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Early nutrition practices and access to food and nutrition services for young malnourished children attending MSF-supported facilities in Herat, Afghanistan: a mixed-methods study

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Abstract

Background Afghanistan's protracted humanitarian crisis has intensified food insecurity and child malnutrition. In 2022, Medecins Sans Frontieres (MSF) reported that 45% of malnourished children admitted to Khadestan hospital were under 6 months, yet evidence on feeding practices and access barriers for infants < 12 months in Herat is limited.

Objectives To describe breastfeeding and complementary feeding among infants aged 0–11 months attending MSF-supported services in Herat and to examine caregivers' needs and barriers to food and nutrition services using the demand-side domains of Levesque's access-to-care framework.

Methods Explanatory mixed methods in two MSF-supported facilities (Herat Regional Hospital; Khadestan clinic). Phase 1 analysed routine programme data (August–September 2022), including infant feeding practices, maternal and child food insufficiency and related coping strategies, health-seeking behaviour, and barriers to accessing health and nutrition services for all infants 0–11 months admitted with acute malnutrition (including severe acute malnutrition, SAM). Phase 2 comprised 38 in-depth interviews with caregivers of malnourished and non-malnourished infants and key informants (Jan–Jun 2023). Participatory approaches included training community peer researchers, informed tool refinement, data collection, and interpretation.

Results Phase 1- Sixty-seven% of the children accompanied by the mother to the MSF health facilities ($N = 236$) were currently breastfed, but only 17.8% of the children aged 0–5 months received breast milk without other foods or liquids according to their mother. Women frequently cited perceived low milk supply and limited breastfeeding support. Among infants ≥ 6 months, the majority ate ≥ 3 times/day, but diets were mainly cereals with frequent sweets. Although 92.3% of mothers ate ≥ 3 times/day, 63.5% reported ≥ 1 day of food insufficiency in the prior week; coping strategies included portion reduction mostly and meal skipping. For child illness episodes, 75.0% sought facility care first, yet 62.3% reported access barriers (distance, transport costs, poor roads, seasonal constraints). Phase 2- Interviews identified constraints across Levesque domains: low female literacy and reliance on informal advice (perceive); restricted autonomy, gender norms, and language-related stigma (seek);

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long travel times and harsh climatic/road conditions (reach); poverty and costs of transport/medicines (pay); and reduced self-efficacy, suboptimal feeding, and maternal stress/mental health challenges (engage).

Conclusions Early infant feeding among infants accessing MSF-supported health facilities in Herat is shaped by socio-cultural, geographic, and economic barriers. According to the study participants, programmes may pair facility nutrition care with community-led education, early counselling and peer support, targeted food assistance during antenatal/postnatal contacts, affordable transport solutions, and integrated maternal mental health support to improve access and outcomes for infants aged 0–11 months.

Introduction

Afghanistan faces a complex humanitarian crisis marked by the breakdown of livelihood systems due to a combination of economic collapse, rising food prices, recurrent extreme climatic events such as droughts, and protracted conflict [1–3]. These overlapping shocks have significantly deepened food insecurity across the country. As a result, malnutrition rates remain alarmingly high, with undernourished children facing greater susceptibility to infections and disease compared to their well-nourished counterparts [4]. UNICEF estimated that, in 2022, approximately half of all children under five in Afghanistan would be affected by acute malnutrition, largely in the context of severe food insecurity and inadequate access to safe water, sanitation and hygiene services [4].

Malnutrition is especially high among young children aged 1 year and below in Afghanistan according to published studies [4, 5]. In Herat, there is one of the highest burden of global acute malnutrition, with more than 206,000 cases [5]. In the MSF hospital in Khadestan, approximately 100 children are treated for malnutrition daily, of whom 45% were aged 6 months or younger in 2022. Evidence suggests that poor feeding practices for infants and young children are strongly linked with acute malnutrition [6]. According to the Afghanistan Demographic and Health Surveillance (DHS) data in 2015, only 43% of infants under six months were exclusively breastfed; additionally, 10% consumed plain water, 2% received non-milk liquids, 28% consumed other types of milk, and 14% were given solid foods [7]. Exclusive breastfeeding declined with age, with only 33% of infants aged 4–5 months exclusively breastfed. Continued breastfeeding remained high, at 78% among children aged 12–15 months and 59% among those aged 20–23 months. More recent data from the 2022–23 Afghanistan Multiple Indicator Cluster Surveys (MICS) reveals a notable improvement: 67% of infants aged 0–5 months were exclusively breastfed, while 80.6% of children aged 12–15 months continued to receive breastmilk, and 52.3% of those aged 20–23 months were still being breastfed [8].

Although some progress has been made in the country to achieve optimal child feeding practices and exclusive breastfeeding of infants under 6 months, the data remains sparse and unclear, especially for malnourished children [9].

The aim of this study was to characterize the nutritional and care-related needs of children aged 0–11 months and their caregivers attending MSF health facilities in and around Herat Province. Specifically, the study sought to: [1] describe breastfeeding and complementary feeding practices among children aged 0–11 months; [2] assess household and maternal food insufficiency and related coping strategies; [3] identify barriers to accessing health, food and nutrition services for children with and without acute malnutrition; [4] explore caregivers' and key informants' experiences and perspectives regarding child feeding, malnutrition and access to nutrition services; and [5] integrate quantitative and qualitative findings to provide a more comprehensive understanding of the factors influencing nutritional practices and access to care.

Children aged 0–11 months were included because this period represents a particularly important stage for infant growth, feeding practices and vulnerability to malnutrition. A mixed-methods approach was used, combining programme data from August and September 2022, and interviews with caregivers of malnourished, non-malnourished children, and key informants. By integrating these sources of evidence, the study aimed to generate actionable findings to inform MSF priorities for the prevention and management of malnutrition among young

children in Herat Province, including Herat City and Khadestan. More broadly, the study contributes evidence relevant to efforts to reduce child malnutrition in line with Sustainable Development Goal 2.2.

