



Access and Utilization of Maternal Newborn and Child Health Services in the Fragile Context of Somalia

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Abstract

Background: The humanitarian situation in Somalia is characterized by unstable government, insecurity, fragility, and limited investments in funding essential public services and maternal newborn and health services are not spared. The health system in Somalia remained under-resourced to meet the urgent lifesaving, essential, and preventive health services. This study sought to assess the access and utilization of maternal and newborn child health services in Somalia.

Methodology: A cross-sectional design was used in this study. Descriptive and inferential statistical data analysis was conducted to establish the performance of indicators and relationships. The study targeted mothers of children 0-59 months.

Results: The results show a low (13.1%) attendance of focused (4th visit) antenatal care among the mothers. 23.3% of the mothers from Somaliland attended at least three antenatal care visits, while the rest of the states only achieved less than 10%. At least 41.5% of the deliveries occurred at the health facility. Skilled attendants assisted 42.7% of the deliveries. No significant difference was observed in the number of women having an extra meal during pregnancy or delivery at the health facility or in predicting the number of ANC visits. Nonetheless, 43.2% of the infants in Somalia had not been exclusively breastfed for the first six months of life. The results equally demonstrated poor nutritional index with only 38.4% of the pregnant women having an extra meal during pregnancy. In Somalia, early health care seeking for common childhood illnesses is still low, with Respiratory Tract infections (RTIs) at 40%, malaria at 56.6%, and diarrhea at 63.4%.

Conclusion and Recommendations: There is a need for deliberate efforts to improve low-performing indicators and hence improve the survival of mothers and children.

Keywords

Maternal Health, Antenatal, Breastfeeding, Childcare and Health-Seeking Behaviors

Background

Globally, war and armed conflict cause a significant loss of human life. Apart from those hurt and killed directly, a vast amount of people mostly women and children are negatively impacted by the wider effect of war on healthcare access and utilization [1]. Fragility

and conflict divert scarce resources from those who need it to survive conflict damages the infrastructure put in place to support healthcare and forces people to flee their homes in search of safety [2]. The presence of conflict in health is strongly gendered, in this regard, access to family planning services and obstetric

care becomes challenging with limited access to such services significantly impacting the safety of giving birth. This is confirmed by the evidence which shows that half of all maternal deaths occurring worldwide happened in six countries all of which were involved in war. Children born during conflict are at a higher risk of being of a low birth weight, which is associated with an increased risk of infant mortality, poorer health in later life, and childhood developmental problems [3].

For almost three decades, Somalia has been affected by the protracted humanitarian crisis due to the lack of a stable government with no sufficient revenue to fund public services, including the health system [4]. Moreover, the humanitarian situation is compounded by negative cultural norms, attitudes, and flare-ups in the climatic and political situations that exacerbate the crisis [5]. As a result, the Country has faced many challenges ranging from poor maternal and child health services, food insecurity, and malnutrition, among others [6].

The Fragile States Index, 2017 places Somalia as the 6th Country with the highest maternal mortality rate (very high alert) [7], typically characterized by suboptimal maternal care. The health system in Somalia is under-resourced and ill-equipped to provide urgently needed lifesaving and preventative services. The number of health workers is 2 per 100,000 people compared to the global standard of 25 per 100,000 people [8]. Less than 20% of health facilities have the required equipment and supplies to manage epidemics [9]. The under-five mortality rate is at 122/1000, and the infant mortality rate was at 76.6 death per thousand live births in the same year, among the highest around the world [10]. The risk of maternal mortality is highest for adolescent girls under 15 years old, and complications in pregnancy and childbirth are higher among adolescent girls aged 10-19 than women aged 20-24 [11]. The results show that 68% of mothers did not attend ANC visits during their most recent pregnancy in the past five years [12]. Of those who attended ANC services, 31% received ANC from the trained personnel at least once.

Moreover, 32% of births are delivered with the assistance of skilled healthcare providers. Health-facility-based delivery is reported at 20.7% [13]. At least 73% of the mothers reported that they faced at least one problem accessing health care, with lack of money (64%), distance to the health facility (62%), and 47% lack of desire to seek health care as the main challenges among others [14].

