Beliefs and practices of Somali citizens concerning infant nutrition

Findings from interactive radio programmes on infant nutrition aired during August and November 2016. A report prepared by Africa's Voices Foundation for the nutrition sections at UNICEF Somalia

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Photo: A mother carries her baby in Baidoa, Somalia, 2017. UNICEF/Mackenzie Knowles-Coursin

EXECUTIVE SUMMARY

In August and November 2016, Africa's Voices deployed a communication for development and social research initiative in Somalia to research the following question: *What determines mothers' adoption of appropriate breastfeeding practices?* Two interactive radio shows were designed to elicit audience feedback via toll-free SMS. In partnership with Hargeisa-based MediaINK, the radio shows were broadcast on 26 FM radio stations across Somalia, with a combined range estimated to cover 70% of the Somali population.

A total of **9,676 people** participated in the shows by sending text messages. 46.5% of the participants were female. **12,775 messages** received could be used for in-depth multidisciplinary analysis. The resulting insights can inform UNICEF Somalia's programmes related to infant nutrition. Our main findings include:

1. **A majority of participants (80.2%) mentioned breastmilk as the best nutrition to give to an infant in their first six months of life. Most participants (89.0%) also supported breastfeeding on the first day of a baby's life.** This positively suggests that there are widespread beliefs in Somalia which are in line with the WHO guidelines on breastfeeding. As a result, future shows could leverage the views of citizens who are supportive of (exclusive) breastfeeding, and include them directly in messaging, thereby informing and influencing others in their community who are more sceptical of exclusive breastfeeding during a baby's first six months.

2. **A significant minority of participants (19.8%) mentioned food and drink other than breastmilk as the best form of nutrition in a baby's first six months. In addition, 53.0% of participants said that they gave nourishment other than breastmilk to their child before she/he reached six months old.** Providing nutrition other than breastmilk, and especially water, has the risk of leading to malnutrition or illness due to unhygienic or unsuitable foods. C4D campaigns around breastfeeding should continue to emphasise the benefits of exclusive breastfeeding in the first six months of life. Through future research, we require deeper understanding of beliefs and practices that are related to nourishment other than breastmilk in order to understand the severity of the risk to infants health.

3. **Over one in ten participants (11.0%) did not support the practice of giving babies colostrum, and 17.8% of SMS survey respondents reported that they do not give their own child colostrum.** The most prevalent barrier to giving colostrum was the belief that it is unhealthy or harmful to a baby, as well as that its consistency, temperature, and quality of were not suitable for a newborn baby. There were also a number of cultural beliefs that dictated against giving colostrum. Future campaigns and health practitioners can address these misconceptions directly by explaining why colostrum appears the way it does, what it contains, and why it is beneficial to infants.

4. **Among the beliefs and practices identified, there were no significant differences between demographic groups.** This included no significant variation based on gender, age, zone, or location. It is likely that there are other factors at play, which this study was not able to gather data on, that influence breastfeeding practices. Given these findings, we thus recommend that future research gathers more specific data on the differences between demographics and regions that may affect beliefs and practices on breastfeeding, including details on socio-economic background, access to medical facilities, and education level.

This report reflects on the method and findings as well as the suitability and efficacy of AVF's approach for researching topics related to infant nutrition in Somalia as a:

- culturally-sensitive, flexible, and time-sensitive approach to social research;
- a complementary Communications for Development (C4D); intervention with in-built feedback and evidence gathering tools,
- and a remote monitoring and evaluation tool in Somalia.

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Acronyms used in this report include:

AVF	Africa's Voices Foundation	**NWZ**	North West Zone
C4D	Communications for Development	**PESS**	Population Estimate Survey of Somalia
FM	Frequency Modulation	**SCZ**	South-Central Zone
IDP	Internally Displaced Person	**SMS**	Short Message Service
MICS	Multiple Indicator Cluster Survey	**UNFPA**	United Nations Population Fund
NEZ	North East Zone	**UNICEF**	The United Nations Children's Fund

1. INTRODUCTION

1.1. Context: infant nutrition in Somalia

At current rates, one in every fourteen children in Somalia will die before their first birthday and one in eleven before their fifth birthday. Lack of adequate nutrition remains one of the primary causes of mortality among infants and young children. Early malnutrition also has devastating effects on children's long-term development, health and well-being.[1]

Breastfeeding is a source of crucial nutrients to children that is comprehensive, free, and safe. The World Health Organisation (WHO) recommends: (1) exclusive breastfeeding for first six months of children's lives and (2) continued breastfeeding for two years or more.[2] It is also recommended that breastfeeding starts within an hour of birth as this helps produce milk and ensures that infants are fed colostrum (this is the first secretion of breast milk after giving birth, which is particularly rich in antibodies and nutrients, such as vitamin A and certain proteins).

Mothers and caregivers are generally aware of the importance of these practices in Somalia but there are still barriers to initiating breastfeeding within an hour of birth. For example, some cultural beliefs associate the first breast milk as being harmful to the child.[3]

Despite recent progress, only 33% of children age 0-6 months in Somalia are exclusively breastfed, and only 46% of children aged 12–15 months continue breastfeeding.[4] This can contribute to diminished growth, micronutrient malnutrition, as well as lead to other complications when unsafe water is used for infant formula. The promotion of appropriate breastfeeding and early nutrition practices is thus crucial to guarantee the wellbeing of infants in Somalia.

1.2. Communications for Development

Effective behavioural change interventions and Communications for Development (C4D) programming is important for ensuring that appropriate nutritional practices are followed. Existing literature shows that behaviour change programmes are more effective when they:

1. Stem from theories that address change at individual, interpersonal, and community levels;[5]

2. Are adapted to the sociocultural context[6] with a clear understanding of the target audience;[7]

[1] UNICEF (2014). "Somaliland: Multiple Indicator Cluster Survey. Final Report 2014: Monitoring the situation of children and women."
[2] "Horta,, L.B. and Victora, G.G. (2013). "Long-term effects of breastfeeding: a systematic review." World Health Organisation (WHO).
[3] UNICEF. (2017). "Somali Infant and young child nutrition assessment. Infant and young child nutrition practices, barriers and facilitators Special study report no. VII 71." pp 25-26
[4] UNICEF. (2017). "Somali Infant and young child nutrition assessment. Infant and young child nutrition practices, barriers and facilitators Special study report no. VII 71."
[5] Aboud, F.E and Singla, D.R. (2012). "Challenges to changing health behaviours in developing countries: A critical overview." *Social Science and Medicine.* 75: 589-594
[6] Campbell, C. (2003). 'Letting them die': Why HIV/AIDS programmes fail. Oxford: James Currey.
[7] Joffe, H. Bettega, N. (2003). Social representations of AIDS among Zambian adolescents. *Journal of Health Psychology*, 8(5): 616-31.

