Demand-side Factors Affecting Access to Severe Acute Malnutrtion Services among Under-Five Children in Ethiopia

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in Public Health

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Declaration:

Where other people's work has been used (from either a printed or virtual source, or any other source), this has been carefully acknowledged and referenced in accordance with academic requirements.

The thesis **"Demand Side Barriers: Factors affecting access to Severe Acute Malnutrtion services among Under-Five Children in Ethiopia**" is my own work.

Signature: 

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Abbreviations

CMN	Coverage Monitoring Network
CHWs	Community Health Workers
CMAM	Community-based Acute Malnutrition Management
FGD	Focus group Discussion
HEP	Health Extension Program
HEWs	Health Extension Works
iCCM	integrated Community Case Management
IDI	In-depth Interview
INGO	International Non-Governmental Organization
MOH	Ministry of Health
RUTF	Ready-to-Use-Therapeutic Food
SAM	Severe Acute Malnutrition
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
USAIDS	United States Agency of International Affairs Children's Fund
USD	United States Dollar

Glossary

- **Severe Acute Malnutriton (SAM)** : The technical definition of SAM in under-five children by WHO is weight for height < -3 Z score on WHO standard curve, or Mid upper arm Circumference < 11.5 cm, with or without the presence of grade three edema(1)(2).

- **SAM services/progrogam:-**
    - Inpatient services for SAM: treats SAM childern with medical complications (co-morbities) in health facilities until the complications resolve and then transfer to out-patient services
    - Out patients services for SAM: treats SAM cihildern with no medcial complications at health facility level with a weekly follow up until fully recovered(1)(2).

- **SAM Treatment Pacakge**:
    - Inpatient: Duration of treatment differs on the case (7-21 days) and have different phases. Treatment package includes antibiotics, intravenous fluids (with indictions), special formula milks(F-75 and F-100), special peanut-based food [Ready to use Theraputic Food(RUTF)], nursing care, health education,nutritional counseling, play theraphy, iron, and deworming agents(1)(2).
    - Outpatient: Duration of treatment 6 weeks- 8weeks. Treatment package includes oral antibiotics, specical Foods (RUTF), health education, nutritional counseling, play therapy, iron, deworming agents, and a weekly follow up at health facility (1)(2).

- **Caregiver**: Family member or a person provides direct care to the child(3).

Abstract

Background

In Ethiopia, severe acute malnutrition (SAM) is one of the leading cause of deaths among under-five children accounting for 5.9% of death from all causes in this age group. Access to SAM services is crucial for these children to avert death and to nutritional rehabilitate them. Therefore, the aim of this study was to explore the demand-side factors affecting access to SAM service among under-five children in Ethiopia and to propose evidence-based strategies to address the identified factors.

Methodology

This study used literature review to address its objectives. Literatures were search on PubMed, VU library, Cochrane Library, Google scholar and Google. The demand-side of Levesque model was used to analyzed the finding.

Findings

The demand-side factors affecting access to SAM services were traditional perceptions towards SAM, lack of awareness about the condition, lack of autonomy mothers to seek care, socio-cultural gender roles, and stigma were identified. Additionally long distance, lack of transportation and incurring direct and indirect cost, were some of the barriers to reach the service and to utilize the services. Some discontinued follow-up care due to above mentioned factors. The evidence-based strategies identified to alleviate some these barriers were community sensitization, mothers support group and unconditional cash transfer.

Conclusion

The study identified that there are several demand-side barriers that affected access to SAM services. These barriers are highly interlinked to each other, so interventions need be as much as possible comprehensive approach by tackling more than one factor.

Keywords: Severe acute malnutrition, Under-five children, Access, Ethiopia

Word count: 12,875

Introduction

I am a child health advocate and I have been working in the health care of under of five years children for more than ten years. I was also involved in the inpatient care of children with severe acute malnutrition with medical complications. This motivated me to do this study in order to learn and to understand the factors related with SAM services besides the health system factors.

In the world in 2020, 13.6 million children had severe acute malnutrition (4). In Ethiopia the prevalence of SAM is 1.2 % among under-five children according to 2019 EDHS report(5). But due to the current political instability and humanitarian crisis the prevalence it expected to be high.

Severe acute malnutrition (SAM) is a major public health problem, which is by severe lack of inadequate intake of macro- and micronutrients in children (4). It predisposes a child to many infectious diseases due to low immunity, thus a child with SAM has 11 times increased risk of dying than a well-nourished child (6)(7)(8)(9). Therefore, timely access to SAM services is critical to prevent long-term complication like developmental delays, and to avert death among children with SAM(10).

Hence the purpose of the Literature review was to identify the demand-side factors that affect access to SAM services among under-five children in Ethiopia

Chapter One: Background Information on Ethiopia

1.1 Geographic context

Ethiopia is a country located in the horn of Africa. It is a land locked country, sharing boarders with Eritrea, Sudan, South Sudan, Kenya, Somalia, and Djibouti. The surface area is 1,104,300 km²(11). The country has 13 regional states: Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, Gambella, Sidama, Tigray, Southern Nations Nationalities and People Region (SNNPR), South West Ethiopia Peoples Region (SWEPR), Harari, Dire Dawa and Addis Ababa. Addis Ababa is the capital of Ethiopia(12).

1.2 Demographic Characteristics

According to 2021 World Bank data, Ethiopia has a total population size of 117. 8 million, ranking 12th position from the world in population size. The crude birth rate is 30.97 per 1000 people, and crude death rate is 6.16 per 1000 people(13). The country has a broad-based population pyramid, with half of the population being below the age of 19 years, and under five account for 7.8% of the total population. The life expectancy in Ethiopia has reached 67.5 years in 2020. Sex distribution of the population is almost equal between male (50.03%) and female (49.97%). Majority of the total population that is 91,738, 352 people (78%) dwell in the rural part of country (13–16).

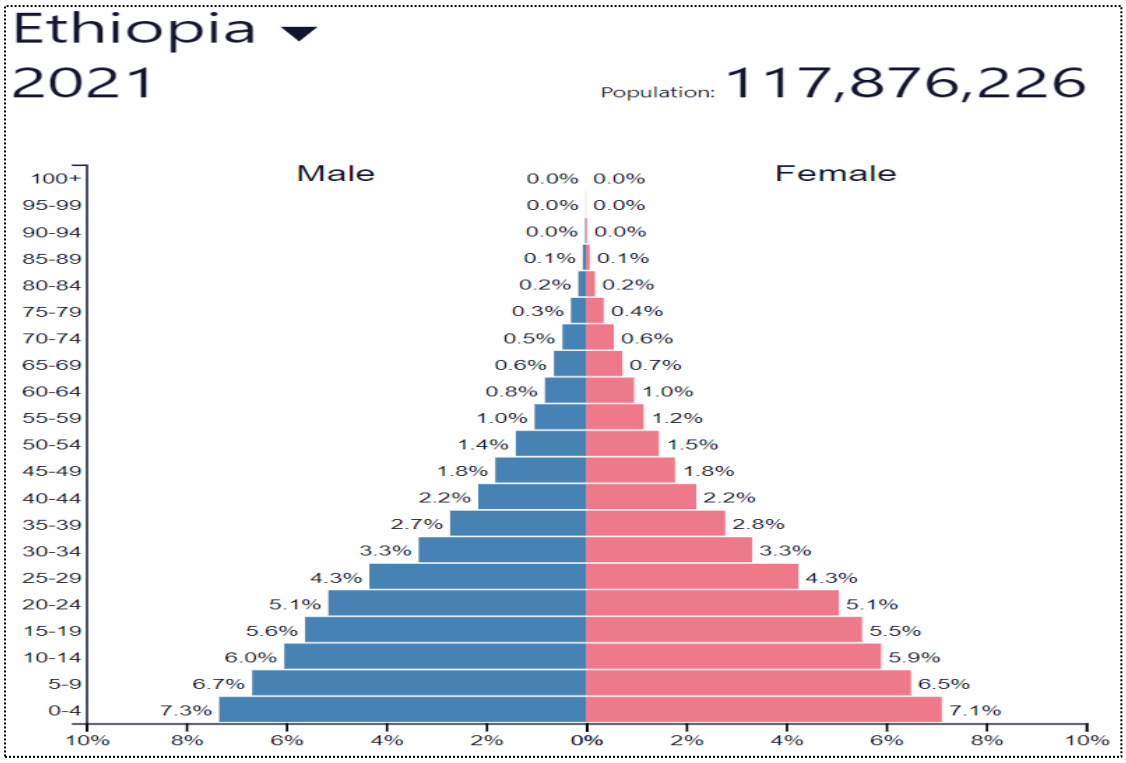

Figure 3:- Ethiopia's Population Pyramid 2021. Source: Populationpyramid.net- 2021

1.3 Education

From Ministry of Education data, education enrollment in Ethiopia has reached 24,922,489 students in primary and secondary school in 2020/2021 academic year; male 53% and female 47% (17). Though education enrollment has increased in the past five years, there is a gap in pre-primary school enrollment, with only 1/5 children enrolled, and there is a wide inequity between regional state enrollment rate; Addis Ababa 93%, Afar 4.5 Somalia 14% and Afar 4.5%(17,18). UINICEF 2021 Ethiopia annual report, the students to teacher's ratio is 39 to 1 in the country(19).

1.4 Socio-economic situation

Ethiopia have diverse culture and ethnicity with more than 80 languages, but only five official working languages: Amharic, Afan-Oromo, Tigrigna, Somali, and Afar. The major religions are Christianity and Muslim, with few others tradition religions (20).

The Gross Domestic Product per capita in USD was $936.6 (2020) with GDP annual growth of 6.1% (2020) which drop from 8.7% in 2019(21). This could be the effect of COVID-19 pandemic, and the ongoing political unrest in the country. Most people, that is 67% of the total employment in the country depends on agriculture, and unemployment 3.7% of the total labor force according to International Labor organization 2021 estimation(21). The proportion of people living under the poverty line, which $1.90 per day is 19.54% of the total population (2019), which off track from the SDG goal to eradicate extreme poverty by 2030(22).

