

55th Master of Science in Public Health/International Course in Health Development

Key influential factors impacting access to primary healthcare among nomadic communities

A literature review in Kenya and
Ethiopia

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Key influential factors impacting access to primary healthcare among nomadic communities. A literature review in Kenya and Ethiopia

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

By

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Italy

Declaration:

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The thesis Key influential factors impacting access to primary healthcare among nomadic communities. A literature review in Kenya and Ethiopia is my own work.

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List of abbreviation

AMREF	African Medical Research Foundation
ANC	Antenatal Care
BEmONC	Basic Emergency Obstetric and Neonatal Care
CBAHW	Community-based Animal Health Workers
CEmONC	Comprehensive Emergency Obstetric and Neonatal Care
CHW	Community Health Workers
DRC	Democratic Republic of the Congo
EFY	Ethiopian Financial Year
FMoH	Federal Ministry of Health
GDP	Gross Domestic Product
HEP	Health Extension Program
HEW	Health Extension Worker
HSDP	Health Sector Development Plan
KAP	Knowledge Attitude Practice
KHPF	Kenya Health Policy Framework
KI	Key Informant
KNBS	Kenya National Bureau of Statistics
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MoHK	Ministry of Health Kenya
MSF	Médecins Sans Frontières
NGO	Non-governmental Organization
PHC	Primary Health Care
SBA	Skilled Birth Attendants
SDGs	Sustainable Development Goals
SNNPR	Southern Nations Nationalities and Peoples Regions
SSA	Sub-Saharan Africa
TBA	Traditional Birth Attendant
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

List of definitions

Animal husbandry: it is considered as part of agriculture when animals are raised for meat, milk and other products. It also includes daily care and the raising of livestock. Traditionally, animal husbandry was part of the household subsistence, producing not only the food needed but also the fuel, fertiliser, clothing, transport and draught power. Killing the animal for food was a secondary consideration, and wherever possible its products, such as wool, milk and blood were harvested while the animal was still alive (Blench 2001)

Kinship: in anthropology is used to describe culturally recognized ties between members of a family. It includes the terms or social statuses, used to define family members and the roles or expected behaviours the family associated with it. Kinship encompasses relationships formed through blood connections (parents and children), as well as relationships created through marriage ties (in-laws). Kinship can also include "chosen kin," who have no formal blood or marriage ties but consider themselves to be family or be adopted (Social Science 2019).

Nomadism: is a mobile way of life practised by inhabitants living in arid lands in response to ecological/natural and social/political conditions (Schlölz & Schlee 2015).

Out-of-Pocket: are the expenses that individuals pay out of their cash reserves. This includes medical costs that households bear at the time of availing healthcare services and are not covered by a third-party source (Kagan 2019).

Pastoralism: is a mode of subsistence that involves raising domestic animals in grassland environments using herd and household mobility. Combined with nomadism, pastoralism has allowed the individual to inhabit the world's vast drylands (Galaty 2015).

Woreda: is the district third-level administrative division of Ethiopia. The district is subdivided into kebele (wards) or neighbourhood associations, consisting in the smallest unit of the local government in Ethiopia (Yilmaz & Venugopal 2008).

Introduction

After graduating as a nurse in Italy and spending a few years working in a hospital, I switched my career to the humanitarian medical sector and joined Médecins Sans Frontières. In the past five years, I worked in different projects and countries over Africa, the Middle East and the Caribbean. ☒

One of my last projects before starting this Master in Public Health was an emergency nutrition response in the Somali region of Ethiopia. In this period, I led ambulatory nutrition programs in four mobile, nomadic camps. The biggest challenge was the high number of children lost to follow up since the family moved away to look for water and grass for the cattle. Also, the nutrition supplements were often shared within the family, with poor outcomes on the health of the child. Besides the famine's effect on the herd and individuals, many were the unmet health needs of this community. Although community health has always been among my priority, throughout this period, I developed a particular interest in community health service delivery for vulnerable communities, such as nomadic pastoralist. ☒

In a time where the World Health Organization focuses more on achieving Universal Health Coverage and natural disasters, such as drought, force more and more nomadic populations to increase their movement, I believe this is the right moment to analyse the access to healthcare of these populations and identify and propose areas for improvement.

This interest led me to develop the subject of my thesis and explore the different factors influencing access to healthcare for nomadic communities in Ethiopia. Afterwards, I decided to compare Ethiopia with Kenya to find similarity and dissimilarity among nomadic groups of neighbouring countries. ☒

Abstract

Introduction: Many factors influence access to healthcare for pastoral nomadic communities in Kenya and Ethiopia. Most of these factors can be categorized within the five dimensions of access: Availability, Accessibility, Affordability, Adequacy and Acceptability. This study provides a comprehensive analysis of the different factors within these dimensions.

Methodology: Throughout a literature review and few interviews with key informants, the data from Kenya and Ethiopia were analysed within the five dimensions of access.

Results: Availability of health structures and its uneven geographical distribution between urban and rural areas undermine access to healthcare for pastoralists. Accessibility entails long-distance and means of transport, which opposes to the mobility patterns of pastoralists, thus excluding them from health services. Affordability for pastoralists means owning cattle, which is the primary goods providing family sustain and financial access to healthcare. Adequacy is the inability of health programs to respond to the needs of pastoralists, resulting in their marginalization and reluctance to visit the health facility. Acceptability relates to the culture and traditional practices of pastoralists, which are deeply rooted in their lifestyle, often preventing them from accepting the healthcare services. The five dimensions of access remarkably influence each other, and other perspectives, such as gender disparity, ethnic conflict, animal husbandry and climate change also impact the overall access to healthcare.

Conclusions: Nomadic pastoralists have unique lifestyle characteristics, and there is a need for integrating these characteristics into specific recommendations and actions to improve their access to healthcare.

Keywords: animal husbandry, nomads, access, healthcare, traditional medicine.

Word count: 12632

1. Statement of the problem and justification

Worldwide nomadic populations share characteristics due to their lifestyle. These include seasonal migratory movements, rough living conditions and dependency on the livestock; characteristics that categorize them as a vulnerable group (Marchi 2010). As such, they require special protection and particular attention.

This paper uses Marchi's definition of nomadic groups, which defines them as a group of mobile people that live in challenging conditions and walks in remote areas to find grass and water. Their main dependency is on cattle herding, from which they derive food, clothes and other products (Marchi 2010). Their proximity to social services and health facilities is often compromised. Due to their lifestyle, access to healthcare - measured through a broad array of factors - is severely limited. Further, basic social needs, such as education and healthcare, are often neglected and considered as a low priority for this population (Zinsstag, Ould Taleb, & Craig 2006). Different efforts and programs have been tailored to respond to their needs. However, the challenges to reach these communities and understand their needs remain a priority to analyse. These challenges raise an essential question about the key differences between the nomadic population that can encourage or inhibit their access to healthcare. Using the example of Kenya and Ethiopia, this paper shows that although each community has its characteristics, there are common factors that can be addressed to improve access to healthcare for nomadic.

In Sub Saharan Africa (SSA) nomadic population are mainly distributed in the Sahel region, which comprises of Mali, Niger, Chad and Sudan, as well as in the Horn of Africa. This research paper focuses on analysing the key enablers of accessing primary health care (PHC) for nomadic pastoralist population in Kenya and Ethiopia. In this paper, PHC includes health centres, health posts and community health workers part of the national health system.

Multiple factors influence access to healthcare. For instance, in the remote areas of northern Kenya, there is a shortage of health facilities. Nomads perceive the geographical distance and the lack of medical equipment as barriers to access healthcare (International Organization of Migration 2011). A study conducted in the semi-nomadic community in Samburu and Laikipia counties (Central Kenya), shows that 92% of nomadic women deliver at home comparing to the national average of 56% (Caulfield et al. 2016). This difference can relate to the lack of available structures, distance from the facilities, but also cultural preference.

In Ethiopia, by comparing the utilization of modern health services among settled (53.9%) and mobile communities (46.1%), it appears that the services are more suitable for the settled population. The services are thus failing to deliver appropriate and affordable services according to the needs and lifestyle of the

nomadic community (Dubale & Mariam 2011). Regarding maternal and child health (MCH), women were less likely to seek care at the health facility. Which is due to lack of knowledge, economic reason, geographical distance, and perceived lack of competent health workers (Ibrahim et al. 2018). Therefore, the preference to deliver at home assisted by a Traditional Birth Attendant (TBA) is widely accepted, as the woman is surrounded by family and community (Yousuf, Ayalew, & Seid 2011). This situation creates a safe and comfortable environment for women to deliver.

Migratory movements increase the geographical distance between nomads and the primary health services, thus limiting access. Besides, the services are often static and inadequate for the lifestyle of nomads (Harragin 1992). Also, living in proximity to the livestock can expose the nomads to zoonotic infections that, although considered under control, might remain active and carried across provinces and countries as a result of their mobile patterns (Bawa et al. 2018). Possible consequences at the national and international level can arise, considering the difficulty in controlling their movement. ☒

Other contributing factors lie in the internal socio-political organization usually characterized by patriarchal dominance. The man head of the family holds decision-making in regards to the cattle and household, whereas the woman is responsible for food preparation, looking after goats and sheep and taking care of children (Amzat & Razum 2018). This situation is slightly different in other nomadic communities, but overall, the gender division of roles and responsibilities is consistent. Education is also an essential asset towards the acceptance and utilisation of the health services. A study shows that women visited the health centre after a health professional provides health education at home (Yousuf et al. 2011).

Other considerations, such as socio-economic and cultural values also impact healthcare access. A study conducted among the Afar community in Ethiopia illustrates that having economic issues was statistically significant for low modern health care utilization (Dubale & Mariam 2011). Among the Turkana community (Kenya) traditional medicine is often preferred over “modern medicine” (Harragin 1992). Cultural values often outweigh other aspects and have significant consequences for access to healthcare services. Pastoralists are considered stronger and healthier than settled communities. They use mobility patterns to avoid disease outbreaks but become more vulnerable to zoonotic diseases (Sheik-Mohamed & Velema 1999). The vulnerability of this population is not related to high mortality, but to their marginalization from essential services, such as healthcare, education, water and sanitation. These examples provide evidence of a variety of factors impacting access to healthcare among the nomadic population and underline the need for further analysis.

During the last few decades, some programs have been implemented to support and improve health access for the nomadic population. In 2003, the Federal Ministry of Health (FMOH) of Ethiopia launched the Health Extension Program (HEP) to achieve universal health coverage of PHC in rural areas. Community females

were trained as Health Extension Workers (HEWs) to provide basic services (health education, health hygiene, disease prevention and control) in the rural communities (FMoH 2005). In 2006 the program was extended to pastoralist areas, and the Pastoralist Health Promotion and Disease Prevention Directorate were established focusing on health needs of the nomadic (FMoH 2010). However, a study in the Somali region shows that only 1 in 5 patients identified with presumptive tuberculosis, was referred by a HEW. Due to poor community health education since less than 50% received a visit by HEW (Getnet et al. 2017). This is to demonstrate some challenges in the program.□

The Ministry of Health of Kenya (MoHK) in the 2013 Kenyan Health Sector Strategic and Investment Plan, aimed at building new facilities and implementing mobile health services to reach the nomadic communities (MoHK 2013). However, it lacked explanations and evidence describing this approach. In the 1980s was introduced the 'manyatta' approach. It consisted of a small centre, near the health facility, where the pastoralists could get drugs for tuberculosis (Ligami 2018). Other Non-governmental Organizations (NGOs) trained the so-called "village patient helper" and "traditional birthing helper" from pastoralist community to detect signs of illness and refer to the nearest health facility (Cohen 2005). Two studies evaluated the effectiveness of the community health strategy among nomadic pastoralist communities. Although the overall improvement of access to healthcare, the first study showed limitation in considering the socio-demographic context (Olayo et al. 2014). The other study concluded that the high cost of these interventions limited its implementation (Wafula, Edwards, & Kaseje 2017). These conclusions can also have consequences on the sustainability of the programs.

