Pastoralism: Research, Policy and Practice

REVIEW

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Nomadic pastoralists' experience accessing reproductive and maternal healthcare services in low and middle-income countries: A contextual scoping review

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Abstract

Globally, discriminately vulnerable and marginalized groups, such as nomadic pastoralist populations, have perhaps the least access to reproductive and maternal health services (R/MHCSs). Previous studies report that most nomadic pastoralist mothers use both traditional methods of childbirth (i.e. delivering at home and assistance by traditional birth attendants (TBAs)) and traditional methods of contraception. However, determining factors of R/MHCSs in these nomadic pastoralist communities remain scarcely explored and condensed. This study aims to analyse quantitative, qualitative, and mixed methods studies and summarize pastoralists' experience accessing R/MHCSs in low- and middle-income countries (LMICs).

We employed a mixed method approach in conducting this scoping review by including studies applying quantitative, qualitative, and mixed methods retrieved from online databases (PubMed, Google Scholar, and JSTOR) as well as reviewing indexes of journals specific to the field by using a set of keywords related to R/MHCSs in LMICs. Thematic content analysis was performed to generate four themes and codes.

We retrieved 2131 articles and retained 25 that met our inclusion criteria. Of these, 6 were quantitative studies, 12 were qualitative studies, and 7 were mixed methods studies. We found that nomadic pastoralists face multi-faceted barriers in access to R/MHCS that can be broadly categorized into four themes: (i) physical (geographic isolation and access), (ii) political (discriminatory/marginalized status, poor transport system, lack of infrastructure, and little political status to improve their lives), (iii) economic (poor quality of service/lack of available resources in rural areas where nomadic pastoralists live, vulnerability, poverty/affordability of R/MHCSs), and (iv) socio-cultural (misconceptions, perception, gender roles in decision-making, low demand for R/MHCSs by nomadic pastoralists, autonomy for females to travel) factors. Therefore, to effectively address the needs of nomadic pastoralist populations, R/MHCSs must be available, accessible, acceptable, and affordable through political, economic, geographic, and socio-culturally sensitive approaches.

Low awareness of, and low access to, modern R/MHCSs and their benefits is a critical barrier to service utilization. Partnership with nomad communities through leveraging existing structures, networks, and decision-making patterns and involvement of nomadic women and girls, community leaders, male partners, and trained traditional birth attendants are key to R/MHCS access.

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What is known about this topic?

1. The utilization of a skilled attendant at birth has been improving amongst nomadic pastoralists but with significant variations across LMICs.
2. The experiences in accessing R/MHCs amongst pastoralist populations are not fully known.

What the study adds

1. Traditional delivery beds should be provided in health facilities because most nomadic women believe the sitting position during delivery speeds up the labour.
2. Static health facilities are not helpful for pastoralist lifestyles because they are inaccessible and culturally insensitive.
3. Female midwives are required in the health facilities to attract pastoralist women who abhor being attended to by male midwives. We also call for the need for culturally appropriate maternal care at healthcare facilities.
4. Conventional youth programming does not reach the large population of marginalized and disadvantaged nomadic girls who need reproductive health information and services. Innovative approaches considering the socio-cultural and economic environment can better address the nomadic youth's reproductive health challenges.
5. In order to increase girls' participation in reproductive health issues, it is important to create a safe environment for them and to involve their mothers in issues of sexual and reproductive health.
6. To successfully give nomadic girls and mothers a voice in their reproductive health requires the support of cultural leaders who give direction on various issues in the community.
7. Safe spaces and social networks for girls are potent strategies for RH advocacy at the community level.
8. Accessing FP methods is a problem mainly due to long distances to health facilities.
9. Some women are willing to use modern FP methods but encounter resistance from their male partners/husbands.
10. Traditional FP methods are popular because they are readily available, have no side effects, and are trusted.

Keywords: Nomad, Pastoralist, Reproductive and maternal health, Family planning

Background

Global inequalities in healthcare delivery have long been linked and associated with disparities between rich and poor countries. Low- and middle-income countries (LMICs) have developed models of healthcare delivery that reflect the often complex make-up of their state. In most LMICs of nomadic pastoralist populations which are characterized by geographic isolations, political clientelism, and sectarian structures, access to decent health care is often more contingent on ethnicity and religious affiliation rather than entrenched poverty (Chatty et al. 2013; Caulfield et al. 2016; Lechthaler et al. 2018; Dahab and Sakellariou 2020). Nomadic pastoralists' experiences accessing reproductive/maternal healthcare services (R/MHCSs) encompass the range of interactions that nomadic pastoralists have with the reproductive/maternal healthcare system, including their care from health plans, doctors, nurses, hospital staff, physician practices, and healthcare care facilities. This access concept is used to detect inequity in the use of services between different populations defined geographically, socially, culturally, economically, and politically or in terms of their clinical condition (Wilunda et al. 2014; Watson-Jones et al. 2015; Ng'asike 2019; Negero et al. 2022).

Healthcare inequality or healthcare disparities refer to the difference in health and healthcare quality between groups of diverse racial and ethnic backgrounds, sexual orientations, and income differentials (Chatty et al. 2013; Ali et al. 2019). After the 1978 Alma-Ata conference in Kazakhstan, when "healthcare for all" was assumed to be possible by making accessible healthcare services available to all people, this soon became unrealistic for governments due to severe economic difficulties (Chatty et al. 2013; Byrne et al. 2016; Lechthaler et al. 2018).

Despite the tremendous efforts over the years towards improving R/MHCSs for global populations, outcomes such as maternal morbidity and mortality and a global unmet need for family planning remain significant concerns in the local and international public health communities (Wilunda et al. 2014; Wulifan et al. 2016; Ali et al. 2019). The 2030 sustainable development goals (SDGs) underscore the need for a reduction of maternal mortality

and the unmet need for family planning as critical targets to ensure adequate health and well-being of the global community (Wulifan et al. 2016). The SDGs also further stress the need for gender equality and improved global experiences of women and girls (Sheik-Mohamed and Velema 1999; Ali et al. 2019). To realize these potentials, we must focus on populations such as the nomadic pastoralists who are vulnerable and marginalized and whose outcomes lag compared to the general population (Sheik-Mohamed and Velema 1999). Nomadic pastoralists are generally defined as a group whose subsistence is marked by mobility as they move from place to place, broadly in traditional routes, in search of resources and food. Our scoping review focuses on nomadic pastoralists whose direction or route largely relies on grazing grounds for livestock. Nomadic pastoralists are groups that move from their homes according to grazing opportunities for their livestock and make up a large proportion of the global nomadic population (Sheik-Mohamed and Velema 1999; Caulfield et al. 2016; Ali et al. 2019; Gammino et al. 2020).

The factors that account for variations in maternal health service uptake across LMICs are multi-faceted from both supply and demand sides. Restricted transport infrastructure, poor quality of services, prevailing traditional/cultural practices, and low decision-making power of women are amongst the dominant enabling factors (Yousuf et al. 2011; Medhanyie et al. 2012; Wako and Kassa 2017). However, the lack of competent local researchers has hampered the conduct of research across most LMICs. Thus, little is known about nomadic pastoralists' experiences in accessing healthcare services that specifically hinder utilization. Understanding the R/MHCS utilization patterns and the barriers of the pastoralist women can generate useful information to improve maternal health services for the pastoralist communities, particularly across LMICs (Chatty et al. 2013; Yaya et al. 2016; Ibrhim et al. 2018; Kenny et al. 2021).