Methods

Study setting

The study was conducted in MSF health facilities in Herat and Khadestan. Herat Province, on Afghanistan's western frontier with Iran and Turkmenistan, is largely rural, while Herat City functions as the region's urban and commercial hub and administrative capital. Herat Province is linguistically and culturally diverse, with Dari (Persian) serving as the dominant language in Herat City and much of the province, while Pashto-speaking communities, largely concentrated in rural and displaced populations, often experience higher levels of poverty and social marginalization compared with Dari-speaking groups [3]. Since 2022, food security in Herat has mirrored national fragility, with the province recurrently in IPC Phase 3 (Crisis) amid depressed incomes and high prices [10]. The earthquakes in October 2023 in Herat Province further damaged housing and basic services, heightening humanitarian needs, and increasing malnutrition [11].

MSF presence in the country

Since 2019, MSF has managed both inpatient and outpatient care for malnutrition in children and adults in Herat, through an Inpatient Therapeutic Feeding Centre (ITFC) and two Ambulatory Therapeutic Feeding Centres (ATFCs). In 2022, MSF expanded activities to include outreach, focusing on follow-up of children discharged from the ITFC and linking families in rural areas to local outpatient nutrition services. Each month, between 500 and 800 children are admitted to MSF's ITFC and ATFCs in Herat Province. During 2022, the Herat ITFC recorded 3,733 admissions for nutritional care. Based on the available admission data, 3,664 admissions met at least one criterion for SAM and 42 met moderate acute malnutrition (MAM) criteria without a concurrent SAM criterion. Overall, 2,946 admissions had a weight-for-height z-score (WHZ) < -3, 2,982 had middle upper arm circumference (MUAC) < 115 mm, and 420 presented with pitting bilateral oedema (107 grade 1+, 121 grade 2+, and 192 grade 3+).

Study design

We employed a sequential explanatory mixed-methods design in two phases [12].

In the first phase, quantitative programme data collected in August–September 2022 were analysed to characterize nutritional status, infant feeding practices, food-related challenges, and patterns of access to health and nutrition services (Supplementary Material 1). Findings from this phase informed the subsequent qualitative component by identifying issues requiring further exploration and by guiding the selection of participants with different experiences.

The second phase, conducted between January and June 2023, consisted of in-depth interviews with caregivers and key informants. The interview guides were developed and refined on the basis of findings emerging from the quantitative phase, with particular attention to understanding the reasons underlying observed feeding practices, food insufficiency, care-seeking behaviours, and barriers to accessing health and nutrition services (Supplementary Material 2). The qualitative findings were subsequently used to explain and contextualize patterns identified quantitatively, allowing convergence, complementarity and differences between the two sources of data to be examined during interpretation.

ProgrammeParticipatory research principles [13] guided the qualitative component. We adopted a peer researcher model [14, 15]. Two local research assistants, one male and one female, conducted the interviews,

supported by a female community peer researcher, who was purposively selected with input from health workers at the participating health facilities. She was chosen because of her familiarity with the local community, fluency in both Dari and Pashto, previous experience working in the hospital, and strong communication and interpersonal skills. These characteristics were considered important for facilitating communication, building rapport with participants, and supporting engagement with mothers. Drawing on her familiarity with the community and local context, the peer researcher supported recruitment, helped establish trust, and facilitated open communication between participants and the research team.

Additionally, a community-informed approach was used. Caregivers and key informants who were not subsequently enrolled as study participants were consulted before formal data collection to help identify and prioritize the issues considered most important to explore in relation to infant feeding, malnutrition and access to nutrition services. During the pilot phase, a separate group of caregivers also provided feedback on the interview itself, including the clarity, relevance and acceptability of the questions, and this feedback was used to refine the interview guide. The community peer researcher and local research team further supported refinement of the interview approach to ensure that it was understandable and contextually appropriate. During analysis and interpretation, emerging findings were discussed with the community peer researcher, the local research team, and local MSF health workers from the participating facilities to support contextual interpretation and assess whether the findings reflected local experiences. This participatory approach complemented the sequential mixed-methods design by incorporating local perspectives into the interpretation of the quantitative and qualitative findings.

Conceptual framework

We applied an adapted version of Levesque's access-to-care framework using the five demand-side dimensions as the primary analytical structure because the study aimed principally to understand access from the perspective of caregivers and community members (Table 1) [14]. Supply-side factors, such as service availability, medicine shortages, staffing and provider behaviour, were retained when they emerged from participants' accounts because they shaped caregivers' ability to perceive, seek, reach, pay for and engage with care. However, these factors were interpreted from the perspective of service users and key informants only.

Participant sampling

For the quantitative phase, all programme data on infants aged 0–11 months with SAM or MAM admitted to the participating MSF facilities during August–September 2022 were included. For infants aged 0–5 months, the MSF protocol in use during the study identified nutritional risk using anthropometric and clinical indicators, including oedema, low wight-for-age z-score (WAZ) or weight-for-length z-score (WLZ), inadequate weight gain, failure to regain birthweight, and a history of prematurity, low birthweight or multiple birth. Admission to inpatient care depended additionally on the presence of feeding-related problems or medical complications. For children aged 6–11 months, SAM was classified using WHZ <-3, MUAC <115 mm or bilateral oedema, while MAM was defined by WHZ between -3 and <-2 or MUAC between 115 and <125 mm in the absence

Table 1 Demand side from Levesque's framework analysed in this study [16]

Demand-side dimension	Definition
Ability to perceive	The caregiver's awareness of the need for care, and recognition of malnutrition as a health problem
Ability to seek	Motivation, autonomy, and willingness to seek care; shaped by trust, stigma, norms
Ability to reach	Physical ability to get to services; affected by geography, transport, mobility
Ability to pay	Financial ability to afford care or nutrition-related needs (not just fees)
Ability to engage	Capacity to participate in care; includes mental health, communication, and confidence

of oedema; inpatient care was required when acute malnutrition was accompanied by severe oedema, medical complications or failure of the appetite test.