To address the above challenges, several humanitarian agencies have continued to work in Somalia, focusing on delivering both emergency and long-term maternal, newborn, and child health and nutrition services. Even though the situation in fragile Somalia is in a sorry state, the Federal Republic of Somalia through the Ministry of Health, and the states are aware of the situation. Through the Health sector strategic plan [15], the country's first priority is to provide health services to the population. Working majorly through development partners, Somalia aims to provide guidance to all partners to implement low-cost high-impact maternal newborn and child health interventions. The country has further developed and adopted the newborn action plan [16] that aims at reducing maternal and newborn mortality.

Therefore, this study was aimed at assessing maternal and delivery services. In particular, the study focused on assessing antenatal care, health-seeking behaviours, and infant and young child feeding practices in the target districts among others.

Methodology

Study Area:

The study was conducted across 15 districts of Southwest, Jubaland, and Puntland States of Somalia and Somaliland. A total of 5 districts (Somaliland), 4 districts (Puntland), 4 districts (Southwest), and 2 districts (Jubaland) were covered. The data was collected in January 2019.

Study Design:

A cross-sectional, convergent parallel mixed-method at the household level study design was used in this study. This involved a concurrent collection, analysis, and interpretation of quantitative data and a review of the secondary sources of data. The adoption of the

mixed-method design was informed by the study objectives and the key indicators of interest.

Study Population:

The primary household survey data collection targeted mothers and children under the age of five years. In a household where the mother was absent, the most available person assumed the position of a respondent.

Sampling Procedure:

The Slovan's sample size formula [17] was used to establish the sample size for quantitative data collection. The regional and district population was used to constitute the sampling frame. This was substituted in the formula below. The sample size was then proportionately distributed across each district and village.

$n = N/(1+Ne^2)$ Where;

n = Sample Size N = Population size; e = Confidence interval (0.05)

The households that participated in the study were randomly identified using a random number generator application. This was based on the household list generated for each target village.

Overall, a sample size of 3,766 households was achieved across Somaliland, Puntland, Southwest, and the Jubaland States during quantitative data collection. This was representative of each region with Somaliland (1,255), Puntland (1,005), Southwest, and Jubaland (1,506), respectively. A simple random sampling technique was used to identify the respondents to participate in the quantitative data collection.

The Study Variables (Measures):

This study involved a number of maternal, newborn, and child health indicators from a number of variables. These were measured through the household survey carried out. These are included in **Table-1**.

Data Collection:

The quantitative data was collected by administering a semi-structured questionnaire to mothers of children

6-59 months. The questionnaire was designed, coded, and leveraged on smartphones with Global Positioning System (GPS) functionality enabled to support geo-referencing of the survey locations. The mobile data collection was deployed on Kobo mobile data collection platform.

Quality Assurance Measures:

Data quality assurance measures were applied at six levels, including; designing the tools, pre-testing, sampling, data collection, data analysis, and validation. The questionnaire was validated by the sector specialists. The data collection tools were pre-tested to ensure the reliability and validity of the data. Also, the tool was evaluated for clarity of direction, continuity, and accuracy. The pre-test provided an opportunity to refine the tools. During data collection, the use of mobile phones provided an opportunity to ensure only the relevant questions are asked and filled. The enumerators underwent two days of training on the data collection process and mastery of the questions. The enumerators were closely supervised during the data collection, with a daily debrief and technical backstopping provided to address the emerging quality issues. Data cleaning and review was conducted to check for consistency before analysis. Box plots were run to test the distribution of data and identification of any outliers.

Data Management and Analysis:

The quantitative data was directly downloaded from the Kobo server in the Microsoft csv format compatible with the analysis software. Data analysis and processing was undertaken using SPSS (version 25) software. Both descriptive and inferential statistical analysis was run to establish the performance of indicators and establish relationships. The results were disaggregated by region and sex where required. A chi-square test was conducted for the key variables to ascertain any relationships, including; the number of people in the household with having an extra meal during pregnancy, delivery at the health facility, and how many ANC visits during pregnancy among others. The results are presented in the form of tables.