3. Involve the community in the planning, implementation, and ownership of interventions. [8]

It is therefore necessary to have a granular understanding of the target beneficiaries -- their beliefs, opinions, practices, and barriers to adoption of behaviours related to infant nutrition, and how these vary between different groups in the population.

Because of poor infrastructure and large areas of political insecurity in Somalia, traditional, on-the-ground qualitative research to explore the diverse beliefs and practices of Somali citizens is difficult to undertake and costly to reproduce at scale. Africa's Voices Foundation (AVF) has a growing track record of overcoming such obstacles and can address evidence and data gaps by leveraging the popularity of interactive radio in Somalia.

AVF shapes inclusive discussions through radio broadcasts to which audiences contribute their opinions via SMS. Combined with follow-up SMS questions on health practices and demographic information, these messages create a large dataset on Somali people's beliefs, opinions, and practices. Using our unique multi-disciplinary analysis of this local language dataset, we were then able to provide insights that meet UNICEF's data and knowledge needs regarding infant nutrition.

Since 2015, AVF has partnered with UNICEF Somalia to generate insights into a range of issues using interactive radio as a research tool. **This report refers to two radio shows on infant nutrition, which were a part of the latest series of interactive radio shows broadcast in Somalia at the end of 2016.**

[8] Cornish, F., Priego-Hernandez, J., Campbell, C., Mburu, G., McLean, S. (2014). The impact of community mobilisation on HIV prevention in middle and low income countries: A systematic review and critique. *Aids and Behaviour*, 18 (11): 2110-34.

2. METHOD

2.1. Research design

AVF worked with the UNICEF to devise the following research question:

What determines mothers' adoption of appropriate breastfeeding practices?

Next, with attention to socio-cognitive theories that consider how questions are processed and, in turn, answered by audiences,[9] we designed open-ended radio questions to spark discussion and elicit responses from audience members about their beliefs on infant nutrition. In contrast, the SMS questions were closed, and were geared towards gathering insight into individual practices, as well as to gather demographics (eg. gender, age, and district).

All questions were assessed for comprehension and adjusted to the specific cultural context.[10] Specific wordings were decided with the MediaINK team, AVF's media partner in Somalia.

Table 1: Wordings of Radio and SMS questions

 **Radio Questions** (to gather data on beliefs)	 **SMS Questions** (to gather data on practices)
Q1: What do you believe is the best food and drink to give a baby in the first 6 months after birth? Why?	**SMS Q1.1** Have you given your children food or fluids other than breastmilk before they were 6 months old? If so, what do you give them?
Q2: Do you think mothers should give colostrum or first milk to their babies. Yes or no? Why?	**SMS Q2.1.** Was your child breastfed on the first day it was born?

2.2. Data collection: Radio & SMS

In partnership with MediaINK, our Hargeisa-based media partner, AVF deployed interactive radio programmes across a network of 26 FM radio stations covering all three zones of Somalia. Our own estimates put this range to be 49% of Somali territory, and 70% of the population (see circles indicating radio broadcast coverage, fig.1).

The use of radio and mobile phone technology in tandem allows for the shaping and gathering of digital data from collective discussions, uninhibited by the barriers of poor infrastructure and insecurity.

[9] Sudman, S., Bradburn, N. M., & Schwarz, N. (1996). *Thinking about answers: The application of cognitive processes to survey methodology*. San Francisco, CA: Jossey-Bass.

[10] Lopes, C. and Srinivasan, S. (2014). Africa's Voices: *Using mobile phones and radio to foster mediated public discussion and gather public opinions in Africa*. Centre of Governance and Human Rights, Working Paper 9. Cambridge: University of Cambridge.

Ahead of the radio shows, the radio questions were broadcast in short promos on all of the radio stations. Two 30-minute shows incorporated these initial audience responses and were broadcast on Friday 26th of August and Friday 25th of November 2016 -- encouraging further participation from audiences.

To those who participated, AVF sent follow-up SMS questions using UNICEF's RapidPro platform. These asked for demographic information (e.g., age, gender, and district) and their health practices (see table 1).

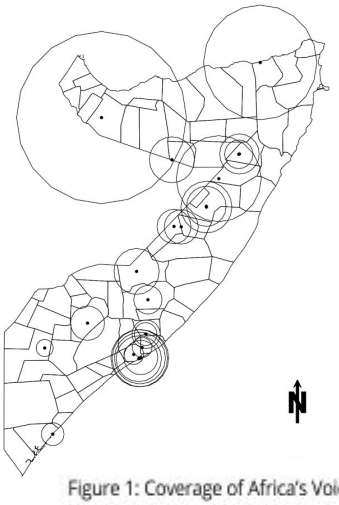


Figure 1: Coverage of Africa's Voices radio programmes in Somalia (circles)

2.3. Data analysis

AVF's research allows it to gain insights from conversations held in local languages and on a scale otherwise difficult for qualitative methods. AVF achieves this scope and depth of research through using a mixed method approach combining semantic networks, grounded theory, thematic analysis and machine learning.

The collective beliefs that emerge from the SMS data allow us to identify ideas shared among demographic groups (geographies, age, gender) as well as differences between them. Contrary to surveys, this approach gathers opinions in cultural context and through a conversational mode, more aligned to the socio-cognitive processes that generate and shape these opinions.

To achieve this, the raw audience data first undergoes pre-processing to remove noise and non-relevant messages as well as to structure the data for analysis. Once the dataset is prepared for analysis, a thematic analysis is undertaken to discover and organise beliefs expressed in the messages, resulting in a coding frame that is applied to the data with manual and automatic techniques. The resulting dataset consists of text messages labelled with one or more themes, which is then analysed for associations with geographical and socio-demographic groups and health practices. Insights are complemented with further qualitative interrogation, and illustrated by a selection of translated text messages in the following section.

2.4. Limits of the approach

We employed an ex-post facto design to allow AVF to identify health beliefs that were associated with groups based on health practices. Because there was neither manipulation of causes nor random assignment of participants into groups, it was not possible to isolate beliefs as the causes of behaviour. Therefore our theoretical framework assumes that the relationship between beliefs and behaviour is bi-directional.[11]

The coverage error[12] –- the difference between the target population (Somali population) and the accessible population (listeners of radio shows) – is substantial due to the fact that roughly 30% of the Somali population lives in a geographical area not reached by the radio shows. Among those reached, a limited group listened to the show depending on their media habits, availability, and interest in the topic. The participants are self-selected and are therefore non-representative

[11] Joffe, H. (2002), Social Representations and Health Psychology. *Social Science Information*, 41(4), 559-580.
[12] Groves, R. M., Fowler, F. J., Couper, M. P., (2009). *Survey Methodology*. New Jersey: John Wiley and Sons.

of the population of listeners of the radio shows. Factors related to access to mobile phones, literacy, gender roles, and dynamics of participation influence participation.[13]

These methodological limitations restrict the external validity of results (generalisation to the population of Somalia and to the group of radio listeners) based on prevalence of health beliefs and practices in the group of participants. Nonetheless, considering that selection bias affects associations (e.g., odds ratio) to a lesser extent – particularly when the data gathering process is inclusive[14], the distributions of key variables in the analysis are not skewed[15] and sample size is large enough (n>1000)[16] –- the robustness of the main findings in this report is not threatened by the lack of representativeness of the group of participants in radio shows.

