

BMJ Open Parent and family perspectives on home-based newborn care practices in lower-income countries: a systematic review of qualitative studies

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ABSTRACT

Objectives To understand family and parent perspectives on newborn care provided at home to infants in the first 28 days of life, in order to inform behavioural interventions for improving care in low-income countries, where the majority of newborn deaths occur.

Design A comprehensive, qualitative systematic review was conducted. MEDLINE/PubMed, Embase and Cumulative Index of Nursing and Allied Health databases were systematically searched for studies examining the views of parents and family members on newborn care at home. The search period included all studies published from 2006 to 2017. Studies using qualitative approaches or mixed-methods studies with substantial use of qualitative techniques in both the methods and analysis sections were included. Studies meeting the inclusion criteria were extracted and evaluated using Critical Appraisal Skills Programme guidelines. Following the initial selection and appraisal, barriers and facilitators to recommended care practices across several domains were synthesised.

Results Of 411 results retrieved, 37 met both inclusion and quality appraisal criteria for methodology and reporting. Geographical representation largely reflected that of newborn health outcomes globally, with the majority of studies conducted in the region of Sub-Saharan Africa and South Asia. Specific barriers and facilitators were identified among a range of domains including: cord care, drying and wrapping, thermal control, skin to skin contact, hygiene, breast feeding, care-seeking for illness, and low birthweight recognition. Cross cutting facilitators, common to all domains were evident and included delivery at a health facility, inclusion of female relatives in care counselling, lower healthcare costs, and exposure to newborn care behaviour change messaging in the community.

Conclusions When designing behavioural interventions to address newborn mortality at scale, policy-makers and practitioners must include barriers and facilitators important to families in low-income settings.

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INTRODUCTION

Approximately 46% of all under-five deaths in 2016 occurred during the neonatal period,

Strengths and limitations of this study

- Strengths of the review include having had a librarian/information scientist in the research team, and multiple reviewers experienced in qualitative research in low-income countries, primary qualitative data collection and analysis.
- Other strengths of the study was the comprehensive search strategy covering multiple relevant databases; appraisal of quality among included studies based on critical appraisal skills guidelines; and a comprehensive description of study findings.
- Limitations included the exclusion of documents not available in English, and those that may have been relevant, but were outside the defined date limitations. A further limitation is that because findings are presented in the aggregate, care practices from different geographical areas may require different interventions.

the initial 28 days following birth (global incidence). Southern Asia and sub-Saharan Africa account for nearly 80% of the newborn deaths. By 2030, the Sustainable Development Goals (SDG) target is to reduce neonatal mortality to at least as low as 12 deaths per 1000 live births. However, per current trends, over 50 countries will fail to meet this target on newborn survival.¹ Yet, the majority of these deaths are preventable.²

During the neonatal period, care provided by parents and caregivers is critical for newborn survival.³ Optimal or essential newborn care practices as defined by the WHO include immediate drying and wrapping of newborns after birth, initiating skin-to-skin (STS) contact, clean cord care, dry cord care, immediate initiation of breast feeding and exclusive breast feeding until 6 months of age, as well as ensuring warmth (thermal control) of the newborn through delayed bathing.⁴ In addition, parents or caregivers at home must also provide nurturing care,

safety and security, and responsiveness to the newborn's needs. The provision of quality, effective care at the home and community level is critical for improving newborn health outcomes and promoting optimal early childhood development. A reduction in neonatal mortality by 25% can be achieved by scaling up community interventions, including provision of optimal home care.⁵ Although feasible interventions exist to reduce newborn mortality, uptake of these interventions is low.⁶

In order to increase scale-up of coverage and implementation of effective home and community-based newborn care practices, providing data on research priorities for newborn health is key.⁷ Researchers have identified specific domains related to caregiver perceptions and behaviours as priorities.⁸ Qualitative research has been particularly useful for obtaining information on newborn care practices at home, which often vary based on the sociocultural context in low-income countries.⁹

Despite the existence of multiple individual qualitative and formative research studies on home and community-based newborn care, a systematic review of the available qualitative research is lacking. Therefore, we conducted a systematic review to provide data to improve both programming and policy for home and community care for newborns.⁷

The primary objective of this study was to systematically review qualitative literature to understand parent and family experiences with home newborn care practice in low-income countries, presenting information related to barriers and facilitators to inform behavioural interventions focused on improving newborn survival and care.

METHODS

The review followed guidelines from the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement.¹⁰ Due to the emphasis on qualitative research, the review primarily employed the ENTREQ guidelines for reporting, while also drawing guidance from Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) which is more specific to the requirements of quantitative literature reviews.^{10 11}

Newborn care practices were defined as all actions taken by parents/caregivers that provide for the essential biological, physiological and psychological needs of the newborn infant following delivery and up to the end of the newborn period (28 days of life). These included, but were not limited to, the essential newborn care practices as defined by WHO: cord care, drying and wrapping after delivery, initiation of breast feeding, bathing, thermal control, breast feeding and care-seeking for newborn illness.¹²

Four of five researchers involved in conducting the review, analysing the results, and writing up the manuscript had strong experience in qualitative research methods, and hold graduate and/or doctoral level qualification in public health, with a specialisation in research

methods (ANB, EFK, AK and SE). One researcher (RH) is an information scientist with a qualification in library sciences and specialisation in support to research in science and biomedicine.

Patient and public involvement

No patients and or public were involved in this systematic review.

Inclusion and exclusion criteria

Studies were included if they used qualitative data collection methods such as interviews, focus groups, direct observation and participatory action research. Inclusion requirements also stipulated that studies needed to have a well-described methodology section and a clear description of the qualitative data analysis methods and process (eg, grounded theory, narrative analysis, content analysis, thematic analysis). Finally, data on newborn care at home must have been directly obtained from parents or caregivers of newborns (infants under 28 days of age, including low birth weight or small babies), whether born at home or at a facility, with or without skilled attendance, and regardless of whether the study also included additional data from non-family members or health workers such as traditional birth attendants (TBAs) (which data were not used for this review). Caregivers were defined as mothers/fathers or other adult family or community members who provided day-to-day physical and psychological support to meet the basic needs of newborn infants. Data gathered from community health workers, and from professional or non-professional healthcare providers, were not used or included in this study although it may have been present in one of the articles included in the review.

