliance on clean fuels and technology</li> <li>Gender:</li> <li>Ownership (goods/land/bank account)</li> <li>Technology use (mobile phone/internet/media)</li> <li>Social capital:</li> <li>Definition/stratification:</li> <li>Definition/stratification:</li> <li>Definition/stratification:</li> <li>Gender:</li> <li>Social capital:</li> <li>Definition/stratification:</li> <li>Definition/stratification:</li> <li>Definition/stratification:</li> <li>Definition/stratification:</li> <li>Definition/stratification:</li> </ul>	☐ Socioeconomic status:
Access to safely managed sanitation services (e.g. hand-washing with water and soap) Children with stunting < 5 years of age Primary reliance on clean fuels and technology Gender: Ownership (goods/land/bank account) Technology use (mobile phone/internet/media) Social capital: Definition/stratification:	Definition /ctratification:
hand-washing with water and soap)         Children with stunting < 5 years of age	Dejinition/stratijication.
hand-washing with water and soap)         Children with stunting < 5 years of age	
hand-washing with water and soap)         Children with stunting < 5 years of age	
Children with stunting < 5 years of age	
Children with stunting < 5 years of age	hand-washing with water and soap)
Primary reliance on clean fuels and technology         Gender:         Ownership (goods/land/bank account)         Technology use (mobile phone/internet/media)         Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Young/old age         Orphan         Sex worker	
Primary reliance on clean fuels and technology         Gender:         Ownership (goods/land/bank account)         Technology use (mobile phone/internet/media)         Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Young/old age         Orphan         Sex worker	Children with stunting < 5 years of age
Gender:         Ownership (goods/land/bank account)         Technology use (mobile phone/internet/media)         Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Orphan         Sex worker         Features of relationships:	
Gender:         Ownership (goods/land/bank account)         Technology use (mobile phone/internet/media)         Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Orphan         Sex worker         Features of relationships:	Drimany reliance on clean fuels and technology
Ownership (goods/land/bank account)         Technology use (mobile phone/internet/media)         Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Definition/stratification:         Orphan         Sex worker         Features of relationships:	
Ownership (goods/land/bank account)         Technology use (mobile phone/internet/media)         Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Definition/stratification:         Orphan         Sex worker         Features of relationships:	
Technology use (mobile phone/internet/media)   Social capital:   Definition/stratification:   Personal characteristics that attract discrimination:   Definition/stratification:   Young/old age   Orphan   Sex worker   Features of relationships:	<u>Gender</u> :
Technology use (mobile phone/internet/media)         Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Voung/old age         Orphan         Sex worker         Features of relationships:	Ownership (goods/land/bank account)
Social capital:         Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Young/old age         Orphan         Sex worker         Features of relationships:	
Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Young/old age         Orphan         Sex worker         Features of relationships:	L Technology use (mobile phone/internet/media)
Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Young/old age         Orphan         Sex worker         Features of relationships:	
Definition/stratification:         Personal characteristics that attract discrimination:         Definition/stratification:         Young/old age         Orphan         Sex worker         Features of relationships:	
<ul> <li>Personal characteristics that attract discrimination:</li> <li>Definition/stratification:</li> <li>Young/old age</li> <li>Orphan</li> <li>Sex worker</li> <li>Features of relationships:</li> </ul>	
<ul> <li>Personal characteristics that attract discrimination:</li> <li>Definition/stratification:</li> <li>Young/old age</li> <li>Orphan</li> <li>Sex worker</li> <li>Features of relationships:</li> </ul>	Definition/stratification:
Definition/stratification: Young/old age Orphan Sex worker Features of relationships:	
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<ul> <li>Orphan</li> <li>Sex worker</li> <li>Features of relationships:</li> </ul>	
<ul> <li>Orphan</li> <li>Sex worker</li> <li>Features of relationships:</li> </ul>	
<ul> <li>Orphan</li> <li>Sex worker</li> <li>Features of relationships:</li> </ul>	
Sex worker	
□ Features of relationships:	🗆 Orphan
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	Eeatures of relationships:
Definition/stratification:	
	Definition/stratification:

	<u>Gender</u> :
	□ Single/divorced/widowed
	☐ Husband's characteristics (e.g. education, etc.
	□ Other:
	☐ Time-dependent relationships:
	Definition/stratification:
	Pregnant/postpartum/breastfeeding
	☐ Humanitarian setting (e.g. refugee, internally displaced person)
	Political instability
	□ Other:
	other:
	Definition/stratification:
	other:
	Definition/stratification:
	1
31. Systematic determinants included (check all applicable)	Maternal mortality ratio
	$\Box$ Maternal cause of death (based on ICD-MM coding)
	□ Maternal death registration
	Under-5 mortality rate
	Neonatal mortality rate
	$\Box$ Proportion of children < 5 years old with registered birth

2		
3 4		□ Stillbirth rate
5 6		C-section rate
7 8		Availability of functional Emergency Obstetric Care facilities
9 10 11		Adolescent mortality rate
11 12 13		Out-of-pocket as a percentage of total health expenditure
14 15		Current country health expenditure per capita
16 17		□ Presence of laws/regulations that guarantee SRH care
18 19	32. Participant determinants that were statistically	Place of residence:
20 21	significant (check all correct answers)	Definition/stratification:
22 23	(check un correct unswers)	0
24 25		Urban/rural/humanitarian
26 27		<ul> <li>Geographic distinction</li> <li>Transportation access</li> </ul>
28 29		Road access
30 31		Ľ.
32 33 34		□ Race/Ethnicity/culture/language:
35 36		Definition/stratification:
37 38		0.
39 40		Occupation:
41 42		Definition/stratification:
43 44		Gender:
45 46		Employment in non-agricultural sector
47 48		$\Box$ Children <15 years old working
49 50		
51 52 53		Gender/Sex:
55 55		Definition/stratification:
56 57		
58		

1 2	10
3	Gender:
4 5	□ Intimate partner violence (recent/ever)
6 7	Power differential
8 9 10	Acceptability of suggesting condom use, refusing sex
11 12	□ Age difference of sex partner
13 14	$\Box$ Decision making about own health
15	□ Marriage/union
16 17	□ choice of spouse
18 19	□ choice of spouse □ age < 15 years old / < 18 years old Sexual health:
20 21	Sexual health:
22 23	□ Sex before age 15
24 25 26	History of sexual violence (recent/ever) and or by age 18 years
27 28	History of female genital cutting
29 30	Reproductive/maternal health:
31	Parity/grand-multiparity
32 33	□ Adolescent pregnancy
34 35	Obstetrical history
36 37	□ self – complications/adverse outcome
38 39	other – complications/adverse outcome
40 41	□ Four or more antenatal visits
42	Early postnatal/postpartum care (within 2 days)
43 44	$\Box$ Uterotonic immediately after birth (facility birth)
45 46	□ Contraception use
47 48	
49 50	Religion:
51 52	Definition/stratification:
53	
54 55	Education:
56 <b></b> 57	
58	

59

Definition/stratification:
<u>Gender</u> :
Primary/secondary/tertiary education
□ Literacy
Socioeconomic status:
Definition/stratification:
Access to safely managed sanitation services (e.g.
Access to safely managed sanitation services (e.g. hand-washing with water and soap)
inanu-washing with water and soap)
□ Children with stunting < 5 years of age
Primary reliance on clean fuels and technology
Gender:
<u>dender</u> .
Ownership (goods/land/bank account)
Technology use (mobile phone/internet/media)
Social capital:
Definition/stratification:
Personal characteristics that attract discrimination:
Definition/stratification:
.,
Young/old age
Orphan
Sex worker

	□ Features of relationships:
	Definition/stratification:
	<u>Gender</u> :
	Single/divorced/widowed
	□ Husband's characteristics (e.g. education, etc.
	□ Other:
	☐ Time-dependent relationships:
	Definition/stratification:
	Pregnant/postpartum/breastfeeding
	Humanitarian setting (e.g. refugee, internally displaced person)
	Political instability
	□ Other:
	□ other:
	4
	Definition/stratification:
	□ other: Definition/stratification:
	Definition/stratification:
<ol> <li>Systematic determinants that were statistically</li> </ol>	Maternal mortality ratio
significant (check all correct answers)	□ Maternal cause of death (based on ICD-MM coding)
	□ Maternal death registration
	Under-5 mortality rate
	Neonatal mortality rate

	$\Box$ Proportion of children < 5 years old with registered birth
	□ Stillbirth rate
	C-section rate
	Availability of functional Emergency Obstetric Care facilitie
	Adolescent mortality rate
	$\Box$ Out-of-pocket as a percentage of total health expenditure
	$\Box$ Current country health expenditure per capita
O,	$\Box$ Presence of laws/regulations that guarantee SRH care
34. Confounding factors/effect modifiers:	
	0
	<b>1</b> 0
	R.
	L.
35. Results (specify, e.g. OR, RR, IRR)	
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36. Limitations:			
37. Scientific quality	🗆 high	moderate	□ low
38. Conclusions of authors			

# **BMJ Open**

# Equity and intrapartum care by skilled birth attendant globally: protocol for a systematic review

Journal:	BMJ Open
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<b>Primary Subject Heading</b> :	Global health
Secondary Subject Heading:	Obstetrics and gynaecology, Health policy
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#### BMJ Open

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3	1	Equity and intrapartum care by skilled birth attendant globally: protocol for a systematic
4	2	review
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38	29	
39	30	
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41	32	Keywords: skilled birth attendant, maternal mortality, childbirth, health equity, inequity, health
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59 60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

#### ABSTRACT

#### 

#### Introduction:

Equity is a cross cutting theme within the Sustainable Development Goals (SDGs) and central to the effort to improve maternal and child health globally. One key strategy to prevent maternal death set out in SDG 3 is assistance by a skilled birth attendant (SBA) at childbirth (Indicator 3.1.2). However, the increased coverage of SBAs globally has not been reflected by the same degree of decrease in maternal mortality and has been reported to have higher levels of inequality than other maternal health interventions. There is a need to evaluate the extent of inequity in intrapartum care by SBAs and evaluate themes in determinants of inequity across regions and specific country characteristics. **Methods and Analysis:** The protocol for this review follows The Cochrane Handbook for Systematic Reviews and PRISMA-E 2012 guidelines. Studies of all languages and from all countries from 2004, the year when the WHO/ICM/FIGO joint statement on SBAs was published, and onwards will be included. PubMed/MEDLINE, CINAHL Complete, Cochrane Database of Systematic Reviews, POPLINE, the WHO Global Index Medicus, and grey literature will be searched. Our primary outcome is intrapartum care by SBA. Studies will be included if they evaluate equity and its

- determinants adapted from the Progress-Plus grouping of characteristics affecting health outcomes. Results will be stratified based on WHO, World Bank Group income and SDG regional
- groupings.

#### Ethics and dissemination:

This review is a secondary analysis of published literature and does not require ethics review. Results will provide information regarding equity in intrapartum care by SBAs globally and will inform development of indicators for monitoring of inequity as well as global policy related to intrapartum care and maternal mortality. Results will be disseminated via peer-reviewed manuscript, international conferences and stakeholder websites. 

#### **Trial registration:**

This protocol was registered with the Prospero database (registration number: CRD42017069021; date: 26/06/2017).

# Word Count: 300

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3	75	STRENGTHS AND LIMITATIONS OF THIS STUDY
4 5	76	- This systematic review aims to evaluate equity in intrapartum care by skilled birth
6	77	attendants globally, which will include specific determinants of inequity. No previous
7	78	review of quantitative studies has evaluated equity/inequity in intrapartum care by SBAs
8	79	during childbirth across the globe.
9	80	
10		- The search strategy for this review is broad and comprehensive including studies in all
11	81	languages and from all countries from multiple electronic databases, grey literature and
12	82	websites.
13	83	<ul> <li>Intrapartum care by SBA as reported in observational studies may not report important</li> </ul>
14 15	84	nuances of care including comprehensiveness of care, time spent with the individual
15 16	85	woman or quality of care.
17	86	- This literature review will evaluate a reproductive health indicator (intrapartum care by
18	87	SBA) within the context of equity/inequity with attention to and expansion of validated
19	88	tools to evaluate equity such as PROGRESS-PLUS and the PRISMA-E framework.
20	89	- This review will summarize data collected using instruments not specifically designed to
21	90	
22		evaluate equity/inequity in relation to SBA intrapartum care; however, based on available
23	91	data, it will help inform development of tools for future monitoring and evaluation of
24 25	92	heathcare and equity related to SDG indicator 3.1.2.
25 26	93	
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#### INTRODUCTION

Equity is a cross cutting theme within the Sustainable Development Goals (SDGs) and central to the effort to move towards improved global maternal, child and adolescent health [1, 2]. Despite some progress during the Millennium Development Goals era, preventable maternal mortality especially in low- and middle-income countries (LMIC) has remained high [3, 4]. There is a need to focus on inequity and underlying social and structural determinants that contribute indirectly to maternal mortality. Special attention also needs to be paid to maternal mortality among high risk groups such as adolescents and young women, particularly in humanitarian settings and in countries with armed conflict [5]. Factors associated with inequity across all countries include sex, age, economic status, education, and place of residence. In specific regions or countries, migrant status, race, 

ethnicity, caste, religion can also be sources of inequity [2]. SDG 3.1 sets the target to reduce global mortality ratio to less than 70 per 100,000 live births by 2030 and one of the key strategies to prevent maternal deaths is assistance by a skilled birth attendant (SBA) at the time of childbirth, which is also reflected in the SDG Indicator 3.1.2 "Births attended by skilled health personnel (%)" [1, 6, 7]. The SBA is defined in the joint statement by the World Health Organization (WHO), the International Confederation of Midwives (ICM) and the International Federation of Gynaecology and Obstetrics (FIGO) as a "midwife, doctor or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" [8]. However, while the coverage of SBAs has increased globally, this has not been reflected in a proportional decrease in the global burden of maternal deaths. Skilled birth attendants have been found to have a variable amount of knowledge and skills and, due to inconsistencies in data reporting, the definition of a SBA is currently under review [9-12]. Nevertheless, around 50% of low- and middle- income countries report that at least 80% rate of births are attended by SBAs. This number varies across countries [12]. Inequity in SBA coverage has been found to be associated with economic status, education and place of residence and presence of SBA at birth has higher inequality rates than other maternal health interventions [12]. This disparity is especially seen in LMICs where women in disadvantaged groups have SBA coverage rates of less than 50% [2]. 

The definition of health inequity by Margaret Whitehead described disparities in health that are "not only unnecessary and avoidable but, in addition [...] unfair and unjust" and that have adverse effects on already disadvantaged groups within a population [13, 14]. In addition, these health differences are systematic and not occasional or sporadic [14]. In evaluating preventable maternal mortality and intrapartum care by SBAs globally as an indicator for maternal health, it is therefore important to assess the characteristics of women who are and who are not attended by an SBA at childbirth. This will allow for identification of possible determinants of inequity, development of potential interventions to address disadvantages and progress towards increased equity in maternal health. 

2		
3	Study objectives and rea	search questions
4		·
5	The objectives of this stu	udv are to:
5	•	stematic review of literature on intrapartum care by a SBA at ch
7	-	the extent of inequity that exists globally.
8		rminants of inequity globally in intrapartum care by SBAs at the
9	•	ross regions and countries.
)		oss regions and countries.
	Our rouiou cooke to one	was the following seconds avertices 1) To what extent does in
1		wer the following research questions: 1) To what extent does in
2		BA exist globally? 2) What are determinants or themes of inequ
3	emerge globally and acr	oss countries and regions?
4		
5	METHODS AND ANALYS	ils
5		
7	Study registration	
8		s registered with the Prospero database (registration number:
9	•	of registration: 26/06/2017).
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2	Study Design	
3	Study Design	
	The study we sthed if so th	is a stand to a family of the set of the set of the Desferred Day
4	•	his systematic review was developed based on the Preferred Rep
5	•	views and Meta-Analyses with equity extension (PRISMA-E 2012
6	•	d Reporting Items for Systematic review and Meta-Analysis Prot
7	•	he Cochrane Collaboration (Cochrane Handbook for Systematic
8		plementary File 1 for the PRISMA-E 2012 Checklist and Suppleme
9	File 2 for the PRISMA-P	2015 Checklist. The literature search will follow the four-step flo
)	diagram outline in the P	RISMA statement [17].
1		
2	Study Eligibility Criteria	
3	- •	
4	Inclusion Criteria	
5		
5	Our research objectives	will be assessed and studies selected based on criteria presente
7	Table 1.	
8		
9		
/	Table 1: Systematic revi	ew inclusion criteria
	Population	Women of reproductive age who experienced childbirth within the specified timeframe of an individual study.
	Intervention	Intrapartum care by SBA or institutional deliveries.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	
20 21 22 23 24 25 26 27 28 29 30 31 23 34 35 36 37 38 9 40 41 23 44 50 51 23 54 55 67 89 20 50 57 58 90 50 57 58 50 50 50 50 50 50 50 50 50 50 50 50 50	180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206

Comparison	Utilization of non- SBA birth attendants or traditional birth attendants at the time of childbirth as well as unattended births.
Outcome	Evaluation of inequity in provision of intrapartum care by SBA at the time of childbirth with quantitative evaluation of determinants of inequity.
Study design	All observational quantitative studies (including but not limited to prospective and retrospective cohort studies, cross-sectional studies, mix-methods studies).
Context	All countries with health facility and/or community-based services offering childbirth care. Years of publication ranging from 1/1/2004 to the time of this study.
Population	
FUUUIAUUUI	
The population selector childbirth within the s	ed for this review include women of reproductive age who experience cope of each individual research study. Surrogate search terms for thi naternity care, pregnancy, childbirth, intrapartum care and obstetrics
The population selector childbirth within the s	cope of each individual research study. Surrogate search terms for thi naternity care, pregnancy, childbirth, intrapartum care and obstetrics
The population selecter childbirth within the s population centre on a ntervention/Compari Studies reporting intra- skilled or traditional b review. Intrapartum ca ncludes immediate po SBA may be indicated whether or not a worn a proxy for SBA since to accreditation are curre SBA is defined as a ski skills proficient to pro- pof improving materna evaluate the qualificat	cope of each individual research study. Surrogate search terms for thi naternity care, pregnancy, childbirth, intrapartum care and obstetrics
The population selector childbirth within the s population centre on a ntervention/Compari Studies reporting intra skilled or traditional b review. Intrapartum co ncludes immediate po SBA may be indicated whether or not a worn a proxy for SBA since to accreditation are curro SBA is defined as a ski skills proficient to pro- pof improving materna	cope of each individual research study. Surrogate search terms for thi maternity care, pregnancy, childbirth, intrapartum care and obstetrics son partum care by SBA with or without comparison to utilization of non- irth attendants as well as unattended births will be included in this are is defined as care during the labour and childbirth of a woman wh ost-delivery care around the third stage of labour. Intrapartum care by with presence of SBA at the time of childbirth or by access to SBA an chooses to utilize care by an SBA. Institutional delivery may be use he concept of SBA and their skill level, competency, education and ently inconsistent across countries [9, 11]. For the purposes of this stu- led health professional who is qualified by education and training and vide intrapartum and immediate postpartum interventions with the ge and newborn health [8]. The purpose of this study, however, is not to