On a global perspective, the 10th article of the Alma Ata declaration (1978) aimed to achieve health for all by the year 2000 (World Health Organization, WHO 1978). Since then, governments developed policy and strategy to provide accessible healthcare to their population. However, already in 1999, many countries with a large nomadic population lagged behind this goal (Omar & Omar 1999). In 2004 the World Health Organization (WHO) published a report including the disadvantaged groups within the health system strengthening strategy. Despite that, pastoralists were not even considered (Zinsstag et al. 2006). The era of the United Nations Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) intended to improve the human on a global scale. The recent SDGs have a key focus on inclusion of everyone, so that population previously excluded, are now detected, monitored and assisted (Randall 2015). However, the SDGs fail to consider that specific population, namely nomadic pastoralist, due to their lifestyle and livelihood, are hard to quantify (Randall 2015). As a result, these populations are not identified. Their needs remain unknown and not addressed at the national level. This creates inequalities and uneven distribution of resources, with an overall impact on their health.

1.1. Thesis objective

The general objective of this research paper is to analyse the factors that influence the accessibility to Primary Health Care services for the nomadic pastoralist communities in Kenya and Ethiopia. Further, this paper aims to provide recommendations to governments for the development of health care policies. In line with the general objective, the specific objectives are as follows:

1. To describe the availability of existent health structures and health programs in the area of study
2. To explore the potential effects of the migration pattern of nomadic populations in regards to geographical access to healthcare
3. To evaluate the impact of the lifestyle of nomadic communities towards their financial access to healthcare
4. To describe whether the existing health services are adequate and meet the requirement to respond to the needs of the nomadic population
5. To assess the perception and awareness of the nomadic community regarding their acceptance of modern healthcare services

1.2. Methodology

This paper relies on an approach mixing primary and secondary sources for research. In terms of the latter, literature research was conducted in different databases: Pub Med, VU Library, ELSEVIER, Trip Medical, and Cochrane. The search engine Google Scholar was also used.

Additionally, websites of local governments, national and international agencies and other organizations were consulted, to find relevant grey literature and up to date information. To scope the research and identify the most pertinent articles, the following selection criteria were applied:

- Use of specific keywords: nomadic, pastoralist, health, access, Ethiopia, Kenya, cultural, religion, socio-economic, strategy.
- Year of publication: due to the challenge in finding a sufficient number of articles published in the last ten years, the research has been expanded to articles dating back to the last 20 years. An exception for two articles from 1992 and 1994 and one official documents from 1978.
- Language: English was used as the primary research language. However, since different countries hosting nomadic population are francophone (Niger, Mali and Chad), the research was also extended to include French articles.

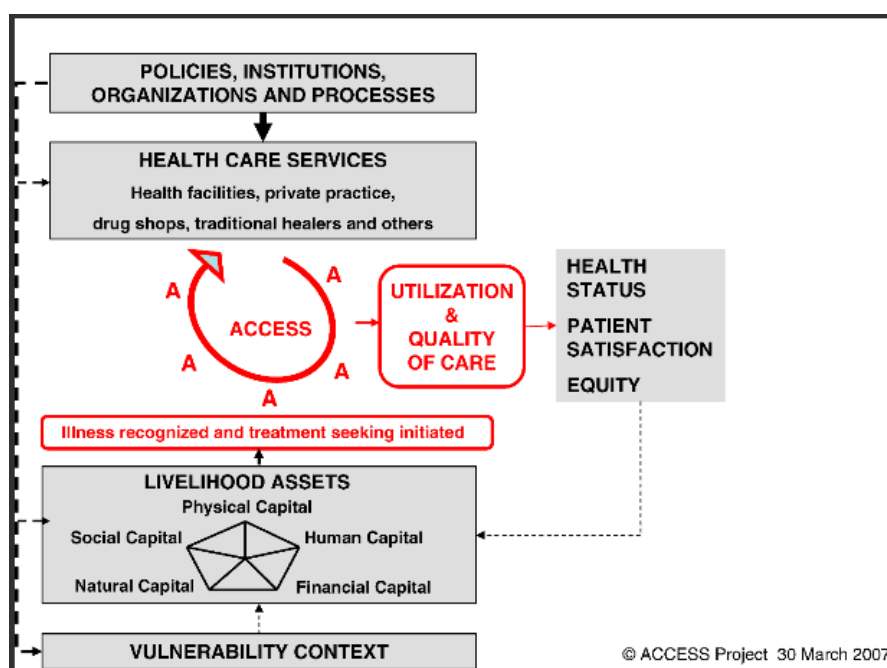
To support the literature review and better contextualize the findings, a limited number of Skype interviews were performed (Annex 1). Key informants (KI) from a representative of NGOs, media and academy are referred to KI in the text reference citation. The interviews were audio-recorded, and each transcript was

analysed based on the topic guide (Annex 2). The results were manually coded according to the thesis objective. In order to guarantee confidentiality, informed consent (Annex 3) was given to the participants and recorded in signed informed consent forms.

The Health Access Livelihood Framework (Obrist et al. 2007) in the below figure 1 was adopted to allow a structural analysis of the findings. The model was chosen as it explores in a comprehensive way the five dimensions of access (Availability, Accessibility, Affordability, Adequacy and Acceptability). It considers as well, to what extent the interaction between the livelihood assets, the health care services and the policies, institutions, organization and processes, can impact the degree of access in a vulnerable context. However, for pragmatic reasons, not all the components of the framework were examined in this study. The livelihood assets and the health care services were analysed within the five access dimensions, rather than separately. The policies, institutions, organization and processes, and the impact on utilization and quality of care were not considered.

In this research, the five dimensions of access refer to the definitions used by the authors of the framework. Availability refers to the existing health services and whether it meets the clients' needs. Accessibility concerns the geographical location of supply and whether it is in line with the location of the clients. Affordability relates to the service fees and whether it tailors to the clients' income and ability to pay. Adequacy refers to the capacity of the service to meet clients' expectation. Acceptability considers whether the characteristics of the service match those of the clients (Obrist et al. 2007).

Figure 1: Health Access Livelihood Framework (Obrist et al. 2007)



2. Background information

2.1. Nomadic pastoralists in Africa

Pastoralist communities are known for their intense animal husbandry system, pushing them to remote rangeland where vegetation and water are available. From an anthropology perspective, the term “pastoralist” includes the cultural-identity of the community and the production of livestock bonded with their lifestyle (Krätli & Swift 2014). Their cultures are extremely diverse and unique in its aspects: religion, culture, economy, socio-political structure. Despite this cultural heterogeneity, there are common factors that all pastoralist communities share that making them a compelling case for comparative analysis. It is the key differences, however, that can help elucidate how different nomadic groups can experience healthcare in varied ways. Based on the different characteristics, the livestock owners are recognised as nomadic pastoralists, nomads, mobile pastoralists, transhumant, agro-pastoralists, mixed farmers or small-scale livestock owners (Weibel 2010). However, pastoralist is not always related to nomadism, but to a strategy of livelihood production to sustain the household. In a favourable environment, this strategy can be achieved within a combined strategy of agriculture and pastoralism.

Pastoralists are defined as such when they derive more than 50% of the income from livestock and the related products and activities. Along with this definition, their degree of mobility is considered as a lifestyle, but also as the core strategy for production (Krätli & Swift 2014). Their subsistence is centred on the livestock. Maintaining strong and healthy productive cattle means following different seasonal movements during the rain and the dry seasons. Usually, the movements are more intense in the raining season, where the animal needs to put on weight, increasing productivity and endurance for the next dry season. In the dry season, the movements are essential to finding water and grass to keep the animal alive. Generally, for nomadic pastoralists “constrain to mobility means constraint to productivity” (KI 24 May 2019).

Worldwide, the number of pastoralists is approximately 200 million (Kaufmann, Hülsebusch, & Krätli 2019). Sub-Saharan Africa (SSA) counts for 120 million people, of which 41 million are solely depending on livestock production, and the remaining derive a fraction of the household revenues from agriculture (Kaufmann et al. 2019). In SSA, 60% of the land is occupied by dry land. Therefore, the livestock sector contributes significantly to the economy of those countries with a large amount of dry land. In West and East Africa livestock-related product (milk, meat, wool) contribute to 5-15% of the Gross Domestic Product (GDP) and about 60% of agricultural GDP (De Haan 2016).

In this paper, the term pastoralist is referred to as the degree of mobility and the dependence of these community on the livestock. Acknowledging the difference of terminologies, for practical reasons, the

terms pastoralist, nomadic and nomadic pastoralist will be used interchangeably and refer to the above definition.☐

2.2. Kenya

2.2.1. General country profile

Situated on the equator of Eastern Africa, Kenya has a population above 50 million in 2018. Its population is spread over eight provinces and 47 counties (World Bank 2018). Eighty per cent of the population lives in rural areas, a very similar situation in Ethiopia. Although the population living on less than 1.90 US\$ per day has decreased from 46.8% in 2005/2006 to 36.1% in 2015/2016, the poverty incidence remains one of the lowest in SSA (World Bank 2018).

Kenya is home of a variety of pastoral ethnic groups. Among the others, the Rendille, Maasai, Samburu, Pokot, and Turkana, corresponding to 14.5% of the whole population (Simpkin 2005). Most of them live in the northern regions of the country (Figure 2). In Kenya, the contribution of livestock production to the GDP is 5.44% and 20.78% for the agricultural GDP (De Haan 2016). In 2010, the public health expenditure accounted for 7.3% of the total government expenditure, far below the 15% target of the Abuja Declaration (United Nations Development Program, UNDP 2013). The major burden of low investment on health was on the most impoverished urban areas, as well pastoralists remained marginalized from the public services. The primary school enrolment ratio is considerably low in the Northern-Eastern region, 71.5 comparing to the national average of 116.9 (UNDP, 2010). The MCH indicators, such as institutional delivery and vaccination coverage, vary tremendously between counties. Vaccination coverage improved dramatically in the urban areas between 36-75%, whereas it falls under 36% in the northern counties of Turkana, Marsabit and Wajir (Demographic Health Survey Program 2015).

Figure 2: Administrative map of Kenya (Wine and vine search 2019)



2.2.2. Health system structure

The health system reform strategy started in 1994 with the Kenya Health Policy Framework (KHPF). The policy aimed to respond to the major health constraints: decrease of health expenditure, centred decision-making process and inefficient use of resources. The policy objectives were framed within two National Health Sector Strategic Plans 1999/2004 and 2005/2012. The second plan was designed to provide equity healthcare and improve the indicator trends after an unsuccessful first plan (Netherlands Foreign Affairs 2016). Throughout this period, a gradual reform towards a decentralised health system took place, with the District Health Management Team becoming more responsible at district level (Luoma et al. 2010).

In 2010, the Constitution of Kenya introduced the devolved system of government aiming at distributing part of the decision-making and the implementation to 47 counties. Later a new health policy 2014/2030 was developed to improve the overall health status of the Kenyan population. This policy set up county health management teams to coordinate the respective counties health service delivery. At the national level, the MoH has a principal function in developing national health policy, legislation and guideline, and providing technical support and capacity building to the counties (MoHK 2014). The third Health Sector Strategic and Investment Plan 2013/2017, divide the public health system in four-tier, as shown in the below figure 3. Level 3 includes the district hospital and level 4 provincial and national referral hospitals.