Therefore, the insights about collective beliefs and social norms contained in this report can be used for UNICEF programming decisions that involve groups of the population that share the same social, demographic, and geographical characteristics/identities with participants of the radio shows.

Finally, a note on the challenge of parsing and analysing Somali text-based data, which has extended the timeframe for delivery of this report. Somali is a low-resource language (a language for which tools and assets for computational and automated analysis are very limited) and much of the data that this and other AVF reports are based on is rich in detail and contextual nuance. Since beginning its work with UNICEF Somalia, AVF has been building its tools for textual analysis from scratch. This has required extensive and on-going verification of data quality to ensure high levels of confidence in our findings. Although this process is time-consuming, one key outcome of this effort is the package of more robust, tested and customised set of language tools and resources for analysing Somali language data. This provides us with a unique opportunity to replicate and scale up the research, in a more efficient and timely way, for UNICEF and others working in Somalia.

[13]Srinivasan, S., and Lopes, C. (2016). Africa's Voices Versus Big Data? The Value of Citizen Engagement through Interactive Radio. In Oscar Hemer, Thomas Tufte (eds.), *Voice & Matter: Communication, Development and the Cultural Return* (pp.157-171), Publisher: NORDICOM.

[14]Inclusiveness is enhanced by reading messages from all strata of population during the show, giving particular relevance to messages from women, nomads, and those living in rural communities.

[15] Deviations of the distribution of main demographic variables to the Somali population are tested, but certain characteristic of the listeners may simultaneously influence participation and opinions, for example, having experience with the disease discussed in the show.

[16] Nemes, S., Jonasson, J., Genell, A., Steineck, G. (2009). Bias in odds ratios by logistic regression modelling and sample size. *BMC Medical Research Methodology*, 9, 56.

3. RESULTS

3.1. Participants

Across the two radio shows, a total of **9,676 people** participated sending a total of **12,775 text messages** that could be used for analysis.

- 46.5% of the participants were female *(response rate for gender was 64.9%*);
- 5.1% were of the participants nomads (*response rate was 16.9%)*)
- 48.3% came from major urban centres (Mogadishu, Hargeisa, Bossaso and Garowe) (*response rate for district was 63.9%*)
- 39.9% of the participants were parents (*response rate was 64.0%*)

Participants came from all age groups (*response rate for age was 61.5%*):

- 3.5 % of participants were 10-14 years
- 34.1% of participants were 15-19 years
- 43.0% were 20-29 years
- 11.5% were 30-39 years
- 8.0% were aged over 40 years.

As Fig 2. shows there is also a clear association between gender and age with the women who responded being generally younger than men [$\chi 2\ (4) = 88.83$, p-value < 0.001], and they were over represented in the 15-19 age group.

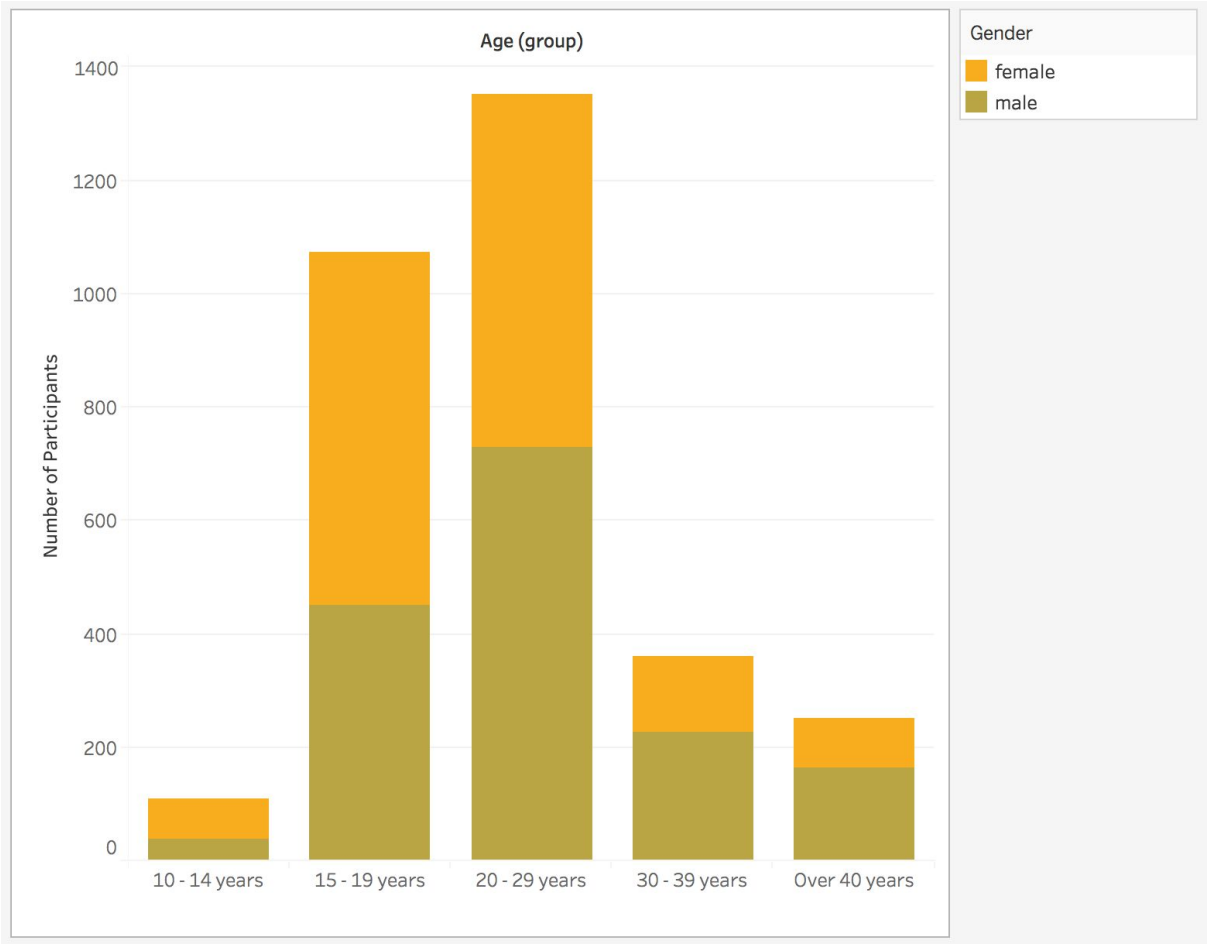


Figure 2: Age distribution of participants in the radio shows by gender (n = 9676).