Table-1: Study Variables and Definitions

No	Indicator	Definition
Pregnancy and Childcare		
1	ANC attendance	Whether the pregnant and lactating women, in their most recent pregnancy, did attend ANC even if it was only once throughout pregnancy.
2	4 or more visits	Whether the lactating women in their most recent pregnancy, attended 4 or more times of ANC.
3	Extra meals	That pregnant woman or lactating woman on top of the three regular meals in Somalia consumes at least an extra snack.
4	Facility-based deliveries	The lactating mother delivered the most recent baby from a health facility.
5	Skilled birth attendance	The lactating mother during delivery was assisted by health personnel who could be a Nurse, Midwife, clinician, or medical doctor only.
6	Exclusive breastfeeding	The baby before 6 months was fed only on breastmilk unless in the state where the health worker recommends any other fluids due to medical reasons.
7	Pre lacteal feeds	Before 6 months, the baby was given other feeds like porridge, animal milk, tea, and other fluids like water.
Health Behaviors		
1	Mosquito net availability	The household with pregnant or lactating women has a mosquito net.
2	Mosquito net utilization	The pregnant or lactating woman or a child below 5 years slept under a mosquito net the previous night preceding the survey.
3	Prevalence diarrhea	Any Child under 5 years who passed two or more watery stools a day within two weeks preceding the survey.
4	Prevalence of malaria	Any Child below 5 years who complained of high temperature for a day within two weeks preceding the survey.
5	Prevalence of RTI	Any child below 5 years who complained of fast breathing and or running nose and cough in a day within the two weeks preceding the survey
6	Appropriate treatment for diarrhea	A child who suffered from diarrhea was given ORS and Zinc as treatment.
7	Appropriate treatment for Malaria	A child who suffered Malaria was treated with Coetem or paracetamol or any other malaria treatment drug.
8	Appropriate treatment for RTI	A child with RTI was treated with anti-infections and or cough syrup with Amoxyl.
9	Place of care	When the child was sick, where did the mother go for treatment or to seek care?

Ethics Statement

The University Ethics Committee, Venda University (SARDF/20/IRD/02/0704), provided the ethical approval. The Puntland State of Somalia Ministry of Health approved the tools and proposal before fieldwork. The enumerators sought informed consent from all the respondents. In the case of children, consent was sought from their caregivers. The privacy of the respondents was observed by ensuring they are interviewed at places away from the other household members.

Results

Social Demographics:

Overall, 3,766 respondents participated in the survey, with 35.7% coming from Somaliland State, 24.0% coming from Southwest State, 28.5% coming

from Puntland, and 11.7% coming from Jubaland state. When the respondents were categorized by age majority (42.8%) were 26-35 years, followed by 34.9% in the age category of 36-50 years, those in the category of 18-25 years were 21.1%, while those below 17 years are about 1.1%. Disaggregation by sex, 97.5% of the respondents were female.

Pregnancy and Childcare:

Overall, 56.7% of the mothers in Somalia attended one ANC during the most recent pregnancy. There was no marked difference between the Southwest (65.2%), Jubaland (62.3%), and Somaliland (60.3%) States. Puntland recorded the lowest (42.8%) ANC attendance rate. Only 13.1% of the mothers had attended at least 4 ANC visits. This incredibly varied among the States, with Somaliland reporting 23.3% focused ANC

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attendance while the rest only recorded <10% of the 4th ANC attendance. Only 38.4% of the mothers reported having an extra meal during pregnancy. Nearly an equal proportion of 42.5% (Somaliland), and 42.4% (Southwest) of mothers reported having an extra meal per day during pregnancy. 34.8% and 26.8% of mothers in Puntland and Jubaland reported having an extra meal per day during the last pregnancy. Details are shown in **Table-2**.