Figure 3: Structure of Kenya’s four-tier Public Health System (PharmaAccess 2016)



2.3. Ethiopia

2.3.1. General country profile

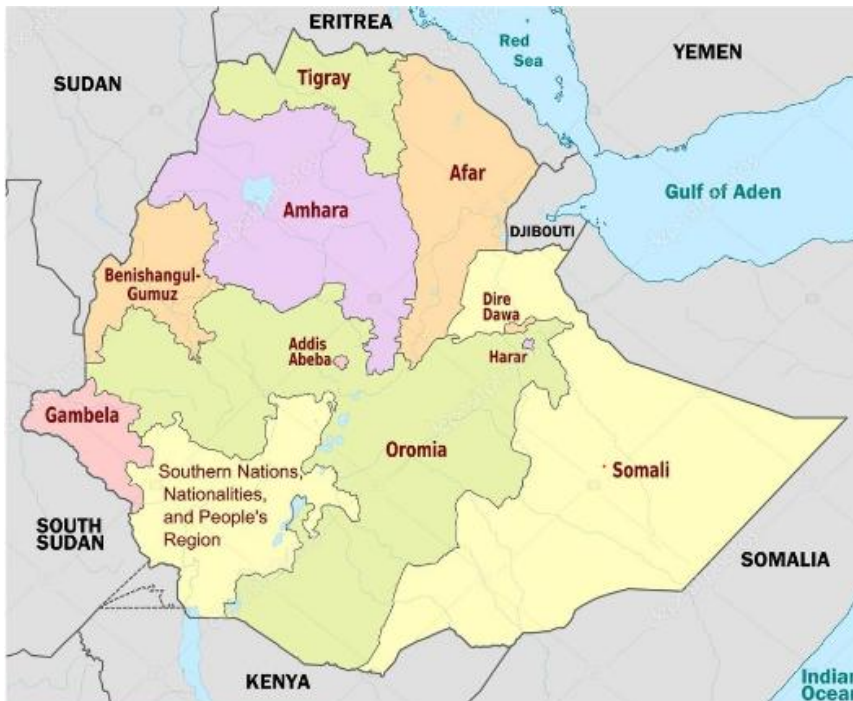
Located in the Horn of Africa, Ethiopia has a population of over 100 million population in 2017 (World Bank 2019) and only 19.4% living in the urban area. It is among the less urbanised country in the world, and it is mainly characterised by rural population (83.6%) (WHO AFRO 2018). In 2015/2016, 23.5% of the population lived below the poverty line comparing to 45.5% in 1995/1996. In 2014, Ethiopia health expenditure counted for 13.2% of the total government expenditure on health. The major benefit was for antenatal care (ANC) coverage, which increased up to 62% in 2016 from 27% in 2000 (UNDP, 2018).

Ethiopia is characterized by broad dry areas in the Eastern, Western and Southern lowlands. These regions are not suitable for the agricultural purpose since those territories suffer from recurrent drought episodes. Ethiopia is home of various nomadic pastoralist populations: the Somali, the Oromo and the Afar. Respectively locates in the southern part of the country comprising of Somali, Oromia and Southern Nations Nationalities and Peoples Regions (SNNPR), and in the Afar region (North-East) (Figure 4) (Amzat & Razum 2018). They account for 11% of the overall population dispersed over 52% of the geographic area (Dubale & Mariam 2011). Also, in Ethiopia, pastoralists are considered an important group for the economic growth of the country. In 2010, the livestock contribution to the GDP was 8.26% and 19.53% of the agricultural GDP (De Haan 2016).

Despite their economic contribution to the country, there are significant differences regarding social services. For instance, the illiteracy rate is considerably high in nomadic regions. In the Somali region, it ranges between 75.3% (women) and 44.8% (men), whereas at capital level (Addis Ababa) is between 8.3% (women) and 3.7% (men). As well as the ANC coverage from a skilled provider is higher in Addis Ababa (97%) and lower in Somali (44%) (UNDP 2018). The Afar region holds the lowest children vaccination

coverage (15%) followed by the Somali and Oromia regions 22% and 25% respectively, compared with national figures of 39% (Demographic Health Survey Program 2017).

Figure 4: Administrative map of Ethiopia (JRTBurr 2015)

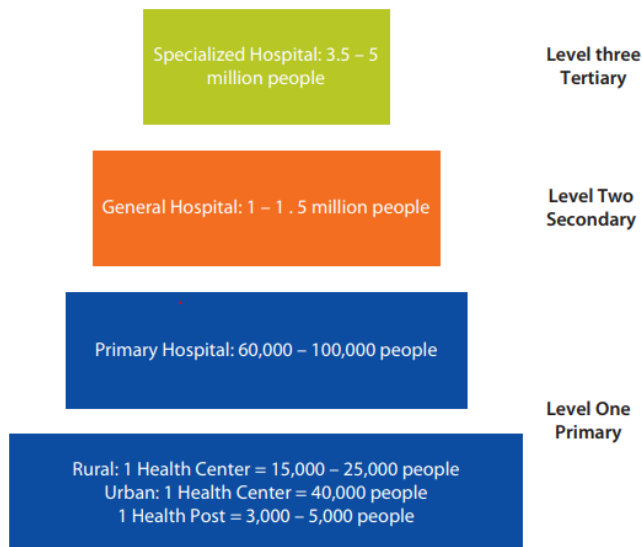


2.3.2. Health system structure

The current health system structure in Ethiopia is the result of a succession of health policies implemented since 1993. All were focusing on restructuring the health service delivery to positively influence the socio-economic development of the country (FMoH 2015). The policy was based on the concept of fiscal and political decentralisation of the health system. It consisted of shifting the decision-making from national level to regional authority and further down to the district level (Wamai 2009). The policy was formulated throughout four phases of the Health Sector Development Plan (HSDP) between 1996/1997 until 2014/2015. Within the strategy of the HSDP-IV was the expansion of HEP to the pastoralist community. Aiming at providing specialized support to some regions facing unique challenges in service delivery and health systems development (Wang et al. 2016).

Currently, the public health system is decentralized in three levels, each accountable for delivery the essential health services (Figure 3). At the first level, the FMoH is responsible for several aspects: the health national strategic planning, resource mobilization and monitoring and evaluation. At the second level, nine Regional Health Bureaus are responsible for the health service delivery programs - according to the national health policy - and to support the district (Woreda). The third level, the Woreda Health Offices, are responsible for coordinate the primary health care units (health centres and health posts) and for planning, financing, and monitoring health progress and service delivery (Wang et al. 2016).

Figure 5: Structure of Ethiopia's three-tier Public Health System (Wang et al. 2016)



3. Factors influencing access to Primary Health Care services

3.1. Availability

Availability describes the number of existing infrastructures and health programs able to answer the needs of the population. A research study conducted in Kenya compared the differences in the spatial distribution of health facilities in 2003 and 2008. In the first year the total number of public health facilities was 3,512 comprising of hospitals, health centres, dispensaries and other clinics (Table 1), whereas in 2008 the number increased to 5,334, of which 67% managed by MoHK, 28% by faith-based organization and NGOs and 2% by the local authorities (Noor et al. 2009).

Table 1: Public health facilities in Kenya in 2003 and 2008 by type and management agency (Noor et al. 2009)

Type of facility	Ministry of health		Faith Based/NGO		Local Authority		Employers and Other		Total		
	2003	2008	2003	2008	2003	2008	2003	2008	2003	2008	(% change)
Hospital	125	193	96	104	0	1	11	7	232	305	24
Health centre	473	678	157	225	50	53	14	15	694	971	29
Dispensary	1,471	2,703	907	1,148	40	47	123	148	2,541	4,046	37
Other clinic	/	/	/	7	/	/	45	5	45	12	-74
Total	2,069	3,574	1,160	1,484	90	101	193	175	3,512	5,334	34

Overall, there was an increase of 34% of the public health facilities within the five years, with the North Eastern province having the highest percentage (68%) and Nairobi the lowest (22%) (Table 2). However, although the North Eastern province had the highest number of facilities, only 29% of its population was within 5 kilometres from a public health facility, the lowest compared to the other provinces (Table 2) (Noor et al. 2009). The Kenya National Bureau of Statistics (KNBS) in the economic survey 2013, showed an increase in health structures of 35.3% over the period 2008-2012 (Table 3) (Kenya National Bureau of Statistics 2017). However, the number of public health facilities identified by the KNBS in 2008 did not match those of the study by Noor et al. (2009 p. 3).

Table 2: Provincial changes in the number of public health facilities and population within the national target of 5 km of a public health service provider in 2003 and 2008 (Noor et al. 2009)

Province	Number of public health facilities in 2003	Number of public health facilities in 2008	% increase in public health facilities from 2003 to 2008	Population in 2003	Population within 5 km of a public health facility in 2003 (%)	Population in 2008	Population within 5 km of a public health facility in 2008 (%)
Central	437	657	34	3,933,597	3,427,483 (82.0)	4,665,152	4,555,059 (97.6)
Coast	330	432	24	2,808,870	1,862,461 (66.3)	3,254,162	2,708,321 (83.2)
Eastern	600	992	40	5,144,073	3,233,429 (62.9)	5,882,336	5,103,168 (86.8)
Nairobi	211	272	22	2,596,918	2,211,329 (83.6)	2,962,125	2,961,837 (100.0)
North eastern	53	164	68	1,319,338	237589 (18.0)	1,150,133	331,737 (28.8)
Nyanza	472	799	41	4,823,786	3,997,043 (80.8)	5,591,531	5,569,071 (99.6)
Rift Valley	1,134	1,615	30	7,950,358	4,962,210 (62.4)	9,266,543	7,523,223 (81.2)
Western	274	403	33	3,874,160	2,975,949 (76.8)	4,294,284	4,274,647 (99.5)
Total	3,511	5,334	34	32,451,100	22,907,493 (71.0)	37,066,266	33,027,063 (89.1)

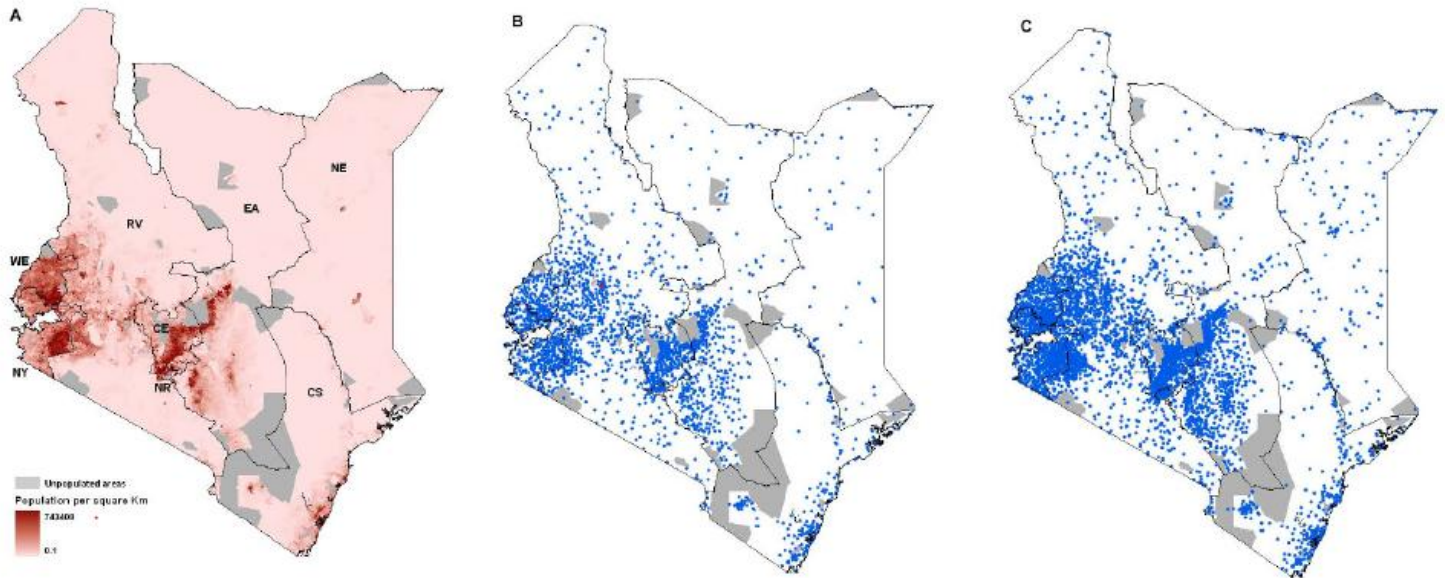
Table 3: Governmental health institution by Region 2008-2012 (Kenya National Bureau of Statistics 2017)

Province	2008	2009	2010	2011	2012
Nairobi	387	406	423	505	562
Central	1199	1251	1345	1413	1438
Coast	723	770	754	852	873
Eastern	942	1106	1256	1441	1548
North eastern	198	232	264	278	291
Nyanza	716	773	745	932	965
Rift Valley	1648	1732	1867	2076	2166
Western	377	426	457	509	532
Total	6190	6696	7111	8006	8375

The Kenya Health Policy 2014-2030 document further illustrates the distribution of these health facilities around the 47 counties. It provides the rates of hospitals and health centres per 100,000 people and underlines significant differences among counties. The Turkana county had 0.7:100,000 hospitals and 16:100,000 health centres, whereas the national average was 1.3:100,000 and 19.9:100,000 respectively (Annex 3) (MoH 2014).