3.2. Beliefs and Practices

A total of **12,775 messages** were included in the analysis about beliefs in response to the radio questions. To analyse these messages, we first carried out a thematic analysis of the responses. Based on this, we developed a coding frame that categorised the relevant beliefs into themes and sub-themes for both of the questions asked. The coding frame was then used to label the most frequent codes across the entire dataset.

3.2.1. Beliefs related to the best food and drink to give to infants

Radio Q1. What do you believe is the best food and drink to give a baby in the first 6 months after birth? Why?

5482 messages were sent in response to the first radio question (*Q1).*

Out of the **1876** messages that were labeled (after excluding noise), the most prevalent belief to emerge was that the best nutrition to give an infant in their first six months is breastmilk (1503 messages; 89.0%). This was followed by water (186 messages) and other types of milk (62 messages). 123 messages referred to various solid food (Fig 3.). Table 1 presents the coding frame that was used to categorise the answers for radio question 1.

Table 1: Coding frame for beliefs about best food and drink to give to the baby in the first 6 months	
Types of nutrition	**Includes**
Breastmilk *(WHO recommendation)*	Mother's milk, breast milk, breastfeeding
Water *(not WHO recommendation)*	Boiled water, clean water, drinks.
Other types of milk *(not WHO recommendation)*	Animal milk, powder milk
Solids *(not WHO recommendation)*	Baby biscuits, fruits/vegetables, meat, oatmeal/porridge, potatoes, simple food

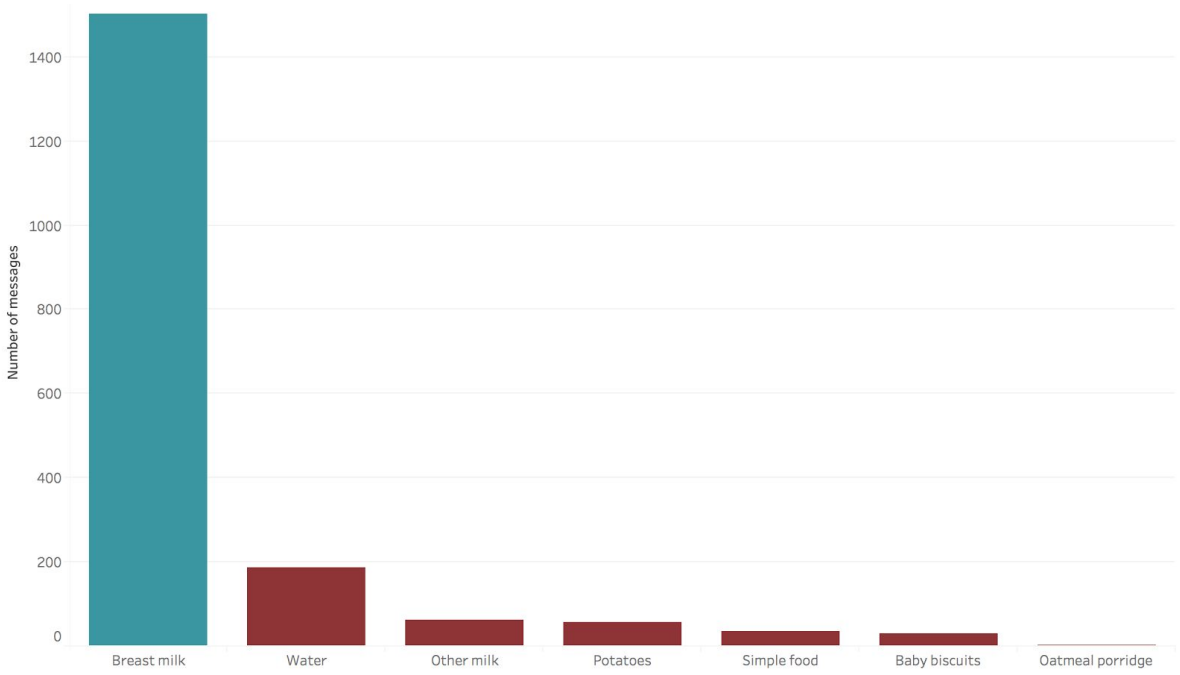


Figure 3: Beliefs related to the best food to give to babies

There was no major demographic variation to the beliefs related to nutrition in the first six months according to age, gender, zone, or urban/rural divide. For all demographic groups, breast milk and (much less so) water were believed to be the two most relevant food and drink to give to infants under six months old. Although no major demographic variation is observed, these descriptive statistics indicate that the relative proportion of answers endorsing breast milk versus non-WHO recommended food sources for babies is lower for the 15-19 age group. Future research-based C4D projects should give this age group greater attention.