1.5 Political Situation

Since late 2020, Ethiopia has been having civil war majorly in Tigray region, Northern part of the country, and there are also other internal conflicts in some part of the country, resulting in the loss of many lives, especially women and children. According to the fragile state index (FSI), the country moved from 24th place in 2006, to 11th place in 2021, scoring 99 from 120 indicators (23).

With the rising humanitarian crisis, food shortage and lack of shelter are the major problem due to internal displacements and conflicts. According to the United Nations Office for the Coordination of Humanitarian Affairs (UNOCH) report, currently 29 million people are requiring humanitarian support, mainly food support and more than 65% percent of these are children and women. As a result, there is an increasing number of new cases of malnutrition in the country, with increasing need of malnutrition treatment services (24).

1.6 Disease Burden among Under Five Children

Under five mortalities in Ethiopia has decreased in the past decade from 88 per 100,000 live births in 2011 to 59 per 100,000 live births in 2019(25), but still the country is off track to achieve the SDG 3.2 goal, to reduce under-five morality less than 25 per 100,000 live births by 2030(26).

The most common illness in this age group are neonatal conditions, Diarrhea, Pneumonia, Pertussis, SAM, Meningitis, HIV, TB, Malaria. The leading causes of death from all causes, in under five are Neonatal condition, 40.7%, followed by diarrhea 13.21%, LRTI 10.3%, Congenital malformation 7.04%, and SAM 5.95%(27).

Of the several factors associated with under-five mortality in Ethiopia, some of the protective factors were institutional delivery(ARR=0.86, 95% CI: 0.73,0.94), Children living in the capital city (ARR=0.52, 95% CI: 0.28–0.98), maternal higher education level (ARR=0.25, 95% CI: 0.10–0.66), and birth gap ≥ 2 years (ARR=0.51, 95% CI: 0.42–0.61),and some of the risk factors were having diarrheal history(ARR=1.23, 95% CI: 1.08–1.41), household with more than one child(ARR=1.80, 95% CI: 1.34–2.42) and children in Afar region (ARR=1.43, 95% CI: 1.09 -1.88). These findings reflect on the health seeking behavior, and health service coverage and access inequality among the different regions (28). Moreover, in all regions of the country, malnutrition, is the one of the major risk factors for diseases mentioned above(29).

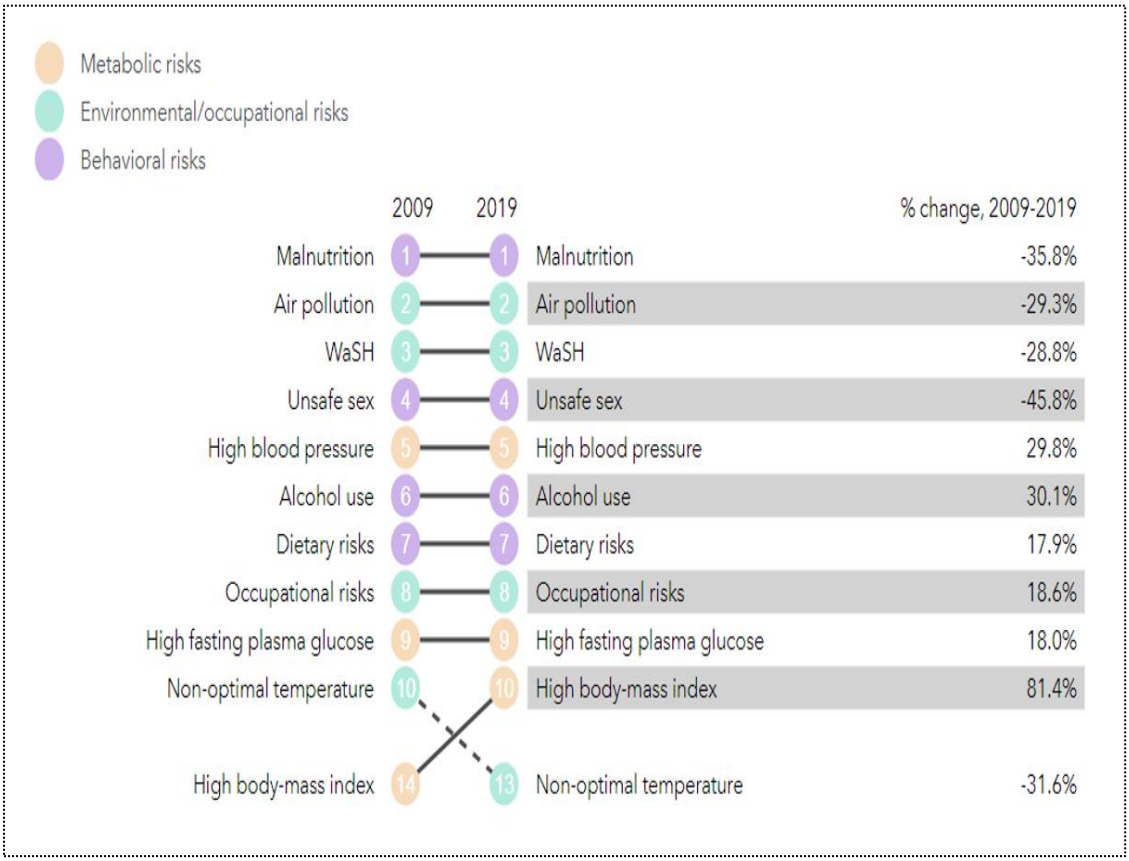

Figure 4 Top 10 risks contributing to total number of DALYs in 2019 and the percent change 2009-2019, all ages combined. Source: GBD 2019, Ethiopia

Child Malnutrition can range from overnutrition to undernutrition. Malnutrition in the context of undernutrition classified into two: acute and chronic malnutrition. Acute malnutrition refers to *wasting*, meaning being thin for once height (<-2 SD WHO weight for height curve) and chronic malnutrition refer to *stunting*, that implies being short for one's height (< - 2 SD of WHO height for age curve) (30).

Acute malnutrition is a public health emergency in under-five children, especially in its severe form, called severe acute malnutrition (SAM). It has two forms the edematous malnutrition previously called *Kwashiorkor* and non-edematous SAM also called 'severe wasting. SAM is caused by severe lack of macro and micronutrients and usually seen in children less than five years (4). In simple terms SAM means having very low weight (being too thin) for one's height. The more technical definition of SAM in under-five children by WHO is weight for height < -3 Z score on WHO standard curve, or Mid upper arm Circumference < 11.5 cm. This condition predisposes a child to many infectious diseases like pneumonia, diarrhea, measles, tuberculosis etc. due to low immunity, and might also cause significant developmental delay (7)(6). Moreover, a child with SAM has more chance of (11 times increased risk) of dying than in a well-nourished child (8) (9).

1.7 Health System in Ethiopia

Ethiopia has three-tier health system. The Ministry of health use a decentralized governance, where the regional health bureaus, and district (woreda) health bureaus run all the three health care levels. However, there are few specialized university hospital and health extension program (HEP) of the country fully run by Federal Ministry of Health. (31). According to WHO Universal Health Coverage (UHC) service coverage index (for SDG 3.8.1), in 2019, Ethiopia has only 38% overall UHC coverage (32).

The health work force in Ethiopia is 1 per 1000 population below the standard 4.5 per 1000 population for UCH(31). HEPs is the back bone of Ethiopian health system at the primary health unit for UHC. The HEP have health extension workers (HEW) working at community level

at the health posts. Two HEWs for one health post, that is for one sub-district(kebele) of 5000 households. They provide preventive and curative services to the community(33).

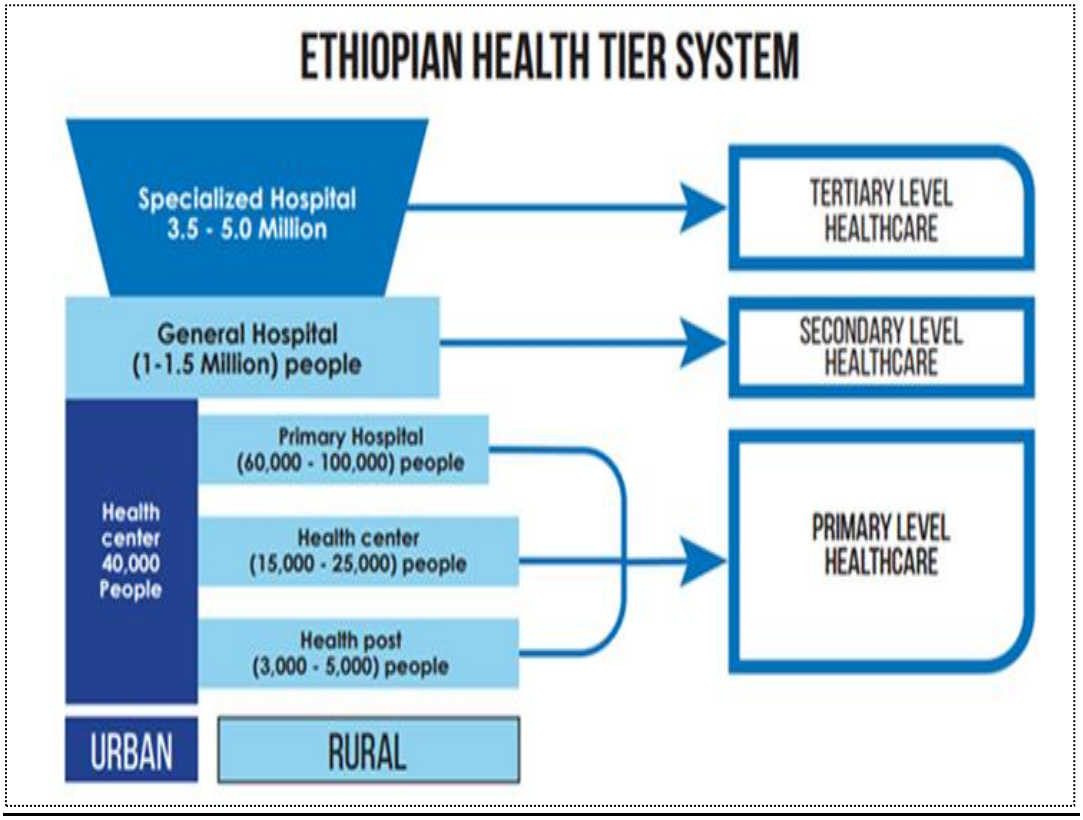

Figure3: Ethiopia three tier health system. Source: HSTP III

1.8 SAM Services / programs in Ethiopia

Until 2003, Ethiopia has no national protocol for SAM treatment services, so most treatment services were run by International Non-Governmental Organizations (INGOs), as inpatient care at hospital level. But later in 2004, with the National nutrition strategy (NNS), SAM service was expanded to outpatient community-based service by including many health centers(34)(35).