1		Protocol 7
1 2		
3	207	We will include studies evaluating inequity in intropartum care by an CDA. Alternative search
4		We will include studies evaluating inequity in intrapartum care by an SBA. Alternative search
5	208	terms include but are not limited to disparities, inequality and barriers to care. Given the moral
6	209	imperative of the word equity, additional search terms such as social justice will also be utilized
7	210	[20]. Based on prior reviews of inequity in maternal care, determinants of inequity are
8 9	211	hypothesized to include demographic, socioeconomic, reproductive and geographic factors [12,
10	212	21-23]. For the purposes of this review, studies will be included if they compare at least two
11	213	populations by one or more indicators. PROGRESS Plus, an established framework for socio-
12	214	demographic factors that may contribute to inequity in health, is an acronym that stands for
13	215	place of residence, race/ethnicity/culture and language, occupation, gender/sex, religion,
14	216	education, socioeconomic status, social capital while 'Plus' adds three additional context-
15 16	217	specific factors including personal characteristics that attract discrimination, features of
17	218	relationships, and time-dependent relationships [24-26]. The PROGRESS Plus framework has
18	219	been adapted for the purposes of this project to include indicators specific to gender, sexual
19	220	and reproductive health, including key indicators of the Global strategy for Women's, Children's
20	221	and Adolescents' Health (2016-2030), and Strategies towards Ending Preventable Maternal
21 22	222	Mortality (EPMM) core maternal health indicators [27-34].
22	223	
24	224	
25	225	Study design
26	226	
27	220	All observational quantitative or semi-quantitative studies of any design will be included if they
28 29	228	evaluate inequity in intrapartum care by SBAs which includes barriers to care, disparities, or
30	228	similar.
31	229	sirinal.
32	230	
33	231	Context
34 35	232	Context
36	233 234	Studies of all languages and across all settings with health facility and /or community based
37		Studies of all languages and across all settings with health facility and/or community-based
38	235	services offering childbirth care will be eligible for inclusion. Studies published from 2004 until
39	236	the time of this review will be considered given the increased global interest in maternal health
40 41	237	and SBAs after the United Nations' Millennium Declaration in 2000 and establishment of the
41	238	Millennium Development Goals and WHO, ICM and FIGO's joint statement on the importance
43	239	of SBAs in 2004 [8, 35].
44	240	
45	241	
46 47	242	Exclusion Criteria
47 48	243	
49	244	Articles will not be eligible for inclusion if:
50	245	1. There are no details regarding determinants that may indicate inequity (e.g.
51	246	demographic factors, socioeconomic factors, reproductive history, geography, etc.)
52	247	2. Only qualitative data is collected
53 54	248	3. They are systematic reviews
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60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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#### 254 Search strategy

In order to answer our research questions, a search for all literature based on related search terms will be conducted using the following online bibliographic databases: PubMed/MEDLINE, CINAHL Complete, POPLINE, the Cochrane Database of Systematic Reviews and the WHO Global Index Medicus (GIM). In addition, a manual search of bibliographic references of retrieved studies and systematic reviews as well as gray literature of international organizations and websites relevant to the field of maternal and child health will be conducted, including, but not limited, to National Institute for Health and Clinical Excellence (NICE); National Institute of Health (NIH); United Nations Children's Fund (UNICEF); United Nations Population Fund (UNFPA); WHO. The search will be inclusive of all languages and will be conducted with specific search terms related to 1) Childbirth; 2) SBA, non-SBA, facility and non-facility deliveries; 3) Equity; 4) Utilization of care or access. Please see Supplementary File 3 for the detailed search strategy for PubMed/Medline and the Cochrane Database of Systematic Reviews. 

## 270 Study Selection

Following a comprehensive and detailed literature search, all duplicate articles will be removed. A team of two (AK/ABM) will screen titles and abstracts of retrieved studies for relevance and eligibility for inclusion. Disagreements will be resolved by an additional reviewer (DC). All study abstracts selected for inclusion will then undergo an independent full-text review with similar methodology. All chosen full-text articles will then be evaluated again for inclusion based on inclusion and exclusion criteria by all co-authors and studies that do not meet the criteria will be eliminated from the study. Disagreements will be resolved by mutual agreement. Full-text articles in languages other than English will be translated. 

# 282 Data Extraction

A standardized data collection form was used as a template for development of a data extraction form for this review [36]. Study details collected include but are not limited to study characteristics (country, year and journal of publication, study design and dates), population and setting (population description, setting description, inclusion/exclusion criteria, sample size), intervention (SBA and non-SBA cadres, facility description), equity measures (primary outcome, determinants, results, study quality and conclusions). During the review additional fields on the data extraction form will allow for flexibility for additional data points or determinants as needed. Two reviewers will independently extract data from the selected

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2		
3	292	studies and discrepancies will be discussed with a third reviewer. Please see Supplementary File
4	293	4 for the data extraction form.
5	294	
6 7	295	
8		Calentific Quality Account
9	296	Scientific Quality Assessment
10	297	
11	298	The risk for study bias will be assessed based on STROBE statement criteria for observational
12	299	studies [37, 38]. Study methodology will be classified as strong, moderate, or weak. Two
13	300	reviewers (AK/ABM) will independently evaluate each study and will resolve conflicts by
14 15	301	reviewing the articles together. Degree of study bias will be reported in the results.
15 16	302	
17	303	Analysis plan
18	304	
19	305	We will evaluate quantitative measures of relations between possible determinants of inequity
20	306	and intrapartum care by SBA or institutional delivery. Results reported in published studies may
21	307	include proportions, means, percentages, rates or other quantifiable differences between two
22 23	308	or more groups. Methodology for analysing health disparities will be followed according to
23 24	309	published guidelines [39, 40]. All research studies reporting secondary analyses of nationally-
25	310	representative household surveys will be reviewed and only studies reporting the most recent
26	311	survey from an individual country will be considered. Sub-analyses may include evaluation of
27		
28	312	inequity based on different measures of intrapartum care by SBA intrapartum care or
29	313	institutional deliveries. Results will be stratified based on WHO, World Bank Group income and
30 31	314	SDG regional groupings [41-43]. Data will be presented in tables by study, country, region
32	315	and/or theme.
33	316	
34	317	
35	318	
36 27	319	DISSEMINATION AND ETHICS
37 38	320	
39	321	This systematic review will provide information regarding equity and determinants of inequity
40	322	in intrapartum care by SBAs globally. It will inform the development of indicators for monitoring
41	323	and evaluation of inequity in intrapartum care by SBAs globally, which is pertinent given the
42	324	higher level of inequality reported with this maternal health intervention [12]. This work is also
43	325	especially relevant given the current effort to revise the definition for SBA and measuring tools
44 45	326	by collaborating international and professional organizations. This work will also guide
46	327	establishment of global policy on health equity specifically related to intrapartum care by SBA
47	328	and maternal mortality. The provision and presence of SBAs and utilization and access to their
48	329	services is essential in decreasing maternal and newborn mortality globally.
49	330	services is essential in decreasing maternal and newborn mortainty globally.
50	331	Final study results will be discominated via a near reviewed publication, which will include all
51 52		Final study results will be disseminated via a peer-reviewed publication, which will include all
52 53	332	supplemental materials on search strategy, data extraction, compilation and analysis. This
54	333	systematic review is a secondary analysis of previously published literature and therefore does
55	334	not require ethics review and approval.
56	335	
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58 59		
60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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LIST OF ABREVIATIONS: FIGO: International Federation of Gynaecology and Obstetrics; EPMM: Strategies towards Ending Preventable Maternal Mortality; GIM: WHO Global Index Medicus; ICM: International Confederation of Midwives; LMICs: Low- and middle-income countries; MeSH: Medical subject FUNDING 

**DATA SHARING STATEMENT** 

headings; MDGs: Millennium Development Goals; NICE: National Institute for Health and Clinical Excellence; NIH: National Institute of Health; PRISMA: Preferred reporting items for systematic reviews and meta-analyses; PRISMA-E: Preferred reporting items for systematic reviews and meta-analyses with equity extension; SBA: Skilled birth attendant; SDGs: Sustainable Development Goals; STROBE: Strengthening the reporting of observational studies in epidemiology; UNICEF: United Nations Children's Fund; UNFPA: United Nations Population Fund; WHO: World Health Organization. **AUTHORS CONTRIBUTIONS** 

DC is the guarantor of this review. AK, ABM, DC and LS contributed to the initial conception and design of this systematic review. AK, ABM, TA and DC developed the search strategies. AK drafted the proposal manuscript. All authors participated in critically revising the protocol for intellectual content. All authors read and approved the final manuscript.

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# **COMPETING INTERESTS STATEMENT**

None declared. The authors alone are responsible for the views expressed in this article and they do not necessarily represent the views, decisions or policies of the funding bodies or institutions with which they are affiliated.

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3	379	All data generated or analyzed during this study will be included in the published article and its
4	380	supplementary information files.
5 6	381	
7	382	
8	383	SUPPLEMENTARY FILES
9	384	SOFFLEMENTANT HELS
10		
11	385	Supplementary File 1:
12	386	- File name: SUPPLEMENTARY FILE 1
13	387	- File format: .pdf
14 15	388	<ul> <li>Title of data: PRISMA-E 2012 Checklist - Equity and intrapartum care by skilled birth</li> </ul>
16	389	attendant globally: protocol for a systematic review
17	390	<ul> <li>Description of data: PRISMA-E 2012 Checklist for this systematic literature review</li> </ul>
18	391	proposal.
19	392	
20	393	Supplementary File 2:
21	394	- File name: SUPPLEMENTARY FILE 2
22	395	
23 24		
24 25	396	- Title of data: PRISMA-P (Preferred Reporting Items for Systematic review and Meta-
26	397	Analysis Protocols) 2015 checklist - Equity and intrapartum care by skilled birth
27	398	attendant globally: protocol for a systematic review
28	399	<ul> <li>Description of data: PRISMA-P 2015 Checklist for this systematic literature review</li> </ul>
29	400	proposal.
30	401	
31 22	402	Supplementary File 3:
32 33	403	- File name: SUPPLEMENTARY FILE 3
34	404	- File format: .pdf
35	405	- Title of data: Equity and intrapartum care by skilled birth attendant globally: search
36	406	strategy for PubMed/Medline and the Cochrane Database of Systematic Reviews
37	407	<ul> <li>Description of data: Search strategies for Pubmed/Medline and the Cochrane Database</li> </ul>
38	408	of Systematic Reviews.
39		of systematic reviews.
40 41	409	
42	410	Supplementary File 4:
43	411	- File name: SUPPLEMENTARY FILE 4
44	412	- File format: .pdf
45	413	<ul> <li>Title of data: Equity and intrapartum care by skilled birth attendant globally: data</li> </ul>
46	414	extraction form
47	415	<ul> <li>Description of data: Data extraction form for this systematic review.</li> </ul>
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#### Protocol 12

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PRISMA-E 2012 Checklist - Equity and intrapartum	care by skilled birth attendant globally: protocol for a s	ystematie review

Section	Item	Reporting Equity-Focused Systematic Reviews Standard PRISMA Item	Extension for Equity-Focused Reviews	Pg #
Section	nem			rg #
Title				
Title	1	Identify the report as a systematic review, meta-analysis, or both.	dentify equity as a focus of the review, if relevant, using t腹 term equity	1
Abstract			State research question(s) related to health equity N	
Structured	2	2. Provide a structured summary including, as applicable: background; objectives;		5
summary		data sources; study eligibility criteria, participants, and interventions; study appraisal		
		and synthesis methods; results; limitations; conclusions and implications of key	26	
		findings; systematic review registration number.	3	
	2A		Present results of health equity analyses (e.g. subgroup an gyses or meta-regression).	Not applicable for
			2	protocol
	2B		Describe extent and limits of applicability to disadvantaged populations of interest.	Not applicable for
				protocol
troduction			Q	
Rationale	3	Describe the rationale for the review in the context of what is already known.	Describe assumptions about mechanism(s) by which the ingervention is assumed to	4
			have an impact on health equity.	
	3A		Provide the logic model/analytical framework, if done, to so the pathways through	
			which the intervention is assumed to affect health equity and how it was developed.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to	Describe how disadvantage was defined if used as criterion $\overline{\mathcal{B}}$ in the review (e.g. for	5-7
		participants, interventions, comparisons, outcomes, and study design (PICOS).	selecting studies, conducting analyses or judging applicabi $\mathbf{ar{B}}$ y).	
	4A		State the research questions being addressed with referen 🙀 to health equity	5
Methods			<u>p</u>	
Protocol and	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web	b i	5
registration		address), and, if available, provide registration information including registration	mjo	
		number.	No. State St	
Eligibility criteria	6	6. Specify study characteristics (e.g., PICOS, length of follow-up) and report	Describe the rationale for including particular study design prelated to equity research	า 5-7
		characteristics (e.g., years considered, language, publication status) used as criteria	questions.	
		for eligibility, giving rationale.	t n the second s	
	6A		Describe the rationale for including the outcomes - e.g. hor these are relevant to	6-7
			reducing inequity.	
Information	7	Describe all information sources (e.g., databases with dates of coverage, contact	Describe information sources (e.g. health, non-health, and grey literature sources) that	at 7-8
sources		with study authors to identify additional studies) in the search and date last	were searched that are of specific relevance to address the quity questions of the	
		searched.	review.	
Search	8	Present full electronic search strategy for at least one database, including any limits	Describe the broad search strategy and terms used to address equity questions of the	See Supplementa
		used, such that it could be repeated.	review.	File 2
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in	2024	5-7
		systematic review, and, if applicable, included in the meta-analysis).		
Data collection	10	Describe method of data extraction from reports (e.g., piloted forms, independently,	by	8
process		in duplicate) and any processes for obtaining and confirming data from	jo j	See Supplementa
		investigators.	l	File 3
Data items	11		List and define data items related to equity, where such data were sought (e.g. using	6-8
		and any assumptions and simplifications made.	PROGRESS-Plus or other criteria, context).	See Supplementa
			o te	File 3
Risk of bias in	12	Describe methods used for assessing risk of bias of individual studies (including		8
individual studies		specification of whether this was done at the study or outcome level), and how this	e Q	See Supplementa
		information is to be used in any data synthesis.	cted by	File 3
Summary	13	State the principal summary measures (e.g., risk ratio, difference in means).	Q Q	9
measures				See Supplementa
			copyright	File 2
	1		<u> </u>	-

# BMJ Open PRISMA-E 2012 Checklist - Equity and intrapartum care by skilled birth attendant globally: protocol for a systematiereview

	including measures of consistency (e.g., $I^2$ ) for each meta-analysis.	Describe methods of synthesizing findings on health inequifies (e.g. presenting both relative and absolute differences between groups).	8-9 See Supplementar
15	15. Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	17-01992	File 3 8 See Supplementar File 3
16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses,	Describe methods of additional synthesis approaches related to equity questions, if	9
	meta-regression), if done, indicating which were pre-specified.		
		00	
17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.		Not applicable (protocol)
18	For each study, present characteristics for which data were extracted (e.g., study	Present the population characteristics that relate to the eduty questions across the	Not applicable
	size, PICOS, follow-up period) and provide the citations.	relevant PROGRESS-Plus or other factors of interest.	(protocol)
19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Do	Not applicable (protocol)
20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Vnloade	Not applicable (protocol)
21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Present the results of synthesizing findings on inequities (see 14).	Not applicable (protocol)
22	Present results of any assessment of risk of bias across studies (see Item 15).		Not applicable (protocol)
23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses,	Give the results of additional synthesis approaches related to equity objectives, if	Not applicable
			(protocol))
24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and padiac makers)	pen.b	Not applicable (protocol)
25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level		Not applicable (protocol)
26	Provide a general interpretation of the results in the context of other evidence, and	Present extent and limits of applicability to disadvantaged populations of interest and describe the evidence and logic underlying those judgments.	Not applicable (protocol)
26A		Provide implications for research, practice or policy related to equity where relevant (e.g. types of research needed to address unanswered questions).	Not applicable (protocol)
		024	
27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	t by g	10
	7 8 9 0 1 2 3 4 5 6 6 6 6 7	<ul> <li>meta-regression), if done, indicating which were pre-specified.</li> <li>Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.</li> <li>For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.</li> <li>Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).</li> <li>For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.</li> <li>Present results of each meta-analysis done, including confidence intervals and measures of consistency.</li> <li>Present results of any assessment of risk of bias across studies (see Item 15).</li> <li>Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).</li> <li>Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).</li> <li>Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).</li> <li>Provide a general interpretation of the results in the context of other evidence, and mplications for future research.</li> <li>Poscribe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.</li> </ul>	6       Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.       Describe methods of additional synthesis approaches related to equity questions, if done, indicating which were pre-specified.         7       Sive numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.       Present the population characteristics that relate to the explicit questions across the relevant PROGRESS-Plus or other factors of interest.         8       for each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.       Present the population characteristics that relate to the explicit questions across the relevant PROGRESS-Plus or other factors of interest.         9       Present tata on risk of bias of each study and, if available, any outcome level assessment (see item 12).       Present results of additional synthesis approaches related to equity outpetities (see item 12).         0       for all outcomes considered (benefits or harms), present, for each study; (a) simple summary data for each intervention group (b) effect estimates and confidence intervals and measures of consistency.       Present results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see item 16]).         10       Sive results of additional analyses, if done (e.g., sensitivity or subgroup analyses, and policy makers).       Sive the results of additional synthesis approaches related to equity objectives, if done, (see 16).         11       Present result