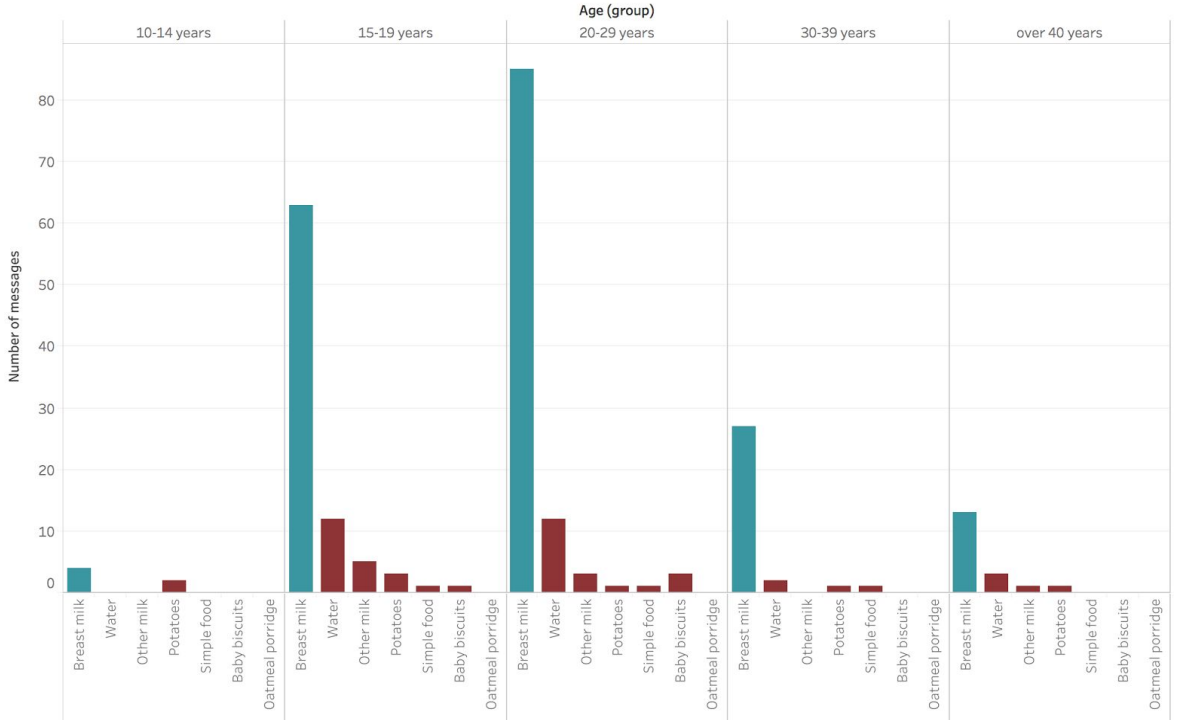


Figure 4: Beliefs related to the best food to give to children by age

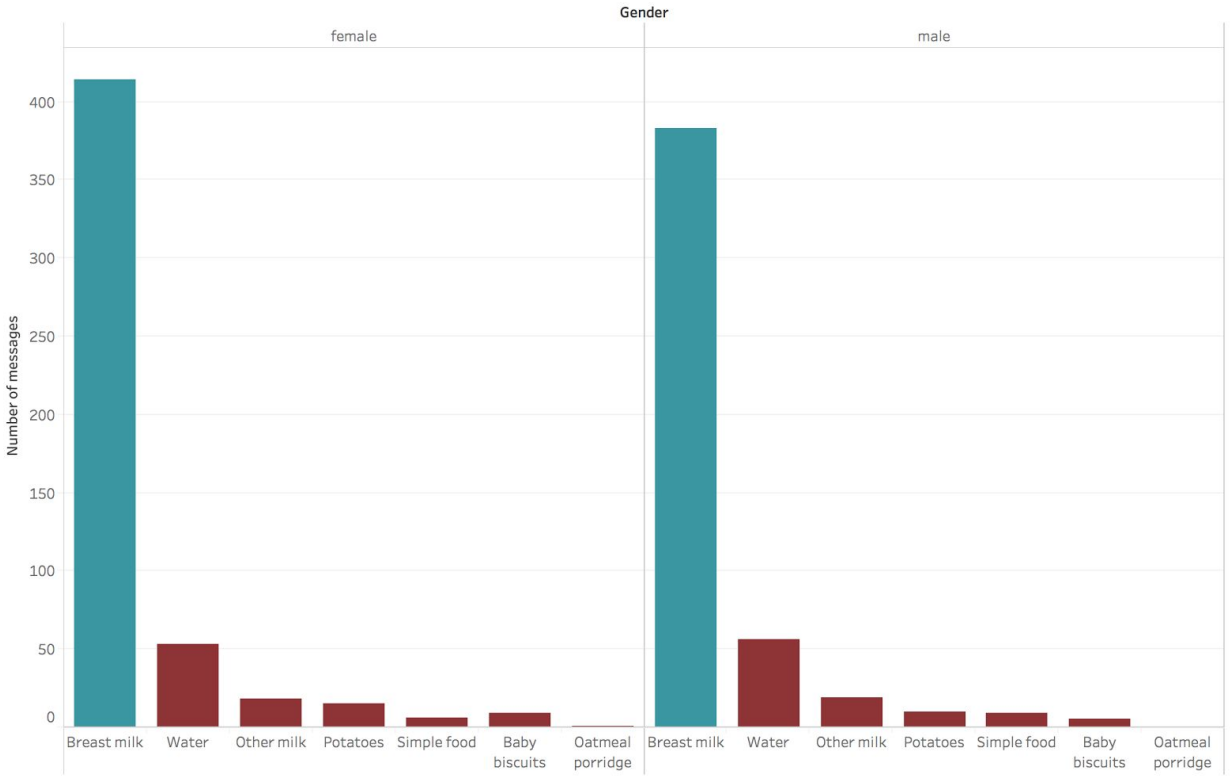


Figure 5: Beliefs related to the best food to give to children by gender

Breastmilk was stated as the best nutrition for babies under six months by the majority of participants (1503 messages; 80.2%). The reasons given were varied and included that breast milk is sufficient nutrition, it protects them from disease and it is better for the child's health and intelligence.

> "The best food for a child in the first six months is breast milk because it protects the child from diseases when he is young and at later stages. A child who is breastfed is not the same as a child who is not and there is always a difference" - Female, 20 years.

> "All the child eats and drinks for the first 6 months is breast milk. This is because if the child is breastfed well then then he won't need anything else as he gets it all from the breast milk. I would also like to add that a child who is breastfed well is better in terms of health and intelligence." - Female, Bardhere.

Some respondents voiced that **water should be given** (186 messages; 9.9%). This included mixing water with sugar or other substances.

> "Yes. I gave my child water mixed with sugar, the milk of livestock, and porridge" - Male, 24 years, Cadaado.

Giving a baby milk other than breastmilk, including that from livestock and camels, or powdered milk, was mentioned in 62 messages (3.3%).

> "I think they should be given camel milk so that they become stronger and also receive all the nutrients in it." - Male, 21 years, Bosaso

Some respondents voiced the belief that children can be given **solid food** from an early age (123 messages; 6.6%). This included mashed food such as potatoes (57 messages), simple food (35 messages), baby biscuits (29 messages) and oatmeal porridge (2 messages).

> "They can be given boiled and mashed potatoes and light but nutritious food" - Male, 27 years, Mogadishu.

> "Children are given soaked and mashed biscuits and porridge." - Male, 27 years, Bosaso.

3.2.2. Beliefs related to giving colostrum or early milk to infants

Radio Q2: Do you think mothers should give colostrum (first milk) to their babies. Yes or no? Why?

7293 messages were sent in response to the second radio question (*Q2).*

Out of the **4357** messages that were labeled (after excluding noise), **3879** (89.0%) supported giving babies colostrum, while **478** (11.0%) did not support the giving of colostrum. Table 2 presents the coding frame used to categorise beliefs that positively viewed colostrum, as expressed in responses to radio question 2.

Table 2: Coding frame for beliefs that ***support*** giving early milk or colostrum to babies	
Reasons for giving colostrum	**Includes**
It's healthy	Yes, because colostrum is more important than the rest of breastmilk Yes, because it's healthy for them Yes, it's nutritious Yes, because colostrum has many benefits
Boosts the immune System	Yes, to build the immune system Yes, because it protects them from many diseases
Growth and development	Yes, because colostrum helps in growth and development of the child Yes, because if the child is not given the first milk, s/he will be weak
Improves intelligence	Yes, children who have been given the first milk are smarter than those who aren't

The most prevalent belief about giving colostrum or first milk to babies was related to colostrum being **healthy for the child** because it contained nutrients and helped the mother and her child soon form a strong bond after birth.[17]

> "Yes the mother is required to give colostrum to the child because it has many benefits for the child." - 24 years, Mogadishu.