A survey of SAM programs done in 2007, showed facility-based out patient SAM services, had more than 1/3 defaulter rate. Some of the identified reasons were frequent unavailability of supply of treatment goods (like therapeutic food), location of service centers being more in the towns, and high indirect cost and transportation cost on the user side. Therefore, in 2008 the SAM services were further scaled up, by into other community-based service package provided at health posts, where health extension workers started to provide treatment SAM outpatient services at the health post. called as Community Management of Acute malnutrition (CMAM) (35)(36). Therefore, the HEWs provided out-patient SAM treatment services in the health post

and conducts active case finding through outreach program in the community. In 2010 the county adopted integrated Community Case Management (iCCM) that was provided via the HEP and SAM service was part of it(37).

In 2012, UNICEF evaluation of the scaled-up SAM program/CMAM, showed that the number SAM patient who got to the services increased by 12-fold when compared to 2003; the health facilities providing the CMAM services reached 59% (36). Since 2018, the overall SAM services are available in more than 90% of the health facilities in Ethiopia(38).

Currently, SAM treatment services are provided mainly at primary health care level, which gives facility-based (in-patient and out-patient) and community-based (out-patient) services. However, secondary, and tertiary level center also provide SAM inpatient services for those referred cases based on indications. Ethiopia has adopted the first treatment guideline for SAM in 2007, in line with WHO recommendations. In recent years, 2019 Ethiopia has official updated Acute malnutrition guideline the include SAM treatment protocol at Health facility level and community level(39).

Chapter Two: Problem Statement, Justification, Objectives and Methods

2.1 Problem statement

Globally in 2020, 45.4 million under-five children were estimated to be wasted ("too thin for their height"). Out of which 13.6 million were severely wasted (severe acute malnutrition), and this was equivalent to 2% of all under-five children in the world(10). More than 65% of these severely wasted children were found in Asia and more than 25% in Africa (4). According to Global Burden of Disease 2019, severe acute malnutrition (SAM) accounts for 2.11% of total DALYS among under-five children (40), and is one of the most preventable causes of death accounting for 20% of total death among under-five children in the world(41).

The economic crisis, due to COVID-19 pandemic has led to a rise in the living cost and consumable goods like food. Due to this, it is expected that there will be 1.15 times increment in the number of children with wasting, thus making SAM to rise by 9.3 million in 2022 (4) (42). Moreover, in recent years several other crises like the Ukraine war, recurrent drought, famine, and internal conflicts in different parts of the world, have made the rise in the burden of SAM among under-five children inevitable(43)(44).

Currently, Sub-Saharan Africa, especially the Horn of Africa is afflicted by man-made and natural calamities: armed conflict, internal displacement, drought, and flood. These caused more than 80 million people in the region to have food insecurity, and malnutrition has soared in a way that has never been seen before (45). UNICEF stated that crises struck countries, especially those in Central and East African regions, have one child going into severe wasting, every one minute, and around 8 million of these are at risk of dying, unless they promptly have access SAM treatment services (44).

The 2019 Ethiopia DHS data shown that the prevalence of all forms of undernutrition among under-five children declined markedly. However, the prevalence of wasting (moderate and severe) showed a slow decrement from 10% in 2011, to 7% in 2019. Severe wasting affects 1.2% of under five in the country (46)(5), thus accounting for 2.7% of the DALYs and 2.56% of total death among that age group(40).

Currently, Ethiopia is in humanitarian crises, with an ongoing internal conflicts, internal displacements, and recurrent drought. More specifically the civil war that broke out on November 04, 2020 in Tigray region, has caused high food insecurity in the Northern part of the country, and this has led to a dramatic rise in the prevalence of SAM. A Pilot data from UNICEF on early 2022, shown that the prevalence of SAM in Tigray and Amhara, has reached 14%, and 6% among under-five in those regions respectively. While the drought impacted regions like Oromia, Sothern region, Somali, and Afar, there is, almost 15% rise in the prevalence of SAM among under-five in these regions (47). This prevalence is in the higher range (10-15%) of the

WHO public health emergency threshold for wasting(48). These data foretell the tip of the iceberg, so there is an urgent need for SAM treatment services in the country than ever(49).

Globally, the identification and treatment of Severe Acute malnutrition (SAM) changed progressively over the years. Previously SAM services were provided solely as inpatient services at health facilities(50). But since early 2000s, the service was integrated with other community-based services as component of primary health care, to increase coverage, acceptability, accessibility and for cost-effectiveness of the services(50)(51). Currently many countries in the world, have integrated out-patient SAM services as part of PHC services, which is called community-based acute malnutrition management (CMAM) (36)(52,53). The CMAM program mainly provides SAM treatment as outpatient-services at primary health care facilities, and performs screening and active case finding of SAM through outreach programs(54). In addition, few SAM children with medical complications (<15% of the total SAM cases) as described in WHO's protocol, will still require inpatient admission and treatment at either PHC level or higher levels as part of the general SAM services (55)(50)(56).

However, there are many factors affecting SAM services. Globally from the 13.6 million children estimated to have SAM, only 40% (5.7 million) of them, have access to SAM services (38). Though barriers in different part of the world varies, some of the known barriers to in-patient SAM services, were low coverage, high cost of treatment supplies, insufficient trained health care provider, mostly located in towns and longer days of stay in the facility away from work for care givers (parents), with high opportunistic cost and parents concern about other siblings left at home. For community-based SAM services, barriers to access were care givers unawareness about child malnutrition, unawareness of the available service, poor compliance to treatment, rejecting services based on religious view, poor coordination between the facility-based and community-based services and lack of availability of supply (56)(57)(58).

According to a survey in 2007, Ethiopia's outpatient SAM services had a defaulter rate of more than one-third of the total SAM children who were on treatment. Some of the identified reasons were frequent unavailability of supply of treatment goods (like therapeutic food, and routine medications), location of SAM service centers being more in the towns, and high indirect cost and transportation cost on the user side. In response to this since 2008 the country has adopted and integrated the CMAM program as part of the PHC at the health post level(35) (37). Moreover, in Ethiopia SAM services are also provided at other PHC level: health centers and primary hospital, as an out-patient and inpatient services. At time some complicated SAM cases are also referred and treated at secondary and tertiary health care levels(1).

The 2012 UNICEF evaluation of the scaled-up SAM program in Ethiopia found that the number SAM patient who got the services increased by 12-folds and the treatment coverage reached 59% (36). In 2018, SAM treatment services were made available in more than 90% of the health facilities in the country (38). However, many studies have shown that there are several gaps in the delivery of the program like lack of constant supply of treatment packages, poor supply chain management, poor co-ordination and referral linkage between inpatient and out-patient SAM

services, shortage of trained staffs, low outreach program, workload of the HEWs, high dependence on INGO for treatment supplies and transportation of the supplies, were some of the identified on the supply side factors affecting access to SAM services (59)(60)(61).

2.2 Justification

Furthermore, according to UNICEF, Ethiopia is one of the 15 "crisis-hit countries" where SAM among under-five is increasing every minute (44) (47). Timely access to SAM treatment services is crucial in order to avoid long-term complication like developmental delays, and to avert death among those with medical complications (10). A study conducted in Ethiopia have shown that child mortality due to SAM can be avert with making the services accessible, and this can indirectly save 79 million USD economic loss for the country (62). However, in developing countries like Ethiopia, many preventable deaths occur due to lack of access to health service (63)(64) Therefore identifying the barriers to access SAM services, helps to explore evidence-based interventions to overcome the barriers, as well as to prevent economic loss for the nation and the caregivers of children with SAM.

Although more than 90% of Ethiopia's healthcare facilities offer SAM services, only 65% of children with SAM received treatment (65) (66). This shows that availability services do not always equate to accessibility services, since there are several supply-side and demand-side factors that influence access to health services (67)(68). In Ethiopia the scaled-up SAM services could address several issues on the supply-side, but might not fully address the demand side factors, and as already mentioned in the problem statement, the supply side factors are already known. Hence, it is crucial to explore demand-side factors in order to make SAM services more accessible to the users.

Moreover, to the best of the author's knowledge, there are few studies in Ethiopia focusing on demand-side barriers to access SAM services, and most of the studies are limited to specific part of the country, and lack through analysis. With all above mentioned reasons, this literature review aimed to explore the demand side factors that affecting access to SAM service among under-five children in Ethiopia.

2.3 Objectives

General Objective:

To explore the factors affecting access to severe acute malnutrition (SAM) services among under-five children in Ethiopia, and to make evidence-based recommendations to address the identified factors.

Specific Objective:

1. To identify demand side barriers and enablers influencing access to SAM services for under five children in Ethiopia.
2. To analyze how evidence-based interventions in other low- and middle-income countries addressed the identified barriers to access SAM services
3. To provide specific recommendations to policy makers and to stakeholders working on SAM services in Ethiopia.

2.4 Methods

Methodology:

The study used literature review as a methodology for the purpose of addressing the study objectives. Peer-reviewed literatures published in Ethiopia and other LMIC, in the past fifteen years were searched using different database and search engines: PubMed, Cochrane library, VU library, Google scholar, and Google. The search was done combining key words and MeSH terms with Boolean operates "AND" and "OR." (See Annex 1). Moreover, snowballing was used to identify additional relevant literatures and whenever necessary grey literature from MOH, UNICEF, WHO, USAIDS, MSF, and other organizations working on malnutrition were reviewed.