The study by Noor et al. (2009 p. 3) mapped the distribution of health facilities within the country (Noor et al. 2009). The below figures 6 B and C, illustrate the higher concentration of health structures in the Western, Nyanza and the Central provinces. While in the Rift Valley, Eastern and North Eastern provinces, predominantly occupied by pastoralists, the concentration is lower. A few years later, in the Kenya Health Policy 2014-2030 document, the distribution of hospitals and health centres in nomadic provinces and the rest of Kenya appears to be approximately equal: 45.2% and 54% respectively (Annex 4) (MoH 2014).

Figure 6: Province maps of Kenya showing: A. 100 m population density; B. distribution of public health facility in 2003; C. distribution of public health facility in 2008. CE = Central province; CS = Coast province; EA = Eastern province; NE = North Eastern province; NR = Nairobi province; NY = Nyanza province; RV = Rift Valley; WE = Western province (Noor et al. 2009)



In 1960 the African Medical Research Foundation (AMREF) introduced an outreach program focusing on providing immunization for the Masai pastoralist population. Within 25 years the program extended to the Turkana county including treatment, health education and a mobile laboratory. The “Medicine by Air” and the “Specialist Outreach Program” intervened in northern Kenya. The “Nomadic Health Unit” visited the Masai areas every two weeks and spent around 25 days in Turkana pastoral zone (Harragin 1992). However, this intervention was logistically challenging and costly, thereafter was performed twice a year with some difficulties for the follow up of patients (Schelling et al. 2008).

Some projects, such as the “Pastoralist Development Project” in northern Kenya, aimed at improving access to social services for the nomadic population. Since 1994 the program trained 230 community health workers (CHW)/TBA and 160 community-based animal health workers (CBAHW) to provide basic health service to their community. The CHWs were responsible for providing about 95% of basic health services (malaria, deforming, eye infections) in five public dispensaries in Marsabit and Moyale districts (Schelling et al. 2008).

Other NGOs, such as Merlin and Oxfam in Turkana, trained “village patient helpers” and “traditional birthing helpers”, to respond to the health needs of nomadic communities and provide health education and referral to the nearest health facility (Cohen 2005). In 2013, the Baringo county government (Rift valley region) in collaboration with the Ministry of Foreign Affairs of Denmark introduced the nomadic clinics. Mobile health facilities provided health services to extend health coverage in the most remote areas (Ministry of Foreign Affairs 2017). Overall, the availability of documents with information about specific

programs and interventions for the nomadic population is scarce or outdated. Which creates challenges for data interpretation and prevents a complete understanding of the situation.

In Ethiopia, some official documents by the FMOH evaluated the number and distribution of health infrastructure in the country. A decade after the implementation of the HSDP-I in 1997, the number of health facilities grew significantly. The health centres doubled every three years, the health posts from 76 in 1996 rise up to 4211 in 2005, and the hospitals increased of 50% in 2005 from 87 in 1996 (FMOH 2005). In 2008, the FMOH published a document showing the distribution of health facilities by region, in relation to the 2007 Ethiopian Financial Year (EFY) (Table 4). The same document provides information about the availability of water in the health facility and the presence of Basic and Comprehensive Emergency Obstetric and Neonatal Care (BEmONC and CEmONC). It showed the disparity between pastoralist regions (Afar, Oromia, Somali and SNNPR) and the other regions (International Fund for Agricultural Development 2016). The below table 4, illustrates that 14% of facilities offering BEmONC are in non-pastoralist regions, and only 6% provided the service in nomadic regions. Similar situation for CEmONC services: 6% in the non-pastoralist region and only half in nomadic areas. In terms of water supply, in the regions predominantly occupied by pastoralists, only 44% of hospitals and health centres have water, compared to 79% in the other regions (Table 4).

Table 4: Public Health facility to population ratio by region (FMOH 2008)

Regions	Total Population	Functional Health Center	Functional Hospital	Functional Health Post	Total functional health facilities	HF providing BEmONC	HF providing CEmONC	% HF offering BEmONC	% HF offering CEmONC	Water	% of Hospital and Health Centre with Water
Tigray	5,055,999	202	15	712	929	201	91	21.6	9.8	204	94.0
Afar	1,723,007	84	6	396	486	29	13	6.0	2.7	39	43.3
Amhara	20,399,004	834	42	3,336	4212	534	172	12.7	4.1	680	77.6
Oromia	33,691,991	1,320	53	6,519	7892	409	152	5.2	1.9	474	34.5
Somali	5,452,994	204	9	1,062	1275	14	5	1.1	0.4	57	26.8
Benishangul Gumuz	1,005,001	37	2	399	438	26	19	5.9	4.3	39	100.0
SNNPR	18,276,012	726	41	3,842	4609	428	324	9.3	7.0	507	66.1
Gambella	409,002	29	1	118	148	1	2	0.7	1.4	4	13.3
Harari	232,000	8	7	31	46	9	9	19.6	19.6	14	93.3
Addis Ababa	3,273,001	88	11	/	99	55	47	55.6	47.5	69	69.7
Dire Dawa	440,000	15	2	32	49	18	14	36.7	28.6	17	100.0
National	90,076,012	3,547	189	16,447	20183	1724	696	8.5	3.4	2104	56.3

This demonstrates that, although the number of functional health facilities is higher in the nomadic regions than in non-nomadic regions (71% and 29% respectively) it is worth considering the services offered, the geographical distribution, the presence of human resources (Table 5), and the availability of medical supply. However, some of these data are not accessible, thus creating further challenges for a complete understanding of the situation.

The study by Wamai (2009, p.280) shows a significant difference in health facilities (hospitals, health centres, health posts) compared to the document by FMOH (2008, p. 55). In the former document, the total

health facilities were 10,738 (Annex 5) compared to the double in the figures of table 4. Also, the number of facilities in the nomadic regions is halved (Wamai 2009) compared to the FMoH document (Table 4). Both documents refer to the year 2007, the former to the 2005-2010 Ethiopia HSDP-III and the latter to the EFY 2007. However, these datasets were not accessible to verify the quality and reliability of the data.

The 2014 Service Provision Assessment plus Census report, indicates an increase of 2.25% in hospitals and health centres since 2008, with Oromia region having the highest percentage of facilities (37%) followed by Amhara and SNNPR, 24 % and 20% respectively (FMoH 2014) (Annex 6).

Table 5: Density of public sector health professionals per 10,000 population by Regions (FMoH 2008)

Regions	Population	Total Health workers	
		Number	Density per 10000
Tigray	5,055,999	5044	9.98
Afar	1,723,007	760	4.41
Amhara	20,399,004	11376	5.58
Oromia	33,691,991	18808	5.58
Somali	5,452,994	4009	7.35
Benishangul Gumuz	1,005,001	1048	10.43
SNNPR	18,276,012	12404	6.79
Gambella	409,002	459	11.22
Harari	232,000	515	22.20
Addis Ababa	3,273,001	4336	13.25
Dire Dawa	440,000	514	11.68
National	90,076,012	59273	6.58

During the HSDP-III (2008/2009) the Pastoralist Health Promotion and Disease Prevention Directorate were established, focusing the attention on the health needs of the nomadic population. The pastoralist health services included 16 HEPs translated into the local language. These services aimed to deliver health and hygiene education, disease prevention and some curative health services at the community level. Although the nomadic regions detain 67% of HEWs compared to the other regions (FMoH 2009), there is not sufficient literature to measure the effectiveness of this program among the nomadic community. According to a KI “HEWs are supposed to be female from the community, but due to the peculiarity of the Afar community (women are not educated), men are also engaged in this program”. The same KI states “There are many challenges in this program: turnover is very higher, there is frustration among HEWs because they cannot do as much as they would. This is due to the mobile nature of the community, as well as the health-seeking behaviours of the community are different from the settled ones” (KI 13 June 2019).

NGOs implemented other programs. For instance, in the Somali region, Médecins Sans Frontières (MSF) provides, since 2007, essential health services to 17 remote areas in the Doolo zone (Médecins Sans

Frontières 2019). Since 1960, AMREF is providing healthcare in Afar, Oromia and SNNPR regions in collaboration with the Ethiopian FMOH. Nowadays AMREF has eight projects in the Afar region, mostly on sexual and reproductive health and MCH, as well as immunization for children under five years old. It also builds a maternity waiting room and organizes training for health workers and HEWs. In addition to this, AMREF provides medical equipment, solar systems for electricity and water systems (KI 13 June 2019). Since few years AMREF established a partnership with Philips, to provide more accessible services where nomadic populations live. It introduced a set of backpacks with basic treatment, laboratory equipment and ultrasound, for the health workers to provide MCH in remote areas. (KI 13 June 2019).

Government and aid agencies aim to deliver health service for the nomadic population. However, on some occasions - when the government cannot deliver health services - humanitarian agencies take over this role, which can reflect the weak national political will and lack of prioritization for pastoralists. Having thus a negative impact on their health and increasing the marginalization gap and discrimination (Reidy 2010a).

In both countries, the situation regarding availability of structure appears to be similar: a high or equal number of available health facilities in nomadic areas 64% in Ethiopia (FMOH 2014) and 45.2% in Kenya (MoHK 2014) compared to non-nomadic areas 36% and 54% respectively. Despite the availability of structure, there is evidence about the uneven distribution of these facilities, mostly located in urban areas. Overall, health facilities and specific programs trying to provide services for pastoralists are available in these regions. However, availability cannot be considered as a single factor, but need more context for better interpretation. ☐

3.2. Accessibility

Accessibility to health facilities is considered as the geographical distance from the population to the facilities. It explores how the mobility of pastoralist impact the distance, thus influencing their access to healthcare. As mentioned by Noor et al. (2009 p. 5), over the period 2003-2008 in Kenya, the population within 5 kilometres from the health facilities (benchmark set by the MoH) increased of 25.3% (Noor et al. 2009). Despite that, the improvement was unequal across the provinces (Figure 6). The North Eastern province had the highest percentage increase in public health facilities (68%). However, only 29% of the population was within the radius of 5 kilometres distance (Table 2 and Figure 7). Overall about 4 million people were not within the radius of 5 kilometres. Among those, more than 3 million (83%) are living in the North-Eastern, Eastern and Rift Valley provinces, areas predominantly inhabited by pastoralist (Table 2 and Figure 7) (Noor et al. 2009).

