

Appendix 1. Detailed search strategy for Ethiopian MNCH research scoping review

PubMed

<i>Population</i>	<p>(("Mothers"[Mesh] OR mother*[tiab] OR matern*[tiab] OR women*[tiab] OR "reproductive age"[tiab] OR "Pregnant Women"[Mesh] OR "Pregnancy"[Mesh] OR pregnan*[tiab] OR gravid*[tiab] OR prenatal[tiab] OR antenatal[tiab] OR pre natal[tiab] OR ante natal[tiab] OR perinatal[tiab] OR postnatal[tiab] OR post natal[tiab] OR postpartum[tiab] OR "Peripartum period"[Mesh] OR "Postpartum period"[Mesh])</p> <p>OR</p> <p>("Infant"[Mesh] OR infant*[tiab] OR newborn[tiab] OR neonat*[tiab] OR fetal[tiab] OR fetus[tiab] OR feotal[tiab] OR feotus[tiab] OR "Child"[Mesh] OR child*[tiab] OR boy[tiab] OR boys[tiab] OR girl[tiab] OR girls[tiab] OR toddler*[tiab] OR "Adolescent"[Mesh] OR teen*[tiab] OR adolescen*[tiab] OR youth[tiab])</p>
OR	
<i>Concepts</i>	<p>("Reproductive Health"[Mesh] OR "Reproductive Behavior"[Mesh] OR "Reproductive History"[Mesh] OR "Contraception"[Mesh] OR "Family Planning Services"[Mesh] OR "family planning"[tiab] OR "birth control"[tiab] OR contraception[tiab] OR "Birth Intervals"[Mesh] OR "Reproductive Health Services"[Mesh] OR "Maternal Health Services"[Mesh] OR "Child Health Services"[Mesh] OR "Maternal-Child Health Centers"[Mesh] OR "Maternal-Child Nursing"[Mesh] OR "Obstetric Nursing"[Mesh] OR "Pediatric Nursing"[Mesh] OR "Doulas"[Mesh] OR "Midwifery"[Mesh] OR "Nurse Midwives"[Mesh] OR doula*[tiab] OR midwife*[tiab] OR "Obstetric Surgical Procedures"[Mesh] OR "Prenatal Care"[Mesh] OR "Prenatal Education"[Mesh] OR "Hospitals, Maternity"[Mesh] OR "Diagnostic Techniques, Obstetrical and Gynecological"[Mesh] OR "Maternal Exposure"[Mesh] OR "Maternal Age"[Mesh] OR "Infectious Disease Transmission, Vertical"[Mesh] OR "Postnatal Care"[Mesh] OR "Kangaroo-Mother Care Method"[Mesh] OR "Intensive Care Units, Pediatric"[Mesh] OR "Intensive Care, Neonatal"[Mesh] OR "Maternal Nutritional Physiological Phenomena"[Mesh] OR "Prenatal Nutritional Physiological Phenomena"[Mesh] OR "Child Nutritional Physiological Phenomena"[Mesh] OR "Infant Nutritional Physiological Phenomena"[Mesh])</p> <p>OR</p> <p>("Maternal Health"[Mesh] OR "maternal health"[tiab] OR "Maternal Welfare"[Mesh] OR "mother-child"[tiab] OR "Mother-Child</p>

	Relations"[Mesh] OR "Maternal Behavior"[Mesh] OR "Maternal Mortality"[Mesh] OR "Parturition"[Mesh] OR birth[tiab] OR "Pregnancy Complications"[Mesh] OR "Genital Diseases, Female"[Mesh] OR "Pelvic Floor Disorders"[Mesh] OR "Gestational Weight Gain"[Mesh] OR "Birth Weight"[Mesh] OR "childbirth"[tiab] OR "childbirth complications"[tiab] OR "Depression, Postpartum"[Mesh] OR "Postpartum Hemorrhage"[Mesh] OR "Infertility, Female"[Mesh] OR "Fertility"[Mesh] OR abortion*[tiab] OR miscarriage*[tiab] OR stillbirth*[tiab] OR "Congenital, Hereditary, and Neonatal Diseases and Abnormalities"[Mesh] OR "Infant Health"[Mesh] OR "Infant Mortality"[Mesh] OR "Child Mortality"[Mesh] OR "Neurodevelopmental Disorders"[Mesh] OR "Child Behavior Disorders"[Mesh] OR "Child Behavior"[Mesh] OR "Child Development"[Mesh] OR "Child Welfare"[Mesh] OR "Child Health"[Mesh] OR "Adolescent Health"[Mesh] OR "Adolescent Development"[Mesh]))
AND	
<i>Context</i>	("Ethiopia"[Mesh] OR ethiopia[tiab])
<i>Filters</i>	English, Amharic, Human