This review fills a gap in the literature by examining the extent to which public sector R/MHCSs in LMICs are adequate and accessible to vulnerable and marginalized rural nomadic pastoralists. The study aimed to identify nomadic pastoralists' experience accessing R/MHCSs from existing literature between 1980 and 2022 to determine how and under what constraints they accessed these services. It also seeks to highlight policy strategies to increase service provision and use amongst this population category.

Methods

This scoping review was conducted based on the York methodology outlined by Arksey and O'Malley from the University of York in the UK and complimented it with Pluye et al.'s framework for mixed methods review (Arksey and O'Malley 2005; Pluye et al. 2009; Wulifan et al. 2016). Scoping studies permit researchers to review the sources and types of evidence related to a specific research area in sufficient detail to understand the current level of knowledge related to a scientific topic (Wulifan et al. 2016). "Scoping" means a method of mapping, charting, and summarizing existing documentary evidence taken from different published sources to ascertain a sufficiently comprehensive understanding of a given area of a research study (Wulifan et al. 2016). York's framework prescribed five sequential stages that are often followed in scoping reviews:

Stage 1: Identifying the research question
Stage 2: Identifying the relevant studies
Stage 3: Study selection
Stage 4: Charting the data
Stage 5: Collating, summarizing, and reporting the results

Stage 1: Identifying the research question

The team met, discussed, and defined the research questions and the search strategy. Our main objective was to appraise evidence available on nomadic pastoralists' experience in accessing reproductive and maternal healthcare services in LMICs. Our primary research question was thus framed as *What are nomadic pastoralist experiences in accessing reproductive and maternal healthcare (R/MHCs) in LMICs?*

Stage 2: Identifying the relevant studies

Relevant literature on nomadic pastoralist experiences accessing reproductive health services in LMICs in quantitative, qualitative, and mixed methods studies was identified through a systematic and comprehensive search of the following databases: PubMed, Google Scholar, Google, and JSTOR (Wulifan et al. 2016). We employed specific key terms that included "nomadic Population" ("itinerant migrants", "nomadic population", etc.) and "reproductive health services" ("reproductive health services", "women health services", "maternal-child health services", "women health service utilization", etc.) (Wulifan et al. 2016; Ali et al. 2019). We also hand-searched relevant and appropriate reference lists to identify additional literature or grey publications.

The first-round search was executed on 20 July 2022 and repeated on 31 July 2022 to update the search result. The search on the various databases generated the following corresponding articles: PubMed (N=890), Google

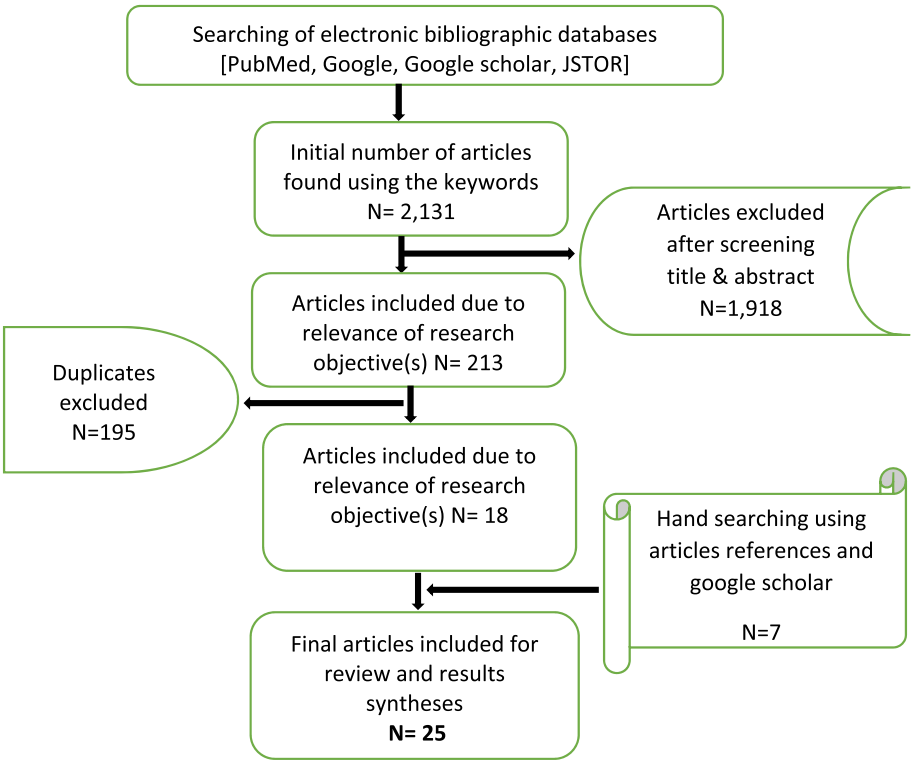

Fig. 1 Flowchart of the number of literature searched and selected

(*N*=790), Google Scholar (*N*=401), and JSTOR (*N*=50). From the abstract and full-text review, 25 articles were included in the dataset. Figure 1 shows a flowchart on the articles and the screening process.

Stage 3: Selection of literature

We retained all study designs and published and grey literature addressing nomadic pastoralist experiences accessing reproductive and maternal health services in low- and middle-income countries. For this review, we defined a nomadic population as a group of people whose way of life is defined by not having permanent places of abode and migrating in a seasonal manner (Omar 1992; Ali et al. 2019). These nomadic pastoralists are found in developing countries and rear livestock for sustenance. They do not practise crop cultivation for their main livelihoods. The review includes studies published in English from 1980 upwards, when reproductive health service policies gained prominence in most LMICs. This consists of the MDG 5 goal "To improve maternal health" and "To reduce the maternal mortality ratio by 75%". This was also the period when reproductive and maternal health service policies gained prominence and coincided with the MDGs (Cleland et al. 2006; Wulifan et al. 2016). We also included semi-nomadic pastoralist groups who engage in seasonal mixed forms of farming and herding. We excluded studies that described access to reproductive health services for internal migrants who historically were not nomadic pastoralists. Reproductive and maternal health services were defined to include the provision of family planning and contraceptive services, including information and services on maternal/newborn, antenatal, delivery, and post-natal care services. Table 1 illustrates the article selection criteria.

Stage 4: Charting of key information

Data charting was carried out after the initial reading of manuscripts; we sorted the key information of selected studies according to the following categories: author(s), year of publication, study location, title of the article, the objective of the study, data collection method, analytical approach, key findings related to access or barriers, and policy strategies to improve R/MHCS amongst nomadic pastoralists. Information provided in quantitative studies was further extracted into explanatory variables and the statistical association with the outcome variable. In qualitative studies, we charted the main themes and the relationship between the thematic findings. Charting tables are presented in Tables 2, 3, and 4.

Table 1 Inclusion/exclusion criteria

Criteria	Inclusion	Exclusion
Study design	Quantitative, qualitative, and mixed method	
Location	Low/middle-income countries (HDI < 0.70)	High-income countries (HDI > 0.70)
Date	1980–2022	Before 1980
Language	English	Any other language
Age	Female 15–49 years	Female < 15 and > 50 years
	Male 18–54 years	Male < 18 and > 54 years
Population	Nomadic and semi-nomadic pastoralists	Any other tribe
Research focus	Experiences in accessing reproductive health services	Access to reproductive health services for internal migrants who historically are not nomadic pastoralists

Stage 5: Collating, summarizing, and reporting the results
In synthesizing the data, each author independently and repeatedly reviewed the extracted evidence. To ensure the validity of the review data, individually appraised findings were later triangulated amongst authors. We first analysed quantitative and qualitative information separately. To carry out that, we collated quantitative key findings across studies based on the measures of association between determinants (predictor variables suggested by authors across studies) and R/MHCS use (the outcome measure). Qualitative information was organized according to the main themes identified and explored across the selected qualitative studies.