Excluded studies were those for which it was difficult to extract qualitative data (eg, mixed methods studies without clearly labelled data, or studies in settings where perceptions of parents'/caregivers' experiences of newborn care practices could not be clearly identified, such as summaries or aggregate data). Commentaries, protocols and systematic reviews were not included in the analysis. Additionally, studies from countries other than those defined by the World Bank as low-income countries and lower-middle-income countries (which have a gross national income per capita of less than \$4125) were excluded.¹³

Search strategy

The review began in 2016 and initially targeted literature published in the previous ten years. Due to delays in the publication process, however, we extended a further year to encompass the timeframe 2006–2017. The following electronic databases were searched: MEDLINE (PubMed), Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL: EBSCOhost). A health sciences librarian (RH) developed the database searching strategy and conducted the final searches. The initial search strategy was developed for MEDLINE and then adapted

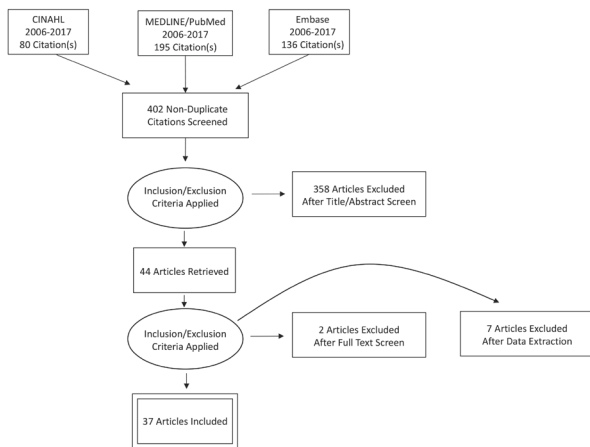


Figure 1 Selection flow chart of review process.

for other databases. Medical Subject Headings (MeSH) were used followed by free-text terms using controlled vocabulary (see the online supplementary appendix for a detailed description of the search strategy). Only articles in English were included due to potential difficulties in translating and interpreting foreign language qualitative data by native English-speaking reviewers, and to ensure that the review covered the most current literature on infant and young child feeding practices.

Figure 1 presents the selection process which followed the PRISMA guidelines for reporting of systematic reviews.¹¹ Search results were initially imported into Endnote reference management software (Thomson Reuters [Scientific]) and duplicates and irrelevant studies were removed. Four independent reviewers screened study titles and abstracts for suitability against inclusion and exclusion criteria. The decision to include or exclude a study required agreement of two reviewers. If after consultation a decision was not reached, a third reviewer made the final decision.

Data extraction

For organisation of extracted data, a unified matrix was used to record specific characteristics of included studies. Extracted data included reference details (author/data/publication), methodological approach (eg, interviews/focus groups), conceptual framework (eg, grounded theory), objectives or aims of the study, sampling methodology, sociodemographic characteristics of participants, country/region and analysis method(s). The results of the selection process and data extraction, with selected characteristics, are presented in table 1.

QUALITY APPRAISAL

After all articles were selected for review inclusion, each article was assessed and scored by two reviewers (AB, EFK) according to the Critical Appraisal Skills Programme (CASP) checklist¹⁴ to describe quality and internal validity. All the selected studies met at least half of criteria defined by the CASP checklist (see 1–10 below) including

domains such as appropriateness of study design, data collection techniques and analysis methods. The detailed CASP criteria are as follows:

1. Was there a clear statement of the aims of the research?
2. Is a qualitative methodology appropriate?
3. Was the research design appropriate to address the aims of the research?
4. Was the recruitment strategy appropriate to the aims of the research?
5. Was the data collected in a way that addressed the research issue?
6. Has the relationship between researcher and participants been adequately considered?
7. Have ethical issues been taken into consideration?
8. Was the data analysis sufficiently rigorous?
9. Is there a clear statement of findings?
10. How valuable is the research?

Possible responses: yes, no and cannot assess due to missing information.

For each checklist item, studies were scored with a 1 if a CASP criterion was met and 0 if not. These scores are available in table 2.

Following data extraction, relevant text from the results, discussion and conclusion sections, which provided information directly pertinent to home care of newborns from the perspectives of family caregivers, were imported into NVivo V.11 qualitative software (NVivo qualitative data analysis software; QSR International, 2015).

Following the appraisal, deductive content analysis based on the WHO guidelines¹⁵ was employed to identify domains for investigation and presentation within a framework analysis approach.¹⁶ The focus of analysis was on manifest content rather than latent content.¹⁷ For each domain of newborn care, study findings were extracted and information on barriers and facilitators synthesised. Then, a narrative summary of the identified domains and themes, developed according to content, was reviewed by the research team (SE, ANB, EFK) to produce a consensus-based listing including barriers and facilitators to recommended newborn care practices.

RESULTS

Geographical overview of studies reviewed

The vast majority of studies identified emerged from research carried out in the Sub-Saharan region, while the South Asian region was also well represented in the qualitative literature relating to newborn care practices at home.

Sub-Saharan Africa

Studies from the African region comprised 24 of 37 included for review, and information presented in the studies described the full range of home based newborn care practices.

South Asia

From the South Asian region, 8 of 37 studies presented information on newborn care practices, covering more