Generally, low health facility-based delivery (41.5%) and skilled birth attendance (42.7%) are reported in Somalia. However, this greatly varied across the States, with 52.2% (Southwest) and 27.9% (Jubaland) of mothers delivering at the health facility. Similarly, skilled birth attendance was reported at 53.3% (Somaliland) and 27.5% (Jubaland). Details are shown in **Table-3**.

Though 89.2% (3,304) of babies born have ever breastfed, an unprecedented proportion (99.5%) of mothers reported having practiced early breastfeeding initiation. However, below half (43.3%) of mothers reported practicing exclusive breastfeeding for six months. On the other hand, for children to whom pre-lacteal feeds were given instead of breastmilk, 55.5% gave animal milk, 69.6% periodically gave water, 19.0% gave tea, and 10.3% settled for Porridge. Details are shown in **Table-4**.

Health Behaviors:

Nearly half (53.5%) of women who are either pregnant or with a child had insecticide-treated mosquito nets with a utilization rate reported at 48.1%. There was no observed difference among states in terms of access and utilization of mosquito nets. **Table-5** presents the access and utilization of mosquito nets.

Table-2: Antenatal Care

Indicator	Somaliland	Puntland	Jubaland	South West	Overall
ANC attendance	60.30%	42.80%	62.00%	65.20%	56.70%
4 and more visits	23.30%	7.20%	5.90%	8.40%	13.10%
Extra meals	42.50%	34.80%	26.80%	42.40%	38.40%

Table-3: Childbirth in Somalia

Indicator	Somaliland	Puntland	Jubaland	South West	Overall
Facility-based delivery	38.10%	42.30%	27.90%	52.30%	41.50%
Skilled birth attendance	42.10%	41.00%	27.50%	53.30%	42.70%

Table-4: Exclusive Breastfeeding

Exclusive Breastfeeding	Before 6 months	19.70%
	Up to 6 months	43.20%
	After 6 months	36.70%
Pre-lacteal Feeds	Animal Milk	55.50%
	Porridge	10.30%
	Water	69.60%
	Tea	19.00%

Table-5: Insecticide-Treated Mosquito Nets Utilization

Indicator	Somaliland	Puntland	Jubaland	South West	Overall
Mosquito net availability	50.00%	56.50%	45.50%	58.70%	53.50%
Mosquito net utilization	43.70%	51.00%	41.40%	54.70%	48.10%

Table-6: Key Variables According to the Source of Household Income

Number of household members	Had Extra Meals During Pregnancy		Delivery at the Health Facility		How many ANC Visits During Pregnancy	
	Yes	No	Yes	No	Yes	No
One to four	435 (20.7%)	357 (17%)	294 (14%)	498 (23.7%)	421 (20.1%)	371 (17.7%)
Five to Eight	552 (26.3%)	581 (27.7%)	415 (19.8%)	718 (34.2%)	580 (27.6%)	553 (26.3%)
Nine to Twelve	84 (4%)	84 (4%)	66 (3.1%)	102 (4.9%)	82 (3.9%)	86 (4.1%)
Thirteen or more	1 (0%)	5 (0.2%)	3 (0.1%)	3 (0.1%)	3 (0.1%)	3 (0.1%)
p-value (sig)	0.017		0.83		0.715	

A high prevalence (45.3% Malaria, 37.8% Diarrhea, and 40.8% Acute Respiratory Infection-ARI) of childhood illnesses was reported among the children. However, poor health-seeking behaviour was observed during malaria (44.4%), diarrhea (37.6%), and ARI (60%) episodes. Of the households that claimed to seek medical attention for their sick child, 74.9% went to a health facility, 12.2% went to the Community Health Workers (CHWs), 10.5% went to a nearby drug shop, and only 2.4% used traditional means.

Relationship Between the Key Variables and the Source of Income:

Table-6 shows the percentages of participants that meet all indicators for the three key variables, according to household number of people. The results show no significance in the household number of people having an extra meal during pregnancy, or delivery at the health facility, nor does it predict the number of ANC visits during pregnancy.

