

Things That Take from People's Bodies: Rumours about Minimally Invasive Tissue Sampling and Evil Spirits in Ethiopia

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Abstract

In this paper we describe how the innovative technique of minimally invasive tissue sampling (MITS) and the researchers associated with it came to represent the fears, anger, and suspicions of a community in Eastern Ethiopia. MITS was developed to lessen the uncertainty over causes of death in low- and middle-income countries (Bassat et al. 2016). It is a medical procedure where a core biopsy instrument is used to extract numerous small tissue samples from a pre-defined set of organs (brain, lung, heart, liver, bone marrow) in deceased children under 5 and stillbirths. Additionally, MITS practitioners collect blood, urine, stool, and cerebral spinal fluid, take nasopharyngeal and oropharyngeal swabs, and include measurements and several pictures of the body to identify any abnormalities. In the study site, MITS has become more than just an act of extracting samples. Instead, it is a social process that begins when the research team learns about the death of a child and ends when the child is buried. Furthermore, the act of sample taking has come to represent the underlying fears, anger, and suspicions in the community about organ and blood theft, and those researchers associated with it – whether social scientists or histopathologists – have become the embodiment of an evil spirit called *tuqatta*, who survives on blood and organs, and conducts ritual sacrifice by offering the blood of its victims to spiritual ancestors. We suggest that the *tuqatta* embodies the strongly felt suspicion that the MITS intervention is not there for people's benefit, but rather that it is taking something from them. The emergence of the *tuqatta* in the research site highlights the vulnerability that people feel in relation to this global health medical intervention. We conclude by arguing that local frames of understanding should not be dismissed as 'rumours' or simply as something to overcome in health research; rather, they require serious attention and indicate the need for open dialogue between researchers and the public.

Keywords: Ethiopia, evil spirits, minimally invasive tissue sampling (MITS), suspicion

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Author contribution statement

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Introduction

The innovative technique of minimally invasive tissue sampling (MITS) was developed to lessen the uncertainty over causes of death in low- and middle-income countries (Bassat et al. 2016). It was developed in 2013 by the Barcelona Institute for Global Health (ISGