

**Working Paper  
Volume 2022 Number 562**

# **Exploring the Intersection of Sanitation, Hygiene, Water, and Health in Pastoralist Communities in Northern Tanzania**

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**Violet Barasa and Linda Waldman**

**January 2022**

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## Summary

This paper explores access to water, sanitation, and health in pastoral communities in northern Tanzania. It argues that the concept of gender, used on its own, is not enough to understand the complexities of sanitation, hygiene, water, and health. It explores pastoralists' views and perspectives on what is 'clean', 'safe', and 'healthy', and their need to access water and create sanitary arrangements that work for them, given the absence of state provision of modern water, sanitation, and hygiene (WASH) infrastructure. Although Tanzania is committed to enhancing its citizens' access to WASH services, pastoral sanitation and hygiene tend to be overlooked and little attention is paid to complex ways in which access to 'clean' water and 'adequate sanitation' is structured in these communities. This paper offers an intersectional analysis of water and sanitation needs, showing how structural discrimination in the form of a lack of appropriate infrastructure, a range of sociocultural norms and values, and individual stratifiers interact to influence the sanitation and health needs of pastoralist men, women, boys, and girls.

## Keywords

Pastoralists; Tanzania; intersectionality; sociocultural behaviours and values; water; sanitation; hygiene; health; gender; women; men.

## Authors

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## Executive Summary

Access to clean water and appropriate sanitation is vital for all societies. Lack of sanitation facilities and poor hygiene cause waterborne diseases such as diarrhoea, cholera, typhoid, and parasitic infection. An estimated 2.2 million people die each year from preventable diseases associated with unsafe drinking water, inadequate sanitation, and poor hygiene in low- and middle-income countries. For this reason, access to water is enshrined in the Sustainable Development Goals (SDGs), with Goal 3 emphasising the interconnected domains of health and wellbeing; Goal 6 focusing on ensuring availability and sustainable management of water and sanitation for all; and Goal 10 aiming to reduce inequalities within and between countries. In support of the SDGs, Tanzania, along with many other countries, has committed to enhancing access to and improving the provision of WASH services for its citizens. Yet, pastoral sanitation and hygiene tends to be overlooked and little attention is paid to the complex ways in which access to 'clean' water and 'adequate sanitation' is structured in these communities.

This paper explores pastoralists' access to adequate sanitation and hygiene infrastructure in relation to health in pastoralist communities in northern Tanzania. It focuses on how structural discrimination in the form of a lack of appropriate infrastructure, a range of sociocultural norms and values, and individual stratifiers (including livelihoods, identity, age, and gender) influence the sanitation and health needs of pastoralist men, women, boys, and girls. The paper draws on a combination of ethnographic data collected in four remote pastoralist villages in Naiti district, northern Tanzania, and on published data on water, sanitation, and health to explore approaches and understandings of sanitation, hygiene, water, health, and gender, and to examine the intersections between these. It explores pastoralists' views and perspectives on what is 'clean', 'safe', and 'healthy', and their need to access water and create sanitary arrangements that work for them, given the absence of state provision of modern water, sanitation, and hygiene (WASH) infrastructure. It then draws on intersectional approaches to explore how access to sanitation, hygiene, water and, to a lesser extent, health is mediated by intersecting layers of marginalisation and sociocultural inequalities, in order to derive lessons that can inform policy.

Conventional WASH approaches often focus on a gender lens aiming to reduce the burden of inadequate access to water and to address sanitation for women. Additionally, conventional research tends to focus on either sanitation, or health, or access to water, rather than seeing a complex problem with multiple and intersecting drivers. However, as this research demonstrates, there are many

other axes of inequality driven by power imbalances and household dynamics which affect access to services.

This paper argues that the concept of gender, used on its own, is not enough to understand the complexities of sanitation, hygiene, water, and health. Structural inequalities in sanitation and hygiene intersect with geographical location, gender, age, and socioeconomic position. People's behaviours and practices in relation to sanitation, hygiene, and water are informed by these sociocultural, environmental, and material considerations. For this reason, in contrast to gender as a driver of difference, individual stratifiers of identity interact with each other and with broader issues and contexts to shape people's experiences of sanitation, hygiene, water, and health. Insights from intersectionality can inform public health interventions to better incorporate personal stratifiers and context-specific dynamics for designing more culturally appropriate, inclusive solutions for all.

# Contents

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<b>Acknowledgements</b>	<b>10</b>
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---

<b>Acronyms</b>	<b>10</b>
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<b>1. Introduction</b>	<b>11</b>
1.1 Context	11
1.2 Water, sanitation, hygiene, and health in the context of pastoralist livelihoods	12
1.3 Cultural norms and practices	15
1.4 Conceptual framework: intersectionality	16
<b>2. Methodology</b>	<b>18</b>

---

<b>3. Case study: WaArusha agro-pastoralists in Naiti</b>	<b>19</b>
---	-----------

---

<b>4. Sanitation and hygiene, and water and health as complex spaces</b>	<b>22</b>
--	-----------

---

<b>5. Sociocultural norms and gender dynamics shape experiences with sanitation and hygiene, health and water</b>	<b>28</b>
---	-----------

---

<b>6. Discussion: public health guidelines versus intersectional realities</b>	<b>32</b>
--	-----------

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<b>7. Conclusion</b>	<b>35</b>
----------------------	-----------

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<b>8. Policy recommendations</b>	<b>36</b>
----------------------------------	-----------

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<b>References</b>	<b>37</b>
-------------------	-----------



**Figures**

Figure 1.1 Intersecting factors in sanitation, hygiene, and health in pastoralist settings	15
Figure 3.1 A typical <i>boma</i> , or homestead, in Naiti village	19
Figure 3.2 Map of Naiti and surrounding villages, showing distance to amenities and services	20
Figure 3.3 Proximity to amenities such as the health-care centre, campsites, water points, and grazing fields	20
Figure 4.1 A Naiti family cooking dinner, showing possible contamination due to dirty water and soil	22
Figure 5.1 Interview with young woman with disabilities	30

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## Acronyms

FAO	Food and Agriculture Organization
SDG	Sustainable Development Goal
WASH	water, sanitation and hygiene
WHO	World Health Organization

# 1. Introduction

There are an estimated +200 million pastoralists worldwide (Whitley *et al.* 2019; FAO 2018), and these communities often lag behind in terms of access to adequate sanitation and hygiene infrastructure (Fostvedt-Mills *et al.* 2018). In pastoralist communities, open defecation, and poor sanitation and hygiene are associated with transmission of diarrhoeal disease, which is one of the leading causes of mortality in children under five in low-income countries (Bastien *et al.* 2015). Despite this, governments, policy actors, and water, sanitation and hygiene (WASH) professionals and practitioners continue to overlook the ways that sociocultural factors and attitudes – such as identity, livelihoods, gender, age, status, structural disadvantage and exclusion – shape differential access to sanitation, hygiene and water, and health (Ahamad 2019). Both sociocultural norms and structural discrimination affect the specific sanitation and hygiene needs of pastoralist men and women, boys and girls.