Results

Of the 2131 articles initially identified by our search criteria, only 25 studies met the inclusion criteria for our scoping review. They were published between 2002 and 2021, with 20 of them being published in peer-reviewed journals (Hampshire 2002; Ernest et al. 2011; Mekonnen et al. 2012; Sachdev 2012; Chatty et al. 2013; Okeibunor et al. 2013; Gyaltsen et al. 2014; El Shiekh and van der Kwaak 2015; Byrne et al. 2016; Caulfield et al. 2016; Reeve et al. 2016; Jackson et al. 2017; Kermode et al. 2017; Wako and Kassa 2017; Ag Ahmed et al. 2018; Assefa et al. 2018; Ibrhim et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018; Kenny et al. 2021), three commentary papers (Gitimu et al. 2011; Pettitt 2011; Yousuf et al. 2011), and two reports (Ernest et al. 2011; Maro and Kwaak 2012). Of these articles, six were quantitative studies (Mekonnen et al. 2012; Sachdev 2012; Wako and Kassa 2017; Assefa et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018), 12 qualitative studies (Gitimu et al. 2011; Pettitt 2011; Yousuf et al. 2011; Okeibunor et al. 2013; Gyaltsen et al. 2014; Byrne et al. 2016; Caulfield et al. 2016; Jackson et al. 2017; Kermode et al. 2017; Ag Ahmed et al. 2018; Ibrhim et al. 2018; Kenny et al. 2021), and seven mixed methods studies (Hampshire 2002; Ernest et al. 2011; Maro and Kwaak 2012; Chatty et al. 2013; Maro et al. 2014; El Shiekh and van der Kwaak 2015; Reeve et al. 2016).

As many as 21 of the literature reviewed in this study described nomadic pastoralist people in Africa (Hampshire 2002; Ernest et al. 2011; Gitimu et al. 2011; Pettitt 2011; Yousuf et al. 2011; Maro and Kwaak 2012; Mekonnen et al. 2012; Okeibunor et al. 2013; Maro et al. 2014; El Shiekh and van der Kwaak 2015; Byrne et al. 2016; Caulfield et al. 2016; Reeve et al. 2016; Jackson et al. 2017; Kermode et al. 2017; Wako and Kassa 2017; Ag Ahmed et al. 2018; Assefa et al. 2018; Ibrhim et al. 2018; Lechthaler et al. 2018; Kenny et al. 2021). One paper described nomadic pastoralists in Middle East (Syria, Lebanon and Jordan) (Chatty et al. 2013), while three papers described nomadic pastoralists in Asia (Sachdev 2012; Gyaltsen et al. 2014; Moucheraud et al. 2018) (Fig. 2). Eight publications explored socio-economic, cultural beliefs, attitude, practices, and perceptions that shape institutional service utilization with skilled birth attendance (SBAs) as against home deliveries assisted by TBAs (Sachdev 2012; Gyaltsen et al. 2014; Byrne et al. 2016; Caulfield et al. 2016; Reeve et al. 2016; Kermode et al. 2017; Ag Ahmed et al. 2018; Assefa et al. 2018) and six publications discussed R/MHCSs amongst nomadic pastoralists in Africa (Ernest et al. 2011; Pettitt 2011; Maro et al. 2014; El Shiekh and van der Kwaak 2015; Moucheraud et al. 2018; Kenny et al. 2021), while four papers explored perceived myths versus reproductive and sexual health decisions and tangible support of modern contraceptives (Yousuf et al. 2011; Maro and Kwaak 2012; Wako and Kassa 2017; Kenny et al. 2021). Two studies each looked at the complexity and fluidity which must be explored in the context of nomadic women's access to health resources and demotivators for institutional deliveries amongst nomadic pastoralists (Yousuf et al. 2011; Ibrhim et al.

Table 2 Summary of mapping articles included in the study

S/N	Author/year/country	Title	Objective	Type of publication	Data collection	Analytical approach	Key findings	Group description
1	Ag Ahmed et al. 2018 **Gossi, Mali**	Sociocultural determinants of nomadic women's utilization of assisted childbirth in Gossi, Mali: a qualitative study	To understand the socio-cultural determinants of assisted childbirth by nomadic women	Qualitative: peer reviewed	Literature review, semi- structured interviews, non-participant observation	A thematic content analysis using QDA Miner software	Emotions associated with pregnancy decision-making and economic agency	Tamasheq (Tuareg) and Fulani in the Gossi (Timbuktu region), Mali
2	Assefa et al. 2018 **Awash, Ethiopia**	Magnitude of institutional delivery service utilization and associated factors among women in pastoral community of Awash Fentale district, Afar Regional State, Ethiopia	To assess institutional delivery service utilization and associated factors amongst women in the pastoral community of Awash Fentale district, Ethiopia	Quantitative, peer reviewed	Community-based cross- sectional study	Descriptive statistics and logistic regression analysis	Overall, 35.2% of women delivered at health facilities. Women who had good knowledge AOR = 2.1 and antenatal care (ANC) follow-up (AOR = 3.2)	Pastoral community of Awash Fentale District of Ethiopia
3	Byrne et al. 2016 **Kenya**	Community and provider perceptions of traditional and skilled birth attendants providing maternal healthcare for pastoralist communities in Kenya: a qualitative study	To understand the practices and perceptions of TBAs and SBAs serving the remotely located, semi-nomadic, pastoralist communities of Laikipia and Samburu counties in Kenya	Qualitative: peer reviewed	Focus group discussions (FGDs) with TBAs, community health workers, in-depth interviews were conducted with seven SBAs	Data were translated, transcribed, and thematically analysed	Some TBA practices are potentially harmful to women, e.g. restricting food intake during pregnancy, and participants recognized that TBAs are unable to manage obstetric complications	Pastoralists including Maasai in Laikipia and Samburu Counties, Kenya
4	Caulfield et al. 2016 **Kenya**	Factors influencing place of delivery for pastoralist women in Kenya: a qualitative study	This paper investigates the socio-demographic factors and cultural beliefs and practices that influence the place of delivery for these pastoralist women	Qualitative: peer reviewed	Interview with key informant and nomadic women	The data were translated, transcribed, and inductively and deductively thematically analysed both manually and using NVivo.	Cultural practices and beliefs influence pastoralist women's place of delivery in Kenya. Pastoralist women continue to deliver at home due to distance, poor roads, and the difficulty of obtaining and paying for transport	Pastoralists including Maasai in Laikipia and Samburu Counties, Kenya

Table 2 (continued)

S/N	Author/year/country	Title	Objective	Type of publication	Data collection	Analytical approach	Key findings	Group description
5	Chatty et al. 2013 **Middle East Levant (Lebanon, Syria, and Jordan)**	Bedouin in Lebanon: Social discrimination, political exclusion, and compromised healthcare	The study explores the importance of considering social discrimination and political exclusion in understanding compromised healthcare	Mixed method (quantitative and qualitative): peer reviewed	Is based on interviews with policy-makers, healthcare providers, and the Bedouin as part of a study	Quantitative descriptive statistics and qualitative thematic analysis	The Bedouin community of Lebanon remains largely invisible to the Government and thus invisible to national healthcare policy and practice. They experience significant social discrimination from health practitioners and policy-makers alike. Their unfair treatment under the health system is generally dissociated from wealth and poverty.	Bedouin (the Bedouin, Beduin, or Bedu are nomadic Arab tribes who have historically inhabited the desert regions in the Arabian Peninsula, North Africa, the Levant, and Mesopotamia) of the Middle Bekaa Valley of Lebanon