Table 1 Characteristics of included studies*

Author(s)	Year	Qualitative methods	Participants†	Country/ countries	Newborn care practices
Aborigo, Moyer, Rominski, <i>et al</i>	2012	In-depth interviews (IDI), focus group discussions (FGD).	Mothers, healthcare providers, traditional birth attendant (TBA), community leaders, grandmothers, compound heads, heads of households.	Ghana	Breastfeeding practices
Adejuyigbe, Bee, Amare <i>et al</i>	2015	IDI, narrative interviews and observations (O).	Mothers, fathers, health workers, grandmothers, TBA.	Nigeria, Tanzania, Ethiopia	Thermal care and bathing
Alam, Ali, Sultana <i>et al</i>	2008	IDI, O.	Mothers, fathers, grandmother, family members, TBA.	Bangladesh	Cord care practices
Amare	2014	IDI.	Mothers, grandmothers, TBA.	Ethiopia	Cord care practices
Amare, Shamba, Manzi, <i>et al</i>	2015	IDI, FGD, O.	Mothers, fathers, health workers, TBA, grandmothers, merchants.	Four African sites	Emollient use for skin care
Atyeo, Frank, Vail <i>et al</i>	2017	Semistructured interviews (SSI).	Mothers.	Guatemala	Breastfeeding practices
Bazzano, Kirkwood, Tawiah-Agyeman, <i>et al</i>	2008	IDI, FGD, participant observation, case study (CS), SSI.	Mothers, grandmothers, health providers, community members.	Ghana	Care-seeking behaviours
Bazzano, Oberhelman, Potts <i>et al</i>	2015	IDI, O, FGD, visual media.	Mothers, grandmothers, fathers.	Cambodia	Breastfeeding practices
Bazzano, Var, Grossman, <i>et al</i>	2017	O, SSI.	Mothers.	Cambodia	Newborn care practices with emphasis on use of emollients
Byaruhanga, Nsungwa-Sabiiti, Kiguli, <i>et al</i>	2011	IDI, FGD.	Mothers, TBA, elderly care takers.	Uganda	Care-seeking behaviours
Degefie, Amare, and Mulligan	2014	IDI, key informant interviews.	Mothers, grandmothers, TBA, fathers.	Ethiopia	General care practices
Dhinga, Gittelsohn, Suleiman, <i>et al</i>	2014	IDI, FGD.	Mothers, fathers, TBA, grandmothers, healthcare providers.	Tanzania	Cord care practices
Engmann <i>et al</i>	2013	IDI, FGD.	Mothers, grandmothers, healthcare providers.	Ghana	Newborn illness, danger signs and care-seeking behaviour
Gondwe, Munthali, Ashorn, <i>et al</i>	2014	IDI, FGD.	Mothers, fathers, TBA, grandmothers, traditional healers.	Malawi	Preterm birth and care-seeking practices
Herlihy, Shaikh, Mazimba, <i>et al</i>	2013	IDI, FGD.	Mothers, grandmothers, TBA, community members.	Zambia	Cord care practices
Hill, Tawiah-Agyemang, Manu <i>et al</i>	2010	IDI, FGD and narratives.	Mothers, grandmothers, TBA, fathers, pregnant women.	Ghana	Thermal care practices
Hunter, Callaghan-Koru, Mahmud, <i>et al</i>	2014	IDI, FGD.	Pregnant women, mothers, husbands, grandmothers, traditional healers, community leaders, religious leaders, healthcare providers.	Bangladesh	Skin to Skin practices
Kesterton and Cleland	2009	IDI, FGD.	Mothers, grandmothers, TBA.	India	General care practices
Khadduri, Marsh, Rasmussen <i>et al</i>	2008	SSI, FGD.	Women of reproductive age, health service providers, mothers, fathers.	Pakistan	General care practices
Lee, Durham, Booth, <i>et al</i>		IDI, FGD.	Mothers, healthcare staff, key informants.	Lao Peoples Democratic Republic	Breastfeeding practices
Lunze, Yeboah-Antwi and Marsh	2014	IDI, FGD.	Mothers, community leaders, health officers, grandmothers.	Zambia	Neonatal hypothermia and thermal care practices

Continued

Table 1 Continued

Author(s)	Year	Qualitative methods	Participants†	Country/countries	Newborn care practices
Melesse-Salasibew, Filteau, and Marchant	2014	IDI, SSI, FGD.	Mothers, local experts on newborn care practices.	Ethiopia	General care practices following home births
Moran, Choudhury, Khan, <i>et al</i>	2009	IDI.	Pregnant women, mothers.	Bangladesh	General care practices
Moyer, Aborgio, Logonia <i>et al</i>	2012	IDI, FGD.	Women with newborns, grandmothers, compound heads, community leaders, TBA, healthcare providers.	Ghana	Cord care practices
Mrisho, Schellenberg, Mushi <i>et al</i>	2008	IDI, FGD, CS.	Female community informants.	Tanzania	Home-based care practices
Nabiwemba, Atuyambe, Criel, <i>et al</i>	2014	IDI.	Mothers.	Uganda	Care practices for LBW babies
Nalwadda, Waiswa, Guwatudde, <i>et al</i>	2015	IDI, FGD.	Mothers, fathers, TBA.	Uganda	General care practices with emphasis on cord care
Newbrander, Natiq, Shahim, <i>et al</i>	2014	IDI, FGD, O.	Household members of perinatal woman, community members.	Afghanistan	General care practices
Okeyere, Tawiah-Agyemang, Manu, <i>et al</i>	2010	IDI, FGD, birth narratives (BN).	Mothers, TBAs, grandmothers, husbands, <i>asram</i> healers.	Ghana	Traditional illness
Pati, Chauhan, Panda, <i>et al</i>	2014	IDI.	Mothers, TBA.	India	General care practices with an emphasis on breast feeding
Premji, Khowaja, Meherali, <i>et al</i>	2014	IDI, FGD.	Mothers, fathers, grandmothers.	Pakistan	General care practices
Sacks, Moss, Winch <i>et al</i>	2015	IDI, FGD, O.	Mothers, TBA, hospital staff.	Zambia	Skin, thermal and cord care
Shamba, Schellenberg, Hildon <i>et al</i>	2014	IDI, FGD, BN.	Mothers, TBA.	Tanzania	Bathing, thermal, and skin to skin care practices
Tawiah-Agyemang, Kirkwood, Edmond, <i>et al</i>	2008	SSI, FGD.	Mother, women of childbearing age, health workers, policy-makers.	Ghana	Initiation of breast feeding
Thairu and Pelto	2008	IDI.	Mothers.	Tanzania	General care practices
Waiswa, Kemigisa, Kiguli, <i>et al</i>	2008	IDI, FGD.	Mothers, fathers, grandparents.	Uganda	General care practices
Walsh, Norr, Sankar, <i>et al</i>	2014	FGD.	TBA, pregnant women, stakeholders, traditional healers.	Haiti	Cord care practices

*Colour coding indicates geographical regions. Orange: Sub Saharan Africa, Blue: South Asia, Light Orange: Southeast Asia, Green: Latin America and Caribbean.

†Data for the review were only extracted from participants who were family members (including mothers of newborns or mothers-to-be) and non-professionals who provided care at home to the newborn.

general rather than specific domains of newborn care, though one focused on breast feeding.