> "Yes because they have special nutrients and creates a bond between mother and child." - Mogadishu, Male, 43 years

Another common reason expressed for giving colostrum was that **it boosts the immune system of the baby** and protects her/him from different diseases.

> "Yes the mother should give the colostrum immediately because it will protect him/her from different diseases." - Female, Jowhar.

> "Yes because colostrum takes part in the growth and development of the child and makes them grow well in a balanced manner." - Male, 18 years, Mogadishu.

[17] Given the unreliability of the machine learning results for this particular question, we have not provided frequency counts of the positive beliefs here but only the negative ones.

"Yes it gives the children proteins and makes them more them stronger and more active." - Male 18 years, Galkacyo.

Others also believed that colostrum contains something that **helps in growth and development,** including improving intelligence and the development of the brain.

"The children that are given colostrum are better and smarter than others because colostrum contains something that improves the child's intelligence." - Dhamasa, Male.

"Yes because colostrum is very beneficial to the child in terms of their health and brain too." - Female, 16 years, Mogadishu.

478 parents (11.0%) did not support the giving of colostrum, and the beliefs expressed were also diverse. Figure 6 shows the types of misconceptions that were the most prevalent among participants.

Table 2: Coding frame for beliefs that *do not support* giving colostrum to babies	
Reasons for *not* giving colostrum	**Includes**
Unhealthy/side effects	No, the first milk is not good for the child No, because the milk has pus No, because the first milk has toxins No, because the first milk is dirty No, because colostrum is glue No, because it causes diseases and problems to the children No, because it can affect the baby No, because it causes them diarrhea No, because the first milk is not healthy
Traditional practices	No, because when they are born they are given water or milk (cow, goat, camel) No, because it's a traditional practice No, because they still following the tradition of water with sugar
Consistency / temperature not appropriate for the baby	No, because colostrum is hot and the child can't handle it and could cause diseases No, because they are hot No, because they are heavy and will overwhelm the baby No, because they can not swallow it No, because they shouldn't be given because it's too strong
Lack of knowledge	No, because they don't know the benefits of colostrum
Lacks quality compared to subsequent breast milk	No, because the milk after colostrum has more quality No, because the first milk is water but the milk after have vitamins
Other misconception	

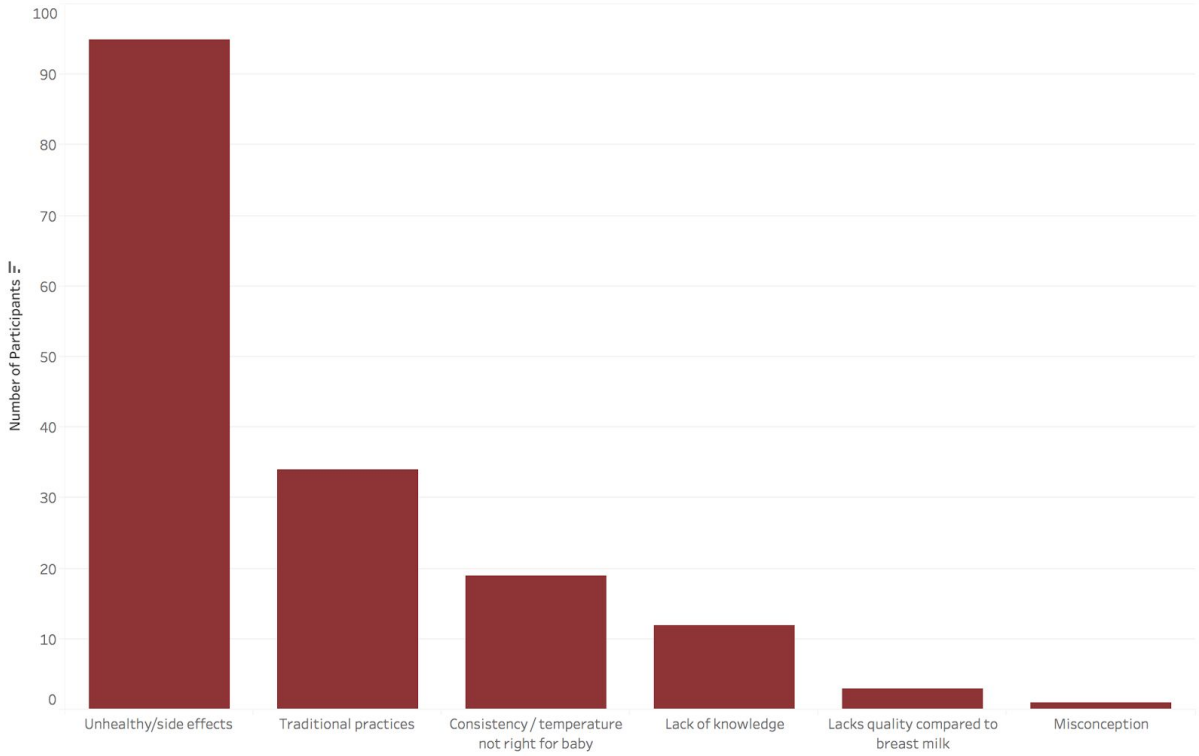


Figure 6. Beliefs against giving colostrum to babies

95 of the messages expressed the misconception that colostrum was **unhealthy for the baby** or had **side effects** for the child. This was attributed to factors such as the milk having toxins, being hot and dirty as well as causing disease.

> "No because the milk has pus" - Male, 14 years.
>
> "No because the first milk has toxins" - Mogadishu,Male, 18 years.
>
> "No because this milk is hot and the child can't handle it and it could cause some disease" - Female, Baidoa, 15 years.
>
> "No because the first milk is dirty" - Mogadishu, 16 years.

34 messages expressed the belief that children should not be given colostrum as **this is against the traditional practices** and Somali culture.

> "No because when they are born they are given the milk of livestock" - Mogadishu, Male 17 years.
>
> "No because they believe that the first milk is dirty so they give a mixture of water and sugar first and this is a Somali culture" - Cabudwaaq, Male, 20 years.
>
> "No because most Somali mothers don't give colostrum because they believe it's not good for the children and they pump it as they are following an old tradition" - Cadaado, Female.

19 participants voiced their concern that early milk or colostrum should not be given to a child because **it's consistency or temperature was not appropriate for the baby**.

"No because this milk is hot and the child can't handle it and it could cause some disease" - Balcad, Male, 18 years.