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		BMJ Open Cerred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: cematic review protocol* Equity and intrapartum care by skilled birth attendant globally: pr	
Section and topic	Ite m No	ay	Page number
	110	ADMINISTRATIVE INFORMATION	
Title: Identification	1a	Identify the report as a protocol of a systematic review	1
Update		If the protocol is for an update of a previous systematic review, identify as such	N/A
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	
Authors: Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of author	corresponding 5
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	1
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list otherwise, state plan for documenting important protocol amendments	t changes; N/A
Support: Sources Sponsor	5b	Indicate sources of financial or other support for the review Provide name for the review funder and/or sponsor Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	10 10
Role of sponsor or funder	50	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	1, 10
		· · · · · · · · · · · · · · · · · · ·	
Rationale	6	Describe the rationale for the review in the context of what is already known	4
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, intervention and outcomes (PICO)	ns, comparators, 5-7
		METHODS &	
Eligibility	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such	n as years 5-7

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criteria	considered, language, publication status) to be used as criteria for eligibility for the review	
Information sources	<ul> <li>9 Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage</li> <li>9 Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage</li> </ul>	7-8
Search strategy	10 Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	See Supplementary F 2
Study records: Data management	11a Describe the mechanism(s) that will be used to manage records and data throughout the review	8
Selection process	11b State the process that will be used for selecting studies (such as two independent reviewers) through each place of the review (that is, screening, eligibility and inclusion in meta-analysis)	8
Data collection process	11c Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	8 See Supplementary F 3
Data items	12 List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-pinned data assumptions and simplifications	See Supplementary F 3
Outcomes and prioritization	13 List and define all outcomes for which data will be sought, including prioritization of main and additional of terms, with rationale	9 See Supplementary F 3
Risk of bias in individual studies	14 Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be gone at the outcome or study level, or both; state how this information will be used in data synthesis	8 See Supplementary F 3
Data synthesis	15a Describe criteria under which study data will be quantitatively synthesised	N/A (not a meta analysis)
	15b If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I <sup>2</sup> , Kendall's τ)	N/A (not a meta analysis)
	15c Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	9
Meta-bias(es)	16 Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	8
Confidence in cumulative evidence	17 Describe how the strength of the body of evidence will be assessed (such as GRADE)       E         2       E	N/A
for important of	recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Haboration (cite wh larification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISM Id by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.	ien available) MA-P (includin

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19 of 40	BMJ Open	6/bmjope
	BMJ Open From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.	22 on
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		http://bmjopen.bmj.com/ on April 20, 2024 by guest
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## SUPPLEMENTARY FILE 3: Equity and intrapartum care by skilled birth attendant globally: search strategy for PubMed/Medline and the Cochrane Database of Systematic Reviews

#### 1. Pubmed / MEDLINE search

#	Section	Search Terms
#	Section	Search Terms
1	Childbirth	"parturition" [MeSH] OR "Delivery, Obstetric" [MeSH] OR "Perinatal Care" [MeSH] OR "Pregnancy Outcome" [MeSH] OR "Pregnancy Complications" [MeSH] OR "Labor, Obstetric" [MeSH] OR "Obstetrics" [MeSH] OR "Postpartum Period" [MeSH] OR "Maternal Health Services" [MeSH] OR "Women's Health Services" [Mesh] OR "Reproductive Health Services" [Mesh] OR "Pregnant Women" [Mesh] OR "Pregnancy" [Mesh] OR "Maternal Death" [Mesh] OR "Maternal-Fetal Relations" [Mesh] OR "Maternal Death" [Mesh] OR "Maternal Mortality" [Mesh] OR "Maternal Behavior" [Mesh] OR "maternal behaviour" [MeSH] OR "pregnant" [TIAB] OR "pregnancy" [TIAB] OR "Maternal' [TIAB] OR "perinatal" [TIAB] OR "peri-natal" [TIAB] OR "Maternativ" [TIAB] OR "post natal" [TIAB] OR "peri-natal" [TIAB] OR "Postpartum" [TIAB] OR "antenatal" [TIAB] OR "ante-natal" [TIAB] OR "birth" [TIAB] OR "intrapartum" [TIAB] OR (labour[TI] AND delivery[TI]) OR (labor[TI] AND delivery[TI]) OR "maternal health" [TIAB] OR "cesarean" [TIAB] OR "cesarean" [TIAB] OR "c-section" [TIAB] OR "cesarean" [TIAB] OR "cesarean" [TIAB] OR "signal functions" [TIAB] OR "obstetric interventions" [TIAB] OR "cesarean section" [TIAB] OR "emergency obstetric" [TIAB] OR "emergency obstetric care" [TIAB] OR "emergency newborn care" [TIAB] OR "signal functions" [TIAB] OR "emergency newborn care" [TIAB] OR "essential obstetric care" [TIAB] OR "vaginal delivery" [TIAB] OR "enormal delivery" [TIAB] OR "EmOC" [TIAB] OR "vaginal delivery" [TIAB] OR "normal delivery" [TIAB]
2	Cadre/Facility Name	delivery"[TIAB] "Health Personnel"[MeSH] OR Midwifery[MeSH] OR Obstetric Nursing[MeSH] OR "Professional Practice"[MeSH] OR "Emergency Responders"[MeSH] OR "Health Occupations"[Mesh] OR "Allied Health Occupations"[Mesh] OR "Students, Health Occupations"[Mesh] OR "Schools, Health Occupations"[Mesh] OR "Health Manpower"[Mesh] OR "health auxiliary"[TIAB] OR "health care manpower"[TIAB] OR "hospital personnel"[TIAB] OR "medical personnel"[TIAB] OR "health care personnel"[TIAB] OR "nursing home personnel"[TIAB] OR "paramedical personnel"[TIAB] OR "Health care workers"[TIAB] OR "Health care worker"[TIAB] OR "Medical Staff"[TIAB] OR "medical personnel"[TIAB] OR "General Practitioners"[TIAB] OR "General Practitioner"[TIAB] OR Caregiver*[TIAB] OR Nurses[TIAB] OR Nurse[TIAB] OR Midwive[TIAB] OR midwives[TIAB] OR midwife[TIAB] OR "Nursing Staff"[TIAB] OR "nurse midwife"[TIAB] OR "nurse midwives"[TIAB] OR "Medical students"[TIAB] OR "nurse-midwives"[TIAB] OR auxiliary[TIAB] OR "Medical students"[TIAB] OR "Nursing students"[TIAB] OR (health*[TI] AND worker*[TI]) OR "Community Health Workers"[TIAB] OR "skilled health OR "Community Health Worker"[TIAB] OR obstetricians[TIAB] OR "skilled health

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		<ul> <li>manpower"[TIAB] OR "skilled delivery"[TIAB] OR "skilled staff"[TIAB] OR "skilled</li> <li>person"[TIAB] OR "skilled birth personnel"[TIAB] OR "skilled health workers"[TIAB]</li> <li>OR "skilled health care worker"[TIAB] OR "assistance at birth"[TIAB] OR "attendant"[TIAB]</li> <li>OR "SAB"[TIAB] OR "SAA"[TIAB] OR "assistance at birth"[TIAB] OR "health care</li> <li>worker"[TIAB] OR "seart[TIAB] or cadre[TIAB] or cadres[TIAB] OR "health care</li> <li>worker"[TIAB] OR "health care person"[TIAB] OR "health person"[TIAB] OR "health care</li> <li>worker"[TIAB] OR "health care person"[TIAB] OR "health aide"[TIAB] OR "health aides"[TIAB] OR "health provider"[TIAB] OR "care providers"[TIAB] OR "health aides"[TIAB] OR "health aides"[TIAB] OR "health aides"[TIAB] OR "health attendant"[TIAB] OR "health attendant"[TIAB] OR "health attendant"[TIAB] OR "feldsher"[TIAB] OR "clinical officers"[TIAB] OR "health assistant"[TIAB] OR "medical officer"[TIAB] OR "medical officer"[TIAB] OR "medical officers"[TIAB] OR "mid-level</li> <li>provider"[TIAB] OR "medical officer"[TIAB] OR "mid-level cadres"[TIAB] OR "mid-level</li> <li>provider"[TIAB] OR "medical officer"[TIAB] OR "mid-level cadres"[TIAB] OR "mid-level</li> <li>provider"[TIAB] OR "community-based skilled birth</li> <li>attendants"[TIAB] OR "community-based skilled birth</li> <li>attendants"[TIAB] OR "community-based skilled birth</li> <li>attendants"[TIAB] OR "health visitor"[TIAB] OR "non-physicians"[TIAB] OR</li> <li>"non-physicians"[TIAB] OR "non-physician"[TIAB] OR "non-physicians"[TIAB] OR "non-physicians"[TIAB] OR</li> <li>"none-physicians"[TIAB] OR "non-physicians"[TIAB] OR "nomeker*[TIAB] OR</li> <li>"none-physicians"[TIAB] OR "non-physicians"[TIAB] OR "nomeker*[TIAB] OR</li> <li>"non-physicians"[TIAB] OR "non-physicians"[TIAB] OR "nomeker*[TIAB] OR</li> <li>"non-physicians"[TIAB] OR "non-physicians"[TIAB] OR</li> <li>"non-physicians"[TIAB] OR "non-physicians"[TIAB] OR</li> <li>"</li></ul>
3	Equity	"doulas"[All Fields] OR "doula"[All Fields]         "Health Status Disparities"[Mesh] OR "Health Equity"[Mesh] OR "Healthcare         Disparities"[Mesh] OR "Social Justice"[Mesh] OR "Social responsibility"[Mesh] OR         "social values"[Mesh] OR "Human Rights"[Mesh] OR "Socioeconomic

23	
4 5 6 7 8 9 10	
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11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	
29 30 31	
30 31 32 33 34 35 36 37 38	
35 36 37	
38 39 40	
41 42	
43 44 45	
46 47 48	
49 50 51	
52 53 54	
55 56	
57 58 59	
60	

		care"[MeSH Terms] OR "Health services needs and demand"[MeSH Terms] OR
		"Primary health care" [Mesh] OR "patient acceptance of health care" [Mesh] OR
		"Health knowledge attitudes practice" [Mesh] OR "health promotion" [Mesh] OR
		"delivery of health care"[Mesh] OR "health behavior"[Mesh] OR "health
		behaviour"[MeSH] OR "attitude to health"[Mesh] OR "personal autonomy"[Mesh]
		OR "attitude of health personnel" [Mesh] OR access [All Fields] OR accessibility [All
		Fields] OR "utilization"[Subheading] OR "utilisation"[Subheading] OR
		"utilization"[All Fields] OR "utilisation"[All Fields] OR "use"[All Fields]) OR
		"coverage"[All Fields] OR "health services"[MeSH Terms] OR "access to health
		care"[All Fields]) OR "delivery of health care"[MeSH Terms] OR "health
		services"[All Fields] OR "health facilities"[All Fields] OR "obstetric delivery"[All
		Fields] OR "delivery"[All Fields] OR "health care surveys"[Mesh] OR "needs
		assessment"[Mesh] OR "health care costs"[Mesh] OR "mental health
		services"[Mesh] OR "mental disorders"[Mesh] OR "health services
		research"[Mesh] OR "outcome assessment health care"[Mesh] OR "quality
		assurance health care"[Mesh] OR "rural health services"[Mesh] OR "social
		support"[Mesh] OR "insurance coverage"[Mesh] OR "community health
		services"[Mesh] OR "health education"[Mesh]
5	1 AND 2 AND 3	AND 4 AND Filter: Publication date from 2004/01/01 to present.
2. (	Cochrane Centra	al search

#### 2. Cochrane Central search

ID	Search Hits
#1	MeSH descriptor: [Parturition] explode all trees 266
#2	MeSH descriptor: [Delivery, Obstetric] explode all trees 4852
#3	MeSH descriptor: [Pregnancy] explode all trees 5608
#4	MeSH descriptor: [Maternal-Fetal Relations] explode all trees 14
#5	MeSH descriptor: [Maternal Mortality] explode all trees 124
#6	MeSH descriptor: [Maternal Health Services] explode all trees 1994
#7	MeSH descriptor: [Postpartum Period] explode all trees 1349
#8	MeSH descriptor: [Cesarean Section] explode all trees 2839
#9	MeSH descriptor: [Emergency Medical Services] explode all trees 🔨 3652
#10	MeSH descriptor: [Perinatal Mortality] explode all trees 45
#11	MeSH descriptor: [Vacuum Extraction, Obstetrical] explode all trees 81
#12	MeSH descriptor: [Obstetrical Forceps] explode all trees 53
#13	MeSH descriptor: [Vaginal Birth after Cesarean] explode all trees 58
#14	MeSH descriptor: [Labor, Obstetric] explode all trees 1945
#15	MeSH descriptor: [Obstetric Labor Complications] explode all trees 2697
#16	MeSH descriptor: [Prenatal Care] explode all trees 1302
#17	MeSH descriptor: [Prenatal Diagnosis] explode all trees 1071
#18	"maternal mortality":ti,ab,kw(Word variations have been searched) 435
#19	delivery:ti,ab,kw (Word variations have been searched) 25934
#20	pregnancy:ti,ab,kw (Word variations have been searched) 33283
#21	"maternal health services":ti,ab,kw (Word variations have been searched) 247
#22	vaginal delivery:ti,ab,kw (Word variations have been searched) 2532
#23	postpartum or prenatal or antenatal or antepartum:ti,ab,kw (Word variations have bee
search	•
#24	"birth":ti,ab,kw (Word variations have been searched) 16054
#25	obstetrics:ti,ab,kw (Word variations have been searched) 2287

#26	c*sarean section:ti,ab,kw (Word variations have been searched) 6986
#27	"emergency obstetric*":ti,ab,kw (Word variations have been searched) 43
#28	lab*r:ti,ab,kw (Word variations have been searched)10228
#29	childbirth*:ti,ab,kw (Word variations have been searched) 1739
#30	{or #1-#29} 69723
#31	MeSH descriptor: [Health Personnel] explode all trees 7620
#32 #33	MeSH descriptor: [Community Health Workers] explode all trees 339
#35 #34	MeSH descriptor: [Nurses] explode all trees 1158
#34 #35	MeSH descriptor: [Allied Health Personnel] explode all trees 978 MeSH descriptor: [Midwifery] explode all trees 324
#35 #36	MeSH descriptor: [Midwifery] explode all trees 324 MeSH descriptor: [Emergency Responders] explode all trees 251
#30	MeSH descriptor: [Allied Health Occupations] explode all trees 1000
#38	MeSH descriptor: [Obstetric Nursing] explode all trees 41
#39	MeSH descriptor: [Health Occupations] explode all trees 20897
#40	MeSH descriptor: [Skilled Nursing Facilities] explode all trees 60
#41	MeSH descriptor: [Physicians] explode all trees 1686
#42	MeSH descriptor: [Nurse Clinicians] explode all trees 153
#43	MeSH descriptor: [Ambulatory Care Facilities] explode all trees 1886
#44	MeSH descriptor: [Maternal-Child Health Centers] explode all trees 49
#45	MeSH descriptor: [Rural Health Services] explode all trees 336
#46	MeSH descriptor: [Community Health Centers] explode all trees 572
#47	MeSH descriptor: [Birthing Centers] explode all trees 23
#48	MeSH descriptor: [Hospitals] explode all trees 3658
#49	nurse* or doctor* or physician* or midwife or midwives:ti,ab,kw (Word variations have been
searche	
#50	"health worker*":ti,ab,kw (Word variations have been searched) 1215
#51	"birth attendant*":ti,ab,kw (Word variations have been searched) 127
#52	"skilled attendant*":ti,ab,kw (Word variations have been searched) 5
#53	"skilled assistant*":ti,ab,kw (Word variations have been searched) 1
#54	obstetrician*:ti,ab,kw (Word variations have been searched) 921
#55	practicioner*:ti,ab,kw (Word variations have been searched) 3
#56	"clinical officer*":ti,ab,kw (Word variations have been searched) 23
#57	birth centre* or birth center*:ti,ab,kw (Word variations have been searched) 2023
#58	health centre* or health center*:ti,ab,kw (Word variations have been searched) 19565
#59	"health facilit*":ti,ab,kw (Word variations have been searched) 647
#60	"health provider*":ti,ab,kw (Word variations have been searched) 253
#61	"health institution*":ti,ab,kw (Word variations have been searched) 61
#62	clinic?:ti,ab,kw (Word variations have been searched) 9489
#63	hospital?:ti,ab,kw (Word variations have been searched) 15683
#64	"birth centre?" or "birth center?":ti,ab,kw (Word variations have been searched) 31
#65	{or #31-#64} 96129
#66	MeSH descriptor: [Health Equity] explode all trees 2
#67	MeSH descriptor: [Human Rights] explode all trees 1262
#68	MeSH descriptor: [Social Justice] explode all trees 60
#69	MeSH descriptor: [Health Status Disparities] explode all trees 142
#70	MeSH descriptor: [Healthcare Disparities] explode all trees 176
#71	MeSH descriptor: [Social Responsibility] explode all trees 87
#72	MeSH descriptor: [Human Rights] explode all trees 1262
#73	MeSH descriptor: [Social Values] explode all trees 164
#74	MeSH descriptor: [Socioeconomic Factors] explode all trees 8582
#75	MeSH descriptor: [Health Status Indicators] explode all trees 19398
#76	MeSH descriptor: [Health Policy] explode all trees 724
#77	MeSH descriptor: [Social Determinants of Health] explode all trees 11
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2			
3	#78	MeSH descriptor: [Quality of Health Care] explode all trees 424055	
4	#78 #79	MeSH descriptor: [Public Health] explode all trees 408036	
5	#80	MeSH descriptor: [Global Health] explode all trees 212	
6	#81	MeSH descriptor: [Sex Factors] explode all trees 5525	
7	#81	MeSH descriptor: [Sex Pactors] explode all trees 783	
8	#83	MeSH descriptor: [Public Policy] explode all trees 784	
9	#83	MeSH descriptor: [Women's Rights] explode all trees 6	
10	#84 #85	MeSH descriptor: [Age Factors] explode all trees 9847	
11	#85		
12		MeSH descriptor: [Age Distribution] explode all trees 845	
13	#87	MeSH descriptor: [Adolescent] explode all trees 90431	
14	#88	MeSH descriptor: [Young Adult] explode all trees 266	
15	#89	MeSH descriptor: [Policy Making] explode all trees 86	
16	#90	MeSH descriptor: [Resource Allocation] explode all trees 145	
17	#91	MeSH descriptor: [Social Welfare] explode all trees 845	
18	#92	MeSH descriptor: [Patient Advocacy] explode all trees 75	
19	#93	MeSH descriptor: [Socioeconomic Factors] explode all trees 8582	
20	#94	MeSH descriptor: [Income] explode all trees 931	
21	#95	MeSH descriptor: [Poverty] explode all trees1377	
22	#96	MeSH descriptor: [Poverty Areas] explode all trees 240	
23	#97	MeSH descriptor: [Vulnerable Populations] explode all trees 220	
24	#98	MeSH descriptor: [Social Distance] explode all trees 113	
25	#99	MeSH descriptor: [Risk Factors] explode all trees 24525	
26	#100	MeSH descriptor: [Ethnic Groups] explode all trees 3695	
27	#101	MeSH descriptor: [Emigration and Immigration] explode all trees 79	
28	#102	MeSH descriptor: [Minority Groups] explode all trees 316	
29	#103	MeSH descriptor: [Developing Countries] explode all trees 1011	
30	#104	MeSH descriptor: [Social Class] explode all trees 589	
31	#105	MeSH descriptor: [Health Care Rationing] explode all trees 77	
32	#106	MeSH descriptor: [Insurance, Long-Term Care] explode all trees 5	
33	#107	MeSH descriptor: [Politics] explode all trees 48	
34	#108	MeSH descriptor: [Health Expenditures] explode all trees 332	
35	#109	MeSH descriptor: [Urban Population] explode all trees 1204	
36	#110	MeSH descriptor: [Rural Population] explode all trees //// 1249	
37	#111	MeSH descriptor: [Universal Coverage] explode all trees 7	
38	#112	MeSH descriptor: [Health Resources] explode all trees 593	
39	#113	MeSH descriptor: [Educational Status] explode all trees 1347	
40	#114	MeSH descriptor: [Residence Characteristics] explode all trees1179	
41	#115	MeSH descriptor: [Time Factors] explode all trees 59415	
42	#116	MeSH descriptor: [Religion and Medicine] explode all trees 59	
43	#117	MeSH descriptor: [Cultural Characteristics] explode all trees 157	
44	#118	MeSH descriptor: [Cultural Diversity] explode all trees 83	
45	#119	equit* or inequit*:ti,ab,kw (Word variations have been searched) 544	
46	#120	equal* or inequal*:ti,ab,kw (Word variations have been searched) 32042	
47	#121	socio-economic? or socioeconomic?:ti,ab,kw (Word variations have been searched)	559
48	#122	"unmet need?":ti,ab,kw (Word variations have been searched) 232	
49	#123	barrier?:ti,ab,kw (Word variations have been searched) 4561	
50	#124	determinant?:ti,ab,kw (Word variations have been searched) 3279	
51	#125	geographic:ti,ab,kw (Word variations have been searched) 1798	
52	#126	"risk factor?":ti,ab,kw (Word variations have been searched) 38428	
53	#127	"determinant* of health":ti,ab,kw (Word variations have been searched) 100	
54	#128	marginali*ation:ti,ab,kw (Word variations have been searched) 22	
55	#129	{or #66-#128} 498594	
56	#130	MeSH descriptor: [Health Care Quality, Access, and Evaluation] explode all trees	430323
57			-
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59			
60		For peer review only - http://bmiopen.bmi.com/site/about/guidelines.xhtml	

