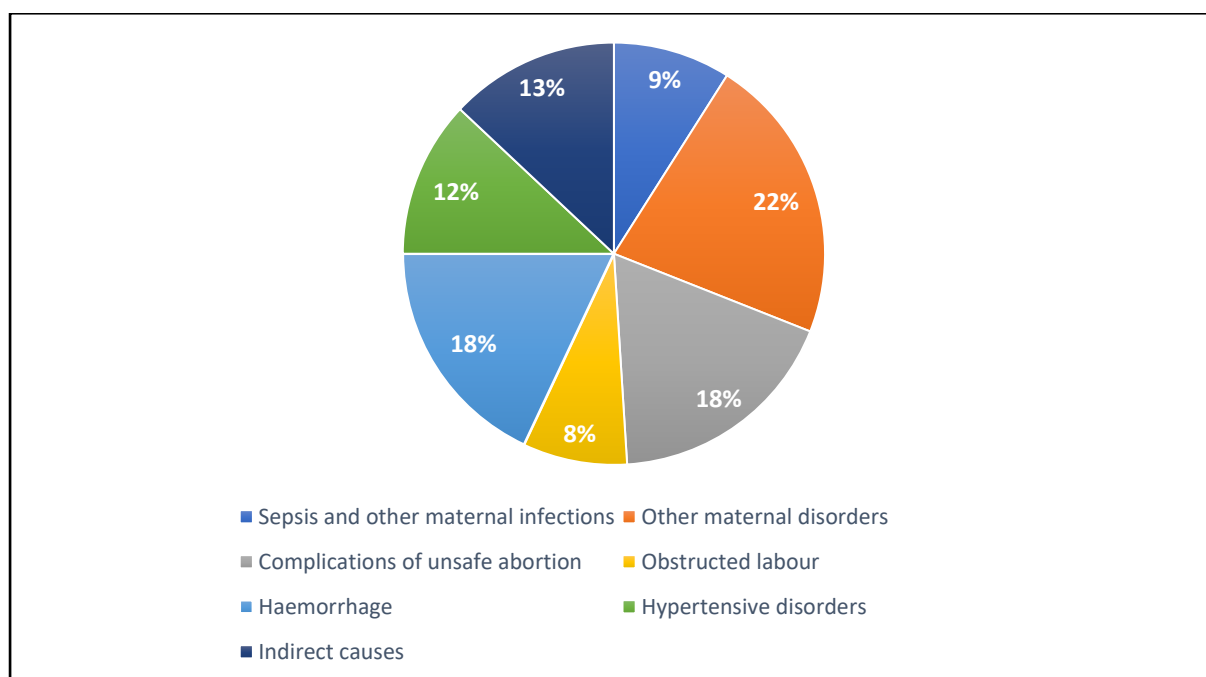


APPENDIX 1:



Main causes of maternal death and key interventions (Source: Series Papers Maternal Health 1 and 6)

MeSH Terms Use in Electronic Database Search	
Category	MeSH Term
Population	'Community health worker', 'care givers', 'health personnel', 'healthcare professional', 'Frontline worker', 'health service', 'ASHA', 'AWW', 'maternal health service', 'child health service', 'new-born healthcare', 'mothers health care', 'FLW', 'CHW'
Intervention	'mHealth', 'mobile health', 'ehealth', 'm-health', 'mobile app', 'smart phone'
Outcomes	'effectiveness', 'effect', 'adaptation', 'adoption', 'acceptability', 'feasibility', 'behaviour', 'attitude', 'Communication', 'acceptance', 'barriers'
Place	'BIMARU', 'Bihar', 'Uttar Pradesh', 'UP', 'Madhya Pardesh', 'MP', 'Rajasthan', 'India'

PICO Format of Research Question	
Population (P)	Pregnant women, mothers, children's, FLW, and healthcare professionals
Intervention (I)	mHealth or Mobile Health (different applications)
Comparison (C)	Traditional paper base or non-technological method
Outcomes (O)	<ul style="list-style-type: none"> • Effectiveness of mHealth on target population • Feasibility of mHealth intervention • Barriers and challenges in accepting mHealth