Southeast Asia

Three studies, two related to breast feeding in Cambodia and Lao PDR, along with another from Cambodia related to skin care, were identified from the Southeast Asian region.

Latin America/Caribbean

Two qualitative studies were identified from the Latin America/Caribbean region, from Guatemala and Haiti, related to breast feeding and cord care respectively.

Barriers and facilitators

A comprehensive list of barriers and facilitators stratified by the recommended care practice that were generated through the data synthesis exercise appears in [table 3](#). Among the 37 studies in this review, many of the reported barriers and facilitators were cross-cutting

Table 2 Critical Appraisal Skills Programme (CASP) Assessment

Author(s)	Year	CASP 1	CASP 2	CASP 3	CASP 4	CASP 5	CASP 6	CASP 7	CASP 8	CASP 9	CASP 10	Overall score
Aborigo, Moyer, Rominski <i>et al</i>	2012	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Adejuyigbe, Bee, Amare <i>et al</i>	2015	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Alam, Ali, Sultana <i>et al</i>	2008	Y	Y	Y	Y	Y	N	Y	Y	C	Y	8/9
Amare	2014	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Amare, Shamba, Manzi, <i>et al</i>	2015	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Atyeo, Frank, Vail <i>et al</i>	2017	Y	Y	N	C	N	Y	Y	Y	Y	Y	7/9
Bazzano, Kirkwood, Tawiah-Agyemang, <i>et al</i>	2008	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	8/10
Bazzano, Oberhelman, Potts, <i>et al</i>	2015	Y	Y	Y	Y	Y	C	Y	Y	Y	Y	9/9
Bazzano, Var, Grossman, <i>et al</i>	2017	Y	Y	Y	Y	Y	C	Y	Y	Y	Y	9/9
Byaruhanga, Nsungwa-Sabiti, Kiguli, <i>et al</i>	2011	Y	Y	N	Y	Y	N	Y	Y	Y	C	7/9
Degefie, Amare and Mulligan	2014	Y	Y	Y	Y	C	N	Y	C	Y	Y	7/8
Dhingra, Gittelsohn, Suleiman, <i>et al</i>	2014	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Engmann, Adongo, Akawire, <i>et al</i>	2013	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Gondwe, Munthali, Ashorn, <i>et al</i>	2014	Y	Y	Y	Y	C	N	Y	Y	Y	Y	8/9
Herlihy, Shaikh, Mazimba, <i>et al</i>	2013	Y	Y	Y	Y	C	N	Y	C	Y	Y	7/8
Hill, Tawiah-Agyemang, Manu, <i>et al</i>	2010	Y	Y	Y	Y	Y	N	N	C	Y	Y	7/9
Hunter, Callaghan-Koru, Mahmud, <i>et al</i>	2014	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Kesterton and Cleland	2009	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Khadduri, Marsh, Rasmussen, <i>et al</i>	2008	Y	Y	Y	Y	C	N	N	C	Y	Y	7/9
Lee, Durham, Booth, <i>et al</i>	2013	Y	Y	Y	Y	C	N	Y	C	Y	Y	7/8
Lunze, Yeboah-Antwi, Marsh, <i>et al</i>	2014	Y	Y	Y	Y	Y	N	Y	C	Y	Y	8/9
Melesse-Salasibew, Filteau and Marchant	2014	Y	Y	Y	N	Y	N	Y	N	Y	C	7/9
Moran, Choudhury, Khan, <i>et al</i>	2009	Y	Y	Y	Y	C	N	Y	C	Y	Y	7/8
Moyer, Aborigo, Logonia, <i>et al</i>	2012	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Mirsho, Schellenberg, Mushi, <i>et al</i>	2008	Y	Y	Y	Y	C	N	Y	N	Y	Y	7/9
Nabiwemba, Atuyambe, Criel, <i>et al</i>	2014	Y	Y	Y	Y	C	N	Y	C	Y	Y	7/8
Nalwadda, Waiswa, Guwatudde, <i>et al</i>	2012	Y	Y	Y	Y	C	N	Y	C	Y	Y	7/8
Newbrander, Natiq, Shahim, <i>et al</i>	2010	Y	Y	Y	Y	C	N	Y	N	Y	Y	7/9
Okyere, Tawiah-Agyeman, Manu, <i>et al</i>	2006	Y	Y	Y	Y	C	N	Y	N	Y	Y	7/9
Pati, Chauhan, Panda, <i>et al</i>	2014	Y	Y	Y	Y	N	N	Y	N	N	C	5/10
Premji, Khowaja, Meherali, <i>et al</i>	2014	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Sacks, Moss, Winch, <i>et al</i>	2015	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Shamba, Schellenberg, Hildon, <i>et al</i>	2014	Y	Y	Y	Y	Y	C	Y	Y	Y	Y	8/9

Continued

Table 2 Continued

Author(s)	Year	CASP 1	CASP 2	CASP 3	CASP 4	CASP 5	CASP 6	CASP 7	CASP 8	CASP 9	CASP 10	Overall score
Tawiah-Agyemang, Kirkwood, Edmond, et al	2008	Y	Y	Y	Y	N	N	Y	Y	C	Y	7/9
Thairu and Pelto	2008	Y	Y	Y	Y	N	N	Y	Y	Y	Y	9/10
Waiswa, Kernigisa, Kiguli, et al	2008	Y	Y	Y	N	N	N	Y	Y	Y	Y	8/10
Walsh, Norr, Sankar, et al	2015	Y	Y	Y	Y	N	N	Y	Y	Y	Y	9/10

for recommended newborn care practices (ie, cord care, drying and wrapping after delivery, prompt initiation of breast feeding, bathing, thermal control, breast feeding and care-seeking for newborn illness). Across all practices, delivering at a health facility, including grandmothers in decision-making processes during and after pregnancy, low healthcare costs, and exposure to newborn care messaging in the community were reported as important facilitators for adoption of recommended newborn care practices. Common barriers across the recommended practices included traditional and historical beliefs and practices, cultural and gender norms, geographical location, conflicting health messaging and societal pressures.

Barriers that influenced adoption of recommended *cord care practices* included lack of resources (eg, clean water and razor blades), misinformation on timeliness of cord cutting, religious and cultural beliefs, and untrained birth attendants. Facilitators included institutional delivery, exposure to educational campaigns on safe and hygienic cord cutting practices, community outreach activities promoting hand-washing and provision of clean razor blades, decision-making by grandmothers and women leaders, and cord-care counselling by TBA.