The first objective was addressed using the literatures retrieved from Ethiopia, and literatures from other low- and middle-income countries (LMICs) were included to compare with findings in Ethiopia. After determining the top three barriers to accessing SAM with the first objective, the second objective used literatures from other LMICs that address those barriers.

All literature focuing on severe aute malnutrion treatment servies among under-five childern were included. The included literatures were publised in the past 20 years (since SAM services strated to be recognized in Ethiopia and in other part of the world), and were all written in English. Other literatures looking into other forms of malnutrtion, other age groups, or those who are not published in english will be excluded.

Analytic framework

The conceptual frame selected for this literature review is Jean-Frederic Levesque et al, "***Conceptual Framework of Access to Health Care"*** (see Annex 2)**.** The framework is multi-angled framework to assess access from the supply-side (health system angle) and from the demand-side (the users angle), to make a comphernsive analysis (68). This frame work was desigened to evaluate access to health care services in general, unlike other framewroks which are desingned to analysis specfic type of health services or specific issues related to accessing health care

service. For example Thaddeus three model was intially designed to assess delay to access materanl health services, and Knippenberg model was designed to assess specifically patient satisfaction (68–70).

Inadditon Levesque model does not see access as one time event rather sees access as a process of events. The center part of the frame work illustrates this, by put access in a sequncetial steps starting from the health care needs (that is the public health problem) untill the health consequences (health outcome) that can happen with or without utiliazation of the service(68).

The demand-side of the model is used, since the focus of this Literature review was to assess demand-side factors to access SAM services. However during literature search the key terms from the demand and the supply-side were used in order not to miss relevant articles.

The finding section used the first two specific objectives as main headings. Futhermore, the first objective are systematically categorized and reported using the each of the five abilities to access care as sub headings. The techinical defintion of the five abilities on the demand-side of Levesque et .al model are given below (68):

- **Ability to percive - Perception of needs and desire of care** Awarness about a disease or a health condition and awarness about the avialable health services. Percetions/ traditional belief about a disease or a health condition.
- **Ability to seek/Health care seeking**: social and culuture views, gender influence, and discrimation/stigmas affecting health care seeking. Automony and decision making power to seek health care.
- **Ability to reach/Health care reaching**: the user's palce of living, transportantion means, distance travelled to reach health care, the living enviroment and work time flexability
- **Ability to pay /Health care utilization**: direct and indirect/oppurtunity cost spent by the user while seeking and utiliaztion of health care
- **Ability to engange/ Health care consequnce:** the user/patient engagment in decision making of treatments and care provided. The dedication of the user/ patient to adhere to treatment and to continue and complete the required care.

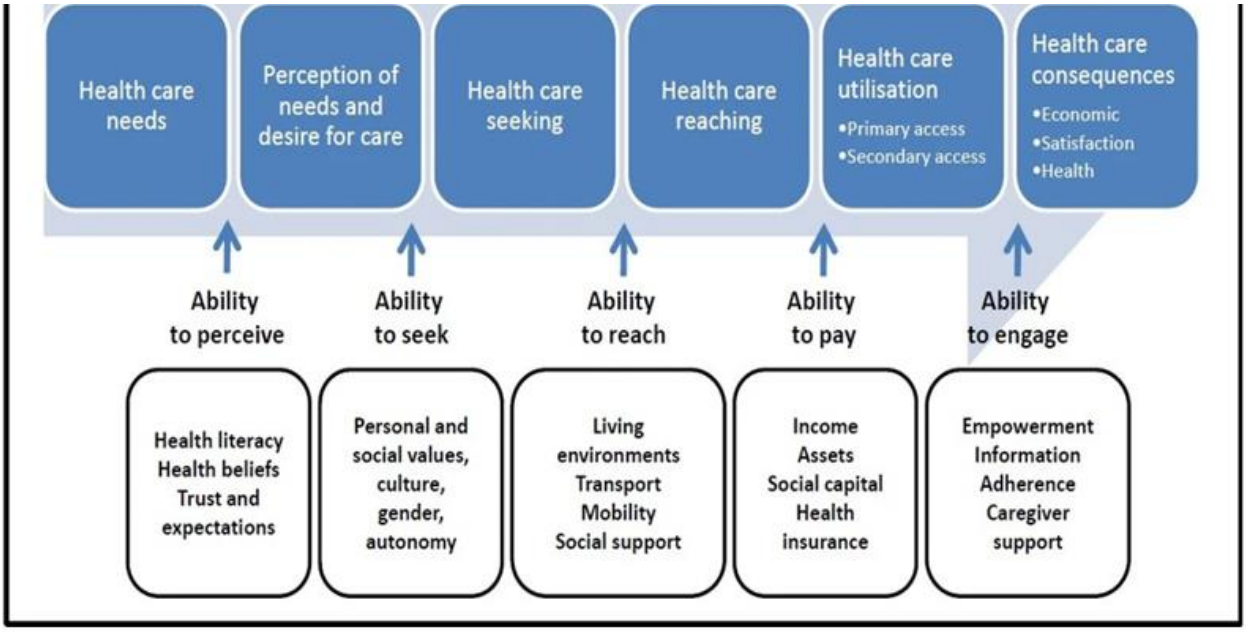

Figure 5: Levesque's conceptual framework of access to health care. Source: Levesque et al 2013.

Chapter Three: Findings

3.1 Demand side barriers and enablers influencing access to SAM services among under five children in Ethiopia.

3.1.1 Ability to perceives: Perception of needs and desire of care

Perception and awareness of the users towards a health condition and the available health services are important factors that depends on the traditional view and the level of literacy of the user(68).

In 2007 program review of community-based SAM services in selected countries including Ethiopia, found that most caregivers view SAM as a natural phenomenon than a serious health condition. Thus, most caregivers continued with feeding practices, which were less nourishing for the child. (59).

A qualitative study conducted in Eastern part of Ethiopia by Child Health and Mortality Prevention Surveillance (CHAMPS), found that the community had local names for SAM and their own beliefs about the causes of SAM. They used names like "*Wanna Shibirom*"(71) for severe wasting and "*Hudurfor*" (71) for edematous SAM. The community perceived that SAM occurs, when a bird soars above the head of a pregnant woman, which makes the child to be born either malnourished or dead; or when parasites multiply in the child's stomach then child becomes malnourished. There was also traditional view that considered SAM as normal phase of a child's growth that will recover by itself (71).

Another qualitative study done by Meshesha et al. in the Northern part of Ethiopia found that some caregivers believed that God gave them "skinny and inactive" (72) as punishment, while others believed that evil eyes made their child thin. So, these caregivers took their children to holy water for healing. Additionally, caregivers perceived ill-health only if the child was febrile, or cried more than the usually, or sustained an injury; otherwise, the child was considered healthy. (72).

In Southern part of Ethiopia, Eva-charlotte et al. during in-depth interviews with mothers found their perception that, SAM was caused by lack of food, or by worms found in wild berries. They believed when have the worms eats up the child from inside, and as the worm growth bigger the child goes thinner. The study pointed out that the community called SAM in a child as the disease of hunger and they were aware of SAM services in their area, since their area repeatedly faced drought in past (73).

On other hand, a comparative qualitative study on barriers of SAM services between Tigray region in Ethiopia and Sindh province in Pakistan, found that most participants in Tigray region had better awareness about malnutrition and about the SAM services available in their area, than the participants form Sindh. In focused group discussion, the mothers in Ethiopian stated that

they got the knowledge about malnutrition and its prevention from community sensitization programs in their area. However, some still used traditional remedies to treat the conditions (74).

In addition, a study showed that the awareness and knowledge about SAM was better among caregivers who had a child previously treated for SAM, those with formal education, those with access to mass media and those who lived in urban areas (75). Moreover, caregivers' knowledge about malnutrition as health problem, was significantly associated with the timely recovery and better outcome of their child with SAM [ARH 2.45 (1.35–4.46, 95% CI, with P< 0.05])(76). However, this finding might be due to caregivers' awareness about the SAM services in their community, and the timely seeking of care or due to other confounding factors (76)(77)(78).

The above studies in Ethiopia indicated that in some part of country, the community's ability to perceive SAM as a health condition was low, and the community have different traditional beliefs that might hinder them from accessing SAM services for their children. On the other hand, access to information about malnutrition and community sensitization were positive factors enhancing the caregivers' understanding about SAM.

Likewise, studies in other low- and middle-income countries found similar traditional views about SAM in children. A study in Zambia showed that the community had a belief SAM in a child was either caused by witchcraft, or, when a father who committed adultery touch his child before ritually cleansing himself. In this study the community leaders were aware of SAM and constantly encouraged the caregivers to take children with SAM to the health facility, however the caregivers refuse to do so due to the deep-rooted traditional belief towards SAM, which made them opt for traditional remedies (79).

Similar to the finding in Ethiopia, the rural community in India, also have local name for SAM like "jallachatu" (80) and traditional beliefs that SAM is caused by evil eyes, or a crow flying over the head of a pregnant woman. However, the community was aware that SAM could be treated at the CMAM program in their area, but also perceived that it can treated traditionally (80).

According to study coverage of community SAM program done by Collins et al. 2010, in five countries: Democratic Republic Congo (DRC), Ethiopia, Malawi, Niger, and Sudan, identified that lack of community awareness about SAM and its services, was one of the top ten barriers for SAM service coverage in all these countries(81).

On the other hand, studies have stated that the above identified barriers affecting the community's ability to perceive SAM as health condition, could be address by community sensitization program, by using locally tuned materials and by engaging trusted community figures like elders and religious leaders in the awareness creation of the community (57)(81)(82)(83)(84).

A study in Sudan by Gutbi et al. 2018, on effectiveness of community SAM programs, added the importance of educating caregivers specifically on how to identify their child's nutritional status, besides the general mass health and nutrition advocacy activities(85).

In Ghana, mothers with malnourished children were found to have low nutritional knowledge score than mothers with well-nourished children [OR= 2.04, (95% CI:1.39–3.02)]. Moreover, it was also found that nutritional knowledge has more effect of the nutritional status of the child than formal education(86). However, this study did not adjust for possible confounders, like economic status, feeding practices, and father's support

In general, the studies in other low-and middle-income countries also indicated that traditional perception about SAM could be a barrier to access SAM services. However, awareness creation in the community can enable the caregivers to have better understanding, thereby facilitating the access to care when needed.