"No mothers are not supposed to give colostrum to the child because this milk is very heavy" - Male, 21 years.

"No because they are not able to swallow the colostrum" - Belet weyn, Male, 19 years.

12 messages received expressed the opinion that children are not given colostrum **because the mothers lack knowledge** about its importance or how to properly breastfeed children when they are born.

"No because our people are mainly nomadic and don't know the benefits of colostrum" - Aidoa, Male.

"No because first time mothers don't know the benefits of colostrum to children and it's common to hear them saying that the child refused to breastfeed" - 18 years.

Other beliefs included various that colostrum should not be given to babies because **it lacked quality** compared to subsequent breast milk or that as well as the colostrum should be pumped out first rather than giving it to the child.

"No because the later milk is of better quality" - Female, Kismayo.

"No because the first milk is just water, the subsequent milk is the one that has vitamins" - Female, 17 years.

3.2.3. Practices related to foods given to infants (other than breastmilk)

SMS Q1.1. Have you given your children food or fluids other than breastmilk before they were 6 months old? If so, what did you give them?

Two follow-up SMS questions (Q1.1 and Q 2.1) were then asked from the participants about their practices.

A total of **743 parents** responded to the first SMS question. Out of the participants, **397 parents (53.4%)** responded yes to the question. These responses were, in turn, subdivided the following way (fig. 7):

- 128 parents said they had given the children **water**;
- 97 mentioned **food** in general;
- 59 nine said **other animal milk**;
- 57 said **powder milk**;
- 25 said **camel milk**;
- 5 said **milk and water;**
- 4 said **breast milk with other milk**.

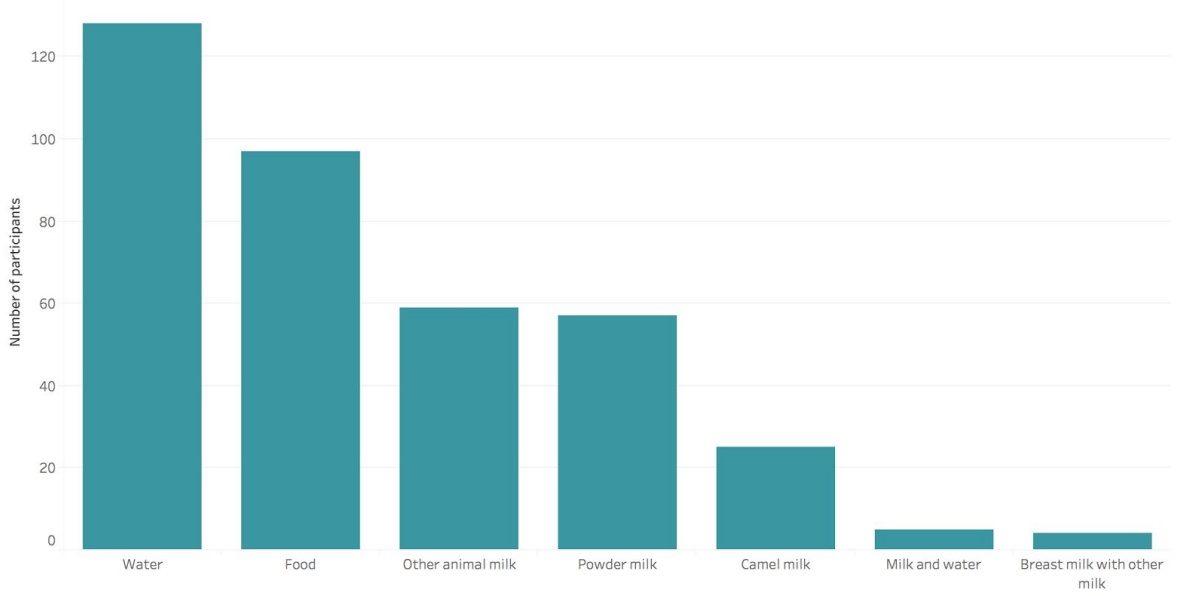


Figure 7: Distribution of the answers about what food or water, other than breast milk, the mother's give to their children (n=397)

These answers were relatively consistent across the different regions and demographics of Somalia, across age groups and gender.

3.2.3. Practices related to breastfeeding on the first day after birth

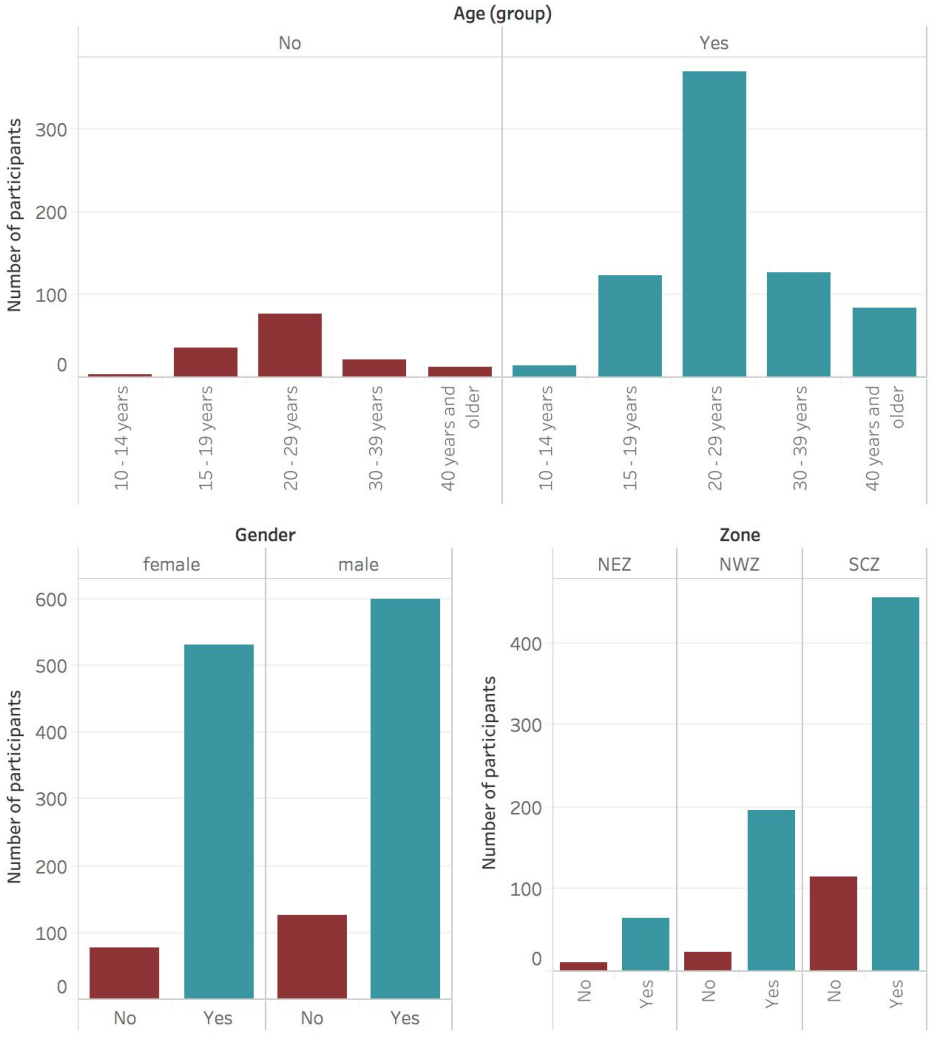
SMS Q2.1. Was your child breastfed on the first day it was born?