Beginning in August 2022, additional questions on infant feeding practices, maternal and household food insufficiency, and access to health services were incorporated into routine programme data collection to provide more detailed information on the needs of young children and their caregivers. The questions were designed to be brief and feasible within routine clinical care and were not developed to calculate standardized WHO/UNICEF IYCF indicators. The dataset was checked for repeat observations to ensure that each child contributed only one record to the analysis. For analyses of caregiver-reported information, only children accompanied by their mothers were included, to improve the consistency and reliability of the information provided.

For the qualitative phase, interviews were conducted with caregivers of malnourished children, with caregivers of non-malnourished children (mothers and grandmothers), and with key informants. Participants were purposively selected based on their experiences and roles relevant to the study objectives, with some additional participants identified through snowball sampling. Due to security constraints, caregivers were recruited at the participating health facilities. Caregivers of malnourished infants were selected among those attending the facilities with children receiving care for acute malnutrition, in order to provide direct accounts of infant feeding, care-seeking and experiences of accessing nutrition and health services. Caregivers of non-malnourished infants attending the same facilities were purposively included to capture a broader range of experiences related to infant feeding and access to services and to provide a more comprehensive understanding of the different dimensions of the Levesque framework. Key informants were purposively selected on the basis of their professional or community roles and their knowledge of child nutrition, health services and local care-seeking practices. They included health workers, nutrition professionals and community representatives, and were included to provide broader contextual and service-related perspectives on feeding practices, community norms, service availability and recurrent barriers to care, complementing and contextualizing caregivers' accounts. Snowball sampling was used where appropriate to identify additional individuals with relevant experience or knowledge [15].

Data collection

Quantitative programme data were recorded by MSF staff using Kobo and stored in medical records. Qualitative data were collected through 45-minute in-depth interviews conducted in Dari or Pashto by the two researcher assistant and the peer researcher (JM, AR, AR). Interviews with caregivers of both malnourished and non-malnourished children were conducted at the participating health facilities in private spaces where conversations could not be overheard. Key informant interviews were conducted at participants' workplaces, including MSF facilities and other relevant work settings. Interviews were audio-recorded with consent, transcribed, and translated into English. They lasted approximately 45 min.

Data analysis

According to the design of the study, quantitative data (programme data) were analysed prior to the qualitative component (in-depth interviews). They were analyzed descriptively using Python, with results expressed as percentages and standard deviations. Data explored child feeding practices, food security and access to health facilities.

Qualitative analysis was conducted on the English-language translated transcripts. One researcher (GS) read all transcripts for familiarisation and conducted the coding. An initial codebook was developed using a combined deductive and inductive approach: broad categories were informed by an adapted version of Hector et al.'s breastfeeding framework and the adapted UNICEF conceptual framework on malnutrition, while additional codes were generated from issues emerging directly from the interviews [16, 17]. The codebook was refined iteratively during analysis, and the resulting codes and themes were subsequently organised and interpreted using the five demand-side dimensions of Levesque's access-to-care framework. As coding was conducted by a single

researcher, inter-coder agreement was not assessed; instead, emerging interpretations and themes were discussed regularly with the Herat research team and MSF field and operational colleagues to strengthen contextual interpretation. Saturation was assessed iteratively during data collection and analysis, with recruitment considered sufficient when successive interviews no longer generated substantively new themes during transcript review and team debriefings. Differences and inconsistencies across participant accounts were considered during interpretation and discussed with the research team.

Results

First phase: programme data

A total of 259 questionnaires have been administered to mothers of children aged 0–11 months, of which 176 in August and 83 in September (Table 2). 93% ($n=242$) of them accessed the Herat Regional Hospital, and 6.5% ($n=17$) Khadestan clinic. The majority of the surveyed children were accompanied to the hospital by the mother (91.1%, $n=236$) and the other 8.8% ($n=23$) from grandmothers or other caregivers (summary of the quantitative results in Tables 2 and 3). The hospitalized children were mostly girls (54.2%, $n=128$), and had a mean age of 5.3 months (SD 3.2).

Breastfeeding & complementary feeding practices

When the medical history was taken, 66.5% ($n=157$) of mothers who accompanied their children a the MSF-supported health facilities reported breastfeeding their child, with an average of 8.2 feeds per day (SD 3.2). Among those who had stopped breastfeeding prior to hospitalization, the mean age of cessation was 3.1 months (SD 1.8).The main reported reasons for discontinuation were perceived insufficient breastmilk and maternal breast problems.

Less than half of breastfeeding mothers (47.8%, $n=113$) felt the time spent breastfeeding was adequate, while the majority (70.7%, $n=167$) perceived their breastmilk supply to be insufficient. Most mothers (82.6%, $n=195$) had not received any support on how to breastfeed. When support was reported, it came mainly from grandmothers (13.1%, $n=31$).

Exclusive breastfeeding was uncommon: only 17.8% ($n=42$ of infants were reported to be exclusively breastfed by their mothers. Among children aged 6 months or older ($n=97$, 41.1%), 79.3% ($n=77$) consumed solid or semi-solid foods three or more times daily, while 20.6% ($n=20$) were fed once or twice daily. The most commonly reported complementary foods were cereals (bread, porridge and rice) and sweet foods (cakes and biscuits) (Supplementary Material 3).