Table 3 Summary of factors that influence nomadic pastoralist access to R/MHCSs

S/N	Author	Nomadic pastoralist experiences accessing reproductive health services							
		Physical	Political factors			Economic	Socio-cultural		
		Geo. isolation	Quality of RHS	Discrimination/ marginalization	Vulnerability to political factors	Poverty/lack of resources	Gender roles	Socio-cultural norms	Perception towards RHS
1	Ag Ahmed et al. 2018			√	√	√	√	√	
2	Assefa et al. 2018	√					√		
3	Byrne et al. 2016								√
4	Caulfield et al. 2016	√	√	√		√	√	√	√
5	Chatty et al. 2013	√		√	√	√			
6	El-Shiekh and Kwaak 2015	√		√	√	√	√	√	
7	Ernest et al. 2011	√				√		√	√
8	Maro et al. 2012	√	√			√		√	√
9	Gitimu et al. 2011	√				√	√	√	√
10	Gyaltsen et al. 2014	√				√		√	
11	Hampshire 2002	√				√	√	√	
12	Ibrhim et al. 2018	√	√			√	√	√	√
13	Jackson et al. 2017	√				√	√	√	√
14	Kenny et al. 2021					√	√	√	
15	Kermode et al. 2017	√	√			√		√	√
16	Lechthaler et al. 2018	√	√			√		√	
17	Maro and Kwaak, 2012							√	√
18	Moucheraud et al. 2018		√			√		√	√
19	Okeibunor et al. 2013	√	√			√		√	√
20	Pettitt 2011	√		√	√	√	√	√	√
21	Reeve et al. 2016	√	√			√		√	√
22	Sachdev 2012	√	√	√		√		√	
23	Wako and Kassa 2017					√			√
24	Yousuf et al. 2011	√	√			√	√	√	√
25	Mekonnen et al. 2012	√	√			√		√	√

Table 4 Summary of strategies for addressing barriers to R/MHCS access

S/N	Author	Nomadic pastoralist experiences accessing reproductive health services						
		Policy strategies for addressing barriers to R/MHCS access						
		Improvement RHS	Mobile health	Increase health manpower	Sensitize health workers on nomadic pastoralist needs	Focus on nomadic pastoralists youth (girls)	Involve nomadic pastoralists on health education	Improve girls' 'education
1	Ag Ahmed et al. 2018				√	√		
2	Assefa et al. 2018						√	
3	Byrne et al. 2016			√	√			√
4	Caulfield et al. 2016	√				√	√	
5	Chatty et al. 2013			√	√			
6	El-Shiekh and Kwaak 2015		√	√	√		√	
7	Ernest et al. 2011	√			√		√	
8	Maro et al. 2014					√	√	√
9	Gitimu et al. 2011		√		√	√	√	√
10	Gyaltsen et al. 2014	√		√	√	√	√	√
11	Hampshire 2002		√				√	
12	Ibrhim et al. 2018	√	√			√	√	
13	Jackson et al. 2017	√	√		√		√	
14	Kenny et al. 2021						√	
15	Kermode et al. 2017	√			√		√	
16	Lechthaler et al. 2018	√		√	√		√	
17	Maro Godson Z et al. 2012						√	
18	Moucheraud et al. 2018	√					√	
19	Okeibunor et al. 2013	√	√				√	
20	Pettitt 2011	√	√		√		√	√
21	Reeve et al. 2016	√	√				√	
22	Sachdev 2012	√		√	√		√	
23	Wako and Kassa 2017						√	
24	Yousuf et al. 2011	√	√	√	√	√	√	√
25	Mekonnen et al. 2012	√		√	√	√	√	√

2018). Finally, one paper explored the importance of considering social discrimination and political exclusion in understanding compromised healthcare delivery and using safe spaces and social networks to convey reproductive health information to nomadic girls, respectively (Gitimu et al. 2011; Chatty et al. 2013).

The papers reviewed reported convergence of factors despite the diversity of studies extracted. The study revealed that reproductive and maternal healthcare is affected by transport systems, women's education, availability of health infrastructure, and availability of skilled health workers. In addition, we found that nurses' attitudes towards nomadic pastoralist women, cultural beliefs and practices, have been critical in determining mothers' health (Hampshire 2002; Ernest et al. 2011; Mekonnen et al. 2012; Sachdev 2012; Chatty et al. 2013; Okeibunor et al. 2013; Gyaltsen et al. 2014;

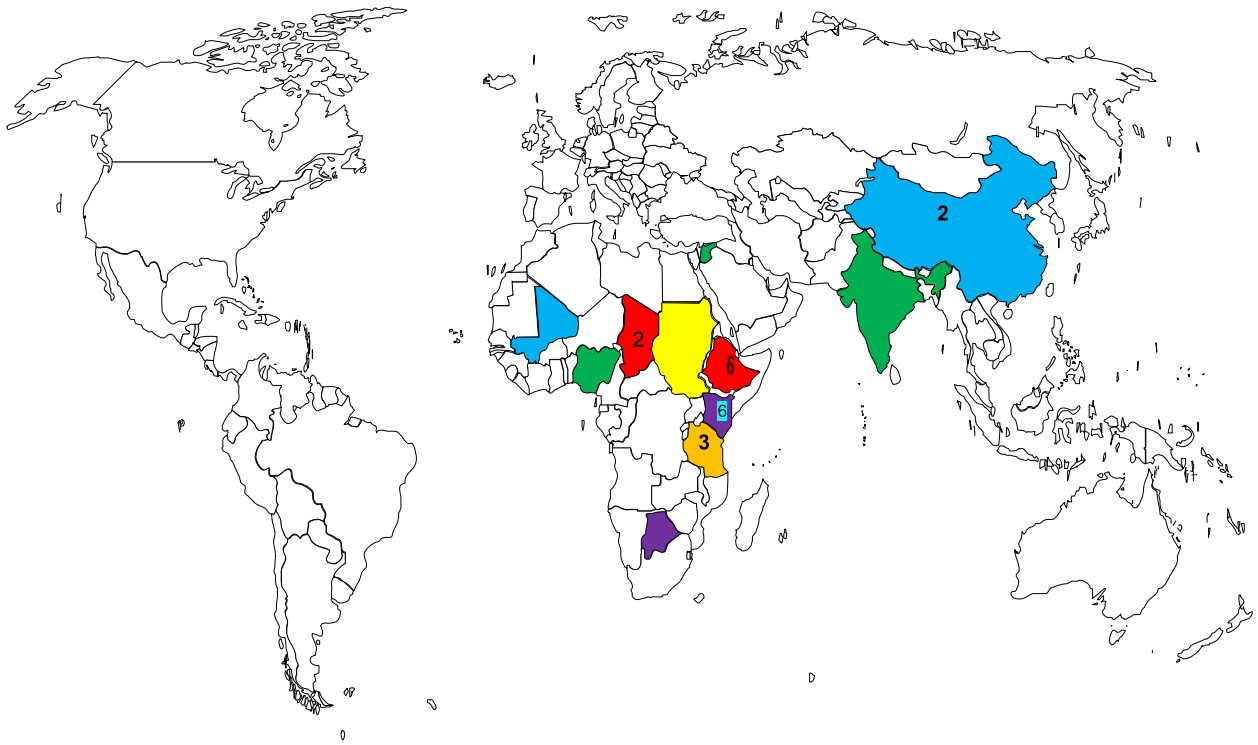

Fig. 2 Geographic distribution of reviewed studies. This map provides an overview of the geographic distribution (shaded countries) of those studies in this review with a country-specific focus (source: author's construct using the World map free template.net, 2021)

El Shiekh and van der Kwaak 2015; Byrne et al. 2016; Caulfield et al. 2016; Reeve et al. 2016; Jackson et al. 2017; Kermode et al. 2017; Wako and Kassa 2017; Ag Ahmed et al. 2018; Assefa et al. 2018; Ibrhim et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018; Kenny et al. 2021).