EMBASE

<i>Population</i>	(('adolescent mother'/de OR 'expectant mother'/de OR 'surrogate mother'/exp OR 'mother*':ab,ti OR 'matern*':ab,ti OR 'women*':ab,ti OR 'reproductive age':ab,ti OR 'named groups by pregnancy'/exp OR 'pregnancy'/exp OR 'pregnan*':ab,ti OR 'gravid*':ab,ti OR 'prenatal':ab,ti OR 'antenatal':ab,ti OR 'pre natal':ab,ti OR 'ante natal':ab,ti OR 'perinatal':ab,ti OR 'postnatal':ab,ti OR 'post natal':ab,ti OR 'postpartum':ab,ti OR 'perinatal period'/de OR 'puerperium'/de)
	OR
	('infant'/exp OR 'infant*':ab,ti OR 'newborn':ab,ti OR 'neonat*':ab,ti OR 'fetal':ab,ti OR 'fetus':ab,ti OR 'feotal':ab,ti OR 'feotus':ab,ti OR 'child'/exp OR 'child*':ab,ti OR 'boy':ab,ti OR 'boys':ab,ti OR 'girl':ab,ti OR 'girls':ab,ti OR 'toddler*':ab,ti OR 'adolescent'/exp OR 'teen':ab,ti OR 'adolescen*':ab,ti OR 'youth':ab,ti)
OR	
<i>Concepts</i>	('reproductive health'/de OR 'reproductive behavior'/de OR 'reproductive history'/de OR 'contraception'/exp OR 'family planning'/de OR 'family planning':ab,ti OR 'birth control':ab,ti OR 'contraception':ab,ti OR 'maternal health service'/de OR 'maternal child health care'/de OR

	'child health care'/exp OR 'newborn nursing'/exp OR 'nurse midwifery'/de OR 'obstetrical nursing'/de OR 'pediatric nursing'/exp OR 'perinatal nursing'/de OR 'midwife'/de OR 'doula'/de OR 'traditional birth attendant'/de OR 'doula*':ab,ti OR 'midwife*':ab,ti OR 'obstetric operation'/exp OR 'prenatal care'/exp OR 'childbirth education'/exp OR 'prepregnancy care'/de OR 'perinatal care'/exp OR 'intrapartum care'/de OR 'maternal exposure'/de OR 'maternal age'/de OR 'vertical transmission'/de OR 'postnatal care'/exp OR 'kangaroo care'/de OR 'pediatric intensive care unit'/de OR 'neonatal intensive care unit'/de OR 'newborn intensive care'/de OR 'maternal nutrition'/de OR 'child nutrition'/exp OR 'adolescent nutrition'/de) OR (('maternal welfare'/de OR 'maternal health':ab,ti OR 'mother-child':ab,ti OR 'mother child relation'/de OR 'maternal behavior'/de OR 'maternal mortality'/de OR 'birth'/de OR 'birth':ab,ti OR 'pregnancy complication'/exp OR 'gynecologic disease'/exp OR 'gestational weight gain'/de OR 'birth weight'/exp OR 'childbirth':ab,ti OR 'childbirth complications':ab,ti OR 'postnatal depression'/de OR 'postpartum hemorrhage'/de OR 'female infertility'/exp OR 'female fertility'/de OR 'abortion*':ab,ti OR 'miscarriage*':ab,ti OR 'stillbirth*':ab,ti OR 'newborn disease'/exp OR 'infant disease'/exp OR 'child health'/de OR 'infant mortality'/de OR 'developmental disorder'/exp OR 'child behavior'/exp OR 'child development'/de OR 'motor development'/de OR 'child welfare'/exp OR 'adolescent health'/de OR 'adolescent development'/de OR (('adolescent mother'/de OR 'expectant mother'/de OR 'surrogate mother'/exp OR 'mother*':ab,ti OR 'matern*':ab,ti OR 'women*':ab,ti OR 'reproductive age':ab,ti OR 'named groups by pregnancy'/exp OR 'pregnancy'/exp OR 'pregnan*':ab,ti OR 'gravid*':ab,ti OR 'postnatal':ab,ti OR 'post natal':ab,ti OR 'postpartum':ab,ti OR 'perinatal period'/de OR 'puerperium'/de OR 'infant'/exp OR 'infant*':ab,ti OR 'newborn':ab,ti OR 'neonat*':ab,ti OR 'fetal':ab,ti OR 'fetus':ab,ti OR 'feotal':ab,ti OR 'feotus':ab,ti OR 'child'/exp OR 'child*':ab,ti OR 'boy':ab,ti OR 'boys':ab,ti OR 'girl':ab,ti OR 'girls':ab,ti OR 'toddler*':ab,ti OR 'adolescent'/exp OR 'teen*':ab,ti OR 'adolescen*':ab,ti OR 'youth':ab,ti) AND ('mental disease'/exp OR 'behavior disorder'/exp))))
	AND
Context	('Ethiopia'/de OR 'ethiopia':ab,ti)
Filters	[humans]/lim AND [english] AND [amharic]/lim NOT [medline]/lim