Food security

Most mothers (92.3%, $n=218$) reported eating at least three times per day during the week prior to the survey. However, 63.5% ($n=150$) had experienced food shortages on at least one day that week. When food was not enough, coping strategies included reducing portion sizes (65.3%$n=98/150$) or skipping meals (34.0%$n=51/150$).

Similarly, 21.6% ($n=51$) of the 236 surveyed mothers reported that their children lacked sufficient food in the previous week. Among these, 54.9% ($n=28$) reduced children's portion sizes and 37.3% ($n=19$) reported skipping meals.

Table 3 Maternal characteristics, caregiver-reported infant feeding, reported food insufficiency and access to care ($N=236$)

Characteristic	*n*/*N* (%) or mean (SD)
Breastfeeding experience and perceptions	
Perceived adequacy of time spent breastfeeding†	
Adequate	113/236 (47.9)
Not adequate	123/236 (52.1)
Perceived adequacy of breastmilk quantity†	
Adequate	69/236 (29.2)
Perceived insufficient breastmilk	167/236 (70.8)
Self-reported average duration of a breastfeeding episode, minutes‡	18.1 (13.8)
Self-reported number of breastfeeds per day	8.2 (3.2)
Breastfeeding support	
Supported by grandmother	31/236 (13.1)
Supported by health worker or other person	10/236 (4.2)
No breastfeeding support reported	195/236 (82.6)
Support at home while breastfeeding	
Grandmother	38/236 (16.1)
Neighbours or friends	34/236 (14.4)
No support reported	164/236 (69.5)
Knowledge of infant feeding	
Reported that breastfeeding should start immediately after birth	203/236 (86.0)
Reported that infants should receive only breastmilk during the first 6 months	188/236 (79.7)
Reported that complementary feeding should start at 6 months	208/236 (88.1)
Reported needing more information on child nutrition	213/236 (90.3)
Current breastfeeding status	
Currently breastfed	157/236 (66.5)
Breastfeeding stopped before current illness	39/236 (16.5)
Not breastfed because of current illness	21/236 (8.9)
Never breastfed	19/236 (8.1)
Reported feeding during the first 6 months of life	
Breastmilk without other foods or liquids	42/236 (17.8)
Formula milk	98/236 (41.5)
Other milk and/or solid or liquid foods	96/236 (40.7)
Reported child food insufficiency during the previous week	
Enough food	185/236 (78.4)
Not enough food	51/236 (21.6)
Number of solid/semi-solid meals among children aged ≥ 6 months (N = 97)	
1–2 meals/day	20/97 (20.6)
≥3 meals/day	77/97 (79.4)
Strategies when the child's food was insufficient (N = 51)	
Reduced child portion sizes	28/51 (54.9)
Skipped child meals	19/51 (37.3)
No response	4/51 (7.8)
Maternal food intake during the previous week	
1–2 meals/day	18/236 (7.6)
≥3 meals/day	218/236 (92.4)
Reported maternal food insufficiency during the previous week	
Enough food	86/236 (36.4)
Not enough food	150/236 (63.6)
Strategies when maternal food was insufficient (N = 150)	
Reduced portion sizes	98/150 (65.3)
Skipped meals	51/150 (34.0)
Other	1/150 (0.7)
Health-seeking behaviour when the child was ill	
Went directly to hospital/health centre	177/236 (75.0)
Went first to a pharmacy	24/236 (10.2)

Table 3 (continued)

Characteristic	*n*/*N* (%) or mean (SD)
Waited before seeking facility care	22/236 (9.3)
Used traditional remedies first	13/236 (5.5)
Reported access to health facilities	
Accessible	200/236 (84.7)
Not accessible	36/236 (15.3)
Previous use of health facilities	
First time accessing a health facility	64/236 (27.1)
Had accessed a health facility previously	172/236 (72.9)
Self-reported travel time to health facility, minutes	49.1 (48.5)
Reported barriers to reaching health facilities	
Yes	147/236 (62.3)
No	89/236 (37.7)

† Perceived adequacy of breastfeeding duration and breastmilk quantity refer to the mother's overall perception of her breastfeeding experience with the child

‡ Breastfeeding duration was reported by the mother as an estimated average duration of a breastfeeding episode and was not directly timed by the research team

Health seeking behaviour

When children were sick, most mothers (75.0%, $n=177/236$) went directly to a hospital or health centre. Others first sought care at a pharmacy (10.1%, $n=24$), delayed taking any action (9.3%, $n=22$), or used traditional remedies (5.5%, $n=13$) before presenting to MSF facilities.

Overall, 84.7% of mothers ($n=200$) reported being able to access national or MSF health facilities. However, 62.3% ($n=147$) experienced barriers in reaching these services, including distance, transportation challenges, and costs (Fig. 1).

Second phase: In-depth interviews

Thirty-eight participants were interviewed for the study (summary of the findings in Table 4), of which 19 caregivers of malnourished children, 10 of non-malnourished children and 10 key informants. Key informants included local nutritionists, community leaders and traditional healers ($n=4$), and health workers (nurses and health promoters) ($n=6$).

Ability to perceive: nutrition literacy, knowledge sources, and cultural beliefs

Participants highlighted that overall literacy on child nutrition and health was limited, largely due to the low rate of female education in Afghanistan. One key informant linked this to decades of conflict and instability, which have eroded women's opportunities to learn and, consequently, their ability to access and apply health knowledge:

> "Basically, in the current situation of Afghanistan, there are 43 years of war, insecurity, instability and lack of order. […] This not only has affected nutrition, but also the children's sector from child to adult. Before these 43 years, people's food culture was different. […] Unfortunately, especially women were deprived of education. If we want a healthy society for Afghanistan, we need a literate mother. In our culture, the mother is the manager, the doctor and the family guide." (KI 3, IDI).