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

	#131 #132	MeSH descriptor: [Health Services Accessibility] explode all tr MeSH descriptor: [Health Promotion] explode all trees	ees 5485	1084		
	<b>#133</b>	MeSH descriptor: [Culturally Competent Care] explode all tree		30		
	#134 #135	MeSH descriptor: [Maternal Health Services] explode all trees				
	#135 #136	MeSH descriptor: [Quality of Health Care] explode all trees MeSH descriptor: [Medically Underserved Area] explode all tr	424055	112		
	#137	MeSH descriptor: [Health Services Needs and Demand] explo			532	
#	¥138	MeSH descriptor: [Delivery of Health Care] explode all trees	45744			
#	<b>#139</b>	MeSH descriptor: [Primary Health Care] explode all trees	6730			
	¥140	MeSH descriptor: [Patient Acceptance of Health Care] explod				
	#141	MeSH descriptor: [Health Knowledge, Attitudes, Practice] exp		rees	5020	
	#142 #143	MeSH descriptor: [Health Promotion] explode all trees MeSH descriptor: [Health Behavior] explode all trees 19176	5485			
	#144	MeSH descriptor: [Attitude of Health Personnel] explode all trees 19176	rees	2095		
	<b>#145</b>	MeSH descriptor: [Attitude to Health] explode all trees	31755			
#	<b>#146</b>	MeSH descriptor: [Personal Autonomy] explode all trees	170			
	¥147	MeSH descriptor: [Health Services] explode all trees 90269				
	#148	MeSH descriptor: [Health Services Accessibility] explode all tr		1084		
	#149 #150	MeSH descriptor: [Rural Health Services] explode all trees access:ti,ab,kw (Word variations have been searched)	336 12815			
	#150 #151	utili*ation:ti,ab,kw (Word variations have been searched)	12813			
	¥152	coverage:ti,ab,kw (Word variations have been searched)	3228			
	<b>#153</b>	"health service?":ti,ab,kw (Word variations have been search	ned)	10578		
#	<b>#154</b>	{or #130-#153} 461529				
#	<b>#</b> 155	#30 and #65 and #129 and #154 Online Publication Date from	n Jan 2004	4 to Jun 2	2017	654
		#30 and #65 and #129 and #154 Unline Publication Date from				

#### SUPPLEMENTARY FILE 4:

Equity and intrapartum care by skilled birth attendant globally: data extraction form

#### Notes:

- Please be consistent in the order and style used to enter information for each item.
- Please record missing data as unclear or missing in the study report.
- If an item is not applicable, please mark as NA.

#### General information

General Data	
1. Study ID	
<ol> <li>Date form completed (dd/mm/yy)</li> </ol>	
3. Primary author	
4. Name of reviewer	
5. Study title	2
6. Year of publication	
7. Journal	
8. Country	
9. Study funding source	
10. Conflict of interest (reviewer)	□ Yes □ No

## Study Eligibility

Study characteri	stics Eligibility criteria	Eligibil	ity criteri	Location in text	
		Yes	No	Unclear	or source (pg/fig/table)
1. Populati	on Women who experience childbirth within the sco of the specific study.				
2. Interver	ation Access to skilled care with SBA or institutional deliveries	<sup>:h</sup>			
3. Compar	ison Utilization of non-SBA bi attendants or traditional birth attendants at the ti of delivery.				
4. Outcom	e Evaluation of inequity in access to SBA at the time childbirth.				
5. Study de	esign All observational quantitative studies on human subjects (includir but not limited to prospective and retrospective cohort studies, r methods studies).	dies,			
6. Context	All countries with health facility and/or communit based services offering childbirth care.		0,		
7. Results	Quantitative results of the association between potential determinants a access to SBA				
8. Decisior	I 🗌 Include 🛛 Exc	lude			
9. Reason exclusio					
Notes:					

#### Methods

Study characteristics	
10. Aim of study	
11. Study design	
11. Study design	□ cross-sectional □ cohort □ mixed-methods
	□ other:
12. Unit of allocation	
(part/person/group)	
13. Start date (dd/mm/yy)	
14. End date	
(dd/mm/yy)	
15. Duration of participation	
(from recruitment to last follow up)	6
16. Ethics approval obtained?	□ yes □ no □ not needed
Notes:	
Population and setting	
17. Population description	
(from which study	
participants are drawn)	
18. Setting	
(including location and	
social context)	
19. Specific geographic region	
20. Inclusion criteria	
21. Exclusion criteria	
<ol> <li>Method(s) of participant recruitment</li> </ol>	
23. Informed consent?	□ yes □ no □ not needed

24. Participants (n)	
25. Subgroups (n)	SBA/institutional delivery
	TAB or other non-SBA birth attendant delivery
	Non institutional delivery
	Non-institutional delivery
	Other
Notes:	
Intervention	
Attendants at birth	
26. SBA cadre included	unurse unurse-midwife clinical officer/physician
(check all correct answers)	
	assistant 🗆 doctor 🗆 unspecified
	□ other:
27. Details of SBA care	Any additional measure (add details to note section below):
	time spent intrapartum care only postpartum care only
	□ quality of care received □ felt respected by SBA
	□ Other
28. Non-SBA cadre included	
(check all correct answers)	□ traditional birth attendant □ unspecified
	□ other:
29. Facility included (check all correct answers)	□ birth centre □ health centre □ district/local hospital
(check an correct answers)	
	□ referral/tertiary hospital □ unspecified
	□ other:
Notes:	

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#### Outcomes

Equity/inequity and Results 30. Primary outcome	
So. Filling outcome	
21 Darticipant datarminants	
31. Participant determinants included <sup>1</sup>	□ Place of residence:
(check all applicable)	Definition/stratification:
	🗆 Urban/rural/humanitarian
	Geographic distinction
	Transportation access
	Road access
	□ Race/Ethnicity/culture/language:
	Definition/stratification:
	□ Occupation:
	Definition/stratification:
	Gender:
	Employment in non-agricultural sector
	□ Children <15 years old working
	□ Gender/Sex:
	Definition/stratification:
	<u>Gender</u> :
	□ Intimate partner violence (recent/ever)

<sup>&</sup>lt;sup>1</sup> Adapted from the Progress-Plus framework; O'Neill J, Tabish H, Welch V, Petticrew M, Pottie K, Clarke M, et al. Applying an equity lens to interventions: using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. J Clin Epidemiol. 2014;67(1):56-64.

Power differential
<ul> <li>Acceptability of suggesting condom use,</li> <li>refusing sex</li> </ul>
□ Age difference of sex partner
Decision making about own health
□ Marriage/union
□ choice of spouse
$\Box$ age < 15 years old / < 18 years old
Sexual health:
□ Sex before age 15
<ul> <li>History of sexual violence (recent/ever) and or by age</li> <li>18 years</li> </ul>
History of female genital cutting
Reproductive/maternal health:
Parity/grand-multiparity
Adolescent pregnancy
Obstetrical history
self – complications/adverse outcome
other – complications/adverse outcome
☐ Four or more antenatal visits
Early postnatal/postpartum care (within 2 days)
Uterotonic immediately after birth (facility birth)
Contraception use
Religion:
Definition/stratification:
Education:
Definition/stratification:

<u>Gender</u> :
Primary/secondary/tertiary education
Literacy
Socioeconomic status:
Definition (stratification)
Definition/stratification:
Access to safely managed sanitation services (e.g
hand-washing with water and soap)
□ Children with stunting < 5 years of age
Primary reliance on clean fuels and technology
Gender:
Ownership (goods/land/bank account)
Technology use (mobile phone/internet/media)
□ Social capital:
Definition/stratification:
Definition, stratification.
Personal characteristics that attract discrimination:
Definition/stratification:
□ Young/old age
🗌 Orphan
Sex worker
Features of relationships:
Definition/stratification:

	<u>Gender</u> :
	Single/divorced/widowed
	Husband's characteristics (e.g. education, etc
	□ Other:
	□ Time-dependent relationships:
	Definition/stratification:
	Pregnant/postpartum/breastfeeding
	Humanitarian setting (e.g. refugee, internally displaced person)
	Political instability
	□ Other:
	other:
	Definition/stratification:
	other:
	Definition/stratification:
32. Systematic determinants included (check all	Maternal mortality ratio
applicable)	□ Maternal cause of death (based on ICD-MM coding)
	Maternal death registration
	Under-5 mortality rate
	Neonatal mortality rate
	Proportion of children < 5 years old with registered birt

2		
3 4		□ Stillbirth rate
5 6		C-section rate
7 8		Availability of functional Emergency Obstetric Care facilities
9 10		Adolescent mortality rate
11 12 13		□ Out-of-pocket as a percentage of total health expenditure
14 15		Current country health expenditure per capita
16 17		□ Presence of laws/regulations that guarantee SRH care
18 19	33. Participant determinants that were statistically	Place of residence:
20 21	significant (check all correct answers)	Definition/stratification:
22 23	(check un correct unswers)	0
24 25		Urban/rural/humanitarian
26 27		<ul> <li>Geographic distinction</li> <li>Transportation access</li> </ul>
28 29		Road access
30 31		Ľ.
32 33 34		□ Race/Ethnicity/culture/language:
35 36		Definition/stratification:
37 38		Ο.
39 40		Occupation:
41 42		Definition/stratification:
43 44		Gender:
45 46		Employment in non-agricultural sector
47 48		□ Children <15 years old working
49 50		
51 52 53		Gender/Sex:
55 54 55		Definition/stratification:
56 57		
58		

1	
2 3	Gender:
4 5	□ Intimate partner violence (recent/ever)
6 7	Power differential
8 9 10	□ Acceptability of suggesting condom use, refusing sex
11 12	□ Age difference of sex partner
13	Decision making about own health
14 15	☐ Marriage/union
16 17	
18 19	□ choice of spouse □ age < 15 years old / < 18 years old <u>Sexual health</u> :
20	Convel health:
21 22	Sexual health:
23 24	Sex before age 15
25	History of sexual violence (recent/ever) and or by age 18 years
26 27	History of female genital cutting
28 29	L'Instory of remain genital cutting
30	Reproductive/maternal health:
31 32	Parity/grand-multiparity
33	Adolescent pregnancy
34 35	Obstetrical history
36	□ self – complications/adverse outcome
37 38	
39 40	□ other – complications/adverse outcome
40	Four or more antenatal visits
42	Early postnatal/postpartum care (within 2 days)
43 44	Uterotonic immediately after birth (facility birth)
45	□ Contraception use
46 47	
48	□ Religion:
49 50	
51	Definition/stratification:
52 53	
54	Education:
55	
56 57	
58	

59

Definition/stratification:
<u>Gender</u> :
Primary/secondary/tertiary education
□ Literacy
Socioeconomic status:
Definition/stratification:
Access to safely managed sanitation services (e.g.
□ Access to safely managed sanitation services (e.g. hand-washing with water and soap)
hand-washing with water and soap)
□ Children with stunting < 5 years of age
Primary reliance on clean fuels and technology
Gender:
<u>dender</u> .
Ownership (goods/land/bank account)
Technology use (mobile phone/internet/media)
□ Social capital:
Definition/stratification:
Personal characteristics that attract discrimination:
Definition (stratification
Definition/stratification:
□ Young/old age
□ Orphan
□ Sex worker

	□ Features of relationships:
	Definition/stratification:
	<u>Gender</u> :
	Single/divorced/widowed
	□ Husband's characteristics (e.g. education, etc.
	□ Other:
	Time-dependent relationships:
	Definition/stratification:
	Pregnant/postpartum/breastfeeding
	☐ Humanitarian setting (e.g. refugee, internally displaced person)
	Political instability
	□ Other:
	□ other:
	Definition/stratification:
	□ other:
	Definition/stratification:
34. Systematic determinants that were statistically	Maternal mortality ratio
significant (check all correct answers)	□ Maternal cause of death (based on ICD-MM coding)
	□ Maternal death registration
	□ Under-5 mortality rate
	Neonatal mortality rate

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	$\Box$ Proportion of children < 5 years old with registered birth
	□ Stillbirth rate
	C-section rate
	Availability of functional Emergency Obstetric Care facilitie
	Adolescent mortality rate
	□ Out-of-pocket as a percentage of total health expenditure
	Current country health expenditure per capita
	$\Box$ Presence of laws/regulations that guarantee SRH care
35. Confounding factors/effect modifiers:	
	0
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	Ľ.
36. Results (specify, e.g. OR, RR, IRR)	
	2
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	21
	1

37. Limitations:			
38. Scientific quality	high	moderate	□ low
39. Conclusions of authors			
otes:			

# **BMJ Open**

# Equity and intrapartum care by skilled birth attendant globally: protocol for a systematic review

Journal:	BMJ Open
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<b>Primary Subject Heading</b> :	Global health
Secondary Subject Heading:	Obstetrics and gynaecology, Health policy
Keywords:	skilled birth attendant, maternal mortality, childbirth, health equity, health determinants, PRISMA-E

**SCHOLARONE**<sup>™</sup> Manuscripts

#### BMJ Open

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3	1	Equity and intrapartum care by skilled birth attendant globally: protocol for a systematic
4	2	review
5 6	3	
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38	29	
39	30	
40	31	
41	32	Keywords: skilled birth attendant, maternal mortality, childbirth, health equity, inequity, health
42 43	33	determinants, health policy, health access, PRISMA-E
44	34	
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59 60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

#### ABSTRACT

#### 

#### Introduction:

Equity is a cross cutting theme within the Sustainable Development Goals (SDGs) and central to the effort to improve maternal and child health globally. One key strategy to prevent maternal death set out in SDG 3 is assistance by a skilled birth attendant (SBA) at childbirth (Indicator 3.1.2). However, the increased coverage of SBAs globally has not been reflected by the same degree of decrease in maternal mortality and has been reported to have higher levels of inequality than other maternal health interventions. There is a need to evaluate the extent of inequity in intrapartum care by SBAs and evaluate themes in determinants of inequity across regions and specific country characteristics. **Methods and Analysis:** The protocol for this review follows The Cochrane Handbook for Systematic Reviews and PRISMA-E 2012 guidelines. Studies of all languages and from all countries from 2004, the year when the WHO/ICM/FIGO joint statement on SBAs was published, and onwards will be included. PubMed/MEDLINE, CINAHL Complete, Cochrane Database of Systematic Reviews, POPLINE, the WHO Global Index Medicus, and grey literature will be searched. Our primary outcome is intrapartum care by SBA. Studies will be included if they evaluate equity and its

- determinants adapted from the Progress-Plus grouping of characteristics affecting health outcomes. Results will be stratified based on WHO, World Bank Group income and SDG regional
- groupings.

#### Ethics and dissemination:

This review is a secondary analysis of published literature and does not require ethics review. Results will provide information regarding equity in intrapartum care by SBAs globally and will inform development of indicators for monitoring of inequity as well as global policy related to intrapartum care and maternal mortality. Results will be disseminated via peer-reviewed manuscript, international conferences and stakeholder websites. 

#### **Trial registration:**

This protocol was registered with the Prospero database (registration number: CRD42017069021; date: 26/06/2017).