Discussion

This study was aimed at assessing maternal newborn and some child health practices in particular, focusing on assessing antenatal care, health-seeking behaviors, and infant and young child feeding practices in the target districts. Key to note is that Overall, 56.7% of the mothers attended at least one ANC during the most recent pregnancy with only 13.1% of them attending at least 4 ANC visits. There was a poor nutrition index with only 38.4% of the pregnant woman having an extra meal during pregnancy. These staggering results were made worse by the low health facility-based delivery (41.5%) and skilled birth

attendance (42.7%). Further still though 89.2% (3,304) of babies born have ever breastfed, below half (43.3%) of mothers reported practicing exclusive breastfeeding. Half (53.5%) of women who are either pregnant or with a child had insecticide-treated mosquito nets with a utilization rate reported at 48.1%.

Evidence shows that the health care that a mother receives during pregnancy and at the time of delivery, referred to as antenatal care contributes to the good health of both the mother and newborn child. However, 34.7% of Somali women go through pregnancy without ever attending ANC at least once. The 2019 SHDS presented a more alarming situation with 68% of women not attending ANC visits during their most recent pregnancy. In tandem with the SHDS results, low ANC attendance could also be associated with low levels of education among the mothers. It is claimed that more than three-quarters of women in higher education received higher ANC services from skilled providers as compared to 26% of those without education. Therefore, this represents inadequate care during this time and hence contributes to breaks in the linkage of the continuum of care, which affects both women and infants [18] The observed variation between the study results and the SHDS results could result from the exposure to timed-and-targeted counseling services (ttC) [19] targeting the mothers.

Antenatal care is more beneficial in preventing adverse pregnancy outcomes if sought early and throughout the pregnancy. The WHO recommends at least four or more ANC visits during pregnancy. This reduces perinatal mortality and improves women's experience of care [20]. A vast majority (87.9%) of the

mothers never attended four or more visits in Somalia. The study results are in tandem with the SHDS results that reported the attendance of focused ANC (four or more) at only 24.4%. 55.8% of the mothers had only attended 2-3 visits. Mothers could explain the low attendance of focused ANC in Somalia due to the late start of attending ANC services during their pregnancies. Only 33% of mothers make their first ANC visit during the first trimester while 19% are reported delaying their first ANC visit after the eighth month. The delays in starting ANC services could be associated with limited information and awareness among the mothers on the importance of ANC services.

Pregnant women need to consume at least an extra meal daily to gain adequate weight to facilitate the body to go through all the changes required during pregnancy. This is because during pregnancy, the body needs extra energy and nutrients to help the growth of the fetus. Further still at particular meals the pregnant woman gets full earlier due to little abdominal space and therefore the need for frequent meals [21]. The study results present a 62.6% gap in the consumption of an extra meal during pregnancy. There is no observed variation from the SHDS results with an above-half (58%) extra meal consumption gap during pregnancy. The qualitative analysis data attributes this limited access to food among the households and lack of financial resources to purchase food for the households.

The WHO recommends children be exclusively breastfed in the first six months of their life and mothers should continue breastfeeding until two years while providing complementary foods. It's observed that infants not exclusively breastfed for six months are 15 times more likely to die from pneumonia than those exclusively breastfed for the recommended six months after birth [22]. The study results (43.2% exclusive breastfeeding) affirm the SHDS report with only 34% of children under 6 months exclusively breastfed with the percentage of exclusive breastfeeding declining with age. Analysis of qualitative data draws the relationship between non-exclusive breastfeeding and poor access to ANC services and general access to health facilities. The

knowledge and practice of mothers on optimal infant and young child feeding practices are also reported to be critical underlying factors contributing to the under-exclusive breastfeeding of infants.