Nomadic pastoralists' women's experience accessing R/MHCSs

Generally, nomadic pastoralist women face a wide range of experiences that hinder them from accessing R/MHCSs. These experiences can be classified as physical (geographic isolation), political (quality of health services provided, discrimination/marginalization, vulnerability to political factors), economic (poverty, gender roles), and socio-cultural factors (socio-cultural norms, beliefs, and perceptions). We discuss these four categories separately in our review, but it is of essence to underscore that these factors are both interlinked and operate in isolation. Also, we extracted policy strategies from the reviewed literature that could potentially be employed to improve access and utilization of R/MHCs in LMICs.

Physical factors

Geographic isolation

In the reviews, nomadic pastoralist women were worried that there were no hospitals within walking distance. The distance between the camps and the nearest hospitals was often not less than 30 km. Thus, obtaining quality R/MHCSs from the formal sector, including travelling long distances to health facilities coupled with poor roads and absence of transport, was significant experiences nomadic pastoralists faced in attempts to utilize R/MHCS (Sachdev 2012; Okeibunor et al. 2013; Caulfield et al. 2016; Jackson et al. 2017; Assefa et al. 2018; Ibrhim et al. 2018). Given that there is often a concentration of health facilities in urban areas compared to rural settings with relative absent or sparse health facilities where these nomadic pastoralists conglomerate, the long distance travel to access these modern healthcare services becomes problematic (Hampshire 2002; Ernest et al. 2011; Gitimu et al. 2011; Pettitt 2011; Yousuf et al. 2011; Maro and Kwaak 2012; Chatty et al. 2013; Maro et al. 2014; El Shiekh and van der Kwaak 2015; Caulfield et al. 2016; Reeve et al. 2016; Jackson et al. 2017; Kermode et al. 2017; Wako and Kassa 2017; Assefa et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018; Kenny et al. 2021). Evidence from a quantitative study

in Ethiopia reveals that women who had to travel for 30 km to reach the nearest health facilities were 3.1 times (AOR = 3.1) more likely to deliver at a health facility as compared to those women who had to travel more than 30 km to reach the nearest health facilities (Assefa et al. 2018). Also, in another qualitative study, participants maintained that ensuring physical access to static health facilities and ensuring that they are staffed with trained health professionals were vital but not the primary solution for improved use of maternal health services. Physical distance to the health facility and geographical isolation leading to substantial travel distance to the facility was a critical barrier (Yousuf et al. 2011).

Political factors

Quality of R/MHCSs

Evidence from our review shows that many community respondents maintain that they were discouraged from going to health facilities due to the negative attitudes of some staff and low-quality services provided by some skilled birth attendants (SBAs). Nomadic women preferred home births because they had heard about or had directly experienced SBAs being verbally or physically abusive to nomadic pastoralist women in health facilities. These perceptions and experiences reinforced continued adherence to traditional birthing practices, which were viewed more positively (Yousuf et al. 2011; Mekonnen et al. 2012; Sachdev 2012; Okeibunor et al. 2013; Maro et al. 2014; Caulfield et al. 2016; Reeve et al. 2016; Kermode et al. 2017; Ibrhim et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018). In specific situations where nomadic pastoralist communities encounter unfavourable health facility experiences, it was found that they discontinued accessing healthcare from those facilities (Pettitt 2011; Caulfield et al. 2016; Jackson et al. 2017). In a qualitative study in Ethiopia, participants also complained about the lack of equipment, supplies, and drugs necessary for maternity care in health facilities. This shortage of materials also contributes partly to their preference for home delivery. Mothers were also concerned about the lack of privacy when they utilized health facility care. One mother described it as follows: "I laid down on the delivery couch, which compromises women's privacy to other service users in the health facility. There is no privacy as different people (staff) frequently come to the delivery room; there is no such a problem at home deliveries" (Assefa et al. 2018).

Ethnic minority discrimination

The gross oppression and discrimination the nomadic pastoralists suffer have resulted in a spectrum of poor experiences in accessing healthcare. While all nomadic pastoralists are exceedingly marginalized due to their ethnic minority status in resident countries/communities, their women also face gender-related stigmatization and abuse, which has harmful effects on their sexual and reproductive healthcare access (Pettitt 2011; Sachdev 2012; Chatty et al. 2013; El Shiekh and van der Kwaak 2015; Ag Ahmed et al. 2018). The health facilities in most LMICs are not well organized to serve the mobile communities who live and are scattered abroad, primarily in arid and semi-arid lands. Furthermore, it is worthy to note that male pastoralists view delivery as solely women's issues or responsibility which they are not supposed to indulge in and because of socio-cultural norms women prefer home deliveries (Pettitt 2011; Sachdev 2012; Chatty et al. 2013; El Shiekh and van der Kwaak 2015; Ag Ahmed et al. 2018; Assefa et al. 2018). In a qualitative study in Enugu State, Nigeria, a participant in a study who was a health worker argued that the medical supplies are meant for their people (the sedentary population) and not for the Fulani strangers (nomadic pastoralists). Also, during the participatory rural approach (PRA) session in one of the camps, a nomad noted that "even when we go to the public health center, they will just be looking at us and that is why we do not go there. A hospital is supposed to be for everyone, but this is not the case". Previous studies have shown that Fulani children had lower immunization rates than the overall population and that Fulani residents were also less likely to be included in Local Government Area (LGA) guinea worm eradication efforts than Yoruba residents of neighbouring hamlets (Okeibunor et al. 2013).

Vulnerability to political factors

The review revealed that the use of assisted childbirth was already limited amongst nomadic pastoralists, but further deteriorated with the political conflicts in communities that they live. In fact, almost all health facilities were closed in these regions due to the security situation. Assisted childbirth proportions decreased drastically (Chatty et al. 2013; El Shiekh and van der Kwaak 2015; Ag Ahmed et al. 2018). In a qualitative study in Ethiopia, community-based integrated primary healthcare interventions during conflicts have been proven effective and efficient in reducing maternal deaths and improving utilization of maternal healthcare services. In view of this, the government of Ethiopia adopted an approach called the "health extension programme" (HEP) to provide services in pastoral areas. The main goal of this approach was to prevent maternal mortality and morbidity amongst pastoralists by enhancing equitable access to community-based promotive, preventive, and selected curative healthcare interventions (El Shiekh and van der Kwaak 2015).