WHO African Index Medicus (via WHO Global Index Medicus)

Maternal health search

(mother* OR matern* OR women* OR "reproductive age" OR pregnan* OR gravid* OR prenatal OR antenatal OR "pre natal" OR "ante natal" OR perinatal OR postnatal OR "post natal" OR postpartum OR peripartum OR "maternal health" OR "reproductive health") AND (Ethiopia)

Limit: English

Newborn and Infant Health

(infant* OR newborn OR neonat* OR fetal OR fetus OR foetal OR feotus OR "infant health" OR "newborn health" OR birth) AND (Ethiopia)

Limit: English

Child and Adolescent Health

(child* OR boy OR boys OR girl OR girls OR toddler* OR adolescent OR teen* OR adolescen* OR youth) AND (Ethiopia)

Limit: English

Appendix 2: Categories of interventions, exposures, outcomes, and research questions

1. Interventions

1.1. Maternal interventions^{14, 26}

Among women of reproductive age 15-49 and pregnant women, interventions addressing pre-conception care areas, including

- Prevention and management of STIs including HIV
- Iron, folic acid, and calcium supplementation
- Vaccination, including tetanus and rubella
- Malaria prevention and management
- Treatment related to female genital mutilation
- Interpersonal violence
- Pregnancy spacing
- Substance use cessation (describe)
- Smoking cessation programs
- Family planning services
- General access to adequate antenatal care
- Other, specify:

Among postpartum women

- Family planning
- Prevention and management of postpartum hemorrhage
- Maternal nutrition
- General access to adequate postnatal care
- Other, specify:

1.2. Newborn interventions²⁶

- Newborn resuscitation
- Early initiation of breastfeeding
- Hygienic cord and skin care
- CPAP use for management of respiratory distress
- Surfactant use for prevention of respiratory distress
- Management of neonatal jaundice
- Thermal care
- Kangaroo-mother care
- Antiretroviral prophylaxis for HIV exposure
- Antibiotic prophylaxis/treatment
- Other, specify:

1.3. Infant and child interventions²⁶

- Exclusive breastfeeding for 6 months
- Management of malnutrition
- Management of childhood pneumonia
- Management of childhood diarrhea

- Management of children infected with or exposed to HIV
- Management of other childhood infection
- Vitamin A supplementation aged 6 months and above
- Other nutrient supplementation
- Prevention and management of childhood malaria
- Routine immunizations
- Other, specify:

2. Exposures

Exposures will be categorized as:

Accidents and injuries³

- Road injuries
- Other, specify:

Domestic violence^{22, 23}

- Intimate partner violence
- Spousal abuse
- Infant abuse
- Child abuse
- Other, specify:

Environmental exposure^{22, 23}

- Aflatoxin exposure
- Air pollution (indoor/outdoor)
- Heavy metal exposure
- Water pollution
- Other toxic exposure, specify:

Infections

Top ten infectious causes in Ethiopia based on DALYs from Global Burden of Disease Data²¹

- Diarrheal
- HIV
- Other STI
- Lower respiratory infection
- Tuberculosis
- Malaria
- Schistosomiasis
- Other infectious/neglected diseases, specify:

Nutrition^{22, 23}

Categories for common nutrition concerns in these populations:

- Anemia
- Vitamin A deficiency
- Calcium deficiency
- Folate deficiency
- Iron deficiency
- Food insecurity
- Acute malnutrition (wasting)
- Chronic malnutrition (stunting)
- Other micronutrient deficiency
- Other macronutrient deficiency
- Breastfeeding
- Other, specify:

Psychosocial^{22, 23}

- Mental health conditions (anxiety, depression, psychosis)
- Substance use and abuse
- Stress
- Other, specify:

Demographics³

- Age
- Gender
- Birth spacing
- Gestational age
- Gravidity/Parity/Abortion (GTPAL)
- Other, specify:

Social determinants of health²⁰

Based on Healthy People 2020 framework:

- Economic stability (e.g. employment, food security, housing security)
- Education (e.g. language and literacy, participation in primary, secondary, and higher education)
- Social and community context (e.g. civic participation, discrimination, incarceration, social cohesion)
- Health and healthcare (e.g. access to care, health literacy)
- Neighborhood and built environment (e.g. access to food to support health, crime and violence, housing quality, environment conditions)

3. Outcomes

Outcomes will be categorized by population: maternal, newborn, infant, and child.

Population categories will be further classified by causes of morbidity and mortality.

Categories will be derived from in-country documents (Health Management Information Systems - HMIS reports) and WHO documents on MNCH outcomes.²²⁻²⁵

3.1. Maternal outcomes (applied for pregnant women and women of reproductive age where appropriate)

Pregnancy with abortive outcome

- Spontaneous abortion/miscarriage
- Medical abortion
- Non-medical abortion
- Other, specify:

Coincidental outcomes during pregnancy

- Domestic violence
- Intimate partner violence
- Road accidents
- Other, specify:

Nutrition

- Anemia
- Malnutrition/undernutrition
- Other, specify:

Pregnancy-related complications, non-infectious

- Gestational diabetes
- Gestational hypertension without proteinuria
- Obstructed labor
- Pre-eclampsia
- Eclampsia
- Other, specify:

Pregnancy-related complications, infectious

- Sexually transmitted infections during pregnancy
- Reproductive tract infections during pregnancy
- Puerperal sepsis
- Other, specify:

Psychosocial

- Postpartum depression
- Other, specify:

Other outcomes

- Mortality
- Morbidity
- Health service utilization
- Family planning
- Other, specify:

3.2. Newborn (birth) outcomes

- Mortality
- Morbidity
- Health service utilization
- Birth asphyxia/Intrapartum hypoxia
- Birth injury
- Birth weight
- Congenital malformations, deformations and chromosome abnormalities
- Fetal growth and malnutrition
- Hyperbilirubinemia/Jaundice
- Neonatal sepsis
- Preterm Birth
- Stillbirth (specify fresh or macerated if applicable)
- TORCH infections
- Other, specify:

3.3. Infant and child outcomes

Infectious

- Diarrheal disease (specify if applicable)
- HIV
- Malaria
- Measles
- Meningitis
- Parasitic infections
- Respiratory disease (not tuberculosis)
- Septicemia
- Tetanus
- TORCH infections
- Trachoma
- Tuberculosis
- Urinary tract infections
- Other, specify:

Nutrition

- Anemia
- Anthropometric measurements
- Acute malnutrition (wasting)
- Chronic malnutrition (stunting)
- Underweight
- Malnutrition, not specified
- Other, specify:

Violence and injuries

- Violence (e.g. child abuse)
- Road accidents and injury
- Burns and corrosions
- Poisoning
- Other, specify:

Psychosocial

- Anxiety
- Depression
- Psychosis
- Other, specify:

Other outcomes

- Mortality
- Morbidity
- Health service utilization
- Other, specify:

4. Research questions

Evidence-based studies will be charted by types of research questions, categorized as, including but not limited to,

- Cost-effectiveness: What is the cost of this intervention? How does it compare to the benefits of the intervention?
- Association/Etiology: What causes the problem?
- Evaluation: How well does this intervention work?
- Descriptive: What are the characteristics of this population or phenomenon?
- Incidence: What proportion of individuals are newly diagnosed/present with the problem?
- Prevalence: What proportion of the population is living with this problem at a given time?
- Intervention: What should be done to treat the problem?
- Perceptions: What are perceptions around the problem?
- Prevention: What can be done to prevent the problem?
- Diagnosis: How can we identify those with the problem and those without the problem?
- Prognosis: What is the likely outcome of the problem?
- Screening: Will detecting this problem early, before symptoms, make differences in outcomes?