This paper draws upon ethnographic data – collected as part of a PhD study on lay experiences with zoonoses and rural health-seeking behaviour – from four remote pastoralist villages in Naiti in northern Tanzania and WASH-specific data to explore approaches and understandings of sanitation, hygiene, water, health and gender, and to elucidate the intersections between these. It explores how access to sanitation, hygiene, water and, to a lesser extent, health is mediated by intersecting layers of marginalisation and sociocultural inequalities, deriving lessons that can inform policy interventions for inclusive and improved access to sanitation and hygiene.

## 1.1 Context

Access to clean water and appropriate sanitation is vital for all societies. Lack of sanitation facilities and poor hygiene cause waterborne diseases such as diarrhoea, cholera, typhoid, and parasitic infection. An estimated 2.2 million people die each year from preventable diseases associated with unsafe drinking water, inadequate sanitation, and poor hygiene in low- and middle-income countries (UN Water 2005). For this reason, access to water is enshrined in the Sustainable Development Goals (SDGs), with Goal 3 emphasising the interconnected domains of health and wellbeing; Goal 6 focusing on ensuring availability and sustainable management of water and sanitation for all; and Goal 10 aiming to reduce inequalities within and between countries.

It is well known that in Tanzania and other African countries, the sanitation and hygiene indicators in pastoral areas ‘routinely bring down the national average’, and that this is not an area of political focus (Fostvedt-Mills *et al.* 2018: 2). Tanzania, following global processes, has committed to a ‘uniform and

harmonized approach in the provision of WASH services' (United Republic of Tanzania 2017: 2). It aims to increase access to improved sanitation for all citizens to 95 per cent, and to 85 per cent for rural communities, by 2025 (United Republic of Tanzania 2021) in tandem with the SDGs. While Tanzanian policies on sanitation, hygiene, water, and health tailor interventions to women and children, Tanzania does not have a targeted policy or strategy to address pastoral sanitation and hygiene. In addition, 90 per cent of rural residents lack access to improved, non-shared latrine facilities, with one in eight rural residents practicing open defecation (Safari *et al.* 2019). Yet, governments and policymakers, in Tanzania and elsewhere, have failed to pay attention to the complex ways in which access to clean water and adequate sanitation is structured.

In northern Tanzania's pastoralist communities, poor sanitation and hygiene put people at greater risk of infectious diseases, not least due to habitat overlaps between people and livestock (Shirima and Kunda 2016; Halliday *et al.* 2015; Kunda *et al.* 2007). Stagnant groundwater following periods of rain is often the only source of water for both people and animals, both domestic and wild (Catley *et al.* 2013). Such water is often contaminated at the source, and there is considerable evidence that associates drinking untreated groundwater with increased incidence of diarrhoeal disease (Trevett, Carter and Tyrrel 2005). Yet, epidemiologists and WASH practitioners working on infectious diseases (such as zoonoses) and neglected tropical diseases in these settings have paid little attention to the nexus between water, sanitation, and health (Countdown 2017), and to how sanitary conditions in the domestic environment, cultural norms, and poverty intersect with biological agents of disease (in water, food, etc.) to amplify public health risks (*ibid.*). They also fail to consider how broader structural, environmental, sociocultural, and economic factors shape men's and women's behaviours and attitudes in relation to the understanding and prevention of disease (Farmer and Sen 2003; Catley *et al.* 2013; Leach and Dry 2010; Scoones 2010). These include considerations of how people's access to water (What water? Whose water? etc.) relates to livelihoods and how, in turn, this affects their sanitation and hygiene practices; how people's beliefs around water and sanitation inform understandings of disease; how behaviours influence, and are influenced by, access to (and lack of) resources; and finally, how gendered access to resources and power relations shape sanitation, hygiene, water, and health.

## **1.2 Water, sanitation, hygiene, and health in the context of pastoralist livelihoods**

Access to water is critical for sustained livelihoods and health. Yet, pastoralists are often concentrated in water-scarce areas, in dry open or wooded grasslands

where rainfall is infrequent, with hardly any perennial or reliable water sources, as is the case in northern Tanzania (Axweso 2011). These communities are perennially vulnerable as temporal and spatial variability in rainfall affects livestock and (to the degree that pastoralists engage in this) crop production, consequentially affecting individuals' and families' health and nutritional status (Galvin *et al.* 2004; Lind, Sabates-Wheeler and Kohnstamm 2016; Catley *et al.* 2014; Galaty 2014).

Moreover, climate change impacts are severely affecting pastoralists. Water scarcity is a characteristic of climate change, with variability in rainfall patterns and extreme weather events already happening in Tanzania and across the East African pastoralist rangelands (Kimaro, Mor and Toribio 2018). Water is depended upon for sustenance and nourishment of people and livestock, and as climate change induces further scarcity, its contamination by livestock and other sources due to overlapping use between people and livestock may expose communities to a range of waterborne diseases. Thus, as climatic variability increases in sub-Saharan Africa, major public health risks will become more difficult to control due to increased drought-related stresses (McMichael *et al.* 2009).

In northern Tanzania's pastoralist habitats, rainfall is unevenly distributed, and average rainfall from year to year cannot be assumed (Ellis 1994). When water availability declines, pastoralists adjust to these harsh conditions. Their water needs are seasonal, with water being most critical in the hot, dry season when people and animals need to drink more frequently. Herders traditionally cope by transferring some or all of their livestock to dry-season camps in search of pasture and water (Catley *et al.* 2014; Galaty 2014). In preparation for transhumance, herds are divided into two groups. The 'daily grazing' herd comprises mainly milking cows, sick herds, and small stock that sleep in the *boma* (homestead) at night, and forage close by for food and water. The remaining herd is managed by unmarried warriors or young circumcised men in far-away 'drought camps' where herders can stay for up to six months, often relying on milk to meet their nourishment and hygiene needs (Caudell *et al.* 2017). Moreover, as pasture and water sources diminish during protracted dry seasons, water is increasingly sought after with people, livestock, and wildlife (which roam the villages at night) sharing the same surface water points; relatedly, hygiene and sanitation practices decline. In Handeni and Longido districts, northern Tanzania, Axweso (2011) found that, during the dry season, baths were rarely taken, clothes were not washed, and food utensils were scraped clean rather than washed after meals. In Naiti, our research showed that water fetched from afar (women and girls walk for whole days looking for water, covering 5–15km each way) is used according to a strict protocol: first weak cattle drink, then sick household members drink, and whatever is left is used for cooking. Those considered healthy or 'strong', particularly men in all age groups,

do not typically drink water during periods of scarcity. Water for sustenance is always precious and never consumed frivolously or casually.

Yet, conventional WASH approaches often underappreciate these complex dynamics, focusing instead on a gender lens, to reduce the burden of insufficient access to water and to address sanitation for women (REACH 2018). However, while studies show close interlinkages between gender inequality and poor access to sanitation, hygiene, and water in low- and middle-income countries (UN Water 2005), there are many other axes of inequality driven by power imbalances, such as age, marriage, disability, and household dynamics, which affect access to services (McCollum, Taegtmeier and Otiso 2019). Additionally, conventional research tends to focus on either sanitation, or health, or access to water, rather than seeing a complex problem, with multiple and intersecting drivers (*ibid.*). For example, Whitley and colleagues' (2019) research among pastoralists in the Afar region, Ethiopia identified WASH interventions that are most likely to alleviate public health risks. Focusing primarily on water, they found that low levels of access to infrastructure and risky behaviours – related to water transportation and storage, animal husbandry practices, and the lack of sanitation and hygiene facilities – were key challenges leading to serious public health issues.