Caregivers explained that they usually relied on elderly women in the family, particularly grandmothers, for advice on feeding practices, as they lacked alternative information sources. While most mothers recognized the benefits of breastfeeding and knew it should be exclusive for the first six months and continued up to two years, they reported mixed knowledge on complementary feeding. Some mentioned television and hospital doctors as

Table 2 Demographic, perinatal and clinical characteristics of children included in the programme dataset

Characteristic	*n*/*N* (%) or mean (SD)
Home province (*N* = 236)	
Herat	206/236 (87.3)
Badghis	15/236 (6.4)
Farah	9/236 (3.8)
Nimroz	3/236 (1.3)
Ghour	2/236 (0.8)
Daikundi	1/236 (0.4)
Sex (N = 236)	
Female	128/236 (54.2)
Male	108/236 (45.8)
Age (N = 236)	
Age, months	5.3 (3.2)
<6 months	139/236 (58.9)
≥6 months	97/236 (41.1)
Caregiver-reported size at birth (N = 236)	
Small	146/236 (61.9)
Normal	90/236 (38.1)
Gestational age at birth (N = 236)	
≤36 weeks	32/236 (13.6)
≥37 weeks	204/236 (86.4)
Mode of delivery (N = 235)	
Vaginal	165/235 (70.2)
Forceps or breech	36/235 (15.3)
Caesarean section	34/235 (14.5)
Place of birth (N = 236)	
Hospital	152/236 (64.4)
Home	84/236 (35.6)
Illnesses recorded at presentation (N = 236)*	
Gastrointestinal disease	148/236 (62.7)
Respiratory disease	35/236 (14.8)
Cardiac disease	9/236 (3.8)
Other disease	80/236 (33.9)
No other pathology recorded	34/236 (14.4)

**More than one illness category may have been recorded for a child*

sources of advice, especially when children were hospitalized. Foods such as peas, beans, meat, and vegetables were commonly considered "good foods" for young children.

However, caregivers described instances in which advice from family elders influenced feeding practices they considered inappropriate or harmful. One caregiver attributed her child's malnutrition to advice from her own mother, who recommended giving large amounts of ghee:

> "My child's malnutrition reason was that she was still small, and my mother fed her ghee. She gave her 2 kilos of ghee [clarified butter] repetitively. […] They had told me that ghee is efficient. Old women were using ghee so much. […] When they were giving ghee to my child, the child was suffering little by little. They also used herbal medicine, but she got malnourished." (CG 7, IDI).

Ability to seek: autonomy, social support and norms, stigma, knowledge of nutrition services and trust in providers

Participants described how women's limited autonomy strongly influenced their ability to seek care for malnourished children. Very young women from low socio-economic backgrounds were often married early, frequently to older men, and faced repeated pregnancies due to restricted access to contraception. Opposition from husbands,

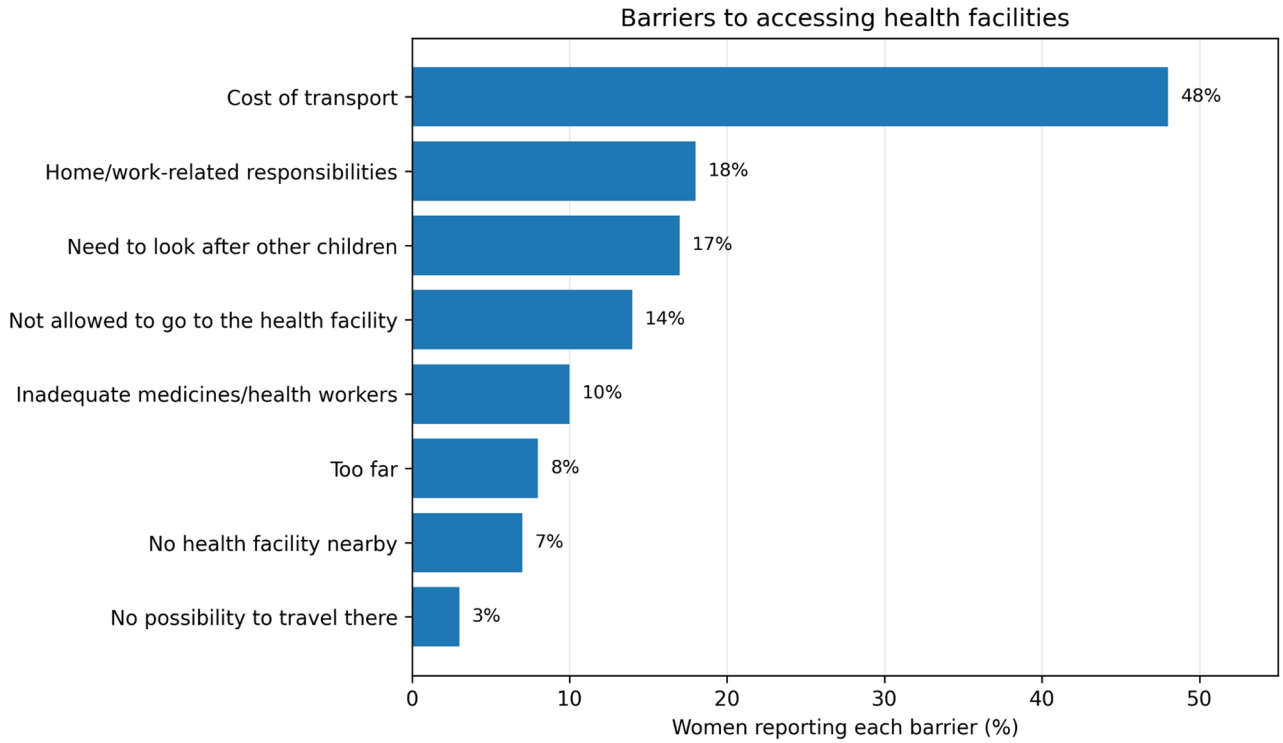

Fig. 1 Barriers mentioned by the women to reach health facilities in Herat Province in August & September 2022