Out of **2212 participants** that responded to the second SMS question, **1773** (80.2%) said yes, their child was breastfed on the first day that she/he was born, and **315** (17.8%) said no. Some of the reasons given for **not breastfeeding** the child during the first day were:

- Started a day or two late (26 participants)
- The Quran was recited on or just water (15 participants),
- One should not breastfeed on the first day (11 participants)
- The baby refused to breastfeed (6 participants)
- Mother was unwell so could not breastfeed (6 participants);
- Lack of milk for the first 5 days (5 participants).

There were also no major demographic variation between the participants who responded positively or negatively to this question, however the descriptive counts suggest that respondents from SCZ were more likely to answer "no". Figure 8. shows the breakdown of the responses according age, gender and zone.

Fig. 8:



Demographic breakdown of responses to question 'Was your child breastfed on the first day it was born?'

4. CONCLUSIONS

4.1. Key findings and recommendations

Finding 1: The majority of participants (80.2%) stated that breastmilk is the best nutrition for an infant in their first six months of life. In addition, most participants (89.0%) expressed beliefs that support breastfeeding on the first day of a baby's life, thereby giving colostrum to the infant. Many accurately identified the benefits of colostrum, including it being healthy for the child and boosting their immune system. This positively suggests that there are widespread beliefs in Somalia which are in line with the WHO guidelines on breastfeeding.

Recommendation 1: Future campaigns should leverage the views of citizens' who are supportive of (exclusive) breastfeeding, and include them directly in messaging. By hearing from people like them, those who are uncertain of the benefits of breastmilk, or have ambivalent opinions, will perceive that social norms in their communities support breastfeeding, therefore adopting beliefs and practices consistent with these norms. A discursive format, such as interactive radio shows, would allow for ideas to be negotiated and social norms crystallised, promoting social change.

Finding 2: One in five participants (19.8%) mentioned food and drink other than breastmilk as the best form of nutrition in a baby's first six months. Beyond this, 53.0% of participants said that they gave nourishment other than breastmilk to their child before she/he reached six months old. While the former finding carries the most risk for a child by demoting and dismissing breastmilk as the best source of nutrition for an infant, even providing sustenance other than breastmilk in the first six months carries with it certain risks and could lead to malnutrition or illness due to unhygienic or unsuitable foods.

Recommendation 2: C4D campaigns should continue to emphasise the benefits to mother and baby of exclusive breastfeeding in the first six months of life. By recruiting a range of channels, including radio and local in-person forums, the message that breast milk contains all of the nutrients a infant needs can reach diverse populations. Specific misconceptions can be targeted, including that water is not a suitable liquid due to the risks of illnesses such as diarrhea from unclean water -- illnesses that can be life threatening for young children. Future research could help to nuance insights and to identify at what ages babies are given certain foods and drinks other than breast milk, as the younger the baby the more unsuitable and risky this can be.

Finding 3: A minority of participants (11.0%) expressed beliefs that did not support the practice of giving babies colostrum, and 17.8% of SMS survey respondents reported that they not give their own child colostrum. The most prevalent barrier was the belief that colostrum was unhealthy for or harmful to a baby, which included ideas that the first milk is dirty, or contains pus, toxins, or diseases. Others referred to incompatible traditional practices, such as providing water or animal milk soon after birth, sometimes accompanied with religious

ceremonies (recitals of the Quran). Some pointed to the consistency, temperature, and quality of colostrum not being suitable for a newborn baby. In response to the SMS question, a few people raised biological barriers, such as a mother's inability to express milk, or the child not accepting the milk. The prevalence of these beliefs were similar between men and women, different age groups, and different locations.

Recommendation 3: Naturally, parents recognise that colostrum is of a different nature than later breast milk. While most understand the value of this difference, others are unaware and therefore sceptical of the benefits of colostrum, and believe that they are protecting their child by not providing them with the first milk. This misconception needs to be addressed directly by explaining, through tailored and tested C4D interventions, why colostrum appears as it does, what it contains, and the nutritional benefits to neonates. Such messaging should be targeted equally at both genders and all age groups, so that new mothers are in a family environment where the beliefs around them are conducive to offering colostrum to new babies. In addition, medical practitioners can help to raise awareness on the value of colostrum, as well as providing practical advice for mothers and babies who experience difficulty with establishing breastfeeding soon after birth.

We also suggest that future research on those in the population who are resistant to feeding colostrum to babies, to identify what is driving and sustaining these beliefs. In particular, it would be valuable to investigate geographical variation related to traditional beliefs and practices that inhibit babies receiving the first milk, as these may only appear among certain communities.

Finding 4: Among the beliefs and practices identified, there were no significant differences between demographic groups. This includes little variation according to gender, age, or location. It is possible that there are other factors at play, which this study did not gather data on, which determine a family's uptake of recommended breastfeeding practices.

Recommendation 4: We recommend that future research on breastfeeding gathers data on a range of demographics that may affect related beliefs and practices, including socio-economic background, access to medical facilities, and education level.

4.2. Future Directions

We have found that infant nutrition as topic can be explored through interactive radio in Somalia. The findings of the report can complement other evidence bases for deepening, adding nuance, and updating UNICEF's understanding of people's knowledge, attitudes and perceptions towards the prevention and treatment of infant nutrition.

When deployed in a robust manner, research via interactive radio can track social change over time. Research can be designed in a way that it assesses progress amongst and between socio-demographic groups, changes in their practices, and associations between beliefs and practices. As the group of engaged radio audience members grows over time, these changes can

be assessed using follow up SMS surveys, independent of radio shows, providing a channel to interact with hard-to-reach populations across Somalia.

While there are still challenges ahead with big data textual analysis in low-resource languages such as Somali, our techniques in machine learning have shown great promise of extending manual coding to larger datasets, thereby offering a means to scale up and speed up analysis in the future. With each interactive radio research project in Somalia, Africa's Voices Foundation is able to build its language analysis assets. With time, accuracy grows and the process becomes more efficient. Each project is thus also an investment in the future towards a unique analytical capability of value to the wider development and governance community supporting human development in Somalia.