The nexus between sanitation, hygiene and water, and health and gender is under-appreciated. Emphasis is placed on the prevalence of waterborne disease, including helminth and protozoa infections that are consistently in the top ten diagnoses in Tanzania (Nyanza *et al.* 2018), and on access to water. Underlying this approach is the idea that most contamination and recontamination of domestic water results from human behavioural patterns, and that if these are changed, health risks will be reduced and/or eliminated (WHO 1997). What is missing is awareness of the intricate patterns of access to sanitation and hygiene facilities, including how these shape and are shaped by intersecting layers of social and economic inequalities. This approach overlooks socioeconomic factors such as household income and lay knowledge of what constitutes 'good' hygiene. This is especially important because in situations of extreme poverty a household's ability to maintain a hygienic and sanitary environment is severely constrained (Trevett *et al.* 2005). Such an approach overlooks the interface of biological, social, cultural, economic, and political contexts in which pastoralists experience sanitation, hygiene, water, and health. Indeed, Caudell and colleagues (2019) highlight the significance of cultural understandings of, and experiences with, sanitation and hygiene, arguing that pastoralists do not always rely on water for hygiene needs as available water is often of suspicious quality and because cultural norms do not necessarily equate water with cleanliness. There is thus a knowledge and resultant policy gap with respect to the sanitation and hygiene status of Tanzania's pastoral communities,

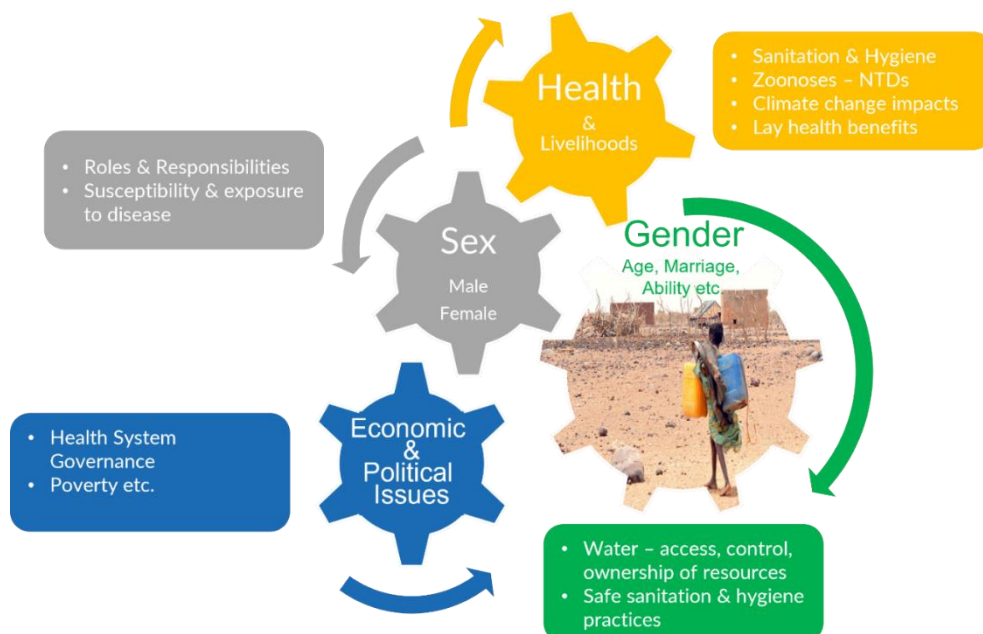
cultural perspectives of sanitation and hygiene, and of how access and utilisation of these facilities is determined (Nyanza *et al.* 2018).

### 1.3 Cultural norms and practices

Pastoralists have strong cultural norms relating to sanitation practices. Customs and traditions discourage families from constructing and using pit-latrines (Tillet and Jones 2021). Among the Maasai in Tanzania, for example, it is an abomination for men and women to share a toilet, because men believe women have poor menstrual hygiene (Axweso 2011). This shows underlying gender-related norms around purity and cleanliness, and the association of menstrual blood with dirt and uncleanness (discussed further in Section 5).

Pastoralist families comprise many extended family members because of polygamous marriages and clanships. Most members live in very close proximity in circular compounds or *bomas* (Galvin *et al.* 2004). The household composition serves as a limitation to constructing and sharing pit-latrines given the cultural taboos regarding the sharing of these facilities (Axweso 2011). Consequently, pastoralist *bomas* tend to be surrounded by bush (see Figure 3.1), providing significant cover and privacy for defecation and, on very limited occasions, bathing. Water and/or soap are not commonly used for hygiene purposes in these settings (*ibid.*).

### Figure 1.1 Intersecting factors in sanitation, hygiene, and health in pastoralist settings



Source: Author's own.

There is, therefore, a need to go beyond a singular focus on water, and/or gender, and to consider broader and intersecting barriers in access to sanitation, hygiene, water, and health in order to design appropriate interventions. As Bastien and colleagues observe, interventions need to be relevant, affordable, accessible, and built on local capacity, because conventional ‘top-down approaches to changing sanitation and hygiene behaviors and messaging based on eliciting embarrassment, disgust, and shame...’ (Bastien *et al.* 2015: 2) clash with pastoralists’ sociocultural values and gender norms. Intersectionality approaches, however, offer a means to conceptualise complex axes of inequality – such as differential access to sanitation and hygiene based on gender, disability, and age – and ask how these shape utilisations of these services, even where availability is guaranteed.

## 1.4 Conceptual framework: intersectionality

Anthropologists increasingly recognise intersectionality’s value in tackling simultaneous forms of discrimination. Some WASH studies also incorporate what Chambers (1983) referred to as ‘clusters of disadvantage’ or intersecting disadvantages (cited in House, Cavill and Ferron 2017). In its basic form, intersectionality invites researchers to explore how different social, economic, and political domains intersect to produce varying levels of power and privilege for individuals or groups in a particular setting (McCollum *et al.* 2019). For Larson *et al.* (2016), using intersectional approaches enhance understandings of inequality by aiding reflection on the complexity of the world and showing how social stratifiers such as gender, age, and location are ‘mutually constituting and intersecting in dynamic and interactive ways’ (2016: 965). This is in keeping with the view that group-based inequalities can disguise severe exclusion within the group, by assuming that all people who belong to one marker of identification, such as ethnic or religious identity, gender or geographical location, experience exclusion and inequality similarly (Lenhardt and Samman 2015). According to Kabeer and Santos (2014), ‘intersecting inequalities’ operate to categorise people according to overlapping markers of identification, such as gender, location, age and class, by which marginalised categories within groups experience multiple and particular forms of inequalities. That is to say that a person’s ethnic identity, gender and spatial location, for example, can all interact in ways that exclude him or her from social, economic, and political life. And while the specific intersections that determine marginalisation vary by country and context, the interaction of a person’s identities (male, old, poor, disabled, etc.) can give rise to the most pronounced forms of discrimination (Kabeer 2010).

Thus, intersectionality invites scholars to come to terms with the legacy of exclusions of multiple marginalised subjects (Nash 2008). For instance, while women in many countries face discrimination on account of their gender, it is also their ethnicity, socioeconomic class, age, marital status, and location that



inform their lived experiences of marginalisation. As Kimberlé Crenshaw (1989) first argued in the late 1980s, and Kabeer (2010) and others have increasingly reiterated, these intersecting layers of marginalisation can lead to an intensification of disadvantage for people with particular stratifiers.