Barriers to timely *drying and wrapping* included perceptions of newborn vulnerability and dirtiness, conflicting advice from household stakeholders, and waiting for delivery of the placenta. Facilitators included institutional delivery, exposure to behaviour change campaigns on newborn thermal regulation, traditional wrapping practices, and the presence of more than one birth attendant during delivery.

Factors impeding *delayed bathing* included societal pressure for cleanliness, preference for immediate bathing due to concerns about ritual pollution and hypothermia, negative perceptions of the vernix and immediate bathing at health facilities. Factors that facilitated delayed bathing after delivery included hospital-based birth, exposure to newborn care messaging on the radio during pregnancy, communication between healthcare workers in the community and at the facility during pregnancy, and social support from other women in the household.

Factors inhibiting *STS care* and *thermal control* practices included use of blankets instead of STS contact, not immediately releasing baby to mother following delivery, early bathing, concerns of disease transmission, and maternal household duties. Facilitators included exposure to kangaroo care messaging during pregnancy, observing positive newborn health outcomes of other mothers who used kangaroo care practices, medical advice from healthcare providers, and prior participation in behaviour change interventions.

Barriers to *care-seeking for illness* included lack of transport, minimal financial resources, distances to health facility, gender norms, prior negative experiences at health facilities, and cultural norms such as protective isolation during the postpartum period. Facilitators included family knowledge and recognition of danger signs and illness symptoms, lower healthcare costs,

Table 3 Barriers and facilitators described in articles reviewed

Domain of newborn care	Barriers	Facilitators	Article number per table 2, year	Total number of article mentions
Cord care	<p>Lack of supplies, including water or infection prevention supplies.</p> <p>Using surgical spirits and powder.</p> <p>Unhygienic cutting practices, including used, unsterilised razor blades or scissors.</p> <p>Unskilled attendants.</p> <p>Delayed cord cutting, resulting in infection.</p> <p>Mixed perception about the length at which cord should detach and heal.</p> <p>Use of topical applications to the cord, including herbs, butter and indigenously made substances, for medicinal/protective purposes.</p> <p>Application of traditional remedies and substances on the cord to moisturise or dry it and facilitate its separation and promote healing.</p> <p>Belief that cord infections caused by mother's diet.</p> <p>Lack of understanding about cord cleaning.</p> <p>Lack of understanding of risks and infections affecting the cord and certain signs of infection, such as redness.</p> <p>Cultural belief and newborn care practices not conforming to recommended practices.</p> <p>Cost of supplies, including chlorhexidine solution.</p> <p>Religious and cultural beliefs about cord cutting and cleaning.</p> <p>Umbilical cord thought to make baby vulnerable to witchcraft.</p> <p>Mothers cutting the cord themselves.</p> <p>Umbilical cord not tied prior to cutting, can lead to tetanus.</p> <p>Practice of only tying to cord on the side of the baby.</p> <p>Recontamination of washed hands before attending to newborn.</p> <p>Seclusion of mother and baby in postpartum period may lead to late identification of illness and delay to seeking care.</p> <p>Using materials, such as rope and twigs, in cord tying.</p> <p>Disconnect between healthcare providers and community.</p> <p>Local conceptions regarding role of cord tying in stemming blood flow.</p> <p>Concerns regarding the length of time until cord detachment.</p> <p>Presence of blood clots associated with curses.</p>	<p>Knowledge about cord care.</p> <p>Community stakeholder recognition that infants are susceptible to cord infection.</p> <p>Delivery in hospital.</p> <p>Informed at health facility.</p> <p>Tailored behaviour change communication.</p> <p>Appropriate compromises between existing and recommended practices.</p> <p>Community education.</p> <p>Outreach education.</p> <p>Inclusion of grandmothers and other female household members, who are key decision-makers and caregivers.</p> <p>Participatory health promotion techniques, such as women's groups.</p> <p>Programmes targeting traditional birth attendants (TBAs) and community mothers.</p> <p>Importance of cord care and tying recognised in community and understood culturally.</p> <p>Recognition of cord problems, such as delayed healing, bleeding or swelling.</p> <p>TBAs counselling mothers to protect the cord from infections.</p> <p>Consensus regarding liquid cord cleaning.</p> <p>Raising awareness about usefulness of CHX in cord cleaning.</p> <p>Willingness to adopt practices that would protect the newborn and alter traditional cord care practices.</p> <p>Behaviour change communication messages beginning at pregnancy.</p> <p>Prescribed practices making their way into traditional care.</p> <p>Efforts to promote hand-washing and to avoid recontamination.</p> <p>Promotion of efforts to avoid unclean home applications to the cord.</p> <p>Programmes, promoting cord cleansing with antiseptics, should provide educational messages about the balance between the benefits and the likelihood that separation of umbilical cord may be slightly delayed.</p> <p>Using materials, such as clean cotton, other than fingers to apply medicine/antiseptic.</p> <p>Programmes in urban slum areas</p> <p>Interventions to improve social support to women, especially first-time mothers.</p> <p>Educating healthcare providers about harmful, traditional practices so they are specifically addressed.</p> <p>Explaining rationale for tying the cord on both sides of the cut.</p> <p>Cultural health systems model that depicts all stakeholders.</p> <p>Presence of blood clots leading to seeking medical treatment at health centres.</p> <p>Promotion of chlorhexidine in place of commonly-reported application of harmful substances.</p> <p>Scale-up of evidenced based practices.</p> <p>Health promotion programmes taking into account health system barriers and financial burden.</p>	<p>3, 2018</p> <p>4, 2014</p> <p>9, 2017</p> <p>10, 2011</p> <p>11, 2014</p> <p>12, 2014</p> <p>15, 2013</p> <p>18, 2009</p> <p>19, 2008</p> <p>22, 2014</p> <p>23, 2009</p> <p>24, 2012</p> <p>25, 2008</p> <p>26, 2014</p> <p>27, 2015</p> <p>30, 2014</p> <p>32, 2015</p> <p>36, 2008</p> <p>37, 2014</p>	19/37