Figure 7 Province maps of Kenya showing: A. areas in 2003 within 5 km of geographic access to public health facilities; **B.** areas in 2008 within 5 km of geographic access to public health facilities; **C.** percentage increase in population within 5 km of a public health facility from 2003 to 2008; **D.** number of people in 2008 that were outside the 5 km radius to public health facilities (Noor et al. 2009)

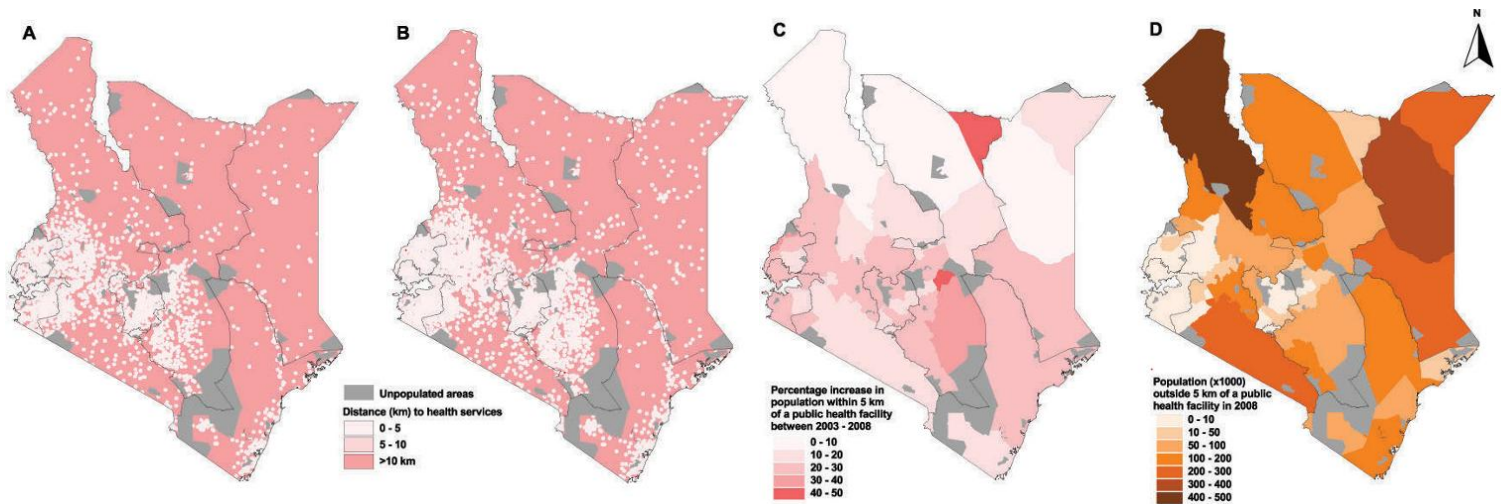


Figure 7 C shows an overall increase of 10%-40% in population within 5 kilometres of a health facility in the central and southern part of the country. However, in most of the northern part of the country (Turkana county, Eastern and North Eastern regions) less than 10% of the population was within the benchmark. Furthermore, between 100,000 to 500,000 people outside the 5 kilometres radius live in pastoralist areas in the north of the country (Figure 7 D) (Noor et al. 2009).

In 2007, a study was conducted among Turkana pastoralists in Kenya, to evaluate the access to ANC of 760 women. The qualitative analysis of the study demonstrated that high walking distance and lack of capacity, such as infrastructure and health workers, were limiting their access to healthcare. Therefore, preferring the TBA due to the proximity to the community (Jillo et al., 2015).

In 2010 the NGO Merlin carried out a Knowledge Attitude Practice (KAP) survey, to find that only 6.5% of the Turkana population lived in the urban areas (Reidy 2010b). It also showed that 71% of people present at the health facility during the survey lived within 5 kilometres from the health facilities, spending less than an hour journey. While only 3% lived 20 kilometres away and 5% spent more than three hours travel. Showing that, the population living 20 or more kilometres far from the health facilities were less represented in the study. This because the distance prevented them from accessing the health services (Reidy 2010b). However, this survey did not compare the results with the national figure, creating some challenges for comparison and interpretation.

Another qualitative study conducted between 2013 and 2014, in two counties of the Rift Valley province (Laikipia and Samburu), showed that men and women identified the long-distance as the primary factor for women to deliver at home. Other factors include poor road conditions, lack of

timely available transportation and the high cost related to it (Caulfield et al. 2016). For these reasons, women preferred to deliver at home assisted by a TBA, rather than walk for hours or days in pain risking to deliver along the road.

Paolo Marchi (2010 p. 41), underlined similar challenges for the Turkana pastoralist community. Only a few roads accessible, the nomadic settlements away from the main road and surrounded by rivers, made the passage almost impossible during the raining season, which limited their access to health facilities (Marchi 2010). Also, among the Masaai nomadic pastoralist in Kenya, the mobility of women and children was identified as the main factor for under vaccination of children (Pertet et al. 2018). The study shows: 57.8% of children were vaccinated by the age of two years, of whom only 2% received all the vaccination according to the calendar. The mobility factor was a significant variable associated with lower vaccination coverage accounting for 40% (Annex 7) (Pertet et al. 2018).

The Ethiopia health indicator report of 2008 (FMoH 2008), showed a lower average of outpatient department attendance per capita in nomadic regions compared to the other regions: 0.31 and 0.88, respectively. This discrepancy in service coverage can be due to a lack of access to the health facilities. As shown in a cross-sectional household survey conducted in the Afar region between 2013 and 2014 (Dubale & Mariam 2011). The study focused on evaluating the impact of mobility and health service utilization among pastoralists. It showed that proportionally, the settled population had higher health services utilization compared to the pastoralists, 53.9% and 46.1%, respectively (Table 6). The average utilization rate per year was of 6 per 100 people in the settled villages and 1 per 100 people in the nomadic communities. This disparity in services utilization is directly related to the long distance from the health facilities since the nomadic group were located farther than the settled. The qualitative data demonstrated that being part of a settled community was considered an important factor to enable access to health facilities, whereas being mobile pastoralists had a negative impact (Dubale & Mariam 2011).

Table 6: Comparison of modern health care utilization between settled and mobile communities, Afar Region, Ethiopia (December 2004) N=1766

Variables	Category	Modern health care non users	Modern health care users	Crude odds ratio 95% CI	Adjusted odds ratio 95% CI
Mobility	Settled	416	487	1.37 (1.13,1.65)***	1.38 (1.14, 1.67)***
	Mobile	465	398	1	1

* P<0.1 ** P<0.05 *** P<0.01

The findings of another qualitative study conducted in the Afar region in 2015 are in line with the above study. The majority of the respondents recognized the distance to the health facility and the lack of transportation as the main limitations for accessing the service (Ibrhim et al. 2018). In the

Somali region, the situation is very similar. Over 385 women, 34.5% visited the health facility during the pregnancy, and only 9.1% had close access to maternal health services (Nejimu & Ahmed 2016).

Another factor that can limit accessibility is the political instability due to the long-lasting conflict between pastoralists and settled population. This issue is explained by three variables that fuel this hate-relationship among those two communities. Firstly, the settled population own the health structures and are built to respond to their needs (Amzat & Razum 2018). Secondly, when pastoralists visit the clinic, some health workers in the community, look suspiciously at them. Often they refuse to treat them or increase the price (KI 17 June 2019). Thirdly, as stated by the same KI "Nurses do not accept them (nomads). They do not give antibiotics to the nomads, who destroy their crops and drink their water. There is a sentiment of hate towards nomads" (KI 17 June 2019). Due to these factors, nomadic groups are reluctant to visit the health facility in the village. They are afraid of being rejected, with enormous consequences on the time and money spent on travelling without receiving any treatment. ☒

The above studies show that access to health services is limited for people living at a considerable distance from the facilities. Also, pastoral mobility patterns can increase this distance and exclude them from accessing healthcare.

3.3. Affordability

Affordability is the ability to pay the service and the related costs. It evaluates how the lifestyle of pastoralist can affect their financial access to healthcare. Pastoralists are perceived as a wealthy community because they own cattle (Montavon et al. 2013). They are poor people, with limited financial access to health services. They need to weigh up expenditures on health services against expenditures on other goods, such as food and clothes, to prevent and reduce out-of-pocket expenditure (Duba, Mur-Veeman, & Van Raak 2001). Pastoralists' out-of-pocket expenditure depends on their need for health services. In the absence of a financial protection system - such as insurance options based on livestock instead of cash - the expenses can be very high and lead to catastrophic household expenditure (Reidy 2010b). This situation means that they have to weight their priority decisions regarding access to healthcare.

Overall, pastoralist communities in Sub-Saharan Africa depend on their livestock, and more than 50% of their income derives from it (Amzat & Razum 2018). The livestock is a vital asset for nomadic families, as it provides food, clothing, financial protection and social identity. However, different factors - such as availability of water and grass, drought and zoonotic disease - can influence the production and the yearly income of the family. To a certain extent, also the access to social services is compromised. Owning cattle allows the family to sustain the household, to create alliance and kinship with other families and to have products to trade and bartering to be able to afford other services.

"If the family is on the boat in the middle of the ocean, someone falls ill, and the boat is also broken and needs mending [...]. Would you use your resources to save the sick person or to mend the boat? The herd is the boat, [...] they cannot stop for a second to mend the boat. So to the extent which this condition is essential, it is painful but logical to give priority to the boat. The root of all of it is the fact that if the herd fails, the family die or the family die socially" (KI 28 May 2019)

It is important to always consider and contextualize the decision-making process within nomadic families. It helps to understand better how they prioritize their choices, also in term of healthcare. Generally, nomadic families do not have ready-to-use cash, and its availability depends on the cattle. However, the availability of cattle does not necessarily imply having ready-to-use money (Duba, Mur-Veeman, & Van Raak 2001). For instance, in the Turkana communities in Kenya, selling animals to pay healthcare services is not a simple choice. The herd is considered more valuable than cash since it sustains the family for a long period compared to money. Therefore, the decision to sell an animal takes time and needs the presence of different community people. Despite that, high direct costs of the health services - which depending on providers can vary from 30 to 200 shilling for adults and 10 to 100 for children - often make the service unaffordable (Reidy 2010b). Couple to that, other indirect costs, such as for transportation, prevent women from using the service in Samburu county (Caulfield et al. 2016).

A peculiar characteristic of the Turkana communities in Kenya is the absence of a family economy. The economy is separate. The wives sell handcraft, charcoal and other animal products, and own their income separately from the husband (KI 24 May 2019). However, women have to work a lot to raise enough money to visit a health facility (Reidy 2010b). In some situation, there is also a form of abuse and the husband tries to own the wife money (KI 24 May 2019), thus creating economic dependency. In some occasions, the payment is required in goods rather than cash. In Turkana, health services are often free of charge for children and pregnant women. However, the rest of the population is obliged to barter cattle or handicraft items as a form of payment, which can also be a purpose to avoid the misuse of treatment received. When the family has to exchange their goods for healthcare, makes them value more the drugs received (Cardós García et al. 2016).

In Ethiopia, the situation is very similar, in emergencies, the money might not be available, and the decision to sell the cattle is not immediate. Among Afar pastoralists having economic problems was one of the factors preventing access to modern health services. While owning cattle and having a strong connection among families was considered as having a positive impact on access to healthcare. Thus, 65.8% of the costs related to health services were covered by close family members (Dubale & Mariam 2011). In another study conducted in the same region, women argued that although the free MCH

services, the family still struggle to afford the indirect costs: transportation, food and drugs (Ibrahim et al. 2018). A similar situation was among pastoralist in the Somali region. Pregnant women preferred to deliver at home with a TBA, since unable to afford the health care fees and the costs of 500 birr (around 15 \$) to rent a motorbike (Nejimu & Ahmed 2016).

Overall, the financial capability of pastoralists to afford the health services and the related indirect costs is a fundamental factor influencing access to healthcare. However, in the above example, the preference for TBAs is also correlated with other cultural and personal perceptions. This shows that other aspects need further consideration.