For pastoralist communities, a repertoire of marginalisations exacerbate the challenges to achieving optimal sanitation, hygiene, and health. These include, but are not limited to, extreme climatic variability, sporadic water and pastoral resources (Balfour, Obando and Deepali 2020; Caudell *et al.* 2017), interwoven with social relations factors and gender (Shitima 2018), and wider, broader economic and political drivers such as policy exclusions and land use changes favouring sedentarisation (Lind *et al.* 2016). Following McCollum *et al.* (2019), who use intersectionality to explore how devolution in Kenya created additional layers of health exclusion for vulnerable people, this paper explores how challenges are experienced by different groups and individuals, and in specific ways as a result of multiple and converging identities. McCollum and colleagues argue that in Kenya, the most important stratifiers for health are geographic location, age, gender, and socioeconomic circumstances. These mutually constituted and intersecting stratifiers create and perpetuate varying levels of power and privilege. In this paper, we use an intersectionality lens to consider how sanitation, hygiene, water, and health shape and are shaped by multiple and intersecting axes of marginalisation, and how this affects specific pastoralist groups in northern Tanzania. After a brief overview of the methodology, we introduce the WaArusha agro-pastoralists living in Naiti. This case study exemplifies two core themes: firstly, on sanitation and hygiene, and water and health as complex spaces, and secondly, on how sociocultural norms and gender dynamics shape experiences with sanitation and hygiene, water and health.

## 2. Methodology

Ethnography is a critical tool for understanding how sanitation, hygiene, water, and health shape and are shaped by multiple and intersecting axes of marginalisation and how this affects Tanzania's pastoralists, not least because it encourages accessing information through interpersonal relationships, participating in peoples' activities, and observing interactions (Agar 1996). Data was collected between 2016 and 2017 in four pastoralist villages in the Naiti area, Monduli district, northern Tanzania. Ethical approval was received from the University of Sussex (ER/VB96/4) in the UK, and the Tanzania Wildlife Research Institute and the National Institute of Medical Research in Tanzania (NIMR/HQ/R.8c/Vol.11/653). All personal data, including photographic data included here, is with participants' informed consent.

Ethnographic tools included in-depth, semi-structured, interviews and key informant interviews, juxtaposed with observational data over a ten-month period. Barasa engaged with participants while at home, in the fields, herding livestock, drawing water from wells and boreholes, and in formal and informal gatherings, observing their sanitation and hygiene practices as well as the norms that governed these, and noting them down in a daily fieldwork diary. These participant observation opportunities offered 'sufficient proximate experience of the everyday circumstances' (Frank 2012: 38). A total of 379 participants (211 women, 168 men), their families, and community leaders took part in this study. Participants were asked about access to water and hygiene facilities. Specific questions regarding use of toilets were not asked, as this is a taboo subject, but participant observation generated insights into how people navigated sanitation, hygiene, water, and health in their daily lives.

Barasa conducted 47 in-depth interviews (23 women and 24 men), and 26 key informant interviews (17 men, nine women). Key informants included lay healers, community elders, local leaders, and public health professionals. Lay healers provided etiologies of common illness, shedding light on how community members interpret health risks. Participants from various social categories (sex, age, distance from services, marital status, ability and disability) were included in the study. Data was disaggregated by sex and gender, age, ability, marital status, and distance from public services such as water and health facilities. We used thematic analysis (Nowell *et al.* 2017) to identify, organise, and describe themes within the interview transcripts and diaries.

### 3. Case study: WaArusha agro-pastoralists in Naiti

**Figure 3.1 A typical *boma*, or homestead, in Naiti village**



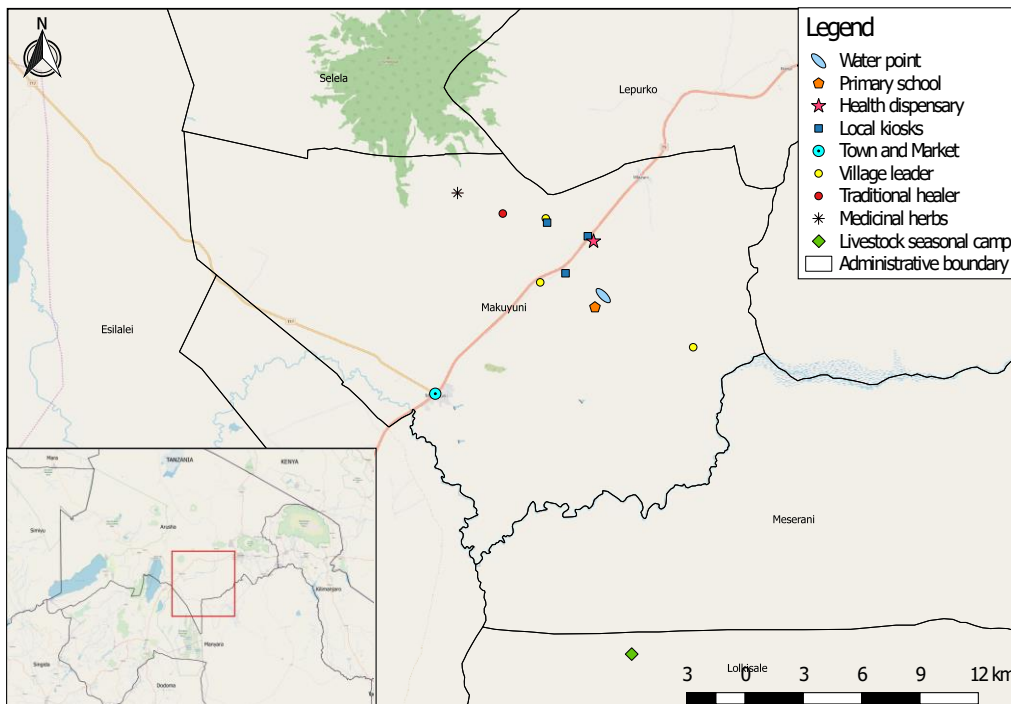
Source: Author

Naiti area and its four villages lie within the Maasai Steppe, a vast savannah plain located along the Arusha–Manyara road in Makuyuni ward, Monduli district, northern Tanzania (see Figure 3.1). Its inhabitants practice pastoralism and agro-pastoralism, with most families describing themselves as *wafugaji* – a Swahili term for livestock keepers. In addition to livestock production, many families are involved in crop cultivation (see, also, Caudell *et al.* 2017; Little 2013), owning small plots of land where they grow food crops. The population comprises the Warusha and Maasai ethnic groups.<sup>1</sup> Figure 3.2 illustrates approximate walking distances from homesteads to public amenities, including the health centre, waterpoint, cattle campsites, and sanitation sites.