3.1.2 Ability to seek: Health care seeking

Seeking health care services is affected by: socio-cultural views, individual preference where to seek care, gender, and autonomy of the user(68). Studies on SAM services have shown that once caregivers perceived their child have severely malnourished, many factors line up between the perception of the condition and the seeking for medical care (71)(72)(74)(75)(78).

As mentioned in section 3.1.1, the study in Eastern Ethiopia, showed traditional/socio-cultural views about the causes of SAM made most caregivers in the community to seeking care from traditional practitioners. On this study, during in-depth interview, a mother who had lost a child from malnutrition stated that, she still prefers to seek care from traditional healers than health centers for her other child (71). In Zuza et al systematic review and Meshesha et al study also showed that some caregivers prefer to seek care from traditional healer, due to their traditional views towards SAM and their belief that traditional healers would give them lasting solution than the health facilities (72)(75).

Moreover, the above studies identified that in these communities having as severely malnourished child was viewed as sign of shortage of food in the household/poverty and poor child care. These societal views made caregivers to feel ashamed to seek health care for their child (71)(75). On the CHAMPS study, traditional healers (key informants) stated that when a child has “Fadhido”(71) meaning shortage of food, the caregivers usually avoid seeking health care, from either the health facilities or the traditional healers, due to the stigma and shame of poverty (71). The stigma associated with SAM, as a disease of the poor in the community, led caregivers to fear of encountering similar stigma at health facilities. Thus, making stigma became a key barrier to seek care in those communities (71)(75).

On the other hand, as mentioned in section 3.1, the comparative study by Puett et al. found that some mothers in Ethiopia preferred to seek care from traditional healers, for their malnourished child, since they associated their child’s malnutrition with the contraceptives, they got from the health facilities(74).

A systematic review by Zuza et al. 2017, on gender related barriers in nutrition in 22 countries including Ethiopia, linked the feeling of shame to seek care with gender roles in the community. The gender role of male as the head of the house made the fathers to feel that they have failed to support their family and to be ashamed to seek care. On the other hand, mothers were also ashamed to seek care because of cultural view that SAM occurs in child when mothers are sexually activity during pregnancy or breast feeding (75).

Furthermore, in Meshesha et al. study on delayed access to SAM service, identified that as community norms mothers had to prioritize taking care of their husbands and other children in the house, which forced them to delay seeking care for their SAM child. This finding could be linked to the community’s perception that viewed SAM as a less serious condition(72). It can also

be linked to the lack of autonomy and decision-making power of the mothers to seek care for their children with SAM(75).

In some case mothers had no financial autonomy, or decision-making power to seek care for their child; because their husband was in control of the money. For some mothers the decision-making power was in the hand of the fathers and the mother in-laws. Sometimes mothers were scolded by their husband, for leaving her household activities to seek health care for the child(87). Pastoral and Argo-pastoral communities in Ethiopia, as cultural husband does not allow women to move freely, except to look after the livestock and fetching water. Thus, limiting women's access to health services and nutritional care(88).

A meta-analysis done on health seeking behaviors of parent for childhood conditions in Ethiopia indicated that there was gender preference when seeking health care. The odds of seeking health care for a male child was 1.21 times [OR=1.21; 95% CI: 1.02 -1.43] more than for a female child, The researchers linked this to the deep-rooted cultural discrimination of female in the society(89).

As mentioned in the section 3.1.1, caregivers' knowledge about SAM and their educational level not only affect the perception of caregivers about conditions, but also have positive associated with health seeking behavior (75). A mixed method study, evaluating the outpatient SAM services by Teshale et al. 2021, found that mothers with knowledge about malnutrition have almost two times [AOR = 1.82, (95% CI: 1.01–3.30)] the odds of seeking SAM care than those who do not know about malnutrition. Moreover, mother with formal education have higher odds of seeking health care for their children than those mother with no formal education [OR=1.15; (95% CI: 0.37, 3.65)] (77).

Previous experience with the SAM services, or other services, shown to be linked to health seeking. The Collins et al. 2010 study found that one third of caregivers did not seek care for their SAM child, due to previous experience of rejection by the SAM services providers (81). Moreover, caregivers were less likely tend to seek care for their child condition at a health facility, if they had previous experiences like finding the health facility closed, absence of medication at health facility, or, previous mistreatment by providers (81)(87). As result of these, some caregiver tends to seek care from alternatives sources like traditional healers, or local drug shops(87).

On the other hand, a previous experience of using the SAM service have also shown a positive effect on health seeking of caregivers. A mixed method study, by Teshale et.al 2021, found that the odds of acceptability of SAM services was almost 2 times higher among mothers who previously had a child treated with malnutrition than those who came for the first time (78). Additionally, a mother who used Postnatal care of iCCM services recently, had 13 times [AOR = 13; (95%CI: 7.37, 23.06)] more like to seek care for her child condition at the health facility than the mother who did not use the service before (90). A study done in 2019, assessed change in health seeking behaviors in Benishangul region after the implemented of iCCM showed that informal health care seeking form traditional healers, and consulting neighbors about child's

condition decreased significantly, while health seeking at the health post doubled [AOR = 2.32; (95% CI: 1.88–2.86)] within two years of the program implementation. The researchers stated the shift in health seeking behavior could be a result of increased trust in the care and awareness created by the HEWs, or the effect of promotion and early advocacy period (91).

All the above studies in Ethiopia indicated health seeking ability for a child with SAM was negatively affected by factors like traditional views, stigma, socio-cultural gender roles, lack of mother autonomy in the household, and previous unfavorable experience at the health facilities. The identified positive factors were knowledge about malnutrition, previous positive experience, health promotion, that enabled to caregivers to seek care.

Some of these barriers to seek health care in Ethiopia were also seen in other neighboring countries as well. For example, in Kenya a cross-sectional facility-based study on stigma related to SAM showed, mothers with SAM child had higher odds of feeling ashamed [OR: 3.64 (95% CI:1.65–8.03) P<0.05] than those with well nourished. These stigma towards child's malnutrition in the community made the mothers to feel ashamed and uncomfortable to seek health services (92). Different from Kenya's and Ethiopia's finding, SAM in a child was stigmatized as a sign of HIV/AIDS in rural Zambia, thus some caregivers were at unease to seek care for child with SAM(79).

The cultural gender role were also seen studies done in Sudan and Pakistan, where culturally men were decision makers of the household, thus depriving the mothers' autonomy to seek care for their children. Additionally, mothers were not allowed to leave the house unless escorted by a male, and even during a door to door SAM screening services, they were not allowed to seek care, from a male health provider for their child's condition, unless there is another male relative in house(74)(85).

The above findings from other countries showed that the identified factors affecting ability to seek care in Ethiopia are not limited to the country, but also exists in many other countries with similar setting.

3.1.3 Ability to reach: Health care reaching

Despite the availability of health facilities for the community, access to health care significantly depends on ability to reach to the health facility. That depends on the distance to travel to reach, the access to transportation means, and the user's living environment, and work time flexibility (68)(70)(87).

In the comparative study by Puett et.al 2015, found that most caregivers complained of long distance as a major barrier to reach the health facilities with SAM services. The study participants from Ethiopia, claimed that they have to walk on average 3 hours to reach the health facility. Due to the long distance some children skipped the weekly follow-ups at the health facility, and some

even stopped the follow up after few visits (74). In relation to this, a study in Afar by Liben et al. 2019 have shown that SAM children who travelling less than 2 hours to get SAM services had three times [AHR=2.91; (95% CI:2.18, 3.88)] higher chance timely recovering than those children travelling more than 2 hours (93). Similarly, finding was identified by a study in Oromia region by Bekalu et al. 2022 (94). The researchers of both studies stated that long distance might have caused caregivers to miss the follow up appointments of the SAM child and this could have attributed to delayed recovery from SAM (93)(94).

Additionally in qualitative study on delay for SAM treatment in Ahmara region Ethiopia by Meshesha et al. 2021, linked long distance as a possible cause of delay in health seeking that delays treatment thus delaying the recovery of a child from SAM. Moreover, the study also identified that, some villages had no access to public/private transportation. One mother replied in an in-depth interview that she had to carry her child on her back and walk long distance barefoot to reach the health facility, and she added even the thought it made her “heart weak” (72). In addition, the mothers in this study area felt insecure (especially sexual violence/rape) to travel alone with their child in forests and to cross rivers to reach the facility (72).

Likewise, a study on access to integrated Community Case Management (iCCM) services identified that most of the rural Ethiopia had poor quality of the roads, unfavorable topography (like mountains, jungles, and rivers), making them inaccessible for transportation (87). These were additional factors that hinders caregivers from reaching health care for their children and at times these factors also contributed for health facilities to be built in a location far from such villages (74)(72).

On the other hand, the time consumed by travelling and the caregivers daily activities (work), was also mentioned as a challenge to reach care(74)(75). Most mothers work daily in their household cooking, taking care of children, and on the top of that some have to travel long distance to fetch water. Other caregivers had to go to the fields to farmer and to herd their live stocks. All these put caregivers in the rural areas in unbreakable routine and leaves them no time travel far distance to reach for health care(75). (95)

The above studies remarked that the longer the distance the less chance of coming to the health facility and less chance of regularly attending the required follow up visits. Furthermore, and the lack of access to transportation might further limits the user’s ability to reach SAM services (76,93,96).

A review of SAM programs in 21 countries in Africa and South-East Asia, found long distance as one of the top barriers to access SAM services. Even though the decentralization of the service to PHC level was to enable the community to access the service in a reachable distance, but long distance still lingers as barrier (56). However, sometimes the concept of long distance differs among different caregivers. For example, caregivers concept of long distance differs depending

on the time consumed at health care, the cost spend on transportation, and depending on the season, especially during extreme weathers (56)(74) (81).

Overall, in Ethiopia long distance, lack of transportation means, and natural topography had an impact on caregivers' ability to reach the health facilities.