Table 4 Summary of qualitative results

Levesque domain	Summary of qualitative findings
Ability to perceive	While caregivers had some awareness of recommended practices, limited literacy, reliance on traditional sources, and conflicting cultural beliefs shaped their ability to recognize malnutrition and adopt appropriate feeding strategies
Ability to seek	Gender norms, family power dynamics, cultural biases, and mistrust of providers undermine caregivers' ability to seek timely care for their malnourished children, even when services exist
Ability to reach	Geographic distance, poor infrastructure, harsh weather, and limited cultural sensitivity of nutrition advice reduced families' ability to physically reach and benefit from available services, especially in the most remote parts of Herat Province
Ability to pay	Severe poverty and food insecurity prevented families from affording nutritious food, formula, or clothing for children. High transport and hidden medical costs further limited access to nutrition and health services, deepening household vulnerability
Ability to engage	Caregivers' ability to engage was constrained not only by knowledge gaps but also by economic hardship, poor living conditions, and unaddressed physical and mental health burdens, limiting their confidence and capacity to follow recommended practices

combined with lack of support from family, left these mothers with limited capacity to care for their children or seek health and nutrition services. Some women reported that their husbands' illness, drug addiction, or inability to work further reduced both financial and emotional support:

> "My father was addicted and gave me to this person [addicted]. This person cannot work and sits next to me until the night. My stepsons work, but they do not give us anything. My children eat tea and become

malnourished. […] There is nothing for the mother to eat so that the child does not get malnourished." (CG 18, IDI).

Although fathers were often uninvolved in day-to-day childcare, they typically held decision-making power regarding children's health. Mothers were not allowed to seek care unless permitted by husbands or grandmothers:

"The mother usually says: 'I cannot bring my child month after month to gain height and weight.' We say: 'It is your responsibility to bring your child.' But the mother says, 'My husband does not allow me.' Therefore, we say bring your husband, we will talk to him so the child can be vaccinated in time." (KI 2, IDI).

Cultural and gender norms also shaped care-seeking. Several informants noted that families often prioritized boys over girls, resulting in greater malnutrition among girls. Some participants perceived that Pashto-speaking families faced additional barriers to accessing and engaging with nutrition and health services, particularly because of language differences and communication challenges. These participants also described lower uptake of practices such as breastfeeding support, vaccination and nutrition guidance among some Pashto-speaking families.

Caregivers explained that illness in children often prompted delayed care-seeking. Mothers commonly tried home treatments or traditional remedies first, sometimes waiting days or weeks before going to a facility—even though services were free. Family members, especially male relatives, could also block hospital visits, prioritizing household duties over children's health:

"Women usually decide to go to health centres and clinics, but men create obstacles in many places. Obstruction by men who lack knowledge and low culture has caused the death of a baby and a mother." (KI 1, IDI).

Finally, while caregivers expressed high satisfaction with MSF services, they reported distrust in other health facilities. Families felt being often blamed for their poverty and not listened to, which discouraged them from seeking care.

Ability to reach (geographical proximities and environmental challenges, transport, road quality)

Participants highlighted that environmental shocks and geography directly constrained families' ability to access nutrition and health services. Extreme climatic events, from severe droughts to freezing winter temperatures, were described as major drivers of both food insecurity and child malnutrition. Droughts in particular led to agricultural and livestock losses, increased pests, and reduced food availability:

"Climate factors that cause drought and prevent people's income source, internal migration and displacement of people are main causes of malnutrition in young children. […] Droughts have caused great damage to farmers over the years, and [plants] cannot grow […]. There are water shortages and even groundwater is shrinking." (KI 8, IDI).

Beyond food insecurity, caregivers emphasized the physical challenges of reaching health facilities. Families in remote areas reported traveling three to four hours to reach the nearest hospital or health centre, often with sick and malnourished children. Poor road quality, worsened during winter snow or summer heat, further increased the burden:

"It is hard [getting to the hospital] and now it is winter. We and our children will perish from the cold. When the weather is hot and we want to go [to the hospital], the child gets diarrhoea and vomiting on the way. There is no choice, but we must go." (CG 5, IDI).

Key informants noted that children in remote mountain areas were particularly vulnerable, since access to services was limited and outreach rarely reached these communities.

Ability to pay (household income, cost of food, hidden costs to care, economic vulnerability)

Participants consistently described poverty as the main driver of child malnutrition in Herat. Rising unemployment, economic collapse, and inflation left families unable to afford food, health care, or other essentials. Women reported that many men migrated to Iran in search of work, leaving mothers to care for children without financial support. As one caregiver explained:

> "[Life] has changed a lot, especially since the Taliban came. When we rent a house, we see that the money for water and electricity comes, it is not possible for me to feed my children." (CG 12, IDI).

Women described restrictions on girls' education as limiting their opportunities for employment and financial independence. Without education, they were unable to work, generate income, or contribute to household expenses. Several contrasted this with the past, when embroidery, sewing, or other small-scale activities provided some independence:

> "Before, I used to embroider and sew. I used to provide myself expenses. I did not wait for my parents and brothers to take care of me. […] Now I cannot embroider and only my husband works. […] It is because of our illiteracy. We had school, but it was closed." (CG 1, IDI).

Food insecurity was reported as widespread and severe. Participants described mothers as frequently having inadequate food intake during pregnancy and lactation and perceived maternal hunger and weakness as negatively affecting breastfeeding and breastmilk supply Caregivers described difficulties affording formula milk and diverse complementary foods, particularly when household resources were limited. Some mothers also lacked money for adequate clothing, exposing children to harsh winter temperatures. A key informant summarized:

> "The main reason is poverty and economic problems. […] The family cannot feed itself and bring food to its child. We see some families begging and collecting bread from trash and bringing them to their children. It is very painful." (KI 6, IDI).