Economic factors

Poverty

Another critical factor related to reproductive and maternal healthcare service access is their affordability. Although quite a few nomadic pastoralists do have income resources that can cover the cost of healthcare services, their willingness to pay remains a question that needs further research exploration. The literature showed that economic independence and control of economic resources lie in the hands of nomadic pastoralist men. Most participants in the included studies were housewives. They do not perform any paid work, limiting their financial independence and autonomy to seek healthcare (Hampshire 2002; Ernest et al. 2011; Gitimu et al. 2011; Chatty et al. 2013; Gyaltsen et al. 2014; Maro et al. 2014; El Shiekh and van der Kwaak 2015; Byrne et al. 2016; Caulfield et al. 2016; Kermode et al. 2017; Ag Ahmed et al. 2018; Ibrhim et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018; Kenny et al. 2021). In other studies, the same financial constraints are amongst the key factors that prevent pastoralist mothers from seeking delivery care at health facilities. The majority of participants in these studies (both male and female) described poverty as the main contributing factor. Although, in actual practice, delivery services are free of charge in public health facilities in LMICs, families may not afford to buy drugs and pay for transportation and other travel-related expenses. Most of the women mentioned that in emergencies, ambulance service is not readily available and accessible to them (Pettitt 2011; Yousuf et al. 2011; Mekonnen et al. 2012; Ibrhim et al. 2018). Also, the paper by Jackson et al. (2017) states that few health extension workers were called to assist women as most women give birth at home with the assistance of TBAs. The ambulance service is not readily available and accessible as only three of the 14 HEWs in the study in the Afar Region had ever called the ambulance (Jackson et al. 2017).

Level of education

Evidence from the reviewed studies reveals a positive correlation between formal education and maternal health service access. Women's level of education is directly associated with better utilization of healthcare services. The nomadic community's literacy rate is very low (Ibrhim et al. 2018; Kenny et al. 2021). In a qualitative study in Kenya, respondents in both Laikipia and Samburu indicated that lack of education was a reason for women not having facility-based deliveries. Although the community health workers were promoting awareness of the importance of facility-based deliveries, many respondents maintained that only better-educated or younger women delivered with SBAs (Caulfield et al. 2016).

Socio-cultural factors

Gender roles

Gender relations are defined by different roles and responsibilities assigned by society to men and women. The traditions and cultures prescribe tasks and responsibilities of individuals within the nomadic pastoralist society and sketch the roles of women within the family and community. Gender norms affect access to reproductive/maternal healthcare through harmful traditional practices such as early marriage and female genital mutilation (FGM). They are always related to the community's beliefs and values. Most nomadic females in LMICs are engaged in unpaid family work and work on their accounts. Decision-making amongst nomadic pastoralists concerning seeking maternal healthcare is similar to other communities in developing countries. In general, women lack autonomy in healthcare decision-making. The decision is always made by their husbands, as they control the resources, and the women usually seek permission before accessing healthcare services (Pettitt 2011; Yousuf et al. 2011; Jackson et al. 2017; Ag Ahmed et al. 2018; Assefa et al. 2018; Ibrhim et al. 2018; Moucheraud et al. 2018; Kenny et al. 2021). In a study in the Afar Region in Ethiopia, women whose husbands were involved in the decision regarding the place of delivery were 1.9 times (AOR = 1.9) more likely to deliver at a healthcare facility as compared to women whose husband did not involve in the decision-making process of their place of delivery (Assefa et al. 2018). Also, regarding the autonomy of nomadic pastoralist women, our findings revealed three dimensions—autonomy of movement, decision-making, and economic agency. The low autonomy of nomadic women constrains their use of assisted childbirth. Most female participants admitted that they did not have freedom of movement and that their movements were restricted by strict rules. Given this, a woman traveling alone would not be well perceived, and the authorization of the husband or a family member would be required (Pettitt 2011; Ag Ahmed et al. 2018; Assefa et al. 2018). In another qualitative study in Ethiopia regarding decision-making about maternal health, female participants maintained that the husband makes most decisions on maternal health because of traditional male dominance. Husbands and senior family members, such as in-laws, strongly influenced women's use of health facilities (Yousuf et al. 2011). The most dominant are younger women with no formal education. Thus, it is important to target all influential family and community members, including religious leaders, to ensure that women have access to essential health services that can improve their health (Yousuf et al. 2011).

Socio-cultural norms

Our review of cultural beliefs, attitudes, and practices of reproductive and maternal healthcare access revealed that the pastoralist community's use of maternal health services is influenced by cultural beliefs, attitudes, and practices. There are several cultural barriers to women's use of health facilities. Indeed, women fear male midwives touching their bodies, especially their reproductive organs. Nomadic women are reluctant to be examined by male midwives. They believe that the nakedness of women of childbearing age should be seen by only God and her husband. Nomadic pastoralist women really view it as culturally impolite and unacceptable for women to expose their reproductive health organs to others (Ernest et al. 2011; Pettitt 2011; Yousuf et al. 2011; Mekonnen et al. 2012; Sachdev 2012; Okeibunor et al. 2013; Gyaltsen et al. 2014; Maro et al. 2014; El Shiekh and van der Kwaak 2015; Caulfield et al. 2016; Reeve et al. 2016; Jackson et al. 2017; Kermode et al. 2017; Ag Ahmed et al. 2018; Ibrhim et al. 2018; Moucheraud et al. 2018; Kenny et al. 2021). In terms of perceived weakness versus bravery, some respondents described nomadic pastoralist women who deliver alone as brave or courageous. The concepts of courage and strength were discussed in the study by women in both Laikipia and Samburu, and some women who gave birth alone "considered themselves brave and didn't want anybody close to them when they gave birth". Some women perceived this to be standard practice (Byrne et al. 2016; Caulfield et al. 2016; Kermode et al. 2017). Many respondents equally identified specific cultural practices and beliefs that influenced the place of delivery. Some said that a customary announcement is made when a baby is born and that this cannot be done at the hospital. Others suggested that family members' help with the delivery ensures a baby is delivered easily, while some identified superstitious beliefs, such as ensuring blood loss during delivery is kept within the homestead to protect against bewitchment, as the reason for the popularity of homebirths (Caulfield et al. 2016). In Tanzania, experience from the Nomadic Youth Sexual and Reproductive Health project in Kilindi shows that nomadic communities do not use modern family planning methods. The reasons are both social-cultural and structural. Deprivation of sexual rights has been a persistent social-cultural problem. For example, nomadic women in the area are subjected to forced sexual abstinence for 3 years after conception and are severely punished if they conceive through extramarital affairs. Knowledge, awareness, and access to modern family planning (FP) methods that can postpone pregnancies but allow sexual contact within marriage can minimize the risks of unplanned pregnancies, sexually transmitted infections (STIs), and HIV (Ernest et al. 2011; Pettitt 2011; Yousuf et al. 2011).

Perception and attitude towards R/MHCSs

We found that perceptions of disrespectful care in health facilities by health workers in a survey reported that women were reluctant to give birth in health facilities because there were male health workers (Afar Region) or that they would be forced to have a caesarean section. Also, all women wanted to have a trusted family member or even the health worker to stay with them during birth in a health facility (Gitimu et al. 2011; Jackson et al. 2017; Ibrhim et al. 2018). Similarly, from another study in Ethiopia, misconceptions about medical procedures and side effects produced a negative impression and experience of modern healthcare in nomadic communities. For instance, pregnant women in the survey were reluctant to visit health centres because they feared having a caesarean section and did not understand the possible benefits of health procedures (Pettitt 2011; Jackson et al. 2017). The majority of nomadic groups in Tanzania reported knowledge of at least one modern method for avoiding pregnancy but chose not to use them due to misconceptions concerning its side effects. Some women believed that if they use oral pills, they will become infertile. Such women prefer to use traditional methods such as breastfeeding, abstinence, withdrawal method, and other less scientific methods such as wearing pieces of sticks around their waist (which is supposed to prevent pregnancy while worn) or the myth that drinking cold water after having sex will prevent pregnancy. This means they wear it around their waist to avoid getting pregnant until they remove it (Ernest et al. 2011). In a focus group discussion with representatives of the Zigua ethnic group, it was revealed that older women and men believed that the new methods of family planning were introduced to kill young women or sterilize them and make them unable to become pregnant (Maro et al. 2014).