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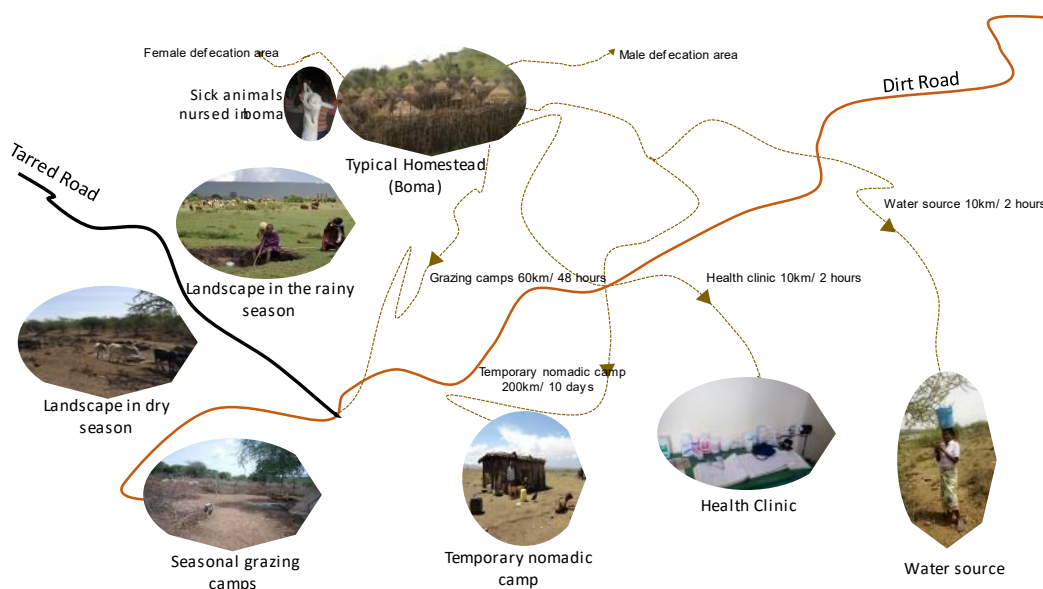
<sup>1</sup> Both are part of the Nilotic ethnic group and the largest pastoralist group in Tanzania and Kenya, sharing habitats, cultural practices, and language.

**Figure 3.2 Map of Naiti and surrounding villages, showing distance to amenities and services**



Source: Authors' own.

**Figure 3.3 Proximity to amenities such as the health-care centre, campsites, water points, and grazing fields**



Source: Authors' own.

Similarly to many other hard-to-reach rural areas across Africa, Naiti's residents experience significant geographic barriers to accessing and using public health services. As illustrated in Figure 3.3, families walk for hours in search of water, to tend livestock, and to access health services and other daily necessities such as food and firewood. Only women and girls are expected to fetch water, often from far away, carrying it on their heads. This labour is also seasonal. Ahamad (2019) shows that, for pastoralist girls in the Iringa Region, Tanzania, the distance and the time taken to collect water doubles in the dry season. These sociocultural norms involve increased labour for women (Fostvedt-Mills *et al.* 2018) and puts men and women at differential risk of disease from handling contaminated water.

Young men and pubescent boys walk for several days with livestock to find pasture and water, and sometimes pitch camp in dry season camps for several months at a time, where they have no access to water, relying on milk and sometimes blood (from animals)<sup>2</sup> to meet their nutritional and hygiene needs. McCollum and colleagues (2019) observed in their study of similar contexts in Kenya that many of the barriers faced by pastoralists result from location converging with poverty, political exclusion, and nomadic lifestyle to exclude the most vulnerable from using services. In Naiti, residents do not have access to running water, toilets, or handwashing facilities. There is one small, basic health clinic, staffed by a clinical officer and auxiliary nurse who serve over 3,000 people (United Republic of Tanzania 2018). The World Health Organization (WHO) recommends a doctor–population ratio of 1:1000 (Kumar and Pal 2018). This clinic also lacks medicines and basic testing facilities.

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<sup>2</sup> Herders commonly make small incisions along the neck veins of healthy animals, draining blood for food and as medicine, particularly while residing at campsites far from home (Barasa, 2019).

## 4. Sanitation and hygiene, and water and health as complex spaces

**Figure 4.1 A Naiti family cooking dinner, showing possible contamination due to dirty water and soil**



Source: Authors' own.

Dominant framings of sanitation and hygiene, and of health can obscure the complex realities that people navigate every day, such as poverty and structural conditions that shape how people interact with their, and others', bodies in terms of food, sanitation, and health. Mainstream WASH approaches focus on household-level data, and do not distinguish between different genders or ages. As Taylor argues,

With a few exceptions, the nature of water and sanitation services does not tend to distinguish between members of a household. Generally either all members of a household have access to a latrine, or none do. The same is true for access to clean and safe water – either a whole household has access or it doesn't, though women and children are likely to bear the brunt of not having water near the household.

(Taylor 2009: 2)

Such approaches do not adequately consider local people's livelihoods, priorities, preferences, or concerns about their health or that of their livestock (Frankenberg 1993). In conceptualising the complexity of sanitation and hygiene, we explore two examples: the first focusing on defecation and latrines, the second on bodily hygiene, water, and washing.

In Naiti, sanitation, hygiene, water, and health are complex spaces that must be conceptualised in holistic ways which go beyond a single event (e.g. handwashing), or dry spell, or a day without soap and water. In Naiti, people were concerned that poor sanitation and hygiene posed a risk to their health, and by their lack of resources for achieving sanitation and hygiene. Yet, their conceptualisation of what constitutes 'good' sanitation or 'adequate' hygiene is different from WASH or development conceptualisations which, as the following quote from Mshidi *et al.* (2018) shows, tend to see pastoralists' living conditions as dirty, unsanitary, and contaminating:

in the semi-pastoral communities of Longido and Monduli, the use of surface water for domestic purposes was associated with stunting and underweight among under-five children. This could be due to high contamination of surface water resulting from unsanitary practices such as open defecation or pollution by animals drinking from or defecating inside the water sources... Furthermore, during the rainy season, water runoffs from surroundings can carry garbage and fecal matters and find its way through streams to the ponds and contaminate surface water. People using surface water for domestic purposes may be infected with waterborne diseases if measures to treat such water before consumption are not taken.  
(Mshidi *et al.* 2018: 1245–46)

For most Naiti residents, human waste is part of the natural landscape and useful for nourishing plants and forests, where herbal medicine is obtained and where domestic animals graze. Open defecation is thus not just about cultural taboos not to share pit-latrines with in-laws or across genders, it is a preference as people recognise the benefits of using human faeces to provide nutrients and mineral fertilizers, which then improve yields in low-resource settings (Kirchmann and Pettersson 1994; Vinneras *et al.* 2003; Useni *et al.* 2013; Kimuni *et al.* 2014).<sup>3</sup>

Yet, these ideas are not consistent with public health approaches to sanitation. As Fostvedt-Mills *et al.* (2018) argue, WASH interventions often allocate to men the role of latrine construction (even though women are likely to need and use

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<sup>3</sup> Tshibuyi Kasu-Bandi and colleagues (2015) found that, in rural Lubumbashi, DR Congo, crop yields improved significantly in areas using human faecal deposits, and that a combination of chemical fertilizer and human faecal material produced the highest yields.

homestead latrines). This failure to consider local perspectives and beliefs also results in men dismissing WASH interventions and avoiding meetings. Moreover, the emphasis on human health risks through contact with faecal material in soils, water, or food, are not in keeping with pastoralists' perspectives. This mismatch is clear among Naiti residents, who receive the idea that human waste is contaminating and can cause health problems, with scepticism. When asked about availability of sanitation facilities and services, interviewees responded:

*We go into the bush and bury it [faecal material] with earth. It is part of earth. Latrines are dirty and can smell, we don't like it [latrines]. They bring a lot of flies which bring dirt and can bring illness to people.<sup>4</sup>*

*Children go [to the toilet] around the home and we throw it [children's faeces] away in the bush, but adults, men go eastwards and women westwards [pointing to nearby bushes in opposite directions].<sup>5</sup>*

When asked about the risk of faecal contamination in drinking water or food and the consequences for health, the responses were:

*We live in the bush, faeces provide manure for growing grass for livestock and food for us.<sup>6</sup>*

*No, we cannot get sick from it [faeces] because it dries very quickly from the heat.<sup>7</sup>*

Naiti's pastoralists did not acknowledge faecal remains as potential sources of risk, even though children's open defecation and the existence of animal faeces in domestic spaces does increase their risk of exposure to harmful pathogens (Trevett *et al.* 2005). As their above responses exemplify, ideas about sanitation and hygiene, and of health are context-based, and are a consequence of people's material conditions and realities, as opposed to official or formal narratives regarding what, in scientific terms, might constitute 'good' or 'bad' sanitation and hygiene behaviour. While there is no denying that poor sanitation leads to poor health outcomes (see Nyanza *et al.* 2018 on the prevalence of protozoa infections in pastoralist settings), one should not assume that pastoralists will embrace official and scientific understandings of 'improved' sanitation and hygiene; for example, by constructing pit-latrines, as these are seen locally as being unsanitary. Indeed, as Fostvedt-Mills *et al.* argue, the use

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<sup>4</sup> Interview, elderly Naiti women, 23/05/2017.

<sup>5</sup> Key informant interview, Naiti, 17/11/2016.

<sup>6</sup> Key informant interview, Naiti, 17/11/2016.

<sup>7</sup> Interview, male herders, Naiti, 23/05/2017.



of ‘shame and disgust’ triggers<sup>8</sup> in WASH interventions are seldom effective given pastoralists’ ‘proximity to animals and their faeces’ (2018: 2).

This suggests that more attention needs to be paid to the complexity of human waste and local understandings of natural processes and environmental health, and that the perspectives of local people need to be integrated into efforts or interventions that target improved sanitation. Not doing so may lead to a mismatch where people are blamed for their sanitation practices causing health problems, while they themselves distrust professionals’ interventions which clash with local experiences, understandings of nature, and cultural values.

Like sanitation practices, hygiene behaviours in Naiti are complex and, as discussed above, people do not typically associate hygiene or cleanliness with water, not least because they recognise that their water quality is poor. As Figure 4.1 shows, families frequently cook with visibly dirty water as this is the only water available. They keep their huts and compounds clean by frequent sweeping and walls are seasonally treated with a clay that repels flies and insects. Additionally, pastoral men rub mud on their bodies and scrape it off once dry to keep clean. As Barasa observed on many occasions, earth is rubbed on hands as a sanitiser after handling aborted animal material, and after assisting with birthing or handling birth fluids, as it is believed that soil stops disease transmission. Naiti pastoralists also share their homes with sick young livestock, as they do not see this as a risk to human health. When asked what precautions they took to avoid disease transmission from livestock, or from cooking with, washing in, and drinking dirty water, the following responses were common:

*You ask about livestock illness, yes, but what about water and land for grazing? Because when we have these [water and land], our animals are healthy, and we are healthy too. But the water we have here is dirty and we have to wash in it, water our livestock and share it with wildlife too. We do not have clean drinking water... Therefore, it does not matter that the cows give us illness, if the water to wash the pot is dirty, people will still get sick from the water, but experts will say it is from the milk.<sup>9</sup>*

*The water makes us sick all the time, children are always running [diarrhoea] so we drink milk to get better. We cannot bathe children in that water [points at the water in the can]. When they need to bathe, we spread their bodies with animal butter [fat from milk cream]*

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<sup>8</sup> A process in which communities come to realise the negative effects of open defecation and in experiencing shame, disgust, and fear collectively identify ways to address open defecation, thereby progressing to collective pride (Safari *et al.* 2019).

<sup>9</sup> Interview, Naiti, 10/05/2017.

*and this keeps them clean for many days. We always use this because it is better than washing in the dirty water.*<sup>10</sup>

*You can see if the water is dirty with your naked eye because of its colour and the residue it leaves in the watering cans. So, we don't drink it or use it to wash the utensils because it makes them dirty too. We have certain herbs we collect from the forest, we use this to wash the main utensils like the milk calabash, because it also makes the curdled milk keep fresh for long. If this is not possible, we can also use animal urine to wash the utensils.*<sup>11</sup>

While these hygiene practices may seem unconventional, they are certainly not unprecedented nor without scientific basis. Animal products including fat and cream and cow urine do contain natural antiseptics which act as disinfectants. For example, in rural India, cow urine is used as an antiseptic for wounds, skin diseases, and bathing (Mohanty *et al.* 2014). When asked about whether people used soap and water to wash hands, their responses included:

*No, I don't use soap and water. I rub dry earth to clean them because it scrapes off any dirt.*<sup>12</sup>

*Soap requires a lot of water to wash it off your hands or utensils. We don't have much water here as you can see.*<sup>13</sup>

One elderly man explained:

*Soap is for women, I cannot use it because the women [his wives and daughters] wash their bodies with it [implying that younger, menstruating women are dirty and therefore need soap].*<sup>14</sup>

As these examples make clear, pastoralists are subjected to the twinned risks of using (a) source water contaminated by dirt and human and animal faecal matter and, (b) re-contaminated water infected by pathogens in household water storage containers and faecal contamination. As Trevett and colleagues, researching water and pathogens in rural Honduras point out, the very act of collecting water reduces water quality, through inadequately washed and contaminated containers and/or through faecally contaminated hand contact (Trevett *et al.* 2005: 261). Yet, the above responses also show the limited socioeconomic alternatives that shape pastoralists' possibilities of 'cleanliness' and 'healthy' water consumption and, through this, exacerbate risk exposure for

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<sup>10</sup> Interview, local medicine man, 10/05/2017.

<sup>11</sup> Interview, young woman, 15/06/2017.

<sup>12</sup> Interview, man at the cattle watering point, 22/11/2017.

<sup>13</sup> Group interview, young male herders, 22/11/2017.

<sup>14</sup> Interview, village elder, Naiti, 12/02/2017.

certain groups of people, often the poorest, to health problems. The way pastoralists understand these risks is, as Lupton and Tulloch (2002) note, plural and dynamic. These risks are hybrid and co-constructed with ideas about resources embedded in the natural environment (for example, rubbing earth on hands to make them clean), societal expectations for different people (women ought to use soap, not men, because women are dirty/impure), and general notions of wellbeing and of health (that land and water represent health), and based on lived experience, rather than on public health messaging or illness episodes.