Details of all included studies			
Sr No.	Study	State	Title
1.	Carmichael et al., 2019	Bihar	Use of mobile technology by frontline health workers to promote reproductive, maternal, new-born and child health and nutrition: a cluster randomized controlled Trial in Bihar, India
2.	Kaphle et al., 2015	Bihar	Adoption and Usage of mHealth Technology on Quality and Experience of Care Provided by Frontline Workers: Observations from Rural India
3.	LeFevre et al., 2019	Madhya Pradesh & Rajasthan	Are stage-based health information messages effective and good value for money in improving maternal new-born and child health outcomes in India? Protocol for an individually randomized controlled trial
4.	Negandhi et al., 2016	Bihar	Computer tablet-based health technology for strengthening maternal and child tracking in Bihar
5.	Nimmagadda et al., 2019	Bihar and Madhya Pradesh	Effects of an mHealth intervention for community health workers on maternal and child nutrition and health service delivery in India: protocol for a quasi-experimental mixed-methods evaluation
6.	Usmanova et al., 2020	Rajasthan and Madhya Pradesh	Acceptability and Barriers to Use of the ASMAN Provider-Facing Electronic Platform for Peripartum Care in Public Facilities in Madhya Pradesh and Rajasthan, India: A Qualitative Study Using the Technology Acceptance Model-3
7.	Ward et al., 2021	Bihar	Implementing health communication tools at scale: mobile audio messaging and paper-based job aids for front-line workers providing community health education to mothers in Bihar, India
8.	Ward et al., 2020	Bihar	Impact of mHealth interventions for reproductive, maternal, new-born and child health and nutrition at scale: BBC Media Action and the Ananya program in Bihar, India