Policy strategies for improving access to R/MHCSs

Improving healthcare delivery system

It emerged from our review that increasing the number of trained health workers with the necessary skill to handle delivery and to refer those at risk whenever necessary could be one way of convincing nomadic pastoralist women that need reproductive and maternal health services. The mobile lifestyle of nomadic pastoralists requires special considerations to improve accessibility and quality of services. Addressing cultural impediments through health education, improving access through maternity waiting areas, and enhancing birth preparedness through community conversation and male involvement can help prevent unnecessary suffering and maternal and neonatal deaths. It was also discovered that mothers spend money on transportation, food, and the purchase of drugs and supplies. These were important

experiences for the low utilization of delivery services in most studies. Making sure essential supplies and medicines are available at all times and the mothers who come seeking the services are satisfied is critical to achieving higher coverage for maternity services. Shortage of essential medical equipment and drugs erodes trust in health facilities and disincentivized subsequent utilization of services either in the same or other health facilities (Ernest et al. 2011; Pettitt 2011; Yousuf et al. 2011; Mekonnen et al. 2012; Sachdev 2012; Okeibunor et al. 2013; Gyaltsen et al. 2014; Caulfield et al. 2016; Reeve et al. 2016; Jackson et al. 2017; Kermode et al. 2017; Ibrhim et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018). Until the road network in LMICs is expanded to ensure easy access to health facilities, appropriate local interventions to alleviate the transportation problem are essential (El Shiekh and van der Kwaak 2015). Health workers' ability to effectively interact with their clients is very important in improving client satisfaction and continued utilization of health services (Maro and Kwaak 2012; Ibrhim et al. 2018; Kenny et al. 2021).

Improving outpost or mobile healthcare delivery system

Complete decentralization of R/MHCSs through the provision of outpost or mobile services can be a prerequisite to ensuring the effective delivery of reproductive and maternal healthcare services (Ernest et al. 2011; Ibrhim et al. 2018). Our review shows that health facilities are not well organized to serve the mobile, nomadic pastoralist communities scattered in the vast drylands in LMICs. A typical nomadic pastoralist woman has no permanent residence. She moves from place to place to find grazing land and water as a part of everyday life which may affect her pregnancy and childbirth outcomes. Their husbands may not be around when labour starts and may be far from health facilities, compelling them to use delivery facilities according to the population's preferences. The mobile lifestyle of pastoralist communities requires special considerations to improve accessibility and quality of services (Hampshire 2002; Gitimu et al. 2011; Pettitt 2011; Yousuf et al. 2011; Okeibunor et al. 2013; El Shiekh and van der Kwaak 2015; Reeve et al. 2016; Jackson et al. 2017; Ibrhim et al. 2018).

Increase in trained healthcare staff

Inadequately trained health workforce in most nomadic communities greatly affects their access to adequate healthcare services (Jackson et al. 2017; Ibrhim et al. 2018). In our review, most studies report that health extension workers in their communities lack the skills and facilities to assist them. Besides, the number of health extension workers assigned per community is too small to cover the scattered population through delivery services or health education. Nomadic mothers in this study confront many hardships in attempts to reach health facilities, which means that they should be welcomed and given satisfactory treatment. Unfriendly attitudes and practices, including lack of privacy, are known to discourage people from using health facilities even though it may be their priority. Some authors noted the existence of the taboo of not showing "private parts" to male healthcare providers, birth position, and preference for a particular gender of the healthcare professionals were relevant to using health facility care (Yousuf et al. 2011; Mekonnen et al. 2012; Sachdev 2012; Jebena et al. 2022; Chatty et al. 2013; Gyaltsen et al. 2014; El Shiekh and van der Kwaak 2015; Byrne et al. 2016; Lechthaler et al. 2018).

Sensitizing health workers on cultural needs of pastoralists

The findings underscore the relevance of appreciating the cultural underpinnings of the nomadic pastoralists. The studies recognize that other persistent barriers, such as distance and accessibility and staff availability, affect healthcare access and the need to uphold social and cultural preferences. In pastoralist communities, TBAs escort women to dispensaries for antenatal care, refer them to the SBA at the onset of labour, provide them with support and comfort during delivery, and assist with domestic chores and pre- and post-partum care. Pastoralist women are more inclined to attend health facilities for maternal care if they are accompanied by a trusted, respected member of their community. The provision of continuous support to women in labour results in better obstetric outcomes and a more positive birth experience (Ernest et al. 2011; Gitimu et al. 2011; Pettitt 2011; Mekonnen et al. 2012; Sachdev 2012; Chatty et al. 2013; Gyaltsen et al. 2014; El Shiekh and van der Kwaak 2015; Jackson et al. 2017; Kermode et al. 2017; Wako and Kassa 2017; Ag Ahmed et al. 2018; Ibrhim et al. 2018; Lechthaler et al. 2018). By providing respectful and culturally sensitive maternal care through sensitizing healthcare providers, a study in Ethiopia revealed that all nomadic women wanted to be supported by women they knew, whether the birth was at home or in a health facility. For most women, this person should be their mother, a TBA, or even a health worker. In the same study, it was found that some health workers were able to reassure women that they would not be "alone" if they went to the health centre as a family member would be able to stay with them during the labour (Jackson et al. 2017).

Involving the nomad community in maternal healthcare education

Our review on community involvement established that enhancing birth preparedness through community

conversation and male involvement can help prevent unnecessary suffering and maternal and neonatal deaths. It also revealed that mothers with good knowledge of institutional delivery service utilization were 2.1 times (AOR = 2.1) more likely to use it than women with poor understanding and no community involvement. In the same way, women whose husbands were involved in the decision regarding the place of delivery were 1.9 times (AOR = 1.9) more likely to deliver at a health facility as compared to women whose husband did not involve in the decision-making process of their delivery place (Hampshire 2002; Ernest et al. 2011; Gitimu et al. 2011; Yousuf et al. 2011; Okeibunor et al. 2013; Gyaltsen et al. 2014; Maro et al. 2014; El Shiekh and van der Kwaak 2015; Caulfield et al. 2016; Reeve et al. 2016; Kermode et al. 2017; Assefa et al. 2018; Ibrhim et al. 2018; Lechthaler et al. 2018; Moucheraud et al. 2018; Kenny et al. 2021). We also discovered that most nomadic women had been afraid to be treated by non-nomadic medics. However, the situation changed due to education and awareness created by the health personnel. There was now acceptance of being attended to by a non-nomadic medic and most women also now recognized the need to go to health facilities. For example, a woman respondent in an FGD said: "We used to deliver at home, but now we go to health facilities. It is as a result of health education delivered to us at home by health professionals" (Pettitt 2011; Yousuf et al. 2011).

Promoting female education

Promoting nomadic females' education is relevant to improving access to reproductive/maternal health services. In our study, antenatal care-seeking was more common amongst women who had received some education than their counterparts without education. 55.3% of women with some education attended antenatal care for at least one pregnancy, versus 44.8% of women with no education. Also, institutional delivery was more common amongst women with some education (55.3%) than women without education (45.8%). The prevalence of SBAs was again higher amongst women with some education compared to no education (60.0 versus 40.0%). Women who had used SBA compared to those who had not were equally likely to agree that it was better for a trained person to assist with delivery (Gitimu et al. 2011; Pettitt 2011; Yousuf et al. 2011; Mekonnen et al. 2012; Gyaltsen et al. 2014; Maro et al. 2014; Byrne et al. 2016). A study that employed a logistic regression model showed that the educational status of a wife and ANC attendance amongst mothers had a significant association (p=0.036) (Mekonnen et al. 2012).