Sanitation and hygiene are also collective experiences, and people are guided by what friends and kin have experienced, where knowledge sharing about what constitutes harm and what does not is key. This includes the idea that water – which makes people and animals sick – is also essential, provides nourishment, and sustains good health but is not automatically associated with cleanliness. Or, that latrines are dirty and cause illness while human waste buried under earth or scattered in the bush offers sustenance to the natural environment and is a form of livelihood regeneration. These ambivalent notions of what is good or bad show the importance of context, of how the substance (water or faeces) is used, and raises questions about what is ‘good’ hygiene and sanitation in a context where the only water source is dirty and untreated. Water is thus scarce and ambiguous – simultaneously both life-sustaining and polluting, causing illness and ensuring life. As a result, sanitation and hygiene needs are met with adaptive mechanisms – using soil to cleanse, drinking milk, or spreading animal fat to keep clean – as these serve the purpose of delivering cleanliness in a context of water scarcity, mobile lifestyles, and the challenges in accessing sanitation, hygiene, and health.

## 5. Sociocultural norms and gender dynamics shape experiences with sanitation and hygiene, health and water

Poverty and structural inequalities intersect with other social and cultural factors including gender, age, marital status, and disability to shape how men and women access sanitation, hygiene and water, and health care in Naiti. Observation data revealed entrenched gender norms around sanitation and hygiene, compounded by beliefs and taboos that stigmatise women, particularly around menstrual hygiene and illness.

Urinary tract infections (UTIs) are associated with any discomfort around women's genitalia, and diarrhoea is associated with promiscuity and a lack of feminine hygiene. This stigmatises women and girls who delay seeking health care for symptoms relating to these conditions. The clinician at Naiti's clinic explained that;

*Women and girls suffering from vaginal infections of any kind or diarrhoeal disease only come here when the symptoms are so advanced that their risk of permanent damage is high. For one woman, she arrived here when her symptoms were so severe that I sent her to the district hospital where it was discovered that she had cervical cancer, and she sadly died not long after. The problem among the pastoralists is that they blame women for any illness that affects genitalia. The men accuse them of sleeping around and catching sexually transmitted diseases. They also claim that women get sick from menstruating. Women, especially younger women, are stigmatised into silence, and when they are suffering they do not tell anyone or seek medical attention.<sup>15</sup>*

It was not possible to discuss menstrual health in depth during the research due to cultural taboos. For example, while meeting five women at a homestead, a question about one woman's clothing unintentionally insinuated that she was menstruating, resulting in awkward, embarrassed laughter. The woman left in humiliation. Similarly, Maasai schoolgirls in Kenya experience stigma, shamefulness and fear, while seeing menstruation as intensely private (Korir, Okwara and Okumbe 2018). Tanzanian pastoral women may also experience increased risk of exposure to UTIs because, as Barr *et al.* (2014) note amongst

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<sup>15</sup> Interview, clinician at Naiti health dispensary, 10/03/2017.

the Maasai of Ngorongoro, menstrual cloths are sometimes washed in dirty water, or not washed due to water shortages.<sup>16</sup>

While Naiti residents experience sanitation, hygiene, water, and health-care challenges collectively at village level, there are also micro- or household-level differences. Here, power relations and patriarchy intersect with gender and sex to produce specific vulnerabilities at different life stages, and particularly affect women of child-bearing age, elderly men, and people with disabilities. This can perpetuate a cycle of disadvantage for these people who may be at increased risk of infection.

During interviews, men associated women's bodies with impurity and lack of hygiene, as exemplified above by the man would not share soap with women. Disability and old age were also associated with illness and dirt, the former equated to mental illness, and in some cases resulted in the neglect of personal sanitation and hygiene needs. For instance, elderly men with no immediate families who could no longer wash themselves either at home or in riverbeds were neglected. Although animal fat is often used for cleansing, this requires one to have livestock that can be milked to make fat. For poor Naiti villagers, who do not have family members, or livestock, old age can mean neglect and a total lack of access to hygiene. As one elderly man explained:

*I don't wash because I cannot walk to the stream anymore. I have no one to bring me water... If I had livestock I could use its fat to clean my body, but I don't have livestock anymore so it is difficult.*<sup>17</sup>

For people with disabilities, and especially women, these challenges are exacerbated as they are doubly stigmatised on the basis of both gender and disability. This came up during an interview with a young woman with disabilities, pictured in Figure 5.1, whose brothers were disparaging of her. One said:

*We were wondering what you were doing talking to that crazy woman. She is very dirty and she defecates on herself because she is mental.*

Barasa's encounter with this woman was extremely pleasant and she had told the author about the stigma and neglect she suffered due to her disability, yet when Barasa challenged the men, they simply dismissed her with cynical laughter.

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<sup>16</sup> Ironically, such stigma can perpetuate girls' and women's experience of UTIs, as they delay changing menstrual cloths. Evidence from non-pastoralist communities in India shows how, due to stigma, women dry cloths indoors, and this too can induce UTIs (Korir, Okwara and Okumbe 2018).

<sup>17</sup> Interview, elderly male, living alone, 12/01/2017.

## Figure 5.1 Interview with young woman with disabilities



Source: Authors' own.

This young woman, who was physically unable to get out of her wheelchair and who relied on others for assistance, told me she had not washed or had a change of clothes for weeks, because her mother, who had been her carer, had passed away. She was thus left without care. The woman represents specific marginalisation at various intersections: gender, disability, economic, and geographical.

Power relations at community and household level shape who can wash, where and when. For example, men wash in riverbeds, at homes, and during the day, whereas women and girls only wash at night and in the home, and if there is no spare water by nightfall, then women use animal fat instead. Moreover, and as described above by the clinician, illness, believed to result from poor hygiene, stigmatises women and reinforces poverty and injustice. In particular, local beliefs around the origin of common infections such as UTIs, mean that women do not seek treatment until it is too late.

Sanitation and hygiene behaviours, including open defecation or the failure to wash hands, can be very difficult to stop (Fostvedt-Mills *et al.* 2018). For example, pastoral health educational workshops in the Iringa region had no noticeable impact. One- or two-day workshops addressed the need to boil or chemically treat water prior to consumption and wash hands after handling livestock, after toilet use, and before eating in order to prevent disease. Over 350 villagers attended the training and received soap and water treatment supplies. Yet, pre- and post-training survey results showed no significant improvements (Ahamad 2019). This intervention is focused on the household level, overlooking gender, age, and pastoralists' notions of what water, cleanliness, health, or wellbeing may mean. In contrast, this paper turns the lens around and instead of showing what pastoralists are not doing in terms of health and sanitation and water, it focuses on what their cultural understandings are, why particular pastoral behaviours take place, what they mean, and how they play out.

## 6. Discussion: public health guidelines versus intersectional realities

McCollum *et al.* (2019) argue that age, gender, geographic location, and socioeconomic circumstances are key stratifiers, intersecting in mutually constituting ways to produce vulnerability in health. Geographic location influences people's exposure to environmental risk, access to infrastructural services (roads, clinic services), and political exclusion. Indeed, water scarcity in Naiti is partly environmental and geographic and partly political. The residents experience natural water shortages, but the lack of water infrastructure is political and reflects pastoralists' relative lack of power, living in geographic areas marginal to national political process. As Workman *et al.* (2021: 4) argue, the 'valuation of water is often tangled with infrastructural considerations' and this provides control over and power in relation to water. Gender and sex leads men and women to experience sanitation challenges very differently. Biologically, women experience menstruation and childbirth (invoking notions of shame and stigma), and socially, gender is constituted through a wide range of norms and gendered power relations which exclude women from decision-making while excluding others (generally men) from domains such as the health clinic or sanitation. Age too is significant because 'social vulnerabilities emerge at different life stages through intersection with other social forces' (McCollum *et al.* 2019: 21). Age intersects with gender and patriarchy to marginalise young girls in different ways to those affecting women or elderly men. And finally, socioeconomic situations are significant because the lack of resources limits individuals' decision-making power and choices. These intersecting factors are both multi-scalar, operating across national, local, household, and individual levels to shape peoples' everyday experiences, and temporal (Akpabio and Takara 2014) in relation to age, seasons, biological rhythms, and health.