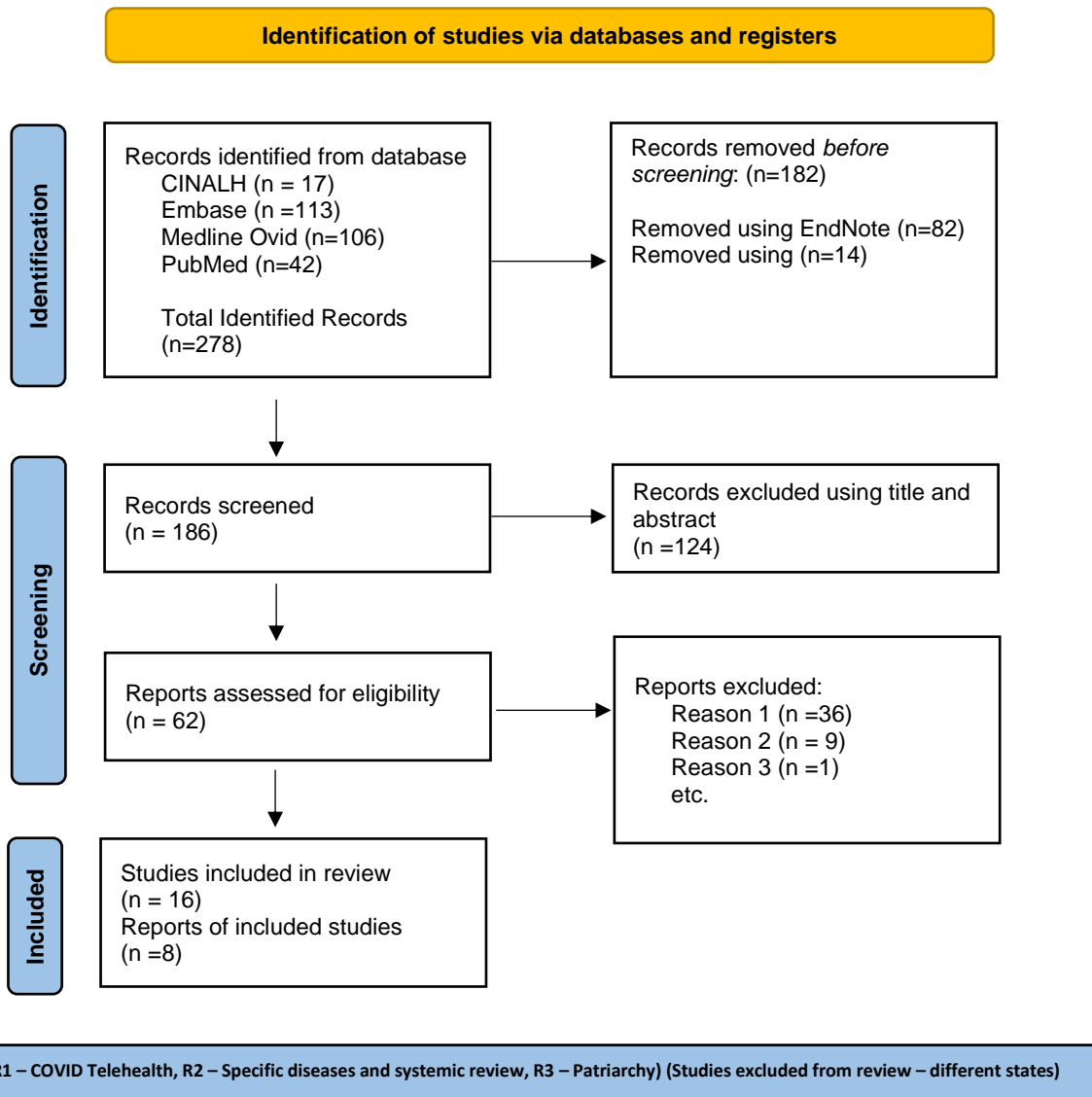


Figure 1: PRISMA flow diagram for database search of studies on mHealth interventions for maternal and child health in BIMARU states of India (Page et al., 2020)

Critical Appraisal Skills Programme for Randomised Control Trial Study

Individual study	Carmichael et al., 2019	LeFevre et al., 2019
Section A: Is the basic study design valid for a randomised controlled trial?		
1: Did the study address a clearly focused research question?	Yes	Yes
2: Was the assignment of participants to interventions randomised?	Yes	Yes
3: Were all participants who entered the study accounted for at its conclusion?	Yes	No
Section B: Was the study methodologically sound?		
4: Blinding	Can't tell	No
5: Were the study groups similar at the start of the randomised controlled trial?	Yes	Yes
6: Apart from the experimental intervention, did each study group receive the same level of care (that is, were they treated equally)?	Yes	Yes
Section C: What are the results?		
7: Were the effects of intervention reported comprehensively?	Yes	Yes
8: Was the precision of the estimate of the intervention or treatment effect reported?	No	Yes
9: Do the benefits of the experimental intervention outweigh the harms and costs?	No	Yes
Section D: Will the results help locally?		
10: Can the results be applied to your local population/in your context?	Yes	Yes
11: Would the experimental intervention provide greater value to the people in your care than any of the existing interventions?	Yes	Yes
TOTAL: 11	8	9

Critical Appraisal Skills Programme Qualitative Study

Individual study	Negandhi et al., 2016	Usmanova et al., 2020
Section A: Are the results valid?		
1: Was there a clear statement of the aims of the research?	Yes	Yes
2: Is a qualitative methodology appropriate?	Yes	Yes
3: Was the research design appropriate to address the aims of the research?	Can't Tell	Yes
4: Was the recruitment strategy appropriate to the aims of the research?	Yes	Yes
5: Was the data collected in a way that addressed the research issue?	Yes	Yes
Section B: What are the results?		
6: Has the relationship between research and participants been adequately considered?	Can't Tell	Can't Tell
7: Have Ethical issues been taken in consideration?	Yes	Yes
8: Was the data analysis sufficiently rigorous?	No	Yes
9: Is there a clear statement of findings?	Yes	Yes
Section C: Will the results help locally?		
10: Was result valuable for your research?	Yes	Yes
TOTAL	7	9

JBI Critical Appraisal Checklist for Quasi-Experimental

Individual study	Nimmagadda et al., 2019
1: Clarity of cause and effect	Yes
2: Similarity between participants included in comparisons	Yes
3: Similar treatment/care among participants	Yes
4: Control group	Yes
5: Multiple measurements of the outcome both pre and post the intervention	Yes
6: Complete follow up	Can't Tell
7: Similarity in outcome measurement	Yes
8: Reliability of outcome measurement	Yes
9: Appropriate statistical analysis	Yes
TOTAL	8

Critical Appraisal Framework for Original Research (CAFFOR) checklist for Mixed Method study			
Individual study	Kaphle et al., 2015	Ward et al., 2020	Ward et al., 2021
1: Research problem, purpose, objectives, question, and rationale	Yes	Yes	Yes
2: Research approach and study design	Yes	Yes	Yes
3: Population, sampling, and sample size	No	Yes	No
4: Ethical conduct	Yes	Yes	Yes
5: Recruitment, participation, data collection	Yes	Yes	Yes
6: Interpreting key findings	Yes	Yes	Yes
7: Contribution and transferability	Yes	Yes	Yes
TOTAL	6	7	6