Discussion

This scoping review revealed a relevant combination of supply- and demand-side contextual information on a complex combination of factors, on the experiences of nomadic pastoralists in accessing reproductive and maternal healthcare services in LMICs. Most studies reported that nomadic pastoralists prefer to access R/MHCSs at the facilities, but this is often impossible due to many constraints related to their physical locations and political, economic, and socio-cultural context. In this challenging environment, using R/MHCSs is more often an expression of pragmatic choices by nomadic pastoralists, and its limitation is related to several factors. In terms of healthcare access, nomadic pastoralists are amongst the most underserved and hard-to-reach populations facing increasing challenges (Trankmann 2018; Ali et al. 2019).

Demand-side factors include financial constraints, geographical isolation/distant health facilities, and entrenched traditional/cultural practices. Supply-side challenges include the lack of skills, poor quality services, failure to protect privacy during delivery, lack of maternity waiting areas, and limited ambulance services. Similar barriers consistent with family, household, and institutional delivery have been reported in previous studies (Bedford et al. 2013; Hill et al. 2014; Caulfield et al. 2016; Sarker et al. 2016; Ibrhim et al. 2018).

To sustainably improve the health of these marginalized nomadic populations, governments must be willing and prepared to invest resources and implement policies to provide better services in rural, nomadic regions. Policies to support health education, sending girls to school and sustaining them to graduate, promoting positive reproductive health practices, and sensitization on maternal/child healthcare services while condemning obnoxious and harmful socio-cultural practices such as FGM could eventually improve access to R/MHCSs and the overall health outcomes of nomadic populations. For instance, interventions to improve the reproductive health of nomadic communities in Kenya and Tanzania have yielded positive health outcomes. Another successful example from studies has been the training of traditional birth attendants (TBAs) in rural Ethiopia, Tanzania, Kenya, and Ghana (Gitimu et al. 2011; Bedford et al. 2013; Hill et al. 2014; Sarker et al. 2016; Odetola and Salmanu 2021; Negero et al. 2022). Specifically, training TBAs to improve linkages with facilities and improve perinatal outcomes is seen as a stop-gap until universal skilled birth attendance "can be realized, particularly in rural, remote, and resource-limited settings" as TBAs play valuable roles in partnering with SBAs and in providing information and support to the woman and her family. Moreover, in many settings, poor women still

chose to deliver with TBAs even when skilled attendance is a possibility, illustrating that TBAs may bring value to families, particularly social and cultural skills from which SBAs could learn (Darmstadt et al. 2009).

Our reviewed literature showed that trained TBAs have been vital in improving the uptake of modern reproductive health services by reaching out to women, counselling them, and referring them for services. Therefore, investing in improving TBA programmes is essential, as their contributions can be broadened through improved training, refresher courses, and more formalized referral systems to health facilities. These findings are consistent with literature specifically where the implementation of a case study from Timor-Leste (a Southeast Asian country, occupying half the island of Timor) showed that integrating traditional birth attendance into a national healthcare system through the Family Health Promoter programme has been pragmatic and effective (**Ribeiro Sarmento** 2014).

Also, training nomadic people from their communities to become medics, community health workers, and health education/extension workers has been found to tremendously promote equity in access to and utilization of health services by reducing inequities and barriers relating to place of residence, gender roles, education, and socio-cultural and economic context. Furthermore, recruiting these health workers from the community and their relationships with community members contribute to improved uptake of the services they provide and thus improve equity, a view held in literature by most studies (Ernest et al. 2011; Bedford et al. 2013; Ribeiro Sarmento 2014; Sarker et al. 2016).

The study equally underscored the relevance of investing in female education and the girls from nomadic populations. Reviewed studies point to the uptake of R/MHCSs, and access to mobile health services was significant amongst educated women. Education, in general, is important for the autonomy and self-independence of pastoralist women regarding decisions to access healthcare services. With substantial improvement in female education, resources, poverty reduction, and independence, women are more likely to seek healthcare and use RH services. This view is complemented by a study in Kenya which found that "the status of girls reflects society's sexual and reproductive health as nomadic girls' low education and social status mirrors their isolation, limited friendship networks, early marriage and female genital cutting (FGC), which undermines their sexual and reproductive health." (Gitimu et al. 2011).

Involving nomadic communities will also ensure that the programmes are effectively implemented and can leverage the community's existing structures, networks, and decision-making patterns. Engaging in discussions with male partners and male community leaders (teachers and religious) has the potential to increase service utilization as they have decision-making powers. Programmes and interventions that seek to engage and improve men's knowledge and understanding of sexual and reproductive health can significantly address poor knowledge and socio-cultural barriers (Gitimu et al. 2011; Ag Ahmed et al. 2018; Ibrhim et al. 2018).

Conclusion

Our review identified many reasons for the extremely low utilization of R/MHCSs in LMICs. To improve access and utilization of these health services, it is important to increase awareness among women, sensitize nomadic communities, improve birth preparedness, bring the service closer, train service providers for quality healthcare, arranging waiting areas around health facilities and improve availability of supplies and ambulance services; these are all critical. There appear to be substantial efforts to understand the specific contexts, barriers, and experiences faced by nomadic people in accessing reproductive and maternal health services. Although the cultures, traditions, and contexts in which nomadic groups live are very diverse, they face similar challenges and potential, which programmes and policies should consider. So, finding innovative ways to build partnerships with nomad communities (women, girls, and decision-makers) has policy significance and is crucial for improving reproductive and maternal health access. This has implications for health practitioners in rural and remote locations in low- and middle-income countries.

Besides these, distance to health facilities is a common issue for pastoralist and nomadic women. If an ambulance service to transfer women in labour is only used for emergencies, and women live in areas that are often inaccessible by road and with no mobile phone network, if there are obstetric problems or labour while the woman is at home, it might take up to 3 or 4 days to travel this distance. However, as women and the TBAs who support them are unlikely to seek skilled attendance at birth unless it is an emergency, the disjunction between inadequate health facilities and midwives, coupled with the absence of cultural maternal care, is fundamental to improving maternal health services and the area where future research could focus.

Furthermore, pastoralists move their homes according to grazing opportunities. Therefore, it is taken for granted that they commonly walk long distances. This can also be considered a gender issue: women walk long distances to collect water etc.

Abbreviations
FGM: Female genital mutilation; HEW: Health extension worker; LMICs: Low- and middle-income countries; RH: Reproductive health; R/MHCSs: Reproductive/maternal healthcare services; SBA: Skilled birth attendant; TBA: Traditional birth attendant; WHO: World Health Organization.

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All authors were involved in the conceptualization of the study. JKW conducted the database search to identify relevant literature. All authors contributed by independently reviewing abstracts and conducted the full article analysis. JKW, ADD, and JS agreed on the data charting table and on what variables will be extracted. JKW conducted the data charting. ADD and JS were involved in the analysis of data. JKW, ADD, and JS drafted the manuscript, and all authors reviewed and approved the manuscript for submission.

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It is a review article, and all the included articles are available online in global databases such as PubMed, Google, Google Scholar, etc. If need be, the reviewed articles will be available upon request. Requests can be sent to jwulifan@ubids.edu.gh.

Declarations

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Competing interests
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