Conventional public health guidelines and 'traditional top-down approaches to changing sanitation and hygiene behaviors and messaging [are often] based on eliciting embarrassment, disgust, and shame' (Bastien *et al.* 2015: 19), and emphasise biological or gender factors, rather than intersectional, multi-scalar, and temporal dynamics. Such approaches are, however, unlikely to resonate with pastoralist perspectives. Pastoralists build their domestic structures on soil – which can act as a reservoir for faecal pathogens and are extremely difficult to keep 'clean' – and conduct many domestic and social activities outdoors (see Figures 3.1, 4.1 and 5.1), yet soil is also considered cleansing and serialising. They also share habitats and resources such as water with animals, bringing with it a risk of zoonotic pathogen exposure (Whitley *et al.* 2019; Shirima and



Kunda 2016). However, from a pastoralist perspective, the close proximity of humans and animals and the sharing of water pools are not sources of risk. During our study, we observed young animals (calves, kids, and lambs) roaming in and out of households where infants slept and toddlers played with them, including with sick animals nursed in homesteads. The area around the house was also the space where children defecated.

Public health experts warn that domestic exposure to livestock faeces presents a high risk to human health (Whitley *et al.* 2019; Budge *et al.* 2020). Indeed, from the public health perspective, life in Naiti appears remarkably dirty, dangerous, and full of health risks. In homesteads, women and young children intermingle closely with animals, with little concern to dispose of faeces; food preparation occurs in the open, surrounded by soil particles, using wood fuel that leaves residues in the food, and with dirty-looking water (see Figure 4.1). It can seem that Naiti residents live in what Goodwin and colleagues characterise as a 'risk environment' (2012: 146), where individuals and groups confront a wide range of potentially life-threatening risks. It is, however, important to recognise, as Mary Douglas did, that ideas of purity and dirt are central to a society's values, and that practices cannot be only, or fully interpreted, through modern, Westernised notions of hygiene and pathogenicity (Douglas 1966). And, as such, understandings of risk are socially constructed, 'embedded in people's world-views rather than the judgments of scientists and experts' (Akpabio and Takara 2014: 923).

Moreover, within resource-limited pastoral settings, approaches to risk are shaped by broader socioeconomic and livelihood challenges intersecting with sociocultural factors that make life possible, yet also amplify vulnerabilities for specific categories of people. For example, people who do not own resources and cannot work, such as elderly men or disabled community members, have extremely limited choices. Schneider (2017) cautions that public health interventions to reduce public health risks ought to be designed using culturally appropriate mechanisms that target specific forms of inequalities as well as challenge the entrenched power relations that create these inequalities. Finding ways to do this in places like Naiti, where socioeconomic deprivation intersects with geography, gender, and age to produce extreme marginalisation for particular, isolated individuals is especially challenging.

As this paper illustrates, there is a need to understand pastoralists' context, experiences, and adaptive strategies to sanitation, hygiene, water, and health in order to design inclusive, culturally congruent and sustainable interventions. In Tanzania, pastoralists are either excluded from WASH interventions, in part because of geographic location and their transhumant lifestyles, and in part because of the huge investment in infrastructure and services required to establish water and sanitation schemes (Kessy and Mahali 2016) or, included in

standardised, yet inappropriate, WASH approaches (Fostvedt-Mills *et al.* 2018). The limited research on sanitation, hygiene, water, and health in pastoralist settings (Ahamad 2019) focuses on mechanisms for achieving improved hygiene without taking into consideration the various vulnerabilities and opportunities that are a consequence of the intersections of social stratifiers and development interventions. Fundamentally, neither geographic location nor identity exclusively define pastoralists' exclusion from water, health, and hygiene. Rather, gender power relations, age, and socioeconomic position determine who can access what, when, and where. These ideas are deeply embedded, and can result in people resisting WASH interventions, which in turn can deepen the continued marginalisation of categories of people even within marginalised and vulnerable groups. In our study area, younger women of childbearing age, people with disabilities, and elderly men experience marginalisation and neglect of their sanitation and hygiene based on their social stratifiers.

## 7. Conclusion

Structural inequalities intersect with geographical location, gender, age, and socioeconomic position, bringing sociocultural, environmental, and material considerations to bear on people's behaviours and practices to shape experiences with sanitation, hygiene, water, and health in Tanzania's pastoralist settings. Understanding the ways in which individual stratifiers of identity (geographic location, age, gender, and socioeconomic position) interact with each other and with broader issues and contexts is vital. Public health interventions need to incorporate these sensitive and context-specific dynamics in order to help in designing inclusive solutions that do not further exacerbate inequalities and exclusion, particularly among women and girls, but also for elderly men or others who are differently positioned. This paper concludes that public health interventions ought to incorporate sensitive and context-specific dynamics relating to sanitation, hygiene, water, and health in order to help in designing inclusive solutions. We agree with Workman *et al.*'s call to put 'cultural information first, rather than using it as an explanatory feature for issues/risks within a project' (2021: 411).

However, issues of sanitation, hygiene, water, and health are not just locally determined. Rather they are multi-scalar; both natural and social, and temporal: they are experienced in intensely localised ways yet interconnect with larger political and economic contexts and debates; often appear biological and/or environmental, yet are fundamentally shaped by sociocultural norms, values and political inclusion or exclusion. Tanzania's National Sanitation Campaign acknowledges the biological importance of women and children in relation to sanitation, hygiene, water, and health, but not the intersecting stratifiers of geographic location, gender, age, and socioeconomic positioning. Yet without a holistic intersectoral approach to tackling WASH and health challenges in low-resource settings, and an acceptance of the knowledge and practical challenges experienced in these settings, it would be difficult to achieve meaningful progress in universal coverage for sanitation, hygiene, and water. Indeed, the social, economic, and environmental health costs of ignoring these dimensions are great and potentially undermine all public health and development attempts to create safe and healthy communities.

## 8. Policy recommendations

- WASH researchers and practitioners should apply intersectionality as a tool to help identify the most vulnerable groups, so that they are considered in policy interventions on sanitation, hygiene, and health.
- Public health interventions by the Tanzanian government and non-governmental organisations should incorporate people who may be disadvantaged and who are not usually involved in policy processes including older people and people with disabilities (taking care to accommodate and address their travel needs).
- Governments and development actors should research and develop pastoralist-specific WASH strategies that are sensitive to local terminology, cultural taboos and practices, including avoiding language and tone that trigger shame and disgust, and acknowledging cultural taboos to mixed-gender sanitation practices.
- The Tanzanian National Sanitation Campaign can go further by integrating sanitation approaches with pastoralist priorities (such as water supply in arid and semi-arid settings, livestock health, and livelihoods etc) by using holistic intersectoral approaches.

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