# Word Count: 300

1		
2		
3	75	STRENGTHS AND LIMITATIONS OF THIS STUDY
4 5	76	- This systematic review aims to evaluate equity in intrapartum care by skilled birth
6	77	attendants globally, which will include specific determinants of inequity. No previous
7	78	review of quantitative studies has evaluated equity/inequity in intrapartum care by SBAs
8	79	during childbirth across the globe.
9	80	
10		- The search strategy for this review is broad and comprehensive including studies in all
11	81	languages and from all countries from multiple electronic databases, grey literature and
12	82	websites.
13	83	<ul> <li>Intrapartum care by SBA as reported in observational studies may not report important</li> </ul>
14 15	84	nuances of care including comprehensiveness of care, time spent with the individual
15 16	85	woman or quality of care.
17	86	- This literature review will evaluate a reproductive health indicator (intrapartum care by
18	87	SBA) within the context of equity/inequity with attention to and expansion of validated
19	88	tools to evaluate equity such as PROGRESS-PLUS and the PRISMA-E framework.
20	89	- This review will summarize data collected using instruments not specifically designed to
21	90	
22		evaluate equity/inequity in relation to SBA intrapartum care; however, based on available
23	91	data, it will help inform development of tools for future monitoring and evaluation of
24 25	92	heathcare and equity related to SDG indicator 3.1.2.
25 26	93	
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28	95	
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#### INTRODUCTION

Equity is a cross cutting theme within the Sustainable Development Goals (SDGs) and central to the effort to move towards improved global maternal, child and adolescent health [1,2]. Despite some progress during the Millennium Development Goals era, preventable maternal mortality especially in low- and middle-income countries (LMIC) has remained high [3,4]. There is a need to focus on inequity and underlying social and structural determinants that contribute indirectly to maternal mortality. Special attention also needs to be paid to maternal mortality among high risk groups such as adolescents and young women, particularly in humanitarian settings and in countries with armed conflict [5].

Factors associated with inequity across all countries include place of residence, gender/sex, socioeconomic status, education, as well as age. In specific regions or countries, migrant status, race, ethnicity, caste, religion can also be sources of inequity [2]. SDG 3.1 sets the target to reduce global mortality ratio to less than 70 per 100,000 live births by 2030 and one of the key strategies to prevent maternal deaths is assistance by a skilled birth attendant (SBA) at the time of childbirth, which is also reflected in the SDG Indicator 3.1.2 "Births attended by skilled health personnel (%)" [1,6,7]. The SBA is defined in the joint statement by the World Health Organization (WHO), the International Confederation of Midwives (ICM) and the International Federation of Gynaecology and Obstetrics (FIGO) as a "midwife, doctor or nurse — who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns" [8]. However, while the coverage of SBAs has increased globally, this has not been reflected in a proportional decrease in the global burden of maternal deaths. Skilled birth attendants have been found to have a variable amount of knowledge and skills and, due to inconsistencies in data reporting, the definition of a SBA is currently under review [9-12]. Nevertheless, around 50% of low- and middle- income countries report that at least 80% rate of births are attended by SBAs. This number varies across countries [12]. Inequity in SBA coverage has been found to be associated with economic status, education and place of residence and presence of SBA at birth has higher inequality rates than other maternal health interventions [12]. This disparity is especially seen in LMICs where women in disadvantaged groups have SBA coverage rates of less than 50% [2]. 

The definition of health inequity by Margaret Whitehead described disparities in health that are "not only unnecessary and avoidable but, in addition [...] unfair and unjust" and that have adverse effects on already disadvantaged groups within a population [13,14]. In addition, these health differences are systematic and not occasional or sporadic [14]. In evaluating preventable maternal mortality and intrapartum care by SBAs globally as an indicator for maternal health, it is therefore important to assess the characteristics of women who are and who are not attended by an SBA at childbirth. This will allow for identification of possible determinants of inequity, development of potential interventions to address disadvantages and progress towards increased equity in maternal health. 

2		
;	Study objectives and re	search questions
ŀ		
	The objectives of this st	udy are to:
5	1. Conduct a sy	stematic review of literature on intrapartum care by a SBA at ch
7		e the extent of inequity that exists globally.
3	•	erminants of inequity globally in intrapartum care by SBAs at the
)	childbirth ac	ross regions and countries.
)		
l	Our review seeks to ans	wer the following research questions: 1) To what extent does in
2	in intrapartum care by S	SBA exist globally? 2) What are determinants or themes of inequ
3	emerge globally and acr	ross countries and regions?
1		
5	METHODS AND ANALYS	SIS
5		
7	Study registration	
3		as registered with the Prospero database (registration number:
)	•	of registration: 26/06/2017).
)		
l		
	Study Design	
2	Study Design	
3	<del>_</del>	
1 -	•	his systematic review was developed based on the Preferred Re
5	•	views and Meta-Analyses with equity extension (PRISMA-E 2012
5	-	d Reporting Items for Systematic review and Meta-Analysis Prot
7	•	he Cochrane Collaboration (Cochrane Handbook for Systematic
3		plementary File 1 for the PRISMA-E 2012 Checklist and Supplem
)		2015 Checklist. The literature search will follow the four-step flo
)	diagram outline in the P	'RISMA statement [17].
L		
2	Study Eligibility Criteria	
3		
1	Inclusion Criteria	
5		
5 7	Our research objectives Table 1.	will be assessed and studies selected based on criteria present
3		
	Table 1: Systematic rev	iew inclusion criteria
	Population	Women of reproductive age who experienced childbirth within the specified timeframe of an individual study.
	Intervention	Intrapartum care by SBA or institutional deliveries.

Protocol 6

3       4       Comp         6       7         8       9         10       Outco         11       12         12       13         14       Study         15       Study         16       17         18       19         20       Conte         21       20         23       180         24       181         25       182       Population         26       183         27       184       The population         26       183       30         27       184       The population         30       186       this population         31       187       obstetrics.         32       188       33         33       189       34         34       190       Intervention         36       191       skilled or t         37       192       Studies rep         38       193       skilled or t         39       194       review. Int         41       195       includes in         42	1 2 3		
9       Outco         11       11         12       13         13       14         15       Study         16       17         18       19         20       Conte         21       22         23       180         24       181         25       182         26       183         27       184         28       185         29       185         21       childbirth or         30       186         41       197         31       187         35       190         1ntervention         36       191         37       192         38       193         34       190         11       195         194       review. Int         41       195         198       a proxy for         42       196         43       197         44       198         45       199         46       199         203       skills profin	6 7		Comp
13       Study         14       Study         15       Conter         17       Conter         18       Population         20       Conter         21       Population         22       180         23       181         25       182       Population         26       183       Population         26       183       Population         26       183       Population         26       183       Population         27       184       The population         28       185       childbirth         30       186       this population         31       187       obstetrics.         32       188       33         33       189       34         34       190       Intervention         36       191       Studies rep         38       193       skilled or t         39       194       review. Int         41       195       includes in         42       196       SBA may b         43       197       whether o         44	9 10 11		Outco
18       Content         19       Content         20       180         21       181         22       180         23       181         25       182       Population         26       183         27       184       The population         28       185       childbirth of         30       186       this population         30       186       this population         31       187       obstetrics.         32       188       33         33       189       34         34       190       Intervention         36       191       37         37       192       Studies rep         38       193       skilled or t         39       194       review. Int         41       195       includes in         42       196       SBA may b         43       197       whether o         44       198       a proxy for         45       199       accreditati         47       200       SBA is defi         48       201       skills profid	13 14 15 16		Study
23       180         24       181         25       182       Population         26       183         27       184       The population         28       185       childbirth y         30       186       this population         30       186       this population         30       186       this population         30       186       this population         31       187       obstetrics.         32       188       33         33       189       34         34       190       Intervention         36       191       37         37       192       Studies rep         38       193       skilled or t         39       194       review. Int         41       195       includes in         42       196       SBA may b         43       197       whether o         44       198       a proxy for         45       199       accreditati         47       200       SBA is defi         48       201       skills profid         50       203	18 19 20 21		Conte
29	$\begin{array}{c} 22\\ 23\\ 24\\ 25\\ 26\\ 27\\ 28\\ 29\\ 30\\ 31\\ 32\\ 33\\ 34\\ 35\\ 36\\ 37\\ 38\\ 940\\ 41\\ 42\\ 43\\ 44\\ 45\\ 46\\ 47\\ 48\\ 9\\ 50\\ 51\\ 52\\ 53\\ 54\\ 55\\ 56\\ 7\\ 58\end{array}$	<ul> <li>181</li> <li>182</li> <li>183</li> <li>184</li> <li>185</li> <li>186</li> <li>187</li> <li>188</li> <li>189</li> <li>190</li> <li>191</li> <li>192</li> <li>193</li> <li>194</li> <li>195</li> <li>196</li> <li>197</li> <li>198</li> <li>199</li> <li>200</li> <li>201</li> <li>202</li> <li>203</li> <li>204</li> <li>205</li> <li>206</li> </ul>	The popula childbirth this popula obstetrics. Interventio Studies rep skilled or t review. Int includes in SBA may b whether o a proxy for accreditati SBA is defi skills profie of improvi evaluate th

childbirth within the timeframe of each individual research study. Surrogate search terms for this population centre on maternity care, pregnancy, childbirth, intrapartum care and obstetrics. Intervention/Comparison Studies reporting intrapartum care by SBA with or without comparison to utilization of non- skilled or traditional birth attendants as well as unattended births will be included in this review. Intrapartum care is defined as care during the labour and childbirth of a woman whic includes immediate post-delivery care around the third stage of labour. Intrapartum care by SBA may be indicated with presence of SBA at the time of childbirth or by access to SBA whether or not a woman chooses to utilize care by an SBA. Institutional delivery may be used a proxy for SBA since the concept of SBA and their skill level, competency, education and accreditation are currently inconsistent across countries [9,11]. For the purposes of this stud SBA is defined as a skilled health professional who is qualified by education and training and skills proficient to provide intrapartum and immediate postpartum interventions with the go
Outcome         at the time of childbirth with quantitative evaluation of determinants of inequity.           Study design         All observational quantitative studies (including but not limited to prospective and retrospective cohort studies, cross-sectional studies, mix-methods studies).           Context         All countries with health facility and/or community-based services offering childbirth care. Years of publication ranging from 1/1/2004 to the time of this study.           Population         The population selected for this review include women of reproductive age who experienced childbirth within the timeframe of each individual research study. Surrogate search terms for this population centre on maternity care, pregnancy, childbirth, intrapartum care and obstetrics.           Studies reporting intrapartum care by SBA with or without comparison to utilization of non-skilled or traditional birth attendants as well as unattended births will be included in this review. Intrapartum care is defined as care during the labour and childbirth of a woman whice includes immediate post-delivery care around the third stage of labour. Intrapartum care by SBA may be indicated with presence of SBA at the time of childbirth or by access to SBA whether or not a woman chooses to utilize care by an SBA. Institutional delivery may be used a proxy for SBA since the concept of SBA and their skill level, competency, education and accreditation are currently inconsistent across countries [9,11]. For the purposes of this study SBA is defined as a skilled health professional who is qualified by education and training and skills proficient to provide intrapartum and immediate post-partum interventions with the go of improving maternal and newborn health [8]. The purpose of this study, however, is not to evaluate the qualifications, competency or skills of specific
Study design       limited to prospective and retrospective cohort studies, cross-sectional studies, mix-methods studies).         Context       All countries with health facility and/or community-based services offering childbirth care. Years of publication ranging from 1/1/2004 to the time of this study.         Population       The population selected for this review include women of reproductive age who experienced childbirth within the timeframe of each individual research study. Surrogate search terms for this population centre on maternity care, pregnancy, childbirth, intrapartum care and obstetrics.         Intervention/Comparison       Studies reporting intrapartum care by SBA with or without comparison to utilization of non-skilled or traditional birth attendants as well as unattended births will be included in this review. Intrapartum care is defined as care during the labour and childbirth of a woman whic includes immediate post-delivery care around the third stage of labour. Intrapartum care by SBA at the time of childbirth or yaccess to SBA whether or not a woman chooses to utilize care by an SBA. Institutional delivery may be used a proxy for SBA since the concept of SBA and their skill level, competency, education and accreditation are currently inconsistent across countries [9,11]. For the purposes of this study, SBA is defined as a skilled health professional who is qualified by education and training and I skills proficient to provide intrapartum and immediate postpartum interventions with the goo of improving maternal and newborn health [8]. The purpose of this study, however, is not to evaluate the qualifications, competency or skills of specific SBA cadres in each study.
Context       services offering childbirth care. Years of publication ranging from 1/1/2004 to the time of this study.         Population         The population selected for this review include women of reproductive age who experienced childbirth within the timeframe of each individual research study. Surrogate search terms for this population centre on maternity care, pregnancy, childbirth, intrapartum care and obstetrics.         Intervention/Comparison         Studies reporting intrapartum care by SBA with or without comparison to utilization of non-skilled or traditional birth attendants as well as unattended births will be included in this review. Intrapartum care is defined as care during the labour and childbirth of a woman which includes immediate post-delivery care around the third stage of labour. Intrapartum care by a SBA may be indicated with presence of SBA at the time of childbirth or by access to SBA whether or not a woman chooses to utilize care by an SBA. Institutional delivery may be used a proxy for SBA since the concept of SBA and their skill level, competency, education and carceditation are currently inconsistent across countries [9,11]. For the purposes of this study SBA is defined as a skilled health professional who is qualified by education and training and heskills proficient to provide intrapartum and immediate postpartum interventions with the goa of improving maternal and newborn health [8]. The purpose of this study, however, is not to evaluate the qualifications, competency or skills of specific SBA cadres in each study.
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Outcome

1 2		
2	208	We will include studies evaluating inequity in introportum care by an SDA. Alternative search
4	208 209	We will include studies evaluating inequity in intrapartum care by an SBA. Alternative search
5		terms include but are not limited to disparities, inequality and barriers to care. Given the moral
6	210	imperative of the word equity, additional search terms such as social justice will also be utilized
7 8	211	[20]. Based on prior reviews of inequity in maternal care, determinants of inequity are
9	212	hypothesized to include demographic factors such age race/ethnicity, socioeconomic status,
10	213	place of residence or geographic factors, as well as reproductive indicators [12,21-23]. For the
11	214	purposes of this review, studies will be included if they compare at least two populations by
12	215	one or more indicators. PROGRESS Plus, an established framework for socio-demographic
13	216	factors that may contribute to inequity in health, is an acronym that stands for place of
14 15	217	residence, race/ethnicity/culture and language, occupation, gender/sex, religion, education,
16	218	socioeconomic status, social capital while 'Plus' adds three additional context-specific factors
17	219	including personal characteristics that attract discrimination, features of relationships, and
18	220	time-dependent relationships [24-26]. The PROGRESS Plus framework has been adapted for the
19 20	221	purposes of this project to include indicators specific to gender, sexual and reproductive health,
20 21	222	including key indicators of the Global strategy for Women's, Children's and Adolescents' Health
22	223	(2016-2030), and Strategies towards Ending Preventable Maternal Mortality (EPMM) core
23	224	maternal health indicators [27-34].
24	225	
25	226	
26 27	227	Study design
27	228	
29	229	All observational quantitative or semi-quantitative studies of any design will be included if they
30	230	evaluate inequity in intrapartum care by SBAs which includes barriers to care, disparities, or
31	231	similar.
32 33	232	
34	233	
35	234	Context
36	235	
37	236	Studies of all languages and across all settings with health facility and/or community-based
38 39	237	services offering childbirth care will be eligible for inclusion. Studies published from 2004 until
40	238	the time of this review will be considered given the increased global interest in maternal health
41	239	and SBAs after the United Nations' Millennium Declaration in 2000 and establishment of the
42	240	Millennium Development Goals and WHO, ICM and FIGO's joint statement on the importance
43	241	of SBAs in 2004 [8,35].
44 45	242	
45	243	
47	243	Exclusion Criteria
48	244	
49	24 <i>3</i> 246	Articles will not be eligible for inclusion if:
50 51	240 247	1. There are no details regarding determinants that may indicate inequity (e.g.
51	247	demographic factors, socioeconomic factors, reproductive history, geography, etc.)
53	248 249	<ol> <li>Only qualitative data is collected</li> </ol>
54	249 250	3. They are systematic reviews
55	250	J. They are systematic reviews
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#### 256 Search strategy

In order to answer our research questions, a search for all literature based on related search terms will be conducted using the following online bibliographic databases: PubMed/MEDLINE, CINAHL Complete, POPLINE, the Cochrane Database of Systematic Reviews and the WHO Global Index Medicus (GIM). In addition, a manual search of bibliographic references of retrieved studies and systematic reviews as well as gray literature of international organizations and websites relevant to the field of maternal and child health will be conducted, including, but not limited, to National Institute for Health and Clinical Excellence (NICE); National Institute of Health (NIH); United Nations Children's Fund (UNICEF); United Nations Population Fund (UNFPA); WHO. The search will be inclusive of all languages and will be conducted with specific search terms related to 1) Childbirth; 2) SBA, non-SBA, facility and non-facility deliveries; 3) Equity; 4) Utilization of care or access. Please see Supplementary File 3 for the detailed search strategy for PubMed/Medline and the Cochrane Database of Systematic Reviews. 

## 272 Study Selection

Following a comprehensive and detailed literature search, all duplicate articles will be removed. A team of two (AK/ABM) will screen titles and abstracts of retrieved studies for relevance and eligibility for inclusion. Disagreements will be resolved by an additional reviewer (DC). All study abstracts selected for inclusion will then undergo an independent full-text review with similar methodology. All chosen full-text articles will then be evaluated again for inclusion based on inclusion and exclusion criteria by all co-authors and studies that do not meet the criteria will be eliminated from the study. Disagreements will be resolved by mutual agreement. Full-text articles in languages other than English will be translated. 

# 284 Data Extraction

A standardized data collection form was used as a template for development of a data extraction form for this review [36]. Study details collected include but are not limited to study characteristics (country, year and journal of publication, study design and dates), population and setting (population description, setting description, inclusion/exclusion criteria, sample size), intervention (SBA and non-SBA cadres, facility description), equity measures (primary outcome, determinants, results, study quality and conclusions). During the review additional fields on the data extraction form will allow for flexibility for additional data points or determinants as needed. Two reviewers will independently extract data from the selected

 studies and discrepancies will be discussed with a third reviewer. Please see Supplementary File
4 for the data extraction form.

#### 298 Scientific Quality Assessment

Scientific quality of studies will be assessed based on the Effective Public Health Practice
 Project's quality assessment tool for quantitative studies which includes an assessment for
 study bias [37]. Study methodology will be classified as strong, moderate, or weak. Two
 reviewers (AK/ABM) will independently evaluate each study and will resolve conflicts by
 reviewing the articles together. Degree of bias will be reported in the results.