Continued

Table 3 Continued

Domain of newborn care	Barriers	Facilitators	Article number per table 2, year	Total number of article mentions
Drying and wrapping	Behaviours vary among home deliveries. Perception of dirtiness of baby. Perception of birthing process as polluting. Vulnerability of baby. Opinions of other household stakeholders, such as the mother-in-law. Home and hospital delivery. Not attending to baby until placenta delivered. Prioritisation of the mothers.	Knowledge about drying and wrapping. Understanding that baby should be kept warm. Delivery in hospital. Informed at health facility. Tailored behaviour change communication. Appropriate compromises between existing and recommended practices. Community education. Inclusion of grandmothers who are key decision-makers. Participatory health promotion techniques, such as women's groups. Traditional practice of wrapping in new clean cloth. Use of warm water and traditional herbs to protect baby. Behaviour change communication messages beginning at pregnancy. Babies dried and wrapped due to awareness of reduction of cold. Having more than one attendant to help both the mother and baby. Programmes in urban slum areas. Interventions to improve social support to women, especially first-time mothers.	2, 2015 8, 2011 10, 2014 14, 2010 16, 2009 19, 2014 20, 2014 21, 2009 28, 2014 30, 2015 31, 2014	11/37
Bathing	Traditional or historical practice. Lack of knowledge of when to bathe baby, especially in home deliveries. Early bathing due to societal pressure. Cultural norm of frequent bathing. Cultural belief and newborn care practices not conforming to recommended practices. Negative perception of vernix, including association with sperm. Vernix considered dangerous for HIV-exposed infants. Bathing in close proximity to smoking fires. Early bathing due to association with dirtiness as well as body odour later in life. Differences in practice by untrained TBAs. Spiritual beliefs attached to use of local herbs for bathing. Bathing practices, such as using pond water. Substances added to water, including Dettol or Savlon. Bathing immediately after birth due to concerns about 'ritual pollution' can cause hypothermia. Early bathing linked to shaping the baby's head. Early bathing to help the baby sleep and feel clean. Early bathing in facilities.	Delayed bathing when delivery in hospital. Informed at health facility. Quality of care in health facility. Health worker advice. Tailored behaviour change communication, addressing community norms and based on formative research. Appreciation of newborn vulnerability to encourage behaviour change. Appropriate compromises between existing and recommended practices. Community education. Outreach education. Inclusion of grandmothers who are key decision-makers. Participatory health promotion techniques, such as women's groups. Behaviour change communication messages beginning at pregnancy. Having more than one attendant to help both the mother and baby. Delayed bathing due to concerns about pneumonia. Identifying and addressing cultural rationales that underlie negative practices. Reinforcing and protecting beliefs that support positive practices. Improving health worker communication skills and social management of patients. Lowering healthcare costs. Programmes in urban slum areas. Interventions to improve social support to women, especially first-time mothers. Scale-up of evidenced based practices. Health promotion programmes taking into account health system barriers and financial burden. Using religious leaders, trained health workers, family health action groups and radio to disseminate messages.	2, 2015 3, 2008 8, 2011 9, 2014 10, 2014 14, 2010 16, 2009 19, 2014 20, 2014 21, 2009 24, 2014 26, 2014 28, 2014 30, 2015 31, 2014 33, 2008 34, 2008	17/37

Continued

Table 3 Continued

Domain of newborn care	Barriers	Facilitators	Article number per table 2, year	Total number of article mentions
Thermal control	<p>Lack of practice when delivery at home or with TBA.</p> <p>Lack of knowledge of keeping baby indoors.</p> <p>Suboptimal practices.</p> <p>Early bathing.</p> <p>Length of time baby undressed during bathing.</p> <p>Bathing with warm water.</p> <p>Use of blankets, rather than skin-to-skin care.</p> <p>Newborn massage, including use of mustard oil, can compromise the skin barrier function.</p> <p>Cultural belief and newborn care practices not conforming to recommended practices.</p> <p>Lack of maintaining thermoprotective practices in the first few hours postpartum, when newborns are at greatest risk.</p>	<p>Informed at health facility.</p> <p>Beliefs about importance of thermal care.</p> <p>Quality of care in health facility.</p> <p>Tailored behaviour change communication based on formative research.</p> <p>Appropriate compromises between existing and recommended practices.</p> <p>Community education.</p> <p>Outreach education.</p> <p>Inclusion of grandmothers who are key decision-makers.</p> <p>Participatory health promotion techniques, such as women's groups.</p> <p>Behaviour change communication messages beginning at pregnancy.</p> <p>Knowledge and practice that baby should be kept warm.</p> <p>Having more than one attendant to help both the mother and baby.</p> <p>Use of low-cost newborn warmers.</p> <p>Community-based practices on hypothermia prevention and management.</p>	<p>2, 2015</p> <p>3, 2008</p> <p>8, 2011</p> <p>9, 2014</p> <p>10, 2014</p> <p>14, 2010</p> <p>17, 2008</p> <p>19, 2014</p> <p>24, 2014</p> <p>28, 2014</p> <p>30, 2015</p> <p>31, 2014</p>	12/37
Skin-to-skin contact	<p>Few mothers given baby immediately after birth.</p> <p>Concerns of disease transmission, harm to umbilicus.</p> <p>Perception of dirtiness after birth.</p> <p>Maternal rest.</p> <p>Concerns of baby becoming cold.</p> <p>Delayed due to early bathing.</p> <p>Perception that it might be harmful to fragile newborns.</p> <p>Lack of understanding that kangaroo mother care is a protective method of caring for healthy newborns.</p> <p>Use of blankets, rather than skin-to-skin care.</p> <p>Lack of continued skin to skin contact.</p> <p>Cultural belief and newborn care practices not conforming to recommended practices.</p> <p>Women feeling responsible for household duties.</p>	<p>Behaviour change interventions based on formative research.</p> <p>Quality of care in health facility.</p> <p>Tailored behaviour change communication.</p> <p>Appropriate compromises between existing and recommended practices.</p> <p>Community education.</p> <p>Outreach education.</p> <p>Inclusion of grandmothers who are key decision-makers.</p> <p>Participatory health promotion techniques, such as women's groups.</p> <p>Behaviour change communication messages beginning at pregnancy.</p> <p>Association with reduced risk of cord infection.</p> <p>Concept easily understood and women willing to try if good for the baby.</p> <p>Appreciation of kangaroo mother care as an appropriate treatment for ill babies.</p> <p>Biomedical advice from healthcare providers reaching community through word-of-mouth and television campaigns.</p> <p>Receiving help from family members.</p> <p>Witnessing other women perform kangaroo mother care with positive outcomes.</p> <p>Focusing intervention messages on building supportive a environment for kangaroo mother care practice.</p>	<p>2, 2015</p> <p>3, 2008</p> <p>8, 2011</p> <p>9, 2014</p> <p>14, 2010</p> <p>15, 2014</p> <p>16, 2009</p> <p>19, 2014</p> <p>31, 2014</p>	9/37
Hygiene	<p>Lack of knowledge on hand-washing with soap.</p> <p>Recontamination of washed hands before attending to the newborn.</p> <p>Cultural belief and newborn care practices not conforming to recommended practices.</p>	<p>Health education.</p> <p>Tailored behaviour change communication.</p> <p>Appropriate compromises between existing and recommended practices.</p> <p>Community education.</p> <p>Outreach education.</p> <p>Inclusion of grandmothers who are key decision-makers.</p> <p>Participatory health promotion techniques, such as women's groups.</p> <p>Efforts to promote hand-washing and to avoid recontamination.</p> <p>Understanding of keeping babies and their surroundings clean.</p> <p>Educating healthcare providers about harmful, traditional practices so they are specifically addressed.</p>	<p>3, 2008</p> <p>9, 2014</p> <p>16, 2009</p> <p>17, 2008</p> <p>22, 2012</p> <p>24, 2014</p>	6/37