3.1.4 Ability to pay: Health care utilization

Accessing a health service is linked to the several costs, which is not limited to the user fee, but also to linked to direct and indirect/opportunity cost spent by the user, and socio-economic status of the user. Therefore, all these affect the health care utilization (68)(70).

In Ethiopia, SAM services have no user fee. This is major facilitator for the community to use the services(59)(87). A study on access to iCCM found that the free service has encouraged families with low-income to use the service. However, the indirect cost for transportation, food, and lodging was costly for some caregivers (72) (87).

In addition, the opportunity costs mentioned by caregivers were daily laborers, farmers, and merchants had to leave work, each time they went for weekly follow up of their child with SAM and the forgoing of these income sources for some caregivers were equivalent to forgoing the household daily bread(74).

In support of the above statement a study on cost-effectiveness of SAM services by Tekeste et al. 2012, found that despite SAM services being free, caregiver lose (opportunity cost/forgone) around $ 20.92 per child from their gross income during inpatient admission and $ 5.88 per child during outpatient follow up for the full course of the treatment. Moreover, the study showed the mean value of the direct costs spent by caregivers (for food, lodging, and transportation) were $1.45 per child for inpatient care, and $0.92 per child for outpatient care utilization(97). Though the direct cost to utilize SAM outpatient services was relatively lower than the inpatient, studies found that some care givers went into debt and loan to cover these costs during weekly SAM outpatient visit (72)(74).

On the other hand, free SAM services had result in over-utilization of the service by some caregivers. One study by Eva charlotte et al. in southern Ethiopia, found that some mothers seek care in more than one health post for one child, by registering their child under different names, and sometimes the mothers in that community lend the SAM child to their neighbors to get more RUTF (Ready to Use Therapeutic food). This was, because of poor socioeconomic status and food insecurity in the households, some care givers sold the extra RUTF for corner shops, to get some money to buy basic food for their whole family (73). Similarly, the selling of therapeutic food

provided from the health post to buy other food for the entire household was mentioned in other studies assessing SAM programs in the country(36)(66)(76)(78).

These findings highlighted the fact that SAM in a child could be due to poverty, and addressing SAM needs to go beyond treating the child (66) (73). In addition studies in Ethiopia stated that food insecurity in the household negatively affects the recovery of children with SAM, and the odds of a timely recovery of a child with SAM from a household with food insecurity was three times lower [AOR=3.21 (95% CI: 1.86, 5.52) p-value <0.05] than those from household with relatively better food security (76)(98).

Furthermore, at the end of 2021 WFP reported more 18 million people in Ethiopia had food insecurity that had worsened due to the ongoing internal conflicts, droughts, and internal displacement; millions have lost their assets(99). Many have lost their source of income from conflict and drought to support their family, leave alone to use health care(100).

Overall, in Ethiopia free SAM services is a major enabling factor for most caregivers to utilize the service, since it abolished user fee. The CMAM program providing outpatient services at health post, also contributed in lowering the direct and indirect cost related to seeking care by making the services closer to the community, as compared to inpatient care. However the opportunity cost/indirect cost and the direct cost could be significantly high for some caregivers thereby acting as a barrier to utilize SAM services (59)(97)(101) But at the same time critically looking at the study that investigated caregivers cost to utilize SAM services, the findings could be prone to recall basis that could result in underestimated or overestimated the direct costs (97), and the researchers did not mention how much percentage of the household income was spent on health care utilization, which could have indicated whether those households faced catastrophic cost or not.

Likewise, SAM program reviews in other African countries shown that high demand side opportunity cost was one of barrier to utilize the community-based SAM services(56). For example, in 2012 a study done on the cost effectiveness of CMAM program in rural Ghana, a caregiver spent an average direct cost of $47.63 USD (all spendings to utilize care) and indirect cost of $ $5.87 USD (lost productivity time). The researchers stated the direct cost was almost 37% of the household income and that this could discourage mother to take their child to care (102).

Moreover, a study conducted in Yemen, evaluation the out-patient program for SAM, found that among the caregivers who did not bring their child with SAM to the services, around 50% of them reported that they were unable to pay the transportation cost to attend the weekly outpatient follow up at the health facility (103).

From the above finding, in Ethiopia and other countries, indicated that accessing SAM services had several direct and indirect cost, especially related with follow up visits, and the ability to pay or to cover these costs was major factor that could deter parents from accessing the service for their children.

3.1.5 Health care consequence: Ability to engage

Access to a service is said to be fully granted, when the service provided is patient centered and when it activity engaging the users and the community at large. In addition, it requires the user's commitment to continue and to adhere to treatments and care provided by the service (70).

Ethiopia being one of the pioneer countries to start community-based management of acute malnutrition in early 2000(34). Community based management of acute malnutrition main aim is the make the community the center of the care, for SAM. This was by mobilizing community actors like women leaders, religious leaders, and traditional healers. This have shown to increased community engagement and success over the years(51).

In this qualitative study by Tadesse 2015, found that some caregivers adhere to giving the RUTF to their children and had a positive attitude toward the treatment. In an in-depth interview in this study a mother replied her child condition improved after starting the RUTF and that her child looks well and "glittery" than before. This also indicated the adhere to treatment (73). However, as mentioned in section 3.1.4, in this study and others literatures some caregivers were selling of the therapeutic food provided form the health post(66,73).In 2012 UNICEF review of the CMAM program in Ethiopia stated that there was high report of selling of the RUTF in the some part of the country(36).

Moreover, another challenge in the continuum of care of children with SAM was the sharing of the therapeutic food with other siblings in the house(66)(73)(76). This tend to persists despite the constant advice and counselling given by the health providers and this had been a major barrier affecting the health outcome of children with SAM (73)(66). The RUTF sharing practices has been found to slow down the recovery of a child with SAM by two times than the child who took the full prescribed amount of RUTF [AHR=0.53, (95% CI: 0.32–0.88)] (76).

On the other hand, a study done in the Agro-Pastoral community in Ethiopia showed, the first time utilization of SAM services was 90% by the study participants, but in later during the follow up visits 21% of the participants dropout from services. This was partly due to the weekly follow up was inconvenient for the users, and partly due to their migratory life style. One caregiver replied, "when they migrate, the services do not migrate with them" so some caregivers in the region were to continue the follow up for their children (104). This finding is also linked to the ability to reach.

On the other hand, there are new upcoming community engagement intervention, that trains the caregivers of children with SAM to actively measure the Mid Upper Arm Circumference (MUAC) as follow up of the treatment response(105)(106). In Ethiopia family MUAC initiative was tried in Gambella refugee camp in 2020 during COVID-19 period, to decrease contact and also to empower family in the care of their child. The parents in the camp were given short training to

screen for SAM with the use of modified ease to use MUAC tape (MAMI-MUAC tape), and these parents actively refer SAM children who were identified during the screening to services center. The first six-month evaluation showed more than 60% of parents were able to use the MUAC tape correctly and more than 90% of them reported their referral was accepted. Though this was an early start, it could be a way forward to encourage and to engage parents in the care of their children and to pick the sign of malnutrition early before the child condition deteriorated (106)..

Overall, in Ethiopia the main factors affecting ability to engage were the selling and the sharing of RUTF there by affecting the health outcome of the SAM child. However, these factors need further thorough investigations. Conversely the new intervention on parent engagement in screening of SAM with MUAC could not only enhanced the ability to engage but also could have a positive effect on the caregiver's ability to perceive SAM as a serious health condition, and to seek SAM services.

3.2 Evidence-based intervention to address the identified factors affecting access to SAM services

The interventions below were analyzed to addresses several demand-side factors identified under section 3.1. More specifically the factors identified under the subsection ability to perceive, ability to seek, ability to pay and ability to engage. The first two intervention (3.2.1 and 3.2.2) aim increase caregivers the ability to perceive malnutrition as a health condition and to increase health care seeking and engagement of the community. The last intervention analyzed focuses more addressing issues related to ability to pay.

3.2.1 Intensified Community Engagement and Community Sensitization for Acute Malnutrition: Lesson Learnt from Indonesia Kupang district

This intervention was analyzed to addresses several demand-side factors identified under section 3.1. More specifically the factors identified under the subsection ability to perceive and 3.1.2 ability to seek.

Indonesia Kupang District Intensified Community Engagement and Sensitization:

Initially Coverage Monitoring Network did a case study on CMAM service on uptake in Eastern rural Indonesia from August to September 2016, and identified the following major demand-side barriers:

- Lack of awareness about malnutrition in the community
- Lack of knowledge about the SAM services in the community
- Lack of adequate community sensitization by the health worker from the health post and health center
- Distance of the villages form the health facilities
- Previous rejection
- Seeking health care from other alternative traditional healers or religious prayers(107)

Specifically, Kupang district, in Eastern Indonesia, had the highest burden of SAM in the country. Fifty percent of the household in that district had food insecurity and around one third of under five children in that region had acute malnutrition (108).

Prior to this intervention, outpatient SAM services were provided under CMAM program at health post and health centers. The coverage of the program in six rural subdistricts in Kupang, was only 44% (Sphere standard is > 50% SAM coverage in rural areas) and the default rate was 48% (Sphere standard is < 15%) (108).

Implementation of the Intervention:

The aim of the intervention was to implement intensified community mobilization and sensitization session to address the barriers identified by CMN. An international NGO (Action for

Hunger) ran the community mobilization, and it was implemented for in multiple steps, after December 2016.

- Focus group discussion and workshops were held with community health workers (CHWs), school teachers, religious leaders, village leaders and local government officials, with the aim to make them fully engaged them in community mobilization.
- The local government and the INGO tried to identified the type information sources that community would accept and trust.
- Community sensitization session were held at the health post, community gathering and religious gatherings. By going door to door, the CHWs invited caregivers with under-five children were to attend the sensitization sessions. Moreover, key community leaders actively attended the sessions.
- During these sessions, the CHWs educated the community about malnutrition and it consequences, and the community was informed about a monthly SAM screening program at the health post. In addition, in these sessions caregivers with a child that fully recovered from SAM were invited to share their experiences. Information education communication (IEC) materials (leaflets, posters, and videos) were also shared.
- Monthly each household with under-five children were reminded about the monthly SAM screening by CHWs.
- In addition, the office of women empowerment together with the local government started a new radio program that focused on SAM and it's services provided in the health facilities(108).