#### 306 Analysis plan

We will evaluate quantitative measures of relations between possible determinants of inequity and intrapartum care by SBA or institutional delivery. Results reported in published studies may include proportions, means, percentages, rates or other quantifiable differences between two or more groups. Methodology for analysing health disparities will be followed according to published guidelines [38,39]. All research studies reporting secondary analyses of nationally-representative household surveys will be reviewed and only studies reporting the most recent survey from an individual country will be considered. Sub-analyses may include evaluation of inequity based on different measures of intrapartum care by SBA intrapartum care or institutional deliveries. Results will be stratified based on WHO, World Bank Group income and SDG regional groupings [40-42]. Data will be presented in tables by study, country, region and/or theme. 

#### 320 Patient and Public Involvement

Patients and the public were not involved in the development of this protocol. This systematicreview of published literature will not involve recruitment and participation of patients.

#### **DISSEMINATION AND ETHICS**

This systematic review will provide information regarding equity and determinants of inequity in intrapartum care by SBAs globally. It will inform the development of indicators for monitoring and evaluation of inequity in intrapartum care by SBAs globally, which is pertinent given the higher level of inequality reported with this maternal health intervention [12]. This work is also especially relevant given the current effort to revise the definition for SBA and measuring tools by collaborating international and professional organizations. This work will also guide establishment of global policy on health equity specifically related to intrapartum care by SBA and maternal mortality. The provision and presence of SBAs and utilization and access to their services is essential in decreasing maternal and newborn mortality globally. 

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Final study results will be disseminated via a peer-reviewed publication, which will include all supplemental materials on search strategy, data extraction, compilation and analysis. This systematic review is a secondary analysis of previously published literature and therefore does not require ethics review and approval. LIST OF ABREVIATIONS: FIGO: International Federation of Gynaecology and Obstetrics; EPMM: Strategies towards Ending Preventable Maternal Mortality; GIM: WHO Global Index Medicus; ICM: International Confederation of Midwives; LMICs: Low- and middle-income countries; MeSH: Medical subject headings; MDGs: Millennium Development Goals; NICE: National Institute for Health and Clinical Excellence; NIH: National Institute of Health; PRISMA: Preferred reporting items for systematic reviews and meta-analyses; PRISMA-E: Preferred reporting items for systematic reviews and meta-analyses with equity extension; SBA: Skilled birth attendant; SDGs: Sustainable Development Goals; STROBE: Strengthening the reporting of observational studies in epidemiology; UNICEF: United Nations Children's Fund; UNFPA: United Nations Population Fund; WHO: World Health Organization. **AUTHORS CONTRIBUTIONS** DC is the guarantor of this review. AK, ABM, DC and LS contributed to the initial conception and design of this systematic review. AK, ABM, TA and DC developed the search strategies. AK drafted the proposal manuscript. All authors participated in critically revising the protocol for intellectual content. All authors read and approved the final manuscript. FUNDING This project was supported by a Queenan Fellowship for Global Health grant from the Foundation for SMFM, the non-profit arm of the Society for Maternal-Fetal Medicine (SMFM). This work was also funded by the UNDP-UNFPA-UNICEF-WHO-World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP), a cosponsored program executed by the World Health Organization (WHO) and this publication was supported by a sub-grant from JHSPH with funds provided by Grant No. OPP1096225 from The Bill and Melinda Gates Foundation. COMPETING INTERESTS STATEMENT None declared. The authors alone are responsible for the views expressed in this article and they do not necessarily represent the views, decisions or policies of the funding bodies or institutions with which they are affiliated. 

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3	382	
4	383	DATA SHARING STATEMENT
5		DATA SHARING STATEMENT
6	384	
7	385	All data generated or analyzed during this study will be included in the published article and its
8	386	supplementary information files.
9 10	387	
10	388	
12	389	SUPPLEMENTARY FILES
13	390	
14	391	Supplementary File 1:
15		Supplementary File 1:
16	392	- File name: SUPPLEMENTARY FILE 1
17	393	- File format: .pdf
18	394	<ul> <li>Title of data: PRISMA-E 2012 Checklist - Equity and intrapartum care by skilled birth</li> </ul>
19	395	attendant globally: protocol for a systematic review
20	396	- Description of data: PRISMA-E 2012 Checklist for this systematic literature review
21	397	proposal.
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25 24	399	Supplementary File 2:
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26	400	- File name: SUPPLEMENTARY FILE 2
27	401	- File format: .pdf
28	402	<ul> <li>Title of data: PRISMA-P (Preferred Reporting Items for Systematic review and Meta-</li> </ul>
29	403	Analysis Protocols) 2015 checklist - Equity and intrapartum care by skilled birth
30	404	attendant globally: protocol for a systematic review
31	405	- Description of data: PRISMA-P 2015 Checklist for this systematic literature review
32	406	proposal.
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35 36	408	Supplementary File 3:
30 37	409	- File name: SUPPLEMENTARY FILE 3
38	410	- File format: .pdf
39	411	<ul> <li>Title of data: Equity and intrapartum care by skilled birth attendant globally: search</li> </ul>
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41	413	- Description of data: Search strategies for Pubmed/Medline and the Cochrane Database
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45	416	Supplementary File 4:
46	417	- File name: SUPPLEMENTARY FILE 4
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48 49	419	<ul> <li>Title of data: Equity and intrapartum care by skilled birth attendant globally: data</li> </ul>
49 50	420	extraction form
50	421	<ul> <li>Description of data: Data extraction form for this systematic review.</li> </ul>
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## Protocol 12

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#### BMJ Open

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PRISMA-E 2012 Checklist - Equity and intrapartum care by skilled birt	h attendant globally: protocol for a systemat	<u>ja</u> ie review

Section	Item	Reporting Equity-Focused Systematic Reviews Standard PRISMA Item	Extension for Equity-Focused Reviews	Pg #
	nem			
Title	-			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	dentify equity as a focus of the review, if relevant, using treater equity	1
Abstract			State research question(s) related to health equity N	
Structured summary	2	2. Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	State research question(s) related to health equity.	5
	2A		Present results of health equity analyses (e.g. subgroup ar kyses or meta- regression).	Not applicable fo protocol
	2B		Describe extent and limits of applicability to disadvantaged populations of interest.	Not applicable fo protocol
ntroduction			0	
Rationale	3	Describe the rationale for the review in the context of what is already known.	Describe assumptions about mechanism(s) by which the infervention is assumed to have an impact on health equity.	4
	3A		Provide the logic model/analytical framework, if done, to to the pathways through which the intervention is assumed to affect health equity and how it was developed.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	Describe how disadvantage was defined if used as criterioon the review (e.g. for selecting studies, conducting analyses or judging applicabiby).	5-7
	4A		State the research questions being addressed with reference to health equity	5
Methods			Ċ.	
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	do mjop	5
Eligibility criteria	6	6. Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	Describe the rationale for including particular study design related to equity research questions.	5-7
	6A		Describe the rationale for including the outcomes - e.g. how these are relevant to reducing inequity.	6-7
Information sources	7		Describe information sources (e.g. health, non-health, and grey literature sources) that were searched that are of specific relevance to addreas the equity questions of the review.	7-8
Search	8		Describe the broad search strategy and terms used to add ess equity questions of the review.	See Supplement File 3
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	2024	5-7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	by gue	8 See Supplement File 4
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	List and define data items related to equity,where such data were sought (e.g. using PROGRESS-Plus or other criteria, context).	6-8 See Supplement File 4
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	ected by	8 See Supplement File 4
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	copyright	9 See Supplement File 4

# BMJ Open PRISMA-E 2012 Checklist - Equity and intrapartum care by skilled birth attendant globally: protocol for a systematie review

14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $l^2$ ) for each meta-analysis.	Describe methods of synthesizing findings on health inequities (e.g. presenting both relative and absolute differences between groups).	8-9 See Supplementar
			File 4
15	15. Specify any assessment of risk of bias that may affect the cumulative evidence	b b	8
	(e.g., publication bias, selective reporting within studies).	1992	See Supplementa File 4
16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses,	Describe methods of additional synthesis approaches related to equity questions, if	9
			-
		N	
17	Give numbers of studies screened, assessed for eligibility, and included in the		Not applicable
	review, with reasons for exclusions at each stage, ideally with a flow diagram.	ay ay	(protocol)
18	For each study, present characteristics for which data were extracted (e.g., study	Present the population characteristics that relate to the eduity questions across the	Not applicable
		relevant PROGRESS-Plus or other factors of interest.	(protocol)
19		<u> </u>	Not applicable
	assessment (see item 12).		(protocol)
20			Not applicable
			(protocol)
		) be	
21		Present the results of synthesizing findings on inequities (see 14).	Not applicable
_		τ	(protocol)
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		t t	(protocol)
23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses	Give the results of additional synthesis approaches related to equity objectives, if	Not applicable
23			(protocol))
		3.	(proceedi))
24	Summarize the main findings including the strength of evidence for each main	8	Not applicable
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		ġ	(protocol)
25			Not applicable
23		8	(protocol)
26		Present extent and limits of applicability to disadvantaged populations of interest and	
20			(protocol)
264			Not applicable
204			(protocol)
		N N	(protocor)
		-	
		N 44	
27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	γd	10
	16 17 18 19	<ul> <li>(e.g., publication bias, selective reporting within studies).</li> <li>Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.</li> <li>Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.</li> <li>For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.</li> <li>Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).</li> <li>For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.</li> <li>Present results of each meta-analysis done, including confidence intervals and measures of consistency.</li> <li>Present results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).</li> <li>Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).</li> <li>Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).</li> <li>Provide a general interpretation of the results in the context of other evidence, and implications for future research.</li> </ul>	16       bescribe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.       bescribe methods of additional synthesis approaches related to equity questions, if done, indicating which were pre-specified.         17       Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for sectusions at each stage, ideally with a for each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the cltations.       Present the population characteristics that relate to the each stage, ideally with a for each study and if available, any outcome level assessment (see item 12).         20       For all outcomes consistered, meta-analysis done, including confidence intervals, ideally with a forest plot.       Present the results of synthesizing findings on inequities (see 14).         21       Present tresults of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression (see tem 16)).       Present the results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression (see tem 16)).         22       Present the main findings including the strength of evidence for each main putcome; consister vertice of additional analyses, if done (e.g., risk of bias), and at review-tevel (e.g., incomplete retrieval of identified research, reporting bias).         23       Discuss limitations at study and outcome level (e.g., risk of bias), and at review-tevel (e.g., incomplete retrieval of identified research, reporting bias).         24       Summarize the main findings including the strength of evidence for each main

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· ·		BMJ Open Cerred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommender cematic review protocol* Equity and intrapartum care by skilled birth attendant globally: protocol for a s	
Section and topic	Ite m No	ay	Page number
	110	ADMINISTRATIVE INFORMATION	
Title: Identification	1a	Identify the report as a protocol of a systematic review	1
Update		If the protocol is for an update of a previous systematic review, identify as such       If         If registered, provide the name of the registry (such as PROSPERO) and registration number       If	N/A
Registration Authors: Contact		Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	5 1
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	1
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	N/A
Support: Sources Sponsor Role of sponsor or funder	5b	Indicate sources of financial or other support for the review Provide name for the review funder and/or sponsor Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	10 10 1, 10
		INTRODUCTION	
Rationale Objectives		Describe the rationale for the review in the context of what is already known Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	4 5-7
		METHODS g	
Eligibility	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years	5-7

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criteria		considered, language, publication status) to be used as criteria for eligibility for the review	
Information sources		Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	7-8
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated $\mathbf{x}$	See Supplementary 1 3
Study records: Data management	11a	a Describe the mechanism(s) that will be used to manage records and data throughout the review	8
Selection process	11t	p State the process that will be used for selecting studies (such as two independent reviewers) through each place of the review (th is, screening, eligibility and inclusion in meta-analysis)	at 8
Data collection process	110	c Describe planned method of extracting data from reports (such as piloting forms, done independently, in dualicate), any processe for obtaining and confirming data from investigators	es 8 See Supplementary 1 4
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	See Supplementary 4
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional of terms, with rationale	9 See Supplementary 4
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be gone at the outcome study level, or both; state how this information will be used in data synthesis	or 8 See Supplementary 4
Data synthesis		a Describe criteria under which study data will be quantitatively synthesised	N/A (not a meta analysis)
	15t	o If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I <sup>2</sup> , Kendall's $\tau$ )	N/A (not a meta analysis)
		c Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	9
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	8
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	N/A
clarification on	the i	nmended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (ﷺ when available) tems. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (ingluding checklist) is and is distributed under a Creative Commons Attribution Licence 4.0.	

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	BMJ Open From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.	12 On
		26 May 2018. Downloaded from http://bmjop
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	For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml	st. Protected by copyright.

### SUPPLEMENTARY FILE 3: Equity and intrapartum care by skilled birth attendant globally: search strategy for PubMed/Medline and the Cochrane Database of Systematic Reviews

#### 1. Pubmed / MEDLINE search

#	Section	Search Terms
#	Section	Search Terms
1	Childbirth	"parturition" [MeSH] OR "Delivery, Obstetric" [MeSH] OR "Perinatal Care" [MeSH] OR "Pregnancy Outcome" [MeSH] OR "Pregnancy Complications" [MeSH] OR "Labor, Obstetric" [MeSH] OR "Obstetrics" [MeSH] OR "Postpartum Period" [MeSH] OR "Maternal Health Services" [MeSH] OR "Women's Health Services" [Mesh] OR "Reproductive Health Services" [Mesh] OR "Pregnant Women" [Mesh] OR "Pregnancy" [Mesh] OR "Maternal Death" [Mesh] OR "Maternal-Fetal Relations" [Mesh] OR "Maternal Death" [Mesh] OR "Maternal Mortality" [Mesh] OR "Maternal Behavior" [Mesh] OR "maternal behaviour" [MeSH] OR "pregnant" [TIAB] OR "pregnancy" [TIAB] OR "Maternity" [TIAB] OR "perinatal" [TIAB] OR "peri-natal" [TIAB] OR "Maternity" [TIAB] OR "post natal" [TIAB] OR "peri-natal" [TIAB] OR "Postpartum" [TIAB] OR "antenatal" [TIAB] OR "ante-natal" [TIAB] OR "Postpartum" [TIAB] OR "antenatal" [TIAB] OR "ante-natal" [TIAB] OR "postpartum" [TIAB] OR "antenatal" [TIAB] OR "ante-natal" [TIAB] OR "postpartum" [TIAB] OR (labour [TI] AND delivery [TI]) OR (labor [TI] AND delivery [TI]) OR "maternal health" [TIAB] OR "cesarean" [TIAB] OR "cesarean" [TIAB] OR "c-section" [TIAB] OR "cesarean" [TIAB] OR "cesarean" [TIAB] OR "signal functions" [TIAB] OR "obstetric interventions" [TIAB] OR "caesarean section" [TIAB] OR "emergency obstetric" [TIAB] OR "emergency obstetric care" [TIAB] OR "emergency newborn care" [TIAB] OR "signal functions" [TIAB] OR "emergency newborn care" [TIAB] OR "signal functions" [TIAB] OR "emergency newborn care" [TIAB] OR "essential obstetric care" [TIAB] OR "vaginal delivery" [TIAB] OR "emergency obstetric care" [TIAB] OR "EmOC" [TIAB] OR "vaginal delivery" [TIAB] OR "emergency obstetric care" [TIAB] OR "EmOC" [TIAB] OR "vaginal delivery" [TIAB] OR "normal delivery" [TIAB] OR
2	Cadre/Facility Name	delivery"[TIAB] "Health Personnel"[MeSH] OR Midwifery[MeSH] OR Obstetric Nursing[MeSH] OR "Professional Practice"[MeSH] OR "Emergency Responders"[MeSH] OR "Health Occupations"[Mesh] OR "Allied Health Occupations"[Mesh] OR "Students, Health Occupations"[Mesh] OR "Schools, Health Occupations"[Mesh] OR "Health Manpower"[Mesh] OR "health auxiliary"[TIAB] OR "health care manpower"[TIAB] OR "hospital personnel"[TIAB] OR "medical personnel"[TIAB] OR "health care personnel"[TIAB] OR "nursing home personnel"[TIAB] OR "paramedical personnel"[TIAB] OR "Health care workers"[TIAB] OR "Health care worker"[TIAB] OR "Medical Staff"[TIAB] OR "medical personnel"[TIAB] OR "General Practitioners"[TIAB] OR "General Practitioner"[TIAB] OR Caregiver*[TIAB] OR Nurses[TIAB] OR Nurse[TIAB] OR Midwive[TIAB] OR midwives[TIAB] OR midwife[TIAB] OR "Nursing Staff"[TIAB] OR "nurse midwife"[TIAB] OR "nurse midwives"[TIAB] OR "Medical students"[TIAB] OR "nurse-midwives"[TIAB] OR auxiliary[TIAB] OR "Medical students"[TIAB] OR "Nursing students"[TIAB] OR (health*[TI] AND worker*[TI]) OR "Community Health Workers"[TIAB] OR doctor[TIAB] OR doctors[TIAB] OR obstetrician[TIAB] OR obstetricians[TIAB] OR "skilled health

#### BMJ Open

		manpower"[TIAB] OR "skilled delivery"[TIAB] OR "skilled staff"[TIAB] OR "skilled person"[TIAB] OR "skilled birth personnel"[TIAB] OR "skilled health workers"[TIAB] OR "skilled health care worker"[TIAB] OR "assistance at birth"[TIAB] OR "attendant"[TIAB] OR "skilled health care worker"[TIAB] OR "assistance at birth"[TIAB] OR "health care worker"[TIAB] OR "SBA"[TIAB] or care[TIAB] OR "health person"[TIAB] OR "health care provider"[TIAB] OR "care provider"[TIAB] OR "health aide"[TIAB] OR "health provider"[TIAB] OR "care providers"[TIAB] OR "health aide"[TIAB] OR "health provider"[TIAB] OR "care providers"[TIAB] OR "health aide"[TIAB] OR "health aides"[TIAB] OR "care providers"[TIAB] OR "health aide"[TIAB] OR "health aides"[TIAB] OR "care providers"[TIAB] OR "health aide"[TIAB] OR "health aides"[TIAB] OR "reditional birth attendant"[TIAB] OR "health atsistant"[TIAB] OR "feldsher"[TIAB] OR "clinical officers"[TIAB] OR "health assistant "[TIAB] OR "feldsher"[TIAB] OR "medical officers"[TIAB] OR "assistant medical officers"[TIAB] OR "Mother and Child Health Aides"[TIAB] OR "mother and Child Health Aide"[TIAB] OR "mid-level cadres"[TIAB] OR "mid- level healthcare workers"[TIAB] OR "mcdical officers"[TIAB] OR "mid- level healthcare workers"[TIAB] OR "community-based skilled birth attendants"[TIAB] OR "community-based skilled birth attendants"[TIAB] OR "community-based skilled birth attendants"[TIAB] OR "health visitor"[TIAB] OR "nonphysicians"[TIAB] OR "non-physicians[TIAB] OR "health sisting"[TIAB] OR "nonphysicians"[TIAB] OR "non-physicians"[TIAB] OR "hospitalization"[MeSH] OR "nomeker*[TI]) OR "fieldworker"[TIAB] OR "hospitalization"[MeSH] OR "nome birth"[TIAB] OR "hospitalization"[MeSH] OR "nomulity health services"[MeSH] OR "hospitalization"[MeSH] OR "nome childbirth"[MeSH] OR "hospitalization"[MeSH] OR "medical staff hospitals"[MeSH] OR "hospitals university"[MeSH] OR "delivery of health care"[MeSH] OR "hospitals university] MeSH] OR "hospitals [MeSH] OR "hospitals"[MeSH] OR "hospitals university"[MeSH] OR "delive
3	Equity	"doulas"[All Fields] OR "doula"[All Fields]         "Health Status Disparities"[Mesh] OR "Health Equity"[Mesh] OR "Healthcare         Disparities"[Mesh] OR "Social Justice"[Mesh] OR "Social responsibility"[Mesh] OR         "social values"[Mesh] OR "Human Rights"[Mesh] OR "Socioeconomic