Continued

Table 3 Continued

Domain of newborn care	Barriers	Facilitators	Article number per table 2, year	Total number of article mentions
Breast feeding (initiation of and provision of colostrum)	<p>Traditional or historical practice.</p> <p>Belief that it is unhealthy.</p> <p>Mother's exhaustion.</p> <p>Limited knowledge.</p> <p>Maternal education status.</p> <p>Geographical isolation.</p> <p>Inconsistency in health education.</p> <p>Learning from relatives.</p> <p>Prelacteal feeds given on fingertip, increasing risk of infection.</p> <p>Low urgency in initiating breast feeding as mother and child believed to be polluted after birth.</p> <p>Negative beliefs regarding colostrum.</p> <p>Traditional practices to test colostrum for bitterness.</p> <p>Perception of a lack of breast milk.</p> <p>Onset of post-birth activities, such as bathing.</p> <p>Perception that baby needs rest.</p> <p>Baby not crying for milk.</p> <p>Premature breast milk supplementation (water and other fluids), which may expose newborns to pathogens.</p> <p>Work served as a barrier.</p> <p>Difference in advice received from different people by first-time mothers.</p> <p>Cultural belief and newborn care practices not conforming to recommended practices.</p> <p>Perception that hunger is not met or satisfied by breast-milk alone.</p>	<p>Community members knowledgeable about importance of breast feeding.</p> <p>Delivery in a health facility, where staff encouraged early breast feeding.</p> <p>Culturally-tailored health education.</p> <p>Targeting isolated villages.</p> <p>Cross-generational education interventions.</p> <p>Interventions through community health clinic workers.</p> <p>Appropriate compromises between existing and recommended practices.</p> <p>Community education.</p> <p>Outreach education.</p> <p>Inclusion of grandmothers/mother-in-laws and religious leaders who are key decision-makers.</p> <p>Participatory health promotion techniques, such as women's groups.</p> <p>Awareness of nutritive value of breast milk.</p> <p>Positive perception regarding infant feeding.</p> <p>TBAe trained by ministry of health.</p> <p>Raising awareness of early initiation of breast feeding in the policy arena.</p> <p>Cultural belief and practices.</p> <p>Identifying and addressing cultural rationales that underlie negative practices.</p> <p>Reinforcing ad protecting beliefs that support positive practices.</p> <p>Improving health worker communication skills and social management of patients.</p> <p>Lowering healthcare costs.</p> <p>Programmes in urban slum areas.</p> <p>Interventions to improve social support to women, especially first-time mothers.</p> <p>First-time mothers' mothers.</p> <p>Working with employers and developing supportive employment policies.</p> <p>Providing postnatal support and working with lay people and health professionals.</p> <p>Research to identify optimal combination of interventions.</p> <p>Using religious leaders, trained health workers, family health action groups and radio to disseminate messages.</p>	<p>1, 2012</p> <p>6, 2017</p> <p>9, 2017</p> <p>10, 2011</p> <p>11, 2014</p> <p>12, 2014</p> <p>18, 2009</p> <p>19, 2008</p> <p>20, 2013</p> <p>22, 2014</p> <p>23, 2009</p> <p>25, 2008</p> <p>26, 2014</p> <p>28, 2014</p> <p>30, 2014</p> <p>31, 2014</p> <p>33, 2008</p> <p>35, 2008</p>	18/37