The cost of reaching hospitals was another barrier. Transportation expenses often forced families to delay care or make trade-offs between food and travel. One caregiver explained how her husband had to sell his motorcycle to pay for transport to the hospital:

> "It took a month because we did not have the money for our fare to come. No one lends money to anyone. […] My husband had an old motorcycle. He sold it and it became our fare. We came to hospitalize her so that she can get well." (CG 2, IDI).

Finally, even when families reached health facilities, hidden costs remained. Some centres lacked medicines, requiring families to purchase them from pharmacies, an additional burden for the poorest households and another factor delaying timely treatment.

Ability to engage (emotional and mental readiness, confidence and self-efficacy, time and caregiving burden)

Participants perceived exclusive breastfeeding up to six months to be uncommon and frequently attributed early introduction of other foods or liquids to perceived insufficient breastmilk or infants refusing the breast. Many mothers introduced complementary foods as early as two to three months because they perceived their breastmilk supply to be insufficient :

> "Most families, as we see, start feeding children at two months or three months of age. The mother says, 'I do not have milk and my milk is not enough for the child.'" (CG 10, IDI).

According to participants, formula milk was a commonly used alternative to breastmilk, although caregivers frequently described its cost as a financial burden. .They described inappropriate formula storage and preparation and perceived these practices as contributing to diarrhoea, vomiting and malnutrition:

> "When this mother is not familiar with how to keep formula milk, how to give to the child, the child gets sick. […] They make more than the baby needs. This causes problems, especially diarrhoea, vomiting and malnutrition." (KI 8, IDI).

Mothers also described giving inappropriate foods such as plantain, candies, teas, or boiled water to very young infants, often mixed with breastmilk or formula, in attempts to satisfy hunger.

Participants described poor living conditions, including limited access to soap, clean utensils and nappies, as barriers to safe food preparation and as increasing their concerns about illness among young infants. .

They also described the cultural and practical relevance of nutrition advice as influencing their ability to engage with recommended feeding practices. One key informant noted that nutrition advice sometimes included foods that were not culturally familiar or locally available, limiting its perceived feasibility for families:

> "Health teams do not know people's culture and people's food culture at all. […] They say what to give to the child. Very good. They go and offer the woman how to feed the child. But they do not think that that food does not exist in this community, in this culture." (KI 7, IDI).

Participants perceived maternal and child health as closely interconnected and described maternal illness during pregnancy or the postpartum period as making breastfeeding more difficult and potentially affecting infant health and nutritional status.:

> "She was ill. She cried day and night and got weaker. […] My daughters have stomach cramps up to six months, they get weak and do not take breast milk much." (CG 13, IDI).

Finally, participants stressed the impact of maternal mental health. High food insecurity, poverty, and the closure of schools for girls were reported as major sources of stress and depression. A key informant described maternal psychological distress as making it more difficult for women to care for and feed their infants:

> "When there are mental problems in society, it also puts the body under pressure and causes all kinds of illnesses. […] Unfortunately, even our doctors have no training in guiding society towards a healthy lifestyle." (KI 3, IDI).

Recommendations to improve early nutrition from the participants

Participants proposed several strategies to strengthen access to food and nutrition services. Many emphasized the need for community-based education targeting mothers and families on malnutrition, food preparation and the use of locally available foods. While food insufficiency was widely reported across the study, one key informant emphasized that some locally available foods may be underused because families lack information on how best to prepare and consume them: "We have the best food in Afghanistan, even in mountainous areas, but people do not know how to consume it. If the mother is taught the right way, we do not need global assistance." (KI 4, IDI).

Participants highlighted the importance of engaging community leaders and elders (e.g., village leaders, heads of households, and Mullahs) to raise awareness, change entrenched mindsets, and support women's use of health and nutrition services:

> "If we want to reduce malnutrition, we need to have contact with the white hairs (elderly), the head of the council, the Mullah Imam, and the head of the family." (KI 2, IDI).

Education of mothers was seen as a cornerstone of prevention. Caregivers valued nutrition courses provided by health workers, which improved their child care practices:

> "Doctors in our area launched a course for mothers. […] Once we did the care from the sheet, later it became normal and we cared for our children." (CG 14, IDI).

At the health system level, participants recommended mobile clinics and stable health teams in remote areas, free or subsidized transport to reduce delays in treatment, and the reinstatement of services for moderately malnourished children and for pregnant and lactating women.

Finally, they underscored the importance of cultural sensitivity in nutrition programmes. Interventions should align with local food culture and availability to ensure realistic and sustainable feeding advice:

> "When we know people's food culture, we can guide them and the way they use food, and what kind of food they have available in their area." (KI 9, IDI).

Discussion and conclusions

This study described breastfeeding and complementary feeding practices of infants accessing MSF-supported health facilities in Herat and explored the barriers and needs of families with malnourished children under one year in accessing nutrition services. By applying Levesque's framework, we highlight how structural, cultural, and individual factors were perceived to influence access to food and nutrition services among the study population. Addressing these barriers requires multi-level interventions that combine health system support, community engagement, and women's empowerment. Although this study was focused on Afghan children attending MSF facilities, it contributes rare evidence on early nutrition and malnutrition among children under one year in Afghanistan, a population often excluded from programmes and research [18–20].

Ability to perceive: Caregivers largely relied on family members, particularly grandmothers, for nutrition advice. Participants linked this reliance to limited access to formal information sources and low levels of maternal education. Similar findings have been reported in other low-literacy settings, where limited access to education may restrict opportunities to obtain reliable knowledge on breastfeeding and complementary feeding [20]. The results suggest that nutrition services may benefit from greater engagement of influential family and community members, particularly grandmothers, male household decision-makers and community elders, alongside health workers and peer supporters. Given grandmothers' prominent role in advising mothers on breastfeeding and child feeding, involving them in culturally appropriate nutrition education and counselling may help reinforce recommended practices within the household.