3.4. Adequacy

Adequacy is the capacity to respond to the needs of the population, thus evaluating whether the service is appropriate for nomadic pastoralists to access it. This capacity is given by the possibility to quantify the population in need, and by allocating resources most efficiently and equitably. However, it is very challenging to include nomadic communities in the national census. Sometimes, these challenges hide political, economic and other reasons. For instance, in Ethiopia, years of civil wars among pastoralists in the Somali and Oromia regions excluded them from the census until 1994 and 2007. However, although the government claimed the universality of the 2007 census, there was a lack of evidence about the number of pastoralists in Afar and Somali regions (Randall 2015). In Kenya, census data is available for pastoralists. However, it categorises them by ethnicity and not by their mobility or lifestyle. Thus making it impossible to evaluate the exact number of pastoralists, since some can abandon the pastoralist life (Randall 2015). Considering their invisibility in the census report - used to plan targeted intervention - some doubts can emerge regarding the national intent to offer well-adapted interventions for nomadic (Randall 2015). Missing disaggregate data of pastoralist can translate in the lack of available and adequate health services for this population.

Sheik-Mohamed and Velema (1999, p. 695) identified the health care system as favouring the settled population, leaving nomadic communities facing significant cultural, political and economic barriers. Different programs tried to address the health needs of the nomadic population, such as static clinics strategically placed along migratory routes or mobile clinics following their movement. In Ethiopia, MSF implemented a tuberculosis control strategy: traditional huts (Manyatta) along the migration route where patients received the treatment. This approach was successfully repeated in Turkana (Kenya) for anti-helminths drug distribution (Zinsstag et al. 2006). However, this intervention proved to be costly and logistically challenging and thus, rarely sustainable (Schelling et al. 2008). AMREF program in Kenya included mobile clinic, with a medical team travelling to the most remote areas and treating people at their home (Cardós García et al. 2016). This method aimed at filling the geographical gap from the health facility to the nomadic population. However, it did not consider the preferences in regards to traditional practices.

"Access depends on both side (aid agency and pastoralists community) it does not depend only on one side, and it is not just a matter of extending the services but also a matter of adapting it, the adaptations are part of the extension" (KI 24 May 2019). [?](#)

Among the Masaai community, one of the factors hindering institutional delivery was the absence of the maternity room close to the facility (Brady et al. 2008). This was also the case in Ethiopia, were to increase the access, AMREF built maternity waiting room for women to stay before and after the delivery (KI 13 June 2019). Another aspect identified by Kenyan pastoralist women was the low quality of services offered by SBA and their lack of respect (Caulfield et al. 2016). The absence of this service can be among the reasons for women to prefer delivering at home, assisted by a TBA.

Healthcare services delivery in rural areas does not offer outreach programs. This is due to bad road condition, costs, but also lack health workers and medical supply. All these factors impact the performance, the quality of the structure and the service delivered. In the Somali region, low quality of services and lack of respect and mistreatment from certain health providers was a barrier for the nomadic community (Nejimu & Ahmed 2016). The situation is similar among the Afar community, where respondents mentioned unfriendly MCH services and lack of competent midwives. This, coupled with the shortage of drugs and equipment, lack of privacy during labour and delivery, limited their access to healthcare (Ibrahim et al. 2018).

Health workers also underline a shortage of equipment. A nurse working in North Turkana mentioned that without electricity, many children were not vaccinated, and lack of water did not allow cleaning and hygiene procedures (Reidy 2010a). Pastoralists will usually visit the health facilities only if they heard about successful treatment stories among their networks. Otherwise geographical, economic and socio-cultural factors, as well mistrust and lack of confidence will prevent the access (Schelling et al. 2008).

It also occurs that in case of scarcity of drugs, nomadic people are the first to be excluded. This situation happens because they are not part of the settled community where the health facilities are located. Therefore, they would not spend their time and money to visit the health facility, considering the possibility of not receiving any treatment (Schelling et al. 2008). In other situations, the language barrier and the tendency to give less attention to the poor looking pastoralists creates reluctance among pastoralists in seeking formal healthcare (Duba et al. 2001; Amzat & Razum 2018). In the Afar community, the health workers are highlanders (from Addis-Abeba and other areas) and do not speak the same language (KI 13 June 2019). In the Turkana county, health workers wrote prescriptions that pastoralist women could not read or understand. Thus, once arrived home, they equally distributed the drugs among the family (KI 28 May 2019), see also (Reidy 2010b p. 13).

Although different programs tried to implement appropriate services for pastoralists, many external and internal challenges arise, putting a limitation in meeting the needs of pastoralists population.☐

3.5. Acceptability

Acceptability refers to the understanding of cultural and social beliefs and practices that are part of nomadic communities and influence their acceptance of modern healthcare services. In this paper “modern” health service refers to western medicine or treatment provided by healthcare providers.

The acceptance of “modern” health care among pastoralists changed throughout decades of programs and interventions willing to provide equitable access and address political, socio-economic and cultural barriers. Nowadays, nomadic communities are aware of the existence of western medicine. To the point that on some occasions, they use it along with the traditional medicine. Overall, both types of medicine co-exist, and there is not a clear-cut preference between the two (Reidy 2010). However, traditional and cultural practices of treating illness are widely consumed and deeply rooted in the pastoralist lifestyle. Nomadic communities perceive traditional medicine as respectful, sensitive and culturally appropriate. They strongly believe in it, although sometimes they consider other options and interventions. The cultural perception of health and disease always prevails, and it is widely accepted and preferred over modern medicine (Cardós García et al. 2016).

Due to their unique lifestyle and for practical reasons, nomadic population seek healthcare, which is most closed to their home and their culture. This is the traditional healer, the religious healer and the traditional birth attendant (Duba et al. 2001). Regardless of their knowledge of health, pastoralists have their explanatory model to define health and illness. This definition goes beyond the biomedical terminology and includes cultural and religious connotations. Turkana communities in Kenya perceive illness as caused by God (Ngidekesiney ka Akuj) or by witchcraft (Ngidekesiney ka ekapilan) and for both they refer to different religious healers (Ngimurok) depending on the illness. God is seen as the most powerful protector. Women would apply traditional white painting on sick children to attract the attention of God and its healing benefit. When the illness is due to the "bad eye" (witchcraft), the healer has to connect with the spirits to heal the person (Reidy 2010b).

Among the Masaai population, it is crucial to have the approval and support of the community elders in regards to traditional medicine (Brady et al. 2008). This seems to be similar among Afar in Ethiopia "in the community there are two influential people: the clan leader and the religious leader and they have to be involved (in the intervention process) to create acceptance by the community" (KI 13 June 2019). Usually, the clan and religious leader decide on the context: what should be respected and accepted by the whole community. They are also consulted when a family member needs a referral to a faraway hospital, whereas for nearby transfer, the decision is taken within the family (KI 13 June 2019). ☐

Generally, religious healer is consulted before using modern medicine and also when modern medicine fails or does not give immediate benefit (Harragin 1992). The treatment is usually based on herbal remedies, prayers and other rituals, such as the sacrifice of cattle and dances (Schelling et al. 2008). A survey conducted in some health facilities of the Turkana county shows that more than a quarter of participants (26%) used herbal treatment before visiting the health facility (Reidy 2010a). Although considered as influential and powerful members of the community, with a potential role to play in services program, there is missing evidence about a possible collaboration with the health system.

For all nomadic groups, TBAs are highly respected members of the community, which is due to their ability in assisting women during the delivery and provide comfort and support them throughout the labour. They are perceived as caring and tactful in their regards compared to the skilled birth attendants (SBA) at the hospital (Caulfield et al. 2016). In the Afar Muslim community in north-eastern Ethiopia, the women refuse to deliver in the health facility because are afraid to be assisted by a male doctor, which is against their culture and religion (Yousuf et al. 2011).

The gender division of roles varies among different nomadic cultures and traditions. Usually, women have always a degree of ownership over the household, the kitchen utensils, some small cattle, and milk production. While men are responsible for the cattle, family decisions in regards to the economy, health, cultural practices and other aspects (Schelling et al. 2008). However, this distinction can also differ among religions. For instance, among the Muslim Afar of Ethiopia, "gender inequality is very marked: women usually have no voice, culturally and traditionally. The male is dominant in almost all the decision areas" (KI 13 June 2019). This is similar to the situation among the Muslim Somali, where the women need permission from the husband or relatives to deliver in a health facility (Nejimu & Ahmed 2016). Contrarily, in the Turkana of Kenya, gender relation is rather egalitarian. Women have some degree of choice in regards to family health and domestic issues (Reidy 2010b p. 23).

"Men are not allowed socially to prepare tea, as it would ridicule them in front of all community, now if you do not find anyone that boils it for you, you stay without tea" (KI 24 May 2019). ☐

However, another article about Turkana underlines that women are not entitled to make decisions about their health, as this is the responsibility of the men (Cardós García et al. 2016). It is appropriate to bear in mind the possible limitation and ditches of the literature about pastoralists. Nomadic communities have certain degrees of freedom that are not found in settlers (KI 24 May 2019). For instance: "the fact that the husband is away for a very long time, and the women have to go to fetch water, this might take eight hours of march on their own, and nobody controls them when they are away" (KI 24 May 2019). Thus, nobody prevents them from looking for healthcare at the health facility, when accessible.

Among nomadic communities, there are significant differences to consider regarding gender inequalities. However, it is fundamental to not make any assumption about the direct relationship between the degree of traditionalism and the bad condition of women, since the two things are entirely disconnected (KI 24 May 2019). This does not mean that women are always treated respectfully and are included in the decision process. Instead, they detain a specific influence that is crucial for the equilibrium of the family and community.

Ethnographic research conducted in the Somali region in Ethiopia (2007-2009) illustrates how a pluralistic approach to healthcare emerged after protracted humanitarian aid interventions. In this region, Somali people acknowledged the benefit of antibiotics, and some desire to have access to better clinical health (Carruth 2014). Traditional healers included pharmaceutical drugs in their treatment. As a result, traditional practices, such as the use of camel milk to combat diarrhea, were used along with visiting hospitals to cure infertility. Overall, humanitarian programs improved local knowledge and understanding of modern medicine. However, they also create significant gaps in service delivery once the operation was over.

Education is crucial to increase overall awareness and acceptance, but often nomadic population lack this service. In Ethiopia, the primary school enrolment rates are 13.8% and 15.1% for Afar and Somali, respectively, with a national average of 64.4% (Reidy 2010a). Low education on health-related issues can impact the choice to visit health facilities, and the recognition of danger signs. Many studies identify education as a barrier to access to MCH. In Somali and Afar regions, lack of knowledge and awareness are among the significant factors preventing institutional delivery (Dubale & Mariam 2011; Nejimu & Ahmed 2016). However, a study shows that Afar women are eager to receive health education from health workers, with an impact on their access to health facilities (Yousuf et al. 2011). In Kenya, education has a crucial role in making informed decisions about pregnancy. It also encourages women and families to go to the hospital (Caulfield et al. 2016). Likewise, hygiene and sanitation problems are due to insufficient information and knowledge. Among the Masaai communities, the implementation of hygiene education activities decreased the microbial load (Brady et al. 2008) substantially.

The biomedical knowledge of traditional healers and TBAs is also very poor, and it is often based on religious and cultural traditions. For instance, a traditional healer in Turkana mixed water and salt to stop the bleeding during labour or treated high blood pressure by drinking goat blood (Reidy 2010a). Nevertheless, traditional healers are often eager to receive new knowledge and adapt their own. Some NGOs in Kenya and Ethiopia organized training for TBA and traditional healer about early recognition of danger signs and referral to health facility (Reidy 2010a).