Continued

Table 3 Continued

Domain of newborn care	Barriers	Facilitators	Article number per table 2, year	Total number of article mentions
Care-seeking for illness	<p>Lack of transportation.</p> <p>Geographical isolation/remoteness from health facilities.</p> <p>Financial ability/constraints.</p> <p>Seclusion of mother and baby in postpartum period may lead to late identification of illness and delay to seeking care.</p> <p>Community understanding of the newborn period and cultural expectations.</p> <p>Caretaker knowledge about newborn sickness.</p> <p>Individual experiences in household and caretaker autonomy.</p> <p>Women's inability to seek care without being accompanied by a male relative.</p> <p>Healthcare decisions influenced by community members.</p> <p>Perceived health system gaps.</p> <p>Confidence in healthcare providers is issue-specific.</p> <p>Sequential care-seeking practices, with traditional medicine as first-line of treatment for 7 days.</p> <p>Untimely action after recognition of danger signs.</p> <p>Previous negative experiences with health services facilities.</p> <p>Local understanding of illness affects treatment practices.</p> <p>Mothers blamed for infant illness.</p> <p>Use of traditional home remedies and self-medication instead of care in health facilities.</p> <p>Shame about utilisation of maternal and neonatal services.</p> <p>Care-seeking for local community members for serious health concerns.</p> <p>Postpartum depression.</p> <p>'Asram' perceived as common illness which cannot be treated at health facilities.</p> <p>'Asram' treatments including frequent cold herbal baths, air-drying and oral treatments.</p> <p>Modification of 'asram' treatment required the sanction of a healer.</p>	<p>Addressing locally existing cultural beliefs.</p> <p>Strengthening facility care.</p> <p>Urging families to seek medical care for any symptom of illness in a newborn.</p> <p>Addressing financial barriers.</p> <p>Recognition of danger signs.</p> <p>Targeted behaviour-change communication programmes.</p> <p>Using religious leaders, trained health workers, family health action groups and radio to disseminate messages.</p> <p>Understanding traditional illnesses in designing care-seeking interventions.</p>	<p>7, 2008</p> <p>8, 2011</p> <p>11, 2013</p> <p>17, 2008</p> <p>25, 2015</p> <p>26, 2014</p> <p>27, 2010</p>	7/37
Other newborn care	<p>Cultural perception of emollients as improving the skin, keeping the baby warm and shaping the baby.</p> <p>Social pressure to use emollients.</p> <p>Emollient choice influenced by cost, availability and traditional norms.</p> <p>Massage, associated with application of emollients, is potentially damaging to skin.</p> <p>Potential impact of emollients, such as engine oil, on harm and even mortality.</p> <p>TBAs applying mild pressure inside baby's mouth on the soft palate with water and local herb.</p> <p>Application of powders directly into dermal incisions of ill children to ward off malevolent spirits.</p>	<p>Association of emollient therapy in reduction of mortality among preterm infants.</p> <p>Newborn emollient trials, specifically designed to reflect contextual differences.</p> <p>If emollients are proven effective, policy-makers deciding whether to provide emollients free of charge or through social marketing.</p> <p>Improving practice of massage associated with emollient application.</p> <p>Understanding traditional illnesses in designing care-seeking interventions.</p>	<p>4, 2014</p> <p>20, 2014</p> <p>26, 2010</p> <p>30, 2015</p>	4/37
Low birthweight recognition	<p>Babies not weighed.</p> <p>Belief in supernatural powers.</p> <p>Less knowledge of home care practices when baby delivered at home or in lower level health facility.</p> <p>Lack of knowledge of how to provide care or when to take baby to health facility.</p> <p>Perceptions of preterm birth, including young and old maternal age, heredity, sexual impurity and maternal illness during pregnancy.</p> <p>Poverty.</p> <p>Women placed with main responsibility for preterm newborns.</p> <p>High time burden of care for preterm babies leading to neglect of household, farming and business duties.</p>	<p>Better knowledge of home care practices when delivery at health facility.</p> <p>Health education at community level to reach mothers that deliver at home.</p> <p>Mechanisms to support mothers.</p> <p>Provision of warmth to preterm newborns.</p> <p>Addressing cultural practices for preterm babies among community members.</p> <p>Vernix considered important for preterm newborns.</p>	<p>9, 2014</p> <p>12, 2014</p> <p>24, 2014</p>	3/37

community education and support from religious leaders, and exposure to newborn health campaigns.

Barriers to *initiating breast feeding* included spatial/physical separation, conflicting health messages, mother exhaustion, baby not crying for milk, historical and traditional beliefs to discard colostrum, and education. Facilitating factors included community and family member knowledge, information provided during health facility-based birth, attendance by trained TBAs, being a first time mother, and exposure to breast feeding education and policy campaigns.

DISCUSSION

Effective interventions to improve newborn survival require information on a number of complex factors related to essential newborn care.¹⁸ In addition to collecting improved quantitative data for neonatal survival, qualitative data are essential for behavioural interventions targeted to specific populations.¹⁹ Few qualitative systematic reviews exist to synthesise information from perspectives of parents on newborn care. One review from 2014 focused on STS contact and included 29 studies containing data from nine countries.²⁰ Findings from that review centred on the experience of becoming a parent under unfamiliar circumstances, and thoughtfully considered the experiences of parents in the unique practice of STS care. The authors did not restrict the review to low-income settings, though studies from Uganda, Brazil and South Africa were included. Our findings add further information to the peer reviewed literature from low-income countries, where the majority of newborn deaths occur.

Another review was recently conducted in relation to thermal care for newborns in Sub-Saharan Africa.²¹ The review focused on sociocultural factors and identified a number of potentially harmful cultural norms and traditions which influence care across African settings. Similar to what has been found in the present review, that review identified caregiver factors and contextual barriers as well as facilitating factors, but in contrast to this review these were specific to thermal control, which may not represent the full range perspectives for other newborn care practices. In addition, that review's restriction to Sub-Saharan Africa settings limits the potential for transferability of the findings to other geographical settings, and data from parents or family caregivers was not the focus.

A systematic review covering neonatal care practices in Sub-Saharan Africa was recently undertaken.²² The authors of that review included both quantitative data and qualitative data published from 2001 to 2014, whereas our review focused on qualitative data only, and covered the period 2006–2017, though similar findings were identified in both reviews in relation to care practices, confirming the findings. Bee *et al* also included studies of facility-based and home-based care (unlike our study which focused on data from parents regarding home care) and noted the limitation of data having

come mainly from five countries, highlighting a need for research from a wider geographical area, such as has been provided in the present review. Given that birth at home presents unique risks to the newborn,²³ information from these settings is key. Whereas the present review focused on barriers and facilitators identified through qualitative research, the review by Bee *et al* centred on the prevalence of key immediate newborn care practices, however, the findings of both reviews are concordant.²²

Policy recommendations and current approaches to reducing newborn mortality have not yet been appropriately scaled to reduce newborn mortality to levels targeted by the SDGs.²⁴ In the context of international calls for reduction of newborn mortality and stillbirths,²⁵ it will be essential for interventions to meet the needs of families and parents caring for newborns. This systematic review of qualitative research, drawn from the literature across low-income countries, is an important step to providing data on the range of newborn care practices at home, which is specifically relevant to behaviour change in settings where high newborn mortality continues.

CONCLUSIONS

This systematic review identified qualitative studies reporting on the experiences and first-hand accounts of family members and caregivers in low-income countries who are responsible for providing essential newborn care for their infants up to the first 28 days of life. The review identified barriers and facilitators commonly reported in studies of newborn care practices. The findings presented here are directly applicable to social and behavioural change initiatives aimed at improving care practices for better newborn health outcomes in low resource settings.

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