With this intense mobilization, caregivers started to show up to the health posts and the findings are shown in table 1 and the figure below (108).

Table 1: Parameters measured pre and post implementation of the intensified community mobilization

Parameters measured	2015	2018
First time Screening rate	17%	66%
Monthly follow up screening	0%	70%
Services coverage	44	79%
Default	48%	10%

Based on the results achieved with this intervention, the researches stated that with intense community sensitization and with engagement of the using key figures (like local government, community leaders and religious leaders) increased the acceptability of the messages delivered during the sensitization sessions thus increased the community attendance in the health post (108).

The lesson learnt from this study is that the with well-structured community sensitization in it is possible to increase awareness about SAM among caregivers, which in turn enhance the

caregiver's ability to seek care. These effects were reflected by the rise in the percentage of SAM screening and the percentage of monthly follow up. In addition, this intervention is a good example to show the positive effect of engaging the community in the care and prevention SAM. However, the sustainability of such interventions could be very challenging, since it demands high human resources and financial resources, and high degree commitment from the government authorities.

3.2.2 Mother to Mother Support Group: Lesson learnt from Kenya

In Kenya, mother support group (MSG) is part of the infant and young child nutrition strategy by the government. This support group is meant for mother to support each other, and those mothers with better knowledge to shares their experiences with the others. The health facilities that provide nutritional services closely supervise the MSG program.

A descriptive comparative study was done *Laisamis* village Kenya, to assess the effect of MSG program on child nutritional outcome. Mothers who are pregnant or have children less than six months were recruited during outpatient visits or outreach programs. Forty mothers were recruited and divided into two group, 20 mothers who were part of MSG and 20 who were not part of MSG. The children of both 41 children for the two groups: 20 in MSG group and 21 in the non-MSG, and the nutrition status of the children were followed for one year starting from January 2015.

The mothers in the MSG group had biweekly meetings, and the mothers who were well trained and experienced shared information on breastfeeding and child care with the other mothers. Occasionally the mothers got additional nutrition education by the nutrition assistants in their area.

After one year of follow up of the children in each group, the key findings were, the prevalence of moderate acute malnutrition was comparable in both groups. However, none of the children with mother in MSG had SAM, whereas 19% of the children with mothers in non-MSG had SAM, which was statistically significant with p-value= 0.04. The researchers concluded that MSG have an impact on a child nutritional status of children and could also prevent SAM (109).

From this study, the lesson learnt is, MSG could be a potential platform to address lack of awareness about malnutrition among mothers. MSG is useful means to actively engage and empower mothers with the knowledge about child nutrition. The nutritional knowledge not only to prevent malnutrition but also enables mother to recognize malnutrition in a child early that could help in timely seeking of care

However, firstly this study does not directly address specific issues identified with accessing SAM services. Secondly looking at the quality of study, it was not a randomized control trial, and

the sample size was low. Thirdly, it was not clear if the children in both groups were treated for SAM or not, during the one-year study period. Finally, the researchers reported the p-value 0.04 as statistically significant, but they have not mentioned in the methodology the cutoff to say p-value is significant.

3.2.3 Unconditional cash transfer for SAM: Lesson learnt for Democratic Republic of Congo (DRC)

A clustered randomized trial was conducted in DRC where unconditional cash was transferred to the caregivers with a child with SAM (intervention group), in order to support the family in the care of the SAM child. The children with SAM were recruited during outreach screening or during outpatient visit for other condition, from 20 randomly selected health centers.

Both the intervention and the control group had children with SAM and all the group had weekly follow up visit at health centers

The intervention group (734 children with SAM) got standard SAM treatment and nutritional counselling plus the caregiver got unconditional cash transfer of $40 USD each month during the treatment period and for six months after. The control group (747 children with SAM) had similar care expect the cash transfer.

The outcome indicators used were number of relapse (reoccurrence of SAM in a child fully recovered from SAM) and the normalization of the growth parameters. After six months of intervention, the study found only 1.1% of children in the intervention group had relapse as compared to 7.1% children with relapse in the control group. In addition, 80% of children in the intervention group which achieved their normal growth, whereas only 40% of children the control group attained normal growth parameters.

The researcher justified their findings, that the unconditional cash transfer had supported the household to buy food with better nutritional values. They also stated the cash transfer that was continued for six months after the child was discharged, supported the family to continue to provide their child with nutritious food. But the researchers argue that the cash transfer might not have caused a change in health seeking behavior of the caregivers.

Moreover, the overall quality of this study was good with large sample size. The message to take form this research is that children in a household with relatively better financial support [with unconditional cash transfer] were able to pay some of the cost that comes with care of a child with SAM. The factor seen under ability to pay especially the direct cost of seeking health care might also be address by such support to the family. However the sustainability of such an intervention is very challenging.

Chapter Five: Discussion

The focus of this literature reviews was to assess the demand-side factors affecting access to SAM service among under five children in Ethiopia. The overall findings conveyed that in most part of country, caregivers of children with SAM face several barriers in all the steps to access SAM services. The ability of caregivers to perceive SAM, as health condition was mainly influenced by the traditional beliefs, and lack of awareness about the condition. Those caregivers who were able recognizes SAM as a health condition, were deterred from seeking SAM services, due to several other factors including the lack of autonomy and decision-making power of mothers, the previous unfavorable experiences at the health facilities, and due to the existing cultural taboos and stigma towards a child with SAM in the community.

Moreover, once the caregivers had decided to seek care, they face several barriers to reach the health facility like long distance, lack of access to transportation means, and unfavorable topographies that exists between the health facility and the villages same caregivers live. In addition, in Ethiopia despite the SAM services being free of charge, the caregivers spent unignorable amount of direct and indirect cost, especially during the weekly follow up visit to health facilities until the child fully recovers.

Most of these factors that appeared under each ability are highly interlinked. The traditional views toward the cause SAM in a child, was an important factor that made some caregivers to prefer to seek care from traditional practitioners. In community where SAM was assumed as a natural phenomenon or an effect of spiritual affliction, the health seeking behavior would most likely be low. This shows a strong link between health perception and health seeking behaviors.

In addition, health seeking can be affected by the other abilities like ability to reach and ability to pay. Long distance and lack of transportation to reach the health facilities could be one of the possible reasons to avoid seeking health care. As mentioned in the finding section long distance was a major barrier to reach SAM services, and in some cases it has led to delayed seeking care.

Long distance is also be linked to long travelling hours and high transportation cost. The time taken to reach health facility compels the caregivers to leave their work place for several hours and this could be associated with additional high opportunity cost. Therefore, if the direct and indirect costs tied with health care utilization are too high, caregivers might abandon seeking healthcare, or might shift to other options to seek care like a nearby informal/traditional practitioners.

SAM care especially out-patient care required weekly follow and this would result in incurring costs that are directly related to utilization of care. So, for some caregivers continuing follow care for their SAM child might be challenging due to the incurring cost. Additionally, the longer the distance the less frequent the caregiver might take their child for follow up. Hence all these indicates how a caregiver might not adhere and continue in the follow up care. This demonstrates

how ability to engage, ability to reach, and ability to pay are intertwined and how most of the demand-side factors cannot be seen separately, thus cannot be addressed separately.

Under the intervention section three intervention are mentioned: intensified community sensitization, Mother support group and unconditional cash transfer. The intensified community mobilization has shown to increase health care utilization. This was due to create awareness in the community, and the way try to identify the reliable source of information in the community and the involvement of key community leaders are very strong point. Because if this intervention is adopted in Ethiopia, the major issue to address would be some of the deep-rooted traditional and cultural taboos about SAM. Addressing these wrong traditional beliefs would be possible by involving the community's respected figures (religious leaders, traditional practitioners, and elders) are mostly like supports the traditional views.

So, by changing the perception of these key stakeholders and bringing them on board during community mobilization is the right way to address the negative impact of traditional view on access to SAM services. Such awareness creation helps the community to acknowledge SAM as a health condition that requires formal health care, and this can directly increase the community's health seeking behaviors. Additionally, such community sensitizations will play a great role in the prevent SAM as well.

Similarly, the mother-to-mother support group can help mother break the existing cultural taboos gender and help mothers to learns from each other on how to prevent malnutrition. In addition, as it was seen in the finding sections mothers are culturally deprived of decision making and autonomy in the health care of their child. Having such support group would help the mother to be empower with the right nutritional knowledge and to have the agency to care for her child health.

Using unconditional cash transfer for caregivers with SAM child have shown to improve the household's food security. The other benefit of unconditional cash transfer, since the transfer cash is not allocated for specific purpose, caregivers could use this cash to cover some the direct cost spent during that incur like transportation cost, especially for the follow visits. Thus, this further remove the barrier of defaulting form follow by increasing the caregiver's adherence and commit to the whole course of SAM care. However, the major point to not here is cash transfer usually tends to be unsustainable, and might not be feasible to scale-up at a national level. In addition, the governance of such cash transfer is highly demanding with its own cost and since the sources of fund is usually from other sector, it could be challenging to integrate into the health sector. Moreover, inequality among similar socio-economic status could be created artificially during the period of the cash transfer, which could disruption the community's equilibrium. Finally, though cash transfer shown to be crucial in the care of child with SAM, since it is hard to do it nation-wide, it need a critical situation analysis to know when, where, and how to apply it.

Cross-cutting issues seen in SAM care were cultural gender-role and lack autonomy and lack decision-making power of the mothers as a barrier affecting ability to seek care for SAM services. However, one can deducted that these issues are not limited to seeking care for child with SAM, but also general health care seeking of women for their own health or for their child's health. In a patriarchal household and in a community where masculinity dominate, female's agency is extremely narrow. The community's cultural gender-role pictures female as reproductive by limits them to taking care of all the family member and all the indoor household activities. While the cultural gender role looks male as productive earning income and having the financial power. So, all the findings seen related to inability to seek SAM services due to lack decision making power and lack of financial control by the mothers, the effect of patriarchal community.