One of the pre-lacteals feeding practices mostly used by Somali mothers is water with 69.6% of all babies falling culprits. The results correspond with the SHDS report with 31% of the breastfed infants reported getting liquids other than breast milk compared to 41% who were not breastfed. Prelacteals feeding is associated with higher risks of infection in infants. Support for exclusive breastfeeding should be provided to mothers to avoid these adverse consequences [23]. This is because, for infants to survive, grow and develop properly, they require the right proportion of nutrients rather than water alone. Therefore, breast milk is rich in nutrients and antibodies and contains the right quantities of fat, sugar, water, and protein [24].

Because malaria in pregnancy is associated with high risks of morbidity and mortality for the pregnant woman and unborn baby, it's important to promote the use of a mosquito net at all times during pregnancy. However, 46.5% of pregnant women in Somalia did not possess a mosquito net at the household level at the time of the study. It's well known that pregnant women have reduced immune response which is less effective in case of malaria infections. In addition, malaria parasites sequester and replicate in the placenta. This can therefore lead to miscarriage, premature delivery, low birth weight, congenital infection, and perinatal death [25]. The study results show that the prevalence among the infants in the past 2 weeks prior to the study was as high as 45.3% with 44.4% reported to have received appropriate care and treatment. The results greatly varied from the SHDS results with 7% of children under the age of five having fever in the 2 weeks before the survey, 4% of children under the age of five had symptoms of ARI and 5% (diarrhea) in the two weeks before the survey. The high prevalence of presumed malaria could be associated with low utilization of mosquito nets.

Globally, it is shown that sleeping under mosquito nets treated with an insecticide in malaria-endemic areas is beneficial to the health of the pregnant woman, her fetus, and the newborn. Long-lasting insecticidal nets are designed to maintain their effectiveness against mosquitoes that carry malaria and other diseases for at least three years [26]. Therefore, the pregnant woman needs to consistently ensure that she sleeps in the insecticide-treated mosquito net on a daily basis every night. However, results from the study revealed that for those who had the nets in the house, 51.5% had not slept in the net the previous night.

Even though early healthcare-seeking behaviours have been seen to reduce child mortality from treatable diseases, significant numbers of children die without ever reaching a health facility [27]. In Somalia, early health care seeking for common childhood illnesses is still a gap with RTIs having 40%, malaria having 56.6%, and diarrhea at 63.4% not seeking timely health care. The results show that children presenting with ARI are more likely to be treated as compared to those presenting with diarrhea and presumed malaria. Studies elsewhere indicate that an estimated 1.2 million children under five years of age die each year in India, with pneumonia and diarrhea among the leading causes. Increasing care-seeking is important to reduce mortality and morbidity from these causes [28].

Strengths and Limitations of the Study

The key major strength is that this evidence contributes substantially to the knowledge and information on maternal newborn and child health practices in Somalia. Somalia is a fragile state that is limited knowledge on the subject. Further still this study provides a status on the suggested locations and further in the discussion chapter provides a status comparison to the greater Somalia demographics and Health survey. This is very good advocacy information for programmers intending to invest in MNCH to try and improve the results presented. The limitations of this study include the fact that it is a one-off cross-sectional survey with limited indicators that could not provide sufficient information to cover the whole spectrum of MNCH. In fact, the only newborn indicator

available through this study is delivery and hence making it difficult to know the whole spectrum of newborn practices. Being a cross-sectional study, no vigorous scientific analysis would be done, bundled with few indicators studied limiting the generation of strong scientific conclusions to this study. Equally, the study mainly adopted a quantitative approach and this limited the opportunity to triangulate the results with qualitative analysis.

Conclusion

There is low access and utilization of maternal newborn and child health services generally in the Somalia region. The rates of focused antenatal care, health facility delivery, and skilled birth attendance unearthed the challenges associated with under-resourcing and equipping maternal health services in Somalia. The situation is worsened by negative health-seeking behaviours that see a decline in antenatal care attendance from the first and fourth visits. This requires a shift in strengthening the health care systems by ensuring high ownership of health service delivery by the Ministry of Health rather than emergency response provided by the humanitarian actors. Strengthening the community structures will also go a long way in improving the healthcare system.

Conflict of Interest

The authors have read and approved the final version of the manuscript. The authors have no conflicts of interest to declare.

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