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		care"[MeSH Terms] OR "Health services needs and demand"[MeSH Terms] OR
		"Primary health care" [Mesh] OR "patient acceptance of health care" [Mesh] OR
		"Health knowledge attitudes practice" [Mesh] OR "health promotion" [Mesh] OR
		"delivery of health care" [Mesh] OR "health behavior" [Mesh] OR "health
		behaviour"[MeSH] OR "attitude to health"[Mesh] OR "personal autonomy"[Mesh]
		OR "attitude of health personnel" [Mesh] OR access [All Fields] OR accessibility [All
		Fields] OR "utilization"[Subheading] OR "utilisation"[Subheading] OR
		"utilization"[All Fields] OR "utilisation"[All Fields] OR "use"[All Fields]) OR
		"coverage"[All Fields] OR "health services"[MeSH Terms] OR "access to health
		care"[All Fields]) OR "delivery of health care"[MeSH Terms] OR "health
		services"[All Fields] OR "health facilities"[All Fields] OR "obstetric delivery"[All
		Fields] OR "delivery"[All Fields] OR "health care surveys"[Mesh] OR "needs
		assessment"[Mesh] OR "health care costs"[Mesh] OR "mental health
		services"[Mesh] OR "mental disorders"[Mesh] OR "health services
		research"[Mesh] OR "outcome assessment health care"[Mesh] OR "quality
		assurance health care"[Mesh] OR "rural health services"[Mesh] OR "social
		support"[Mesh] OR "insurance coverage"[Mesh] OR "community health
		services"[Mesh] OR "health education"[Mesh]
5	1 AND 2 AND 3	AND 4 AND Filter: Publication date from 2004/01/01 to present.
2. (	Cochrane Centra	al search

#### 2. Cochrane Central search

ID	Search Hits
#1	MeSH descriptor: [Parturition] explode all trees 266
#2	MeSH descriptor: [Delivery, Obstetric] explode all trees 4852
#3	MeSH descriptor: [Pregnancy] explode all trees 5608
#4	MeSH descriptor: [Maternal-Fetal Relations] explode all trees 14
#5	MeSH descriptor: [Maternal Mortality] explode all trees 124
#6	MeSH descriptor: [Maternal Health Services] explode all trees 1994
#7	MeSH descriptor: [Postpartum Period] explode all trees 1349
#8	MeSH descriptor: [Cesarean Section] explode all trees 2839
#9	MeSH descriptor: [Emergency Medical Services] explode all trees 🔼 3652
#10	MeSH descriptor: [Perinatal Mortality] explode all trees 45
#11	MeSH descriptor: [Vacuum Extraction, Obstetrical] explode all trees 81
#12	MeSH descriptor: [Obstetrical Forceps] explode all trees 53
#13	MeSH descriptor: [Vaginal Birth after Cesarean] explode all trees 58
#14	MeSH descriptor: [Labor, Obstetric] explode all trees 1945
#15	MeSH descriptor: [Obstetric Labor Complications] explode all trees 2697
#16	MeSH descriptor: [Prenatal Care] explode all trees 1302
#17	MeSH descriptor: [Prenatal Diagnosis] explode all trees 1071
#18	"maternal mortality":ti,ab,kw (Word variations have been searched) 435
#19	delivery:ti,ab,kw (Word variations have been searched) 25934
#20	pregnancy:ti,ab,kw (Word variations have been searched) 33283
#21	"maternal health services":ti,ab,kw (Word variations have been searched) 247
#22	vaginal delivery:ti,ab,kw (Word variations have been searched) 2532
#23	postpartum or prenatal or antenatal or antepartum:ti,ab,kw (Word variations have bee
search	ed) 10362
#24	"birth":ti,ab,kw (Word variations have been searched) 16054
#25	obstetrics:ti,ab,kw (Word variations have been searched) 2287

#26	c*sarean section:ti,ab,kw (Word variations have been searched) 6986
#27	"emergency obstetric*":ti,ab,kw (Word variations have been searched) 43
#28	lab*r:ti,ab,kw (Word variations have been searched)10228
#29	childbirth*:ti,ab,kw (Word variations have been searched) 1739
#30	{or #1-#29} 69723
#31	MeSH descriptor: [Health Personnel] explode all trees 7620
#32 #33	MeSH descriptor: [Community Health Workers] explode all trees 339
#35 #34	MeSH descriptor: [Nurses] explode all trees 1158
#34 #35	MeSH descriptor: [Allied Health Personnel] explode all trees 978 MeSH descriptor: [Midwifery] explode all trees 324
#35 #36	MeSH descriptor: [Midwifery] explode all trees 324 MeSH descriptor: [Emergency Responders] explode all trees 251
#30	MeSH descriptor: [Allied Health Occupations] explode all trees 1000
#38	MeSH descriptor: [Obstetric Nursing] explode all trees 41
#39	MeSH descriptor: [Health Occupations] explode all trees 20897
#40	MeSH descriptor: [Skilled Nursing Facilities] explode all trees 60
#41	MeSH descriptor: [Physicians] explode all trees 1686
#42	MeSH descriptor: [Nurse Clinicians] explode all trees 153
#43	MeSH descriptor: [Ambulatory Care Facilities] explode all trees 1886
#44	MeSH descriptor: [Maternal-Child Health Centers] explode all trees 49
#45	MeSH descriptor: [Rural Health Services] explode all trees 336
#46	MeSH descriptor: [Community Health Centers] explode all trees 572
#47	MeSH descriptor: [Birthing Centers] explode all trees 23
#48	MeSH descriptor: [Hospitals] explode all trees 3658
#49	nurse* or doctor* or physician* or midwife or midwives:ti,ab,kw (Word variations have been
searche	
#50	"health worker*":ti,ab,kw (Word variations have been searched) 1215
#51	"birth attendant*":ti,ab,kw (Word variations have been searched) 127
#52	"skilled attendant*":ti,ab,kw (Word variations have been searched) 5
#53	"skilled assistant*":ti,ab,kw (Word variations have been searched) 1
#54	obstetrician*:ti,ab,kw (Word variations have been searched) 921
#55	practicioner*:ti,ab,kw (Word variations have been searched) 3
#56	"clinical officer*":ti,ab,kw (Word variations have been searched) 23
#57	birth centre* or birth center*:ti,ab,kw (Word variations have been searched) 2023
#58	health centre* or health center*:ti,ab,kw (Word variations have been searched) 19565
#59	"health facilit*":ti,ab,kw (Word variations have been searched) 647
#60	"health provider*":ti,ab,kw (Word variations have been searched) 253
#61	"health institution*":ti,ab,kw (Word variations have been searched) 61
#62	clinic?:ti,ab,kw (Word variations have been searched) 9489
#63	hospital?:ti,ab,kw (Word variations have been searched) 15683
#64	"birth centre?" or "birth center?":ti,ab,kw (Word variations have been searched) 31
#65	{or #31-#64} 96129
#66	MeSH descriptor: [Health Equity] explode all trees 2
#67	MeSH descriptor: [Human Rights] explode all trees 1262
#68	MeSH descriptor: [Social Justice] explode all trees 60
#69	MeSH descriptor: [Health Status Disparities] explode all trees 142
#70	MeSH descriptor: [Healthcare Disparities] explode all trees 176
#71	MeSH descriptor: [Social Responsibility] explode all trees 87
#72	MeSH descriptor: [Human Rights] explode all trees 1262
#73	MeSH descriptor: [Social Values] explode all trees 164
#74	MeSH descriptor: [Socioeconomic Factors] explode all trees 8582
#75	MeSH descriptor: [Health Status Indicators] explode all trees 19398
#76	MeSH descriptor: [Health Policy] explode all trees 724
#77	MeSH descriptor: [Social Determinants of Health] explode all trees 11
	For peer review only - http://bmionen.hmi.com/site/about/guidelines.yhtml

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3	#78	MeSH descriptor: [Quality of Health Care] explode all trees 424055	
4	#78 #79	MeSH descriptor: [Public Health] explode all trees 408036	
5	#80	MeSH descriptor: [Global Health] explode all trees 212	
6	#80 #81	MeSH descriptor: [Sex Factors] explode all trees 5525	
7	#82	MeSH descriptor: [Sex Pitetors] explode all trees 783	
8	#83	MeSH descriptor: [Public Policy] explode all trees 784	
9	#83 #84	MeSH descriptor: [Women's Rights] explode all trees 6	
10	#84 #85		
11	#85 #86	MeSH descriptor: [Age Factors] explode all trees 9847	
12		MeSH descriptor: [Age Distribution] explode all trees 845	
13	#87 #80	MeSH descriptor: [Adolescent] explode all trees 90431	
14	#88 #80	MeSH descriptor: [Young Adult] explode all trees 266	
15	#89	MeSH descriptor: [Policy Making] explode all trees 86	
16	#90	MeSH descriptor: [Resource Allocation] explode all trees 145	
17	#91	MeSH descriptor: [Social Welfare] explode all trees 845	
18	#92	MeSH descriptor: [Patient Advocacy] explode all trees 75	
19	#93	MeSH descriptor: [Socioeconomic Factors] explode all trees 8582	
20	#94	MeSH descriptor: [Income] explode all trees 931	
21	#95	MeSH descriptor: [Poverty] explode all trees1377	
22	#96	MeSH descriptor: [Poverty Areas] explode all trees 240	
23	#97	MeSH descriptor: [Vulnerable Populations] explode all trees 220	
24	#98	MeSH descriptor: [Social Distance] explode all trees 113	
25	#99	MeSH descriptor: [Risk Factors] explode all trees 24525	
26	#100	MeSH descriptor: [Ethnic Groups] explode all trees 3695	
27	#101	MeSH descriptor: [Emigration and Immigration] explode all trees 79	
28	#102	MeSH descriptor: [Minority Groups] explode all trees 316	
29	#103	MeSH descriptor: [Developing Countries] explode all trees 1011	
30	#104	MeSH descriptor: [Social Class] explode all trees 589	
31	#105	MeSH descriptor: [Health Care Rationing] explode all trees 77	
32	#106	MeSH descriptor: [Insurance, Long-Term Care] explode all trees 5	
33	#107	MeSH descriptor: [Politics] explode all trees 48	
34	#108	MeSH descriptor: [Health Expenditures] explode all trees 332	
35	#109	MeSH descriptor: [Urban Population] explode all trees 1204	
36	#110	MeSH descriptor: [Rural Population] explode all trees /// 1249	
37	#111	MeSH descriptor: [Universal Coverage] explode all trees 7	
38	#112	MeSH descriptor: [Health Resources] explode all trees 593	
39	#113	MeSH descriptor: [Educational Status] explode all trees 1347	
40	#114	MeSH descriptor: [Residence Characteristics] explode all trees1179	
41	#115	MeSH descriptor: [Time Factors] explode all trees 59415	
42	#116	MeSH descriptor: [Religion and Medicine] explode all trees 59	
43	#117	MeSH descriptor: [Cultural Characteristics] explode all trees 157	
44	#118	MeSH descriptor: [Cultural Diversity] explode all trees 83	
45	#119	equit* or inequit*:ti,ab,kw (Word variations have been searched) 544	
46	#120	equal* or inequal*:ti,ab,kw (Word variations have been searched) 32042	
47	#121	socio-economic? or socioeconomic?:ti,ab,kw (Word variations have been searched) 559	
48	#122	"unmet need?":ti,ab,kw (Word variations have been searched) 232	
49	#123	barrier?:ti,ab,kw (Word variations have been searched) 4561	
50	#124	determinant?:ti,ab,kw (Word variations have been searched) 3279	
51	#125	geographic:ti,ab,kw (Word variations have been searched) 1798	
52	#126	"risk factor?":ti,ab,kw (Word variations have been searched) 38428	
53	#127	"determinant* of health":ti,ab,kw (Word variations have been searched) 100	
54	#128	marginali*ation:ti,ab,kw (Word variations have been searched) 22	
55	#129	{or #66-#128} 498594	
56	#130	MeSH descriptor: [Health Care Quality, Access, and Evaluation] explode all trees 430	323
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60		For peer review only - http://bmiopen.bmi.com/site/about/guidelines.xhtml	

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

#131 #132	MeSH descriptor: [Health Services Accessibility] explode all tr MeSH descriptor: [Health Promotion] explode all trees	ees 5485	1084		
#133	MeSH descriptor: [Culturally Competent Care] explode all tree	es	30		
#134	MeSH descriptor: [Maternal Health Services] explode all trees				
#135	MeSH descriptor: [Quality of Health Care] explode all trees	424055			
#136	MeSH descriptor: [Medically Underserved Area] explode all tr		112		
#137	MeSH descriptor: [Health Services Needs and Demand] explo		es	532	
#138 #139	MeSH descriptor: [Delivery of Health Care] explode all trees	45744			
#139 #140	MeSH descriptor: [Primary Health Care] explode all trees MeSH descriptor: [Patient Acceptance of Health Care] explod	6730 a all traa	c75525		
#140 #141	MeSH descriptor: [Health Knowledge, Attitudes, Practice] explore			5020	
#142	MeSH descriptor: [Health Promotion] explode all trees	5485	1005	5020	
#143	MeSH descriptor: [Health Behavior] explode all trees 19176				
#144	MeSH descriptor: [Attitude of Health Personnel] explode all the	rees	2095		
#145	MeSH descriptor: [Attitude to Health] explode all trees	31755			
#146	MeSH descriptor: [Personal Autonomy] explode all trees	170			
#147	MeSH descriptor: [Health Services] explode all trees 90269				
#148	MeSH descriptor: [Health Services Accessibility] explode all tr		1084		
#149	MeSH descriptor: [Rural Health Services] explode all trees	336			
#150	access:ti,ab,kw (Word variations have been searched)	12815			
#151 #152	utili*ation:ti,ab,kw (Word variations have been searched)	11183 3228			
#152	coverage:ti,ab,kw (Word variations have been searched) "health service?":ti,ab,kw (Word variations have been search		10578		
#155 #154	{or #130-#153} 461529	ieu)	10578		
#155	420 and 405 and 4120 and 4154 Online Publication Data from	n Jan 2004	4 to Jun 2	2017	654
				-	
	#30 and #65 and #129 and #154 Online Publication Date from				

#### SUPPLEMENTARY FILE 4:

Equity and intrapartum care by skilled birth attendant globally: data extraction form

#### Notes:

- Please be consistent in the order and style used to enter information for each item.
- Please record missing data as unclear or missing in the study report.
- If an item is not applicable, please mark as NA.

#### General information

General Data	
1. Study ID	5
<ol> <li>Date form completed (dd/mm/yy)</li> </ol>	
3. Primary author	
4. Name of reviewer	
5. Study title	2
6. Year of publication	
7. Journal	
8. Country	
9. Study funding source	
10. Conflict of interest (reviewer)	□ Yes □ No

# Study Eligibility

Study characteristic	cs Eligibility criteria	Eligibility criteria met?			Location in text
		Yes	No	Unclear	or source (pg/fig/table)
1. Population	Women who experienced childbirth within the scope of the specific study.				
2. Interventio	n Access to skilled care with SBA or institutional deliveries				
3. Compariso	Utilization of non-SBA birth attendants or traditional birth attendants at the time of delivery.				
4. Outcome	Evaluation of inequity in access to SBA at the time of childbirth.				
5. Study desig	n All observational quantitative studies on human subjects (including but not limited to prospective and retrospective cohort studies, cross-sectional studies, mix- methods studies).				
6. Context	All countries with health facility and/or community- based services offering childbirth care.		2		
7. Results	Quantitative results of the association between potential determinants and access to SBA				
8. Decision	□ Include □ Exclude				
9. Reason for exclusion					
Notes:					

#### DO NOT PROCEED IF STUDY IS EXCLUDED FROM THIS REVIEW

## Methods

10. Aim of study	
11. Study design	cross-sectional cohort mixed-methods dots to ther:
12. Unit of allocation (part/person/group)	
13. Start date (dd/mm/yy)	
14. End date (dd/mm/yy)	
15. Duration of participation (from recruitment to last follow up)	
16. Ethics approval obtained?	□ yes □ no □ not needed
Notes:	C2
Population and setting	
17. Population description (from which study participants are drawn)	
<ol> <li>Setting (including location and social context)</li> </ol>	
19. Specific geographic region	
20. Inclusion criteria	
21. Exclusion criteria	
22. Method(s) of participant recruitment	

24. Participants (n)	
25. Subgroups (n)	SBA/institutional delivery
	TAB or other non-SBA birth attendant delivery
	Non-institutional delivery
	Other
	Other
lotes:	
tervention	
ttendants at birth	
26. SBA cadre included (check all correct answers)	□ nurse □ nurse-midwife □ clinical officer/physician
unswers)	assistant 🗆 doctor 🗆 unspecified
	□ other:
27. Details of SBA care	Any additional measure (add details to note section below):
	□ time spent □ intrapartum care only □ postpartum care
	only a quality of care received felt respected by
	SBA 🗆 Other
28. Non-SBA cadre included (check all correct	□ traditional birth attendant □ unspecified
answers)	
	□ other:
29. Facility included (check all correct	□ birth centre □ health centre □ district/local hospital
(check all correct answers)	
	□ referral/tertiary hospital □ unspecified
	□ other:
otes:	

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Outcomes	
Equity/inequity and Results	
30. Primary outcome	
31. Participant determinants included <sup>1</sup> (check all applicable)	Place of residence: Definition/stratification:
	<ul> <li>Urban/rural/humanitarian</li> <li>Geographic distinction</li> <li>Transportation access</li> <li>Road access</li> <li>Race/Ethnicity/culture/language:</li> <li>Definition/stratification:</li> <li>Occupation:</li> <li>Definition/stratification:</li> <li>Gender:</li> <li>Employment in non-agricultural sector</li> <li>Children &lt;15 years old working</li> <li>Gender/Sex:</li> <li>Definition/stratification:</li> </ul>
	<u>Gender</u> :

<sup>&</sup>lt;sup>1</sup> Adapted from the Progress-Plus framework; O'Neill J, Tabish H, Welch V, Petticrew M, Pottie K, Clarke M, et al. Applying an equity lens to interventions: using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. J Clin Epidemiol. 2014;67(1):56-64.