Another important factor to be considered is the human-animal culture among pastoralist. This strong attachment with the cattle is their most valuable resource. Having healthy cattle is crucial for the nomadic

population, and sometimes, it is prioritised over human health (Amzat & Razum 2018). In the Turkana community, for instance, a woman refused to pay 20 shillings to go to the health facility to prioritise an injection of 800 shillings for a sick animal (Reidy 2010b). It is important to understand the context and realise that if that animal would die the family would struggle as well to survive

Overall, many factors influence the acceptability of health services. Cultural aspects and traditions are often at the base for refusing modern healthcare, therefore it is essential to contextualize the situation and find a possibility for communication integration and adaptation of the existing programs.

4. Discussion

Throughout an in-depth literature review, this paper focuses on the factors influencing access to healthcare for nomadic pastoralist in Kenya and Ethiopia. The findings indicate that multiple variables need to be acknowledged to understand the problem.

The findings suggest that the most critical factor limiting availability is the uneven distribution of health structures, mainly concentrated in urban areas. This unequal distribution of health structures implies geographical access. Since pastoralists live in remote areas, they have to walk greater distances or find transportation to reach the health structure. Other factors underlined in the findings that limit affordability are the inability to pay the health services and the related indirect costs. The pastoralists' dependency on the cattle - as the primary source of household revenues - influences affordability and thus the availability of ready-to-use cash. This study shows that unequipped health facilities, mistrust and unfriendly service impact the adequacy of service. Finally, many are the factors limiting acceptability. The most striking are: the strong cultural bond and believe in traditional medicine; the respect for TBAs and religious leaders; the traditional gender roles, and the lack of knowledge and education. All these dimensions interact and influence pastoralist communities to make an informed choice about their healthcare needs.

According to the findings, the data about the number of structures is not entirely consistent throughout the used studies, giving an incomplete picture for analysis and interpretation. However, regarding the availability of health structures in Kenya and Ethiopia, it is a problem when taking into account its uneven distribution between urban and rural areas. By considering the framework from a broader perspective, it is possible to identify some correlation between the livelihood assets and accessibility of healthcare. While following mobile patterns, the absence of physical capital or means of transport is a challenge for pastoralists wanting to reach health facilities. As a result, NGOs and governments implement tailored programs to improve pastoralists access to healthcare. This was also the case in Tibet, locating fixed health centres according to seasonal pastoralist movements (Zinsstag et al. 2006). However, these programs run by NGOs often last for a limited period, due to financial and operational constraints, thus creating gaps in service delivery and continuity of care.

In the framework used in this study, affordability is among the dimensions influencing access to healthcare. As underlined in the results, pastoralists face significant financial restrictions in affording the direct and indirect costs of the health service. This is mainly due to the unavailability of ready-to-use cash since the cattle represent their main financial capital. The cattle are also an important livelihood asset in terms of natural capital, being the foundation for their living and providing products that can be sold/bartered in the market.

The animal centred culture of pastoralist groups has different effects on access to healthcare. Firstly, cattle can destroy the crops of settled families while approaching the villages. This has been found to fuel the ethnic conflict between settled and pastoralist, as shown between the Banyamulenge (pastoralists) and the Babembe (farmer) in the Democratic Republic of the Congo (Brabant & Nzweve 2013). This situation can lead to the exclusion and discrimination of pastoralists from health services. In turn, this conflict can also expand pastoralists movements across international borders, with the potential risk of transboundary disease and decreased access to healthcare, as showed in Nigeria with the poliovirus (Bawa et al. 2018). The second effect of animal husbandry is its influence on the timeliness in the decision to sell an animal, which might delay the arrival at the health facility. Finally, the need for healthy cattle for family sustain and as a source of natural capital, often influence decision-making, and as a result, animal health prevails on human health.

However, it is important to not consider the latter effect as a cultural limitation, instead, as an entry point to provide accessible services to pastoralists' community. This approach, named ONE health tries to integrate animal health to human health. Such programs have been implemented in Chad, with a joint vaccination campaign improving vaccination coverage and reducing 15% of the costs compared with running two separate campaigns (Zinsstag et al. 2006). This approach can also have an impact on acceptability. Implementing a program that understands and integrates animal and human needs also increases acceptance among pastoralists. Families are more willing to pay for transportation and accept the long-distance if both cattle and children receive treatment.

The findings illustrate that in some pastoralist groups, women have a separate economy, which can also impact the affordability of healthcare. In some occasions and under certain conditions - for instance, when fetching water - having separate income allows women to be more independent and possibly access health facilities. This demonstrates that money is not the only aspect allowing direct access to healthcare.

The gender division of roles often outweighs affordability. In the nomadic communities in the study, gender disparity is well defined, and influences access to healthcare. Women, although having a certain degree of responsibility, are sometimes still depending on their husband. Likewise in Sudan, the husband still has to approve the visit the health facility (El Shiekh & van der Kwaak 2015). However, in the literature of nomadic pastoralists, there is no clear-cut in regards to women independency, which can be due to the influence of several cultural and traditional factors. As well, to the tendency of emphasizing gender inequality without considering the practical and daily life implications.

On a global perspective, the effect of climate change on pastoralists life can indirectly influence their affordability to healthcare. Its environmental impact can increase natural disasters, such as droughts, with consequences on the health of pastoralists. During drought, the availability of water and grassland is very

limited or even missing. Such conditions push animals to their limit, with substantial losses and consequences on goods production. This would lead to a collapse of the main household asset, potentially resulting in famine and consequences to the health of the pastoralists. Cattle losses also decrease the family's degree of bartering or selling, effecting the household economy and sustainability, and also influencing their decision on accessing healthcare services. Ultimately, drought can also push pastoralists towards faraway lands or crossing borders, which in turn can fuel conflicts with other communities and affect their access to healthcare.

In the framework, adequacy is understood as the way “modern” health facilities respond to the needs of nomadic populations in terms of appropriateness of care. According to the findings, the services available are not capable of responding to pastoralists' needs, because of the lack of pastoralists' data does not allow the designing and provision of an adequate healthcare program. This translates into poorly equipped facilities, in terms of medical supply, infrastructure and human resources. Under such unfavourable conditions, pastoralists are reluctant to visit the facilities.

Another aggravating factor within the adequacy dimension, is their exclusion from the medical treatment and lack of respect by the health workers and community, which marginalize pastoralists to value the local population. Analysing this situation at the local level, it can increase the hate-relationship between nomads and settled, with the related consequences on access. As well, it can have repercussion at the country level. Since the pastoralists perceive the government as being unable to respond to their needs, this raises mistrust and low confidence in the national system. This factor was found also among the Bedouin in Lebanon, experiencing resistance from the national health system (Chatty, Mansour, & Yassin 2013).

Acceptability is among the cornerstone for an appropriate and accessible service. However, although important, the evidence shows that pastoralists do not welcome the services provided. This is mainly due to their distinct perception of health and illness, which leads to a different type of medicine. A precise distinction is also present in nomadic communities in Mali, where the classification of the diseases determine the treatment (Montavon et al. 2013). The framework also identifies human capital with traditional perceptions and beliefs, as an important asset allowing pastoralists to seek treatment. Overall, this knowledge is less related to a formal education, which is lacking among pastoralist due to its limited provision. Instead, pastoralists use their traditional and cultural knowledge to identify danger signs and seek treatment. Hence, the lack of formal education and biomedical knowledge does not always mean a delay in accessing modern treatment but accessing what for them it is acceptable and close to their culture. This is to demonstrate that providing biomedical knowledge is not directly related to the use of “modern” medicine.

However, lack of biomedical knowledge among TBAs, traditional and religious leaders, can have possible consequences on health outcomes or delay more appropriate treatment. Despite their poor education, pastoralists are willing to receive knowledge and health education, as well to integrate “modern” medicine along with traditional medicine. As shown in the findings, this can increase acceptance but does not directly entail access, since other barriers mentioned above can prevent them from accessing the health facility. According to the findings, different programs provide training to pastoralist health staff. However, often these programs measure their success based on the one-time training, failing to consider the long term needs for supervision and monitoring efficacy. In general, the literature lacks evidence about the efficiency and sustainability of these activities.

Emerging from the findings, another striking factor influencing acceptability is related to the trust and respect for the influential members of the community. The traditional and religious healer represents the first contact when accessing care, but also when looking for guidance and advice. These connections build the community social capital, as illustrated in the livelihood assets of the framework, with an important role in the path to seeking healthcare. The fact that healthcare providers struggle to understand the influence of traditional healers on pastoralists life can limit service acceptance. Resulting in a service unable to acknowledge and integrate two different cultures, with consequences on accessibility and service utilization. However, considering the health providers’ perspective, this integration of traditional and modern medicines can go against the organizations’ vision and strategy. As well, the health workers might refuse to collaborate with traditional healers because it is against modern biomedical practices, or because there are tribal and cultural prejudices.

Contrarily, the situation appears slightly different from TBAs. The findings shows the benefit of providing training and collaboration with these trusted and respected members of society. Based on this evidence, it is possible to think that a partnership with traditional and religious leaders can have positive effects on the acceptability of pastoralists in regards to “modern” healthcare services. However, many doubts and ethical dilemmas can arise from this collaboration, for instance, about the distribution and correct use of the delivery kit to TBA.²

Finally, at a global perspective, the marginalisation and discrimination of pastoralists can also translate into human rights violation. Although everyone has the right to equal treatment and to access appropriate services regardless of their religion, ethnicity, culture and socio-political ideology, this seems yet not to be the case for pastoralists. In fact, according to governments reports, pastoralists are somehow included within the national policies. However, there is a lack of specific data and evidence on the effectiveness of these programs. The situation at the global level is even more unclear, although the latest SDGs document mentions the inclusion of vulnerable groups there is no evidence about a specific strategy to address pastoralists needs.

Overall, different factors influence access to healthcare for nomadic groups in Kenya and Ethiopia, and each one impacts access to healthcare differently. There are also multiple correlations among the factors that cannot be interpreted alone. Availability of health structure is not directly related to visiting the facilities. It also depends on the geographical access, the costs and the perception and acceptance of the services. Geographical access is strongly related to affordability - it is worth to spend the money - and appreciation of the service. For pastoralist communities, acceptance of the service is at the base of access, and it is considered as the main factor influencing all the others. If the health provider is not welcoming, all the process of access can be damaged. These factors are also influenced by external policies and processes, which although the impact on access to healthcare, were only briefly addressed.

The framework used to analyse the findings and guide the discussion includes components that link with each other and that in different ways, influence the access. The livelihood assets are included in the five dimensions of access. The cattle as the foundation for their living represents the natural capital. The cash, derived from selling cattle to afford the services, serve as the financial capital. Influential members of the community and family kinship providing support to each other, represent the social capital. The absence of mean of transport and geographical distance indicates the physical capital. Personal and traditional knowledge of health and related matters represent the human capital.

In the framework, these assets are identified as the foundation to recognise the illness and start seeking for treatment. However, this study does not analyse and distinguish between the prior existence of livelihood assets and the determinants arising after seeking the treatment, as presented in the framework. Instead, it has tried to integrate the livelihood assets and consider how they can influence the five dimensions' of access.

For practical reasons, it was not possible to develop each aspect of the framework, thus putting a limit to its application. This framework includes the relevant concepts to analyse access to healthcare comprehensively. However, since the geographical mobility is a peculiar characteristic of pastoralists which, coupled with the animal-human relationship, have a significant influence on access, would have been more appropriate to consider those factors separately.

4.1. Study limitations

This study is based on a literature review of available scientific articles, grey literature and other resources. However, some of the literature was out of date, which limited the comparability of the data. It was also difficult to judge the quality and representivnees of some studies due to the small sample size and mismatching or missing data. For some results, it was difficult to find data providing the necessary evidence. It should also be considered the possibility of ditches in pastoralists literature due to the different interpretations. The possibility to interview a few key informants was crucial to this study since it added

different perspectives apart from the literature. However, due to difficulties in finding more people, the sample of people interviewed was not representative.