On the other hand, a relatively new finding was stigma related to having a child with SAM and the feeling of shame that it resulted. This is again related to the cultural gender-role that pictures males as productive, the bread winner of the household, made the fathers to be ashamed of having a severely malnourished child. This was also linked to the stigma in the community that SAM is the disease of the poor, this impacted the seeking of care by caregivers.

Moreover, most of the articles retrieved were done in rural part of Ethiopia, and this could indicate the presence of high prevalence of SAM in the rural community, which could also be linked to inequality between rural and urban in access to health care, access to education, access to water, sanitation and hygiene services (WASH) and inequality in socio-economics status as well. These are also known determinants for the occurrence of SAM in a children under-five (110)(111).

Even though the focus of this paper is on the demand-side factors affecting access to SAM services, demand-side factors are highly linked to supply factors as well. Ethiopia has been expanding the SAM services in many ways since 2004 and has integrated CMAM program to be delivered at PHC level including health posts. As mentioned in the problem statement, some of the supply-side factors were lack of constant availability supply (RUTF, and routine medication), low outreach programs for screening and active case finding, work overload on the HEWs and lack of adequate equipment in the health facilities. These supply-side factors can be linked to some of the factors identified on the demand-side.

For example, low outreach program under the CMAM is a supply-side barrier and at the same time missed opportunity to give nutritional counselling and to create awareness about malnutrition which could possibly address wrong perceptions in the community about SAM and can create awareness about the SAM services availability thus linking ability to perceives and approachability. The unavailability of SAM treatment package, especially stock of the therapeutic food (RUTF) during follow-up visits, could discourage caregivers from seeking care and continuing the follow up for their child. Again, this could be linked to findings about how a caregiver's previous unfavorable experiences can negatively affect health care seeking. It can also affect the commitment of the caregiver to continue their child's follow up. So, these demonstrates how demand side abilities like the ability to seeking care and ability to engage/continue in care could

also be affected by supply-side factors. Overall, in SAM services some supply-side factors tend to cross-over to the demand side and further worsen the existing demand side barriers.

On the other hand, as mentioned under section 1.5 and 2.1 about Ethiopia's current political situation and the multifaceted humanitarian crises leading to a rise in prevalence SAM, one can anticipate the existing demand side barriers would be more aggravated, and, even new barriers could be emerging by further affecting the access to SAM services. Besides this is a clear example, how factors affecting access to health care are dynamic. However, primary studies need to be done to look into the factors.

For this literature review, the demand-side Levesque et al. model was used to address the first objective. With the use of this framework, it was possible to address several demand-side factors affecting access to SAM services. However, Levesque et al. definition of each abilities was sometimes challenging to conceptualized, and each abilities need to be cautiously interpreted and merely not by their direct English meaning. Moreover, under the ability to pay the model need to clearly mention direct and indirect costs on the demand-side and their definitions, which is totally different from the direct and indirect-cost of the supply-side. For example, the supply-side indirect cost could be the time spent during supervision of a program, whereas the direct cost could money spent to purchase the treatment package, the services running cost, salaries to health professional etc.

In addition, some demand side and supply side factors in many. For example, previous bad experience for ANC follow-up at a health facility, might affect the caregiver's health care seeking for SAM services. So, this makes it a demand side factor for SAM services affecting the ability to seek, but at the same time, it is supply-side factor under appropriateness as poor quality of care for the ANC services. Over all, for the future studies, one can still choose to use one part of the framework, but need to consider the above mentioned issues.

This literature review to come across several studies to address the objectives of the study. The individual articles retrieved have their own limitation and strength. Some of the limitations of quantitative studies included in this review, did not consider important confounding factors like the fathers' level of education, occupation, family size and number of under-five children in the household, and knowledge about other health services.

For example, a father with good educational background can be an enable factor to recognize SAM as a health condition, and to seek care early. Educated fathers might decrease gender inequalities in a household which could positively contribute to the mother's autonomy to access to health care. Moreover, the family size, and the number of under-five children in the household can indirectly reflect on the health literacy of parents on other health issues like birth spacing and family planning. It is also known family size is a determinant for SAM in children. Additionally, a mother who uses family planning could be informed about malnutrition during the counselling given about the importance of birth spacing.

Most of the qualitative studies used in this review have several strengths. Almost all used different methods to triangulate their findings like FDG, in-depth interview and key informant interviews, and some used mixed method both qualitative and quantitative data as a method of triangulation. However, some of them lacked, further in-depth investigation into root cause (the "But whys?"). This could be due to a poorly designed topic guide with few probing questions in some of the factors identified. This might have also put some limitation on depth of this literature review.

Overall, for most of the quantitative and the qualitative studies used in this paper of have internal and external validity, and this was reflected by the fact that several of studies were able to reproduce relatively similar findings on the identified factors.

In conclusion the main identified demand-side factors were traditional perceptions about SAM, lack of awareness, lack of autonomy of mother to seek care, stigma towards SAM, long distance to reach

Chapter Six: Conclusion and Recommendations

In conclusion the main identified demand-side factors were traditional perceptions about SAM, lack of awareness, lack of autonomy of mother to seek care, stigma towards SAM, long distance to reach, and direct and indirect cost related to SAM service utilization. All these factors were barriers that hinders access to SAM services. Moreover, these factors are highly interlinked with one another and this makes caregivers to face more than one barrier. Especially traditional perceptions, stigmas and gender role are important community factors that denied many SAM children access to SAM services. In addition, long distance and the direct and opportunity cost that comes with it, still stand as key factors that hinder the first-time access to SAM services and during subsequent care.

In order to, address the identified factors intensify community mobilization is an important intervention to improve community awareness and to increase health care seeking. The mother-to-mother support group is a crucial platform to empower mother with knowledge on nutrition, and to also prevent SAM. Additionally, unconditional cash transfer is a great mean to assist caregivers with indirect cost and to improve food security in households during the care of child with SAM to prevent relapse

This study has picked several demand-side factors from existing literatures and analyzed how these factors are interlinked, thereby indicating the need for comprehensive interventions. In line with the findings the following recommendations are forwarded to policy makers and major stakeholders working on nutrition.

Recommendations:

- **Intensified community sensitization about SAM**
  - With the support of the regional government and major stakeholders (like the MOH, INGO, media owners, traditional practitioners, religious leaders, community, and women leaders) arranging regular community sensitization sessions for the community. By addressing issues like how to prevent malnutrition, how to identify malnutrition in a child, and about the existing SAM services in community and its benefits.
  - Using several other platforms that are easily accessible to the community like radios, religious places and community gathering and locally adopted IEC materials that informs about appropriate childhood nutrition, and early signs of Malnutrition, and when to seek care.
- **Forming community support group**
  - In addition to the above community mobilization, forming mothers support especially for mothers with under-five children to create a sustainable platform to the mothers and the children and to use the platform to give additional health education in order

to address wrong health perception are closely link to malnutrition and to share useful information

- This can be implemented by initially creating a group of 10-15 mothers based on their living area to meet monthly, then by occasional supervision and health education of the health facilities near by
- Inviting the father to some of the group meeting in order to make them understand the purpose of the group and in order to grant the mother autonomy

❖ **Unconditional Cash transfer**

- Do thorough situational analysis at regional level to identify areas with high prevalence of SAM. Reaching out to funding agencies and check their sustainability
- Adopt unconditional cash transfer to families having children with SAM, to motivate them to seek care and also to cover for direct and indirect cost the caregivers might spent while seeking care and during the follow up visits.

❖ **The strengthening the existing CMAM program**

- By recruiting volunteer health works to assist HEWs during outreach programs and community sensitization session
- Reinforce outreach programs to a biweekly program.
- Strong supervision of the health posts outreach program by the responsible sub-district health office with the support of the catchment health center and using the outreach program effectively to create awareness during the door to door visits for screening and active case findings.

❖ **Additional recommendations for future studies**

- Due to the limitation of the literatures reviewed, and to explore the emerging factors that current humanitarian crisis might have posed, it is recommended to do mixed method quantitative and qualitative study using primary data to assure address all factors in-depth
- To address the full scope of factors affecting SAM services, it is recommended to do systematic review of supply-side and demand side factors affecting access to SAM services

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Annexes

Annex 1: Search term and Search strategies

	Health Problem terms		Factor-related terms		Geographical Scope terms
	Malnutrition		Access*		Ethiopia
	Undernutrition		“Service access”		Africa
	“Child* nutrition”		“Program access”		Sub-Saharan Africa
	“Child* malnutrition”		“Treatment access”		“East Africa”
	“Child* undernutrition”		“Treatment outcome”		“Horn of Africa”
	“Malnourished Child*”		“Inpatient services”		“Central Africa”
	“Under-five malnutrition”		“Outpatients services access”		“Central Sahel”
	“Acute malnutrition”		“Community services access”		“West Africa”
	“Severe Acute Malnutrtion”	**AND**	“Community-based services access”	**AND**	Asia
	Wasting		“Community-based management”		“South east Asia”
	“Severe wasting”		“Community-based treatment access”		Glob*
	“Sever* Malnourished”		“Barriers to access”		World
	“Severe malnutrition”		“Access barriers”		
			“Geographic barriers”		
			“Financial barriers”		
			“Economic barriers”		
			“Individual barriers”		
			“Approachability of Services”		
OR			“Accessibility of Services”		
			“Service affordability”		

			“Affordability of Services”		
			“Service affordability”		
			“Appropriateness of Services”		
			“Service appropriate*”		
			“Availability of Services”		
			“Service availability”		
			“Caregiver perception”		
			“Parents perception”		
			“Mother’s Perception”		
			“Health seeking behaviors”		
			“Parents health seeking behaviors”		
			“Caregivers health seeking behaviors”		
			“Mother’s health seeking behaviors”		
			“Services cost”		
			“Services payment”		
			“Direct cost”		
			“Transportation cost”		
			“Indirect cost”		
			“Opportunistic cost”		
			Interventions		
			Strategies		

Annex 2: Levesque et al. Analytical framework