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<pre>     Control and characteristic of suggesting condom use,     refusing sex</pre>	Power differential
refusing sex refusing sex refusing sex refusing sex refusing about own health refusing about own health refusion making about own he	
Image:	□ Acceptability of suggesting condom use,
Image:	refusing sex
Image: Instant Sector Secto	□ Age difference of sex partner
Image: Instant Sector Secto	Decision making about own health
Image:	
Image	☐ Marriage/union
Sexual health:         Sex before age 15         History of sexual violence (recent/ever) and or by age 18 years         History of female genital cutting         Reproductive/maternal health:         Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         Other - complications/adverse outcome         Four or more antenatal visits         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	□ choice of spouse
Sexual health:         Sex before age 15         History of sexual violence (recent/ever) and or by age 18 years         History of female genital cutting         Reproductive/maternal health:         Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         Other - complications/adverse outcome         Four or more antenatal visits         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	$\Box$ are < 15 years old (< 19 years old
age 18 years         History of female genital cutting <u>Reproductive/maternal health:</u> Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	
age 18 years         History of female genital cutting         Reproductive/maternal health:         Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	Sexual health:
age 18 years         History of female genital cutting <u>Reproductive/maternal health:</u> Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	Sex before age 15
age 18 years         History of female genital cutting <u>Reproductive/maternal health:</u> Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	
History of female genital cutting         Reproductive/maternal health:         Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	History of sexual violence (recent/ever) and or by
Reproductive/maternal health:         Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Four or more antenatal visits         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	age 18 years
Reproductive/maternal health:         Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Four or more antenatal visits         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	□ History of female genital cutting
Parity/grand-multiparity         Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Four or more antenatal visits         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:         Education:	
Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Four or more antenatal visits         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:	Reproductive/maternal health:
Adolescent pregnancy         Obstetrical history         self - complications/adverse outcome         other - complications/adverse outcome         Early postnatal visits         Early postnatal/postpartum care (within 2 days)         Uterotonic immediately after birth (facility birth)         Contraception use         Religion:         Definition/stratification:         Education:	Parity/grand-multiparity
Image: Constraint of the set of t	
Image: Self - complications/adverse outcome         Image: Other - complications         Image: Other - complication         Image: Other - complication <td>Adolescent pregnancy</td>	Adolescent pregnancy
Image: Self - complications/adverse outcome         Image: Other - complications         Image: Other - complication         Image: Other - complication <td>Obstetrical history</td>	Obstetrical history
other – complications/adverse outcome   Four or more antenatal visits   Early postnatal/postpartum care (within 2 days)   Uterotonic immediately after birth (facility birth)   Contraception use   Religion:   Definition/stratification:   Education:	
Four or more antenatal visits   Early postnatal/postpartum care (within 2 days)   Uterotonic immediately after birth (facility birth)   Contraception use   Religion:   Definition/stratification:	□ self – complications/adverse outcome
Early postnatal/postpartum care (within 2 days)   Uterotonic immediately after birth (facility birth)   Contraception use   Religion:   Definition/stratification:	other – complications/adverse outcome
Early postnatal/postpartum care (within 2 days)   Uterotonic immediately after birth (facility birth)   Contraception use   Religion:   Definition/stratification:	Four or more antenatal visits
Uterotonic immediately after birth (facility birth) Contraception use Religion: Definition/stratification: Education:	
Contraception use Contraception use Religion: Definition/stratification: Education:	L Early postnatal/postpartum care (within 2 days)
<ul> <li>Religion:</li> <li>Definition/stratification:</li> <li>Education:</li> </ul>	□ Uterotonic immediately after birth (facility birth)
<ul> <li>Religion:</li> <li>Definition/stratification:</li> <li>Education:</li> </ul>	
Definition/stratification:	
Definition/stratification:	
Education:	Religion:
Education:	
	Definition/stratification:
Definition/stratification:	L Education:
	Definition /stratification
	Dejinition/stratijication:

<u>Gender</u> :
Primary/secondary/tertiary education
□ Literacy
Socioeconomic status:
Definition/stratification:
□ Access to safely managed sanitation services (e.g
hand-washing with water and soap)
□ Children with stunting < 5 years of age
☐ Children with stunting < 5 years of age
Primary reliance on clean fuels and technology
<u>Gender</u> :
Ownership (goods/land/bank account)
Technology use (mobile phone/internet/media)
Social capital:
Definition (show tift and so
Definition/stratification:
Personal characteristics that attract discrimination:
Definition/stratification:
□ Young/old age
Orphan
□ Sex worker
Eastures of relationships:
Features of relationships:
Definition/stratification:

	<u>Gender</u> :
	□ Single/divorced/widowed
	☐ Husband's characteristics (e.g. education, etc.)
	□ Other:
	Time-dependent relationships:
	Definition/stratification:
U,	Pregnant/postpartum/breastfeeding
	Humanitarian setting (e.g. refugee, internally displaced person)
	Political instability
	□ Other:
	□ other:
	Definition/stratification:
	□ other:
	Definition/stratification:
	<u> </u>
32. Systematic determinants	Maternal mortality ratio
included (check all applicable)	
<i>app</i>	☐ Maternal cause of death (based on ICD-MM coding)
	□ Maternal death registration
	Under-5 mortality rate
	Neonatal mortality rate
	Proportion of children < 5 years old with registered birth

34       Stillbirth rate         66       C-section rate         7       Availability of functional Emergency Obstetric Care facilities         10       Adolescent mortality rate         11       Out-of-packet as a percentage of total health expenditure         12       Out-of-packet as a percentage of total health expenditure         13       Persence of laws/regulations that guarantee SRH care         14       Presence of laws/regulations that guarantee SRH care         15       Place of residence:         15       Definition/stratification:         16       Out-of-packet as a percentage of total health expenditure         17       Definition/stratification:         18       Out-of-packet as a percentage of total health expenditure         19       Atta were statistically         19       Place of residence:         19       Definition/stratification:         10       Oregoraphic distinction         11       Geographic distinction         12       Definition/stratification:         13       Race/Ethnicity/culture/language:         14       Definition/stratification:         15       Gender:         16       Employment in non-agricultural sector         16       Gender/Sex:	1		5
4       Stillbirth rate         6       C-section rate         7       Availability of functional Emergency Obstetric Care facilities         9       Out-of-pocket as a percentage of total health expenditure         11       Current country health expenditure per capita         12       Out-of-pocket as a percentage of total health expenditure         13       Participant determinants that were statistically significant (check all correct answers)       Place of residence:         12       Out-of-pocket as a percentage of total health expenditure         14       Place of residence:         15       Definition/stratification:         16       Out-of-pocket as a percentage of total health expenditure         17       Image: Country health expenditure per capita         18       Definition/stratification:         19       Place of residence:         10       Definition/stratification:         11       Geographic distinction         11       Geographic distinction         12       Race/Ethnicity/culture/language:         13       Definition/stratification:         14       Definition/stratification:         15       Definition/stratification:         16       Gender:         16       Ender/sex:	2		
6       C-section rate         8       Availability of functional Emergency Obstetric Care facilities         9       Adolescent mortality rate         11       Out-of-pocket as a percentage of total health expenditure         12       Current country health expenditure per capita         16       Presence of laws/regulations that guarantee SRH care         18       33. Participant determinants that were statistically significant (check all correct answers)       Place of residence:         22       Definition/stratification:       Definition/stratification:         23       Brasportation access       Definition/stratification:         24       Current couption:       Definition/stratification:         25       Current couption:       Definition/stratification:         26       Current couption:       Definition/stratification:         27       Current couption:       Definition/stratification:         28       Current couption:       Definition/stratification:         29       Current couption:       Definition/stratification:         29       Current couption:       Definition/stratification:         29       Current couption:       Definition/stratification:         29       Current couption:       Definition/stratification:         20       Cur	4		□ Stillbirth rate
8 <ul> <li>Availability of functional Emergency Obstetric Care facilities</li> <li>Adolescent mortality rate</li> <li>Out-of-pocket as a percentage of total health expenditure</li> <li>Current country health expenditure per capita</li> <li>Presence of laws/regulations that guarantee SRH care</li> </ul> <li>Bission determinants that were statistically significant (check off correct answers)</li> <li>Place of residence:</li> <li>Definition/stratification:</li> <li>Geographic distinction</li> <li>Transportation access</li> <li>Road access</li> <li>Race/Ethnicity/culture/language:</li> <li>Definition/stratification:</li> <li>Gendet:</li> <li>Cocupation:</li> <li>Definition/stratification:</li> <li>Gendet:</li> <li>Children &lt;15 years old working</li> <li>Gendet/Sex:</li> <li>Definition/stratification:</li>	6		C-section rate
10       Adolescent mortality rate         11       Out-of-pocket as a percentage of total health expenditure         11       Current country health expenditure per capita         11       Presence of laws/regulations that guarantee SRH care         11       Presence of laws/regulations that guarantee SRH care         12       Presence of laws/regulations that guarantee SRH care         13       Participant determinants (check all correct answers)         14       Place of residence:         15       Definition/stratification:         16       Urban/rural/humanitarian         16       Geographic distinction         17       Tansportation access         18       Race/Ethnicity/culture/language:         19       Occupation:         10       Children <15 years old working	8		□ Availability of functional Emergency Obstetric Care facilities
12          □ Out-of-pocket as a percentage of total health expenditure         13          □ Current country health expenditure per capita         16          □ Presence of laws/regulations that guarantee SRH care         18          □ Presence of laws/regulations that guarantee SRH care         18          □ Presence of laws/regulations that guarantee SRH care         19          □ Presence of laws/regulations that guarantee SRH care         11          □ Presence of laws/regulations that guarantee SRH care         12          □ Presence of laws/regulations that guarantee SRH care         12          □ Presence of laws/regulations that guarantee SRH care         12          □ Presence of laws/regulations that guarantee SRH care         12          □ Presence of laws/regulations that guarantee SRH care         12          □ Presence of laws/regulations that guarantee SRH care         12          □ Presence of laws/regulations that guarantee SRH care         13          □ Presence of laws/regulations that guarantee SRH care         14          □ Presence of laws/regulations that guarantee SRH care         15          □ Presence of laws/regulations that guarantee SRH care         16          □ Presence of laws/regulations that guarantee SRH care         17          □ Presence of laws	10		□ Adolescent mortality rate
14 <ul> <li>Current country health expenditure per capita</li> <li>Presence of laws/regulations that guarantee SRH care</li> </ul> 18       33. Participant determinants that were statistically significant (check all correct answers) <ul> <li>Place of residence:</li> <li>Definition/stratification:</li> <li>Geographic distinction</li> <li>Transportation access</li> <li>Road access</li> <li>Road access</li> <li>Definition/stratification:</li> <li>Gender:</li> <li>Cocupation:</li> <li>Definition/stratification:</li> </ul> 19 <ul> <li>Gender:</li> <li>Children &lt;15 years old working</li> <li>Gender/Sex:</li> <li>Definition/stratification:</li> </ul>	12		Out-of-pocket as a percentage of total health expenditure
15       Current country health expenditure per capita         16       Presence of laws/regulations that guarantee SRH care         17       33. Participant determinants that were statistically significant (check all correct answers)       Place of residence: Definition/stratification:         24       Urban/rural/humanitarian         25       Urban/rural/humanitarian         26       Transportation access         29       Race/Ethnicity/culture/language:         28       Definition/stratification:         29       Occupation:         29       Definition/stratification:         33       Gender:         39       Employment in non-agricultural sector         41       Gender:         42       Employment in non-agricultural sector         51       Gender/Sex:         29       Definition/stratification:			
17       Presence of laws/regulations that guarantee SRH care         18       33. Participant determinants that were statistically significant (check all correct answers)       Place of residence:         22       Definition/stratification:       Definition/stratification:         24       Urban/rural/humanitarian         25       Geographic distinction         27       Transportation access         28       Race/Ethnicity/culture/language:         29       Occupation:         21       Definition/stratification:         28       Occupation:         29       Definition/stratification:         29       Occupation:         20       Definition/stratification:         28       Occupation:         29       Definition/stratification:         29       Occupation:         20       Definition/stratification:         21       Gender:         22       Children <15 years old working			Current country health expenditure per capita
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24 Urban/rural/humanitarian   26 Geographic distinction   27 Transportation access   28 Road access   31 Race/Ethnicity/culture/language:   33 Definition/stratification:   36 Occupation:   37 Occupation:   38 Gender:   44 Gender:   45 Employment in non-agricultural sector   47 Children <15 years old working		answers)	6
25 Geographic distinction   27 Transportation access   28 Road access   30 Race/Ethnicity/culture/language:   33 Definition/stratification:   34 Occupation:   39 Occupation:   41 Definition/stratification:   42 Gender:   44 Gender:   45 Children <15 years old working			Urban/rural/humanitarian
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32   33   34   35   36   37   38   39   41   42   41   42   43   44   45   46   47   48   49   50   51   51   52   53   54   55			
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42   43   44   45   46   47   48   49   50   51   52   53   54   55   56   57			Definition (structification)
44       Gender:         45 <ul> <li>Employment in non-agricultural sector</li> <li>Children &lt;15 years old working</li> <li>Children &lt;15 years old working</li> </ul> 48 <ul> <li>Children &lt;15 years old working</li> <li>Gender/Sex:</li> <li>Gender/Sex:</li> <li>Definition/stratification:</li> </ul> 54 <ul> <li>Definition/stratification:</li> </ul>			Definition/stratification:
45       Gender.         46       Employment in non-agricultural sector         47       Children <15 years old working			
46 Employment in non-agricultural sector   47 Children <15 years old working			<u>Gender</u> :
47       48 <ul> <li>Children &lt;15 years old working</li> <li>Gender/Sex:</li> <li>Gender/Sex:</li> <li>Definition/stratification:</li> </ul> 53         Definition/stratification:           54         55           57         57			Employment in nen agricultural sector
48 <ul> <li>Children &lt;15 years old working</li> <li>Gender/Sex:</li> <li>Gender/Sex:</li> <li>Definition/stratification:</li> </ul> 53         Definition/stratification:           54         55           57         57			
50   51   52   53   54   55   56   57			Children <15 years old working
51     Gender/Sex:       52     Definition/stratification:       54     Definition/stratification:       55     56       57     57	49		
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35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51	
52 53 54 55 56 57 58 59 60	For peer rev

	<u>Gender</u> :
	□ Intimate partner violence (recent/ever)
	Power differential
	Acceptability of suggesting condom use, refusing sex
	□ Age difference of sex partner
	Decision making about own health
	□ Marriage/union
	$\Box$ choice of spouse
0	$\Box$ age < 15 years old / < 18 years old
	Sexual health:
	Sex before age 15
	☐ History of sexual violence (recent/ever) and or by age 18 years
	☐ History of female genital cutting
	Reproductive/maternal health:
	Parity/grand-multiparity
	□ Adolescent pregnancy
	Obstetrical history
	□ self – complications/adverse outcome
	$\Box$ other – complications/adverse outcome
	□ Four or more antenatal visits
	Early postnatal/postpartum care (within 2 days)
	$\Box$ Uterotonic immediately after birth (facility birth)
	□ Contraception use
	Religion:
	Definition/stratification:
	Education:

Definition/stratification:
<u>Gender</u> :
Primary/secondary/tertiary education
Literacy
Socioeconomic status:
Definition/stratification:
□ Access to safely managed sanitation services (e.g.
☐ Access to safely managed sanitation services (e.g. hand-washing with water and soap)
hand-washing with water and soap)
○ Children with stunting < 5 years of age
Primary reliance on clean fuels and technology
<u>Gender:</u>
Ownership (goods/land/bank account)
Technology use (mobile phone/internet/media)
□ Social capital:
Definition/stratification:
Personal characteristics that attract discrimination:
Definition/stratification:
□ Young/old age
🗌 Orphan
□ Sex worker

	□ Features of relationships:
	Definition/stratification:
	<u>Gender</u> :
	□ Single/divorced/widowed
	☐ Husband's characteristics (e.g. education, etc
	□ Other:
	Time-dependent relationships:
	Definition/stratification:
	Pregnant/postpartum/breastfeeding
	Humanitarian setting (e.g. refugee, internally displaced person)
	Political instability
	Other:
	□ other:
	Definition/stratification:
	0
	other:      Definition (stratification:
	Definition/stratification:
34. Systematic determinants	
that were statistically	Maternal mortality ratio
significant (check all correct answers)	□ Maternal cause of death (based on ICD-MM coding)
	□ Maternal death registration
	Under-5 mortality rate
	Neonatal mortality rate

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	$\Box$ Proportion of children < 5 years old with registered birth
	□ Stillbirth rate
	C-section rate
	Availability of functional Emergency Obstetric Care facilities
	□ Adolescent mortality rate
	Out-of-pocket as a percentage of total health expenditure
	Current country health expenditure per capita
	Presence of laws/regulations that guarantee SRH care
35. Confounding	
factors/effect modifiers:	
	0
	6
36. Results	
(specify, e.g. OR, RR, IRR)	
	$\bigcirc$
	21

37. Limitations:			
38. Scientific quality and	🗌 high	□ moderate	□ low
Study bias <sup>2</sup>	🗆 high	moderate	□ low
39. Conclusions of authors			
	0		
	Č.		
Notes:			

<sup>&</sup>lt;sup>2</sup> Based on the Effective Public Health Practice Project's quality assessment tool for quantitative studies (Effective Public Health Practice Project. Quality Assessment Tool For Quantitative Studies. Hamilton, ON: Effective Public Health Practice Project; 1998.)