4.2. Recommendations to the Kenyan and Ethiopian Ministries of Health

4.2.1. Research

- According to the findings and discussion in Kenya and Ethiopia, there are only a few studies about the human-animal relationship. Therefore, further research is crucial to understand how this factor impact access to healthcare. The evidence from previous studies conducted in other countries should be considered as a stepping stone for further researches, and as an entry point for future interventions.

4.2.2. Policy and practice

- Recognizing the limited financial capacity to provide comprehensive service delivery, governments should consider other programs based on a specific disease or seasonality patterns. For example, a vaccination program before the dry season to prevent meningitis in Ethiopia considering its position in the meningitis belt. These programs can reduce the risk of some diseases among the nomadic population, thus decreasing the possibility of exporting it into other country or among the settled community.
- Emerging from this study is the influence of traditional medicine in the pastoralists' lives. This aspect, although mentioned in different studies, it is often not addressed and ignored. However, it is crucial to understand its effect on the health of pastoralist and identify windows for improvement. Integrate and value the "pastoralist health system" or traditional medicine in the existent structure, is an opportunity to improve access to healthcare. Build collaboration with traditional and religious healers, as well as combine non-harmful traditional practices to modern medicine, can increase acceptance and improve access to healthcare. Moreover, including them in the decision, planning, implementation and evaluation process, can promote ownership of the program, with an overall impact on access to healthcare.☒
- Considering the risk of international disease transmission, elaborate transboundary policies aiming to improve disease surveillance and pastoralists immunity throughout the implementation of ONE health approach can have a significant effect on reducing disease transmission. Based on the discussion, creating collaboration between veterinary and human health, with the community participation appears to be important also to guarantee acceptance and access to health services.

5. Conclusion

Different factors influence access to primary health care for pastoral nomadic communities. In this study, these factors were analysed within the five dimensions of access: Availability, Accessibility, Affordability, Adequacy and Acceptability. The most sensitive factor was acceptability of the service, which reduced access to healthcare. As well, geographical accessibility prevented pastoralists from accessing the health facilities. Finally, the human-animal relationship was another essential factor entailed in the different dimensions of access, with a significant impact.

Overall, the effect that one dimension has on another one is striking. It is a domino effect where one dimension cannot exist on its own and is in turn influenced by the presence or absence of the others. Also, from the study emerges that some factors are also recurrent among pastoralists of other countries, which allows the applicability of some intervention to other contexts and to learn lessons from other countries.

The recommendations focused on addressing specific factors that have a significant influence in the lives of the pastoralists and that if overcome, will improve the overall access to healthcare for pastoral nomadic communities.

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7. Annexes

7.1. Annex 1: Summary Key Informant table

s/n	Key Informant background	County of expertise	Date
1	Media	General pastoralist	24 May 2019
2	NGO worker	Ethiopia	13 June 2019
3	NGO worker	Ethiopia	13 June 2019
4	Academic	General pastoralist	17 June 2019
5	Former NGO and government worker	Kenya	04 July 2019

7.2. Annex 2: Topic Guide

General questions

1. What does nomadic pastoralist mean?
2. What are the differences among pastoralist communities worldwide?
3. What is the socio-political structure of the nomadic communities?
4. How it can influence the access/decision making to healthcare?

Availability

1. What health services/programs are available for pastoralist communities in the country and who runs it?
2. In your experience, have you seen many interventions that address both human and animal health (ONE health)?
3. How was impacting their access to healthcare

Accessibility

1. Considering their periodical movement how nomadic community have access to healthcare?
2. How much they have to walk to reach the nearest health facility?

Affordability

1. What are the economical barriers for nomadic population in accessing health care?
2. How do they afford health care?

Adequacy

1. Different humanitarian actors in the past have tried to provide healthcare for nomadic population, throughout different mobile intervention. Why do you think these populations still struggle in access healthcare?
2. Nomadic population are characterized by a particular lifestyle: animal centred, periodical movement, living in very harsh and remote conditions. Can you tell me how this influences their choice in relation to healthcare?

Acceptability

1. What is their concept of health?
2. Whom they visit when they are sick?
3. According to different studies, the main barriers to access to healthcare for nomadic population can be grouped under three main factors: geographical accessibility, financial affordability and socio-cultural influence. In your experience can you explain how socio-cultural tradition play a role and influence access to healthcare?
4. What is the role of the community leader and the extended family in the decision making?

7.3. Annex 3: Informed consent

Informed Consent Form

Introduction

Good morning/afternoon Madame/Sir, My name is Valeria Cattaneo. I am a student from the Royal Tropical Institute of Amsterdam. I am conducting a research study about the factors influencing the access to Primary Health Care of nomadic population in Ethiopia and Kenya and I believe that your personal contribution can help me to better understand the literature and contextualise the findings.

The information collected during this research is entirely private and anonymous. A number will be used to identify your paper and your name will not be mentioned anywhere.

Procedures for Interviews:

During the interview, some questions about your personal experiences in relation with the research objectives will be discussed more in details. If you do not wish to answer any of the questions during the interview, you may say so and the interviewer will move on to the next question.

The interview of about one hour will take place via Skype and will be tape-recorded. The tape will be kept for 3 months to allow its transcription and afterwards will be destroyed. The information recorded is confidential, and no one else except myself will have access to it.

Risks and Benefits

We are asking you to share with us some personal information, and you may feel uncomfortable talking about some of the topics. You do not have to feel obliged to answer if you feel the questions make you uncomfortable and you do not have to give us any reason.

Whom to contact

Do you have any questions that you would like to ask? If you wish to ask questions later, you may contact any of the following: name Valeria Cattaneo, telephone number 0039 348 1036 177, e-mail cattaneo.val@gmail.com

Certificate of Consent

I have been invited to participate in the research study about factors influencing the health care access of nomadic population in Ethiopia and Kenya.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study

Print Name of Participant _____

Signature of Participant _____

Date _____
Day/month/year

7.4. Annex 4: Distribution of health facilities in Kenya (MoH 2014)

County	Population 2013	No. of hospitals level 4-6	Hospitals per 100,000 population	No. of health centres and dispensaries (Levels 2-3)	Health centres and dispensaries per 100,000 population
Kenya	40,700,000	512	1.3	8,104	19.9
Baringo	593,840	6	1.0	182	30.6
Bomet	782,105	5	0.6	113	14.4
Bungoma	1,473,458	12	0.8	134	9.1
Busia	796,646	7	0.9	74	9.3
Elgeyo - Marakwet	396,663	8	2.0	113	28.5
Embu	550,438	8	1.5	131	23.8
Garissa	457,068	14	3.1	105	23.0
Homa Bay	1,033,941	14	1.4	201	19.4
Isiolo	206,306	5	2.4	42	20.4
Kajiado	732,356	14	1.9	224	30.6
Kakamega	1,781,528	17	1.0	232	13.0
Kericho	799,515	14	1.8	162	20.3
Kiambu	1,734,694	27	1.6	391	22.5
Kilifi	1,179,956	10	0.8	227	19.2
Kirinyaga	564,022	5	0.9	239	42.4
Kisii	1,234,634	20	1.6	137	11.1
Kisumu	1,030,986	21	2.0	145	14.1
Kitui	1,061,296	15	1.4	290	27.3
Kwale	694,612	3	0.4	96	13.8
Laikipia	417,538	7	1.7	96	23.0
Lamu	106,877	3	2.8	41	38.4
Machakos	1,174,587	8	0.7	293	24.9
Makueni	946,292	13	1.4	175	18.5
Mandera	1,005,003	6	0.6	73	7.3
Marsabit	312,325	4	1.3	83	26.6
Meru	1,448,606	24	1.7	369	25.5
Migori	981,319	15	1.5	170	17.3
Mombasa	995,334	15	1.5	275	27.6
Murang'a	1,013,325	8	0.8	299	29.5
Nairobi	3,324,894	54	1.6	599	18.0
Nakuru	1,693,008	21	1.2	318	18.8
Nandi	802,347	6	0.7	169	21.1
Narok	908,597	6	0.7	147	16.2
Nyamira	640,844	7	1.1	126	19.7
Nyandarua	631,034	3	0.5	119	18.9
Nyeri	832,877	10	1.2	401	48.1
Samburu	239,416	3	1.3	70	29.2
Siaya	902,753	11	1.2	154	17.1
Taita Taveta	297,579	7	2.4	72	24.2
Tana River	258,261	2	0.8	62	24.0
Tharaka - Nithi	389,731	8	2.1	96	24.6
Trans Nzoia	875,697	7	0.8	91	10.4
Turkana	868,209	6	0.7	139	16.0
Uasin Gishu	940,112	12	1.3	165	17.6
Vihiga	594,457	6	1.0	75	12.6
Wajir	566,454	10	1.8	102	18.0
West Pokot	525,970	5	1.0	87	16.5

7.5. Annex 5: Distribution of health infrastructure by region in Ethiopia (2006/07)

Region	Hospitals				Health centers				Health stations**			Health posts	Private clinics**
	MOH	Others*	Total	Beds	MOH	Others	Total	Beds	MOH	Others	Total		
Tigray	13	3	16	1,417	41	1	42	380	167	15	182	529	31
Afar	2	0	2	122	14	0	14	0	45	0	45	154	3
Amhara	16	3	19	1,615	169	0	169	369	0	40	40	2,590	304
Oromia	22	8	30	3,513	197	5	202	—	717	100	817	1,985	672
Somali	6	0	6	436	20	0	20	276	75	0	75	149	2
Ben-Gumz	2	0	2	205	15	0	15	150	56	0	56	88	19
SNNPR	14	6	20	1,897	176	4	180	—	179	77	256	4,258	116
Gambella	1	0	1	100	5	4	9	50	27	8	35	64	7
Hareri	2	2	4	710	3	0	3	30	9	10	19	22	21
Addis A	5	25	30	927	24	5	29	180	8	122	130	37	382
Dire Dawa	1	3	4	232	7	0	7	60	0	7	7	38	21
Central	4	5	9	2,460	0	0	0	0	0	0	0	0	0
National	88	55	143	13,677	671	19	690	1,495	1,283	379	1,662	9,914	1,578

7.6. Annex 6: Distribution of health facilities Ethiopia

Background characteristics	Percent distribution of facilities	Number of facilities
Facility type		
Referral Hospital	1	31
General Hospital	2	71
Primary Hospital	1	44
Health Center	96	3314
Region		
Tigray	7	240
Afar	2	64
Amhara	24	824
Oromia	37	1294
Somali	4	149
Benishangul Gumuz	1	34
SNNP	27	713
Gambella	1	30
Harari	0	10
Addis Ababa	2	84
Dire Dawa	0	17
Urban/rural		
Urban	34	1177
Rural	66	2283
Total	100	3460

7.7. Annex 7: Geographical mobility and missed opportunity (n = 515)

Variable	Percent
Number of vaccines completed by first birthday	
None	42.2
One	15.7
Two	9.0
Three	8.4
Four	12.5
Five	10.6
Six	1.4
Seven	0.2
Severely under vaccinated (more than six months)	24.1
Geographical mobility	
Yes/Household moved	40.2
Number of times family moved	
Once	15.5
Twice	16.1
More than twice	12.0
No response	6.6
Person moving	
The whole family	54.6
Adult males	33.0
Women and children	12.3
Missed opportunities	
The child was taken to a health facility in the last one month	63.6
Reason for taking the child to a health facility	
The child was sick	51.2
Clinic day	31.0
No response	17.8
Asked whether the child had been vaccinated	55.1
Taken the child to a health facility and not vaccinated	30.1
Reasons given for not vaccinating the child	
Health staff said the child was not due for vaccination	9.4
There were no vaccines	25.5
Not a vaccination day	13.4
No reason was given	7.5