The current restrictions on girls' education in Afghanistan may further affect opportunities to develop maternal nutrition literacy [18]. The findings suggest that strengthening collaboration with community leaders and peers, health workers, including breastfeeding specialists, and local practitioners, together with tailored communication strategies from antenatal care onwards, may be relevant approaches to improving access to appropriate feeding information [21, 22]. Financial, emotional and practical support may also be important in addressing the needs described by caregivers [23].

Ability to seek and reach: Families described delays in seeking care, reliance first on pharmacies or traditional remedies. Similar patterns have been reported in other resource-constrained settings and comparable barriers have previously been identified in Afghanistan in MSF studies [24, 25, 26]. In our study, participants described travel times of several hours, poor road conditions and high transport costs as important challenges when accessing services, particularly for families travelling with young infants. Infants under six months are already at heightened risk of rapid clinical deterioration [27, 28].

Ability to pay: Poverty and widespread food insecurity as prominent concerns in both the quantitative and qualitative findings. Mothers described reducing their own food intake during pregnancy and lactation, and perceived

hunger, poor health and stress as negatively affecting their ability to breastfeed and their breastmilk supply. Families also reported affording formula or diverse complementary foods, while transport and medicine costs were described as additional barriers to timely care. These experiences are consistent with evidence from conflict and protracted crisis settings [29, 30]. Food support during antenatal and postnatal contacts may represent one potential approach to addressing some of these vulnerabilities [31].

Ability to engage: Women described significant emotional and physical strain, including depression and stress linked to poverty, social isolation, and drug addiction among men. They perceived these challenges as affecting their confidence and capacity to follow recommended feeding and caregiving practices. Similar associations between maternal psychosocial wellbeing and child outcomes have been reported elsewhere [32, 33]. Research in Afghanistan has further linked drug addiction to domestic violence [34] and the perpetuation of gender inequities, with negative consequences for maternal and child health [35]. These findings suggest that maternal mental-health services, peer support and culturally sensitive counselling may warrant consideration within nutrition programmes.

Limitations

This study has some limitations. The involvement of a community peer researcher was intended to facilitate communication, participant engagement and contextual sensitivity. However, this approach required careful training and oversight. Additionally, due to security constraints, the Principal Investigator worked remotely; nonetheless, communication with the local research team remained continuous and effective, and extended remote training was provided to ensure high-quality data collection.

Second, caregivers generally expressed positive opinions about the medical services provided by MSF. While similar findings have been reported elsewhere [26], responses may have been influenced by social desirability bias, given the affiliation of members of the research team with MSF.

Third, recall bias is an inherent risk in retrospective qualitative research. We sought to minimize this by interviewing mothers of children aged 0–11 months and restricting questions to their recent experiences. In addition, several quantitative measures were collected as part of routine programme data collection rather than using standardized research instruments. In particular, the breastfeeding questions did not use a previous-day/24-hour dietary recall and therefore cannot be interpreted as the standard WHO/UNICEF exclusive-breastfeeding indicator. Similarly, the food-insufficiency questions were not based on a validated household food-security scale. These findings should therefore be interpreted descriptively and should not be directly compared with estimates derived using standardized indicators.

Fourth, it was not possible to interview the same caregivers for both the quantitative and qualitative components due to design and time constraints. Nevertheless, triangulation between programme data and interview findings allowed quantitative patterns to be further explored and contextualized through the qualitative findings. Finally, the quantitative analysis covered only a two-month period and involved a relatively small sample, constrained by budget. While this limits statistical power, we deliberately selected months with the highest caseloads of young malnourished children, enabling us to capture a broad range of challenges faced by families across different geographic and cultural contexts.

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Author contributions G.S., A.A., P.L., T.R. and J. S.H. conceptualized the study. T.R. and J. S. H. gave inside on the methodology of the study. A.R, A.R. and J.M. collected the data and helped with the interpretation of the results. G.S. analyzed the data and wrote the first draft of the manuscript. All authors reviewed and approved the final manuscript.

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Data availability Data cannot be shared publicly as consent was given frm the participants for this study only. However, data are available from Nouha Touati, Medical Research Ethics, Regulatory and GDPR Referent, Epicentre/MSF, via email (nouha.touati@epicentre.msf.org) for researchers who meet the criteria for access to confidential data.

Declarations

Ethics approval and consent to participate This study was approved by MSF ERB (MSF ERB 2285), and Afghanistan ERB (approval obtained on 09/01/2023). Retrospective analysis of routine data was approved and consent was waived for the quantitative study component. The study sought written consent prior to collecting any qualitative data. Written informed consent was obtained from all qualitative participants. For participants with limited literacy, the information sheet and consent form were read aloud and explained in the participant's preferred language in the presence of a witness. The participant was given the opportunity to ask questions and, if she agreed to participate, indicated consent with a thumbprint on the form. The witness then signed the form to confirm that the information had been accurately explained and that consent had been given voluntarily.

Consent for publication Consent for publication was requested during the informed consent procedure to all study participants.

Authors' information *Reflexivity statement* Our research team brings together a range of expertise, including community experience, epidemiology, clinical medicine, social sciences, and mixed-methods research. We also represent different cultural backgrounds, with some authors raised in Afghanistan and others in Europe. This diversity enriched our understanding of the study context and shaped how we engaged with participants and interpreted their perspectives. Although our positionalities inevitably influenced the research process, we are united by a shared commitment: to support women and children, and amplify the experiences of those most at risk.

AI use statement The AI technology ChatGPT was used to improve the English language.

Competing interests The authors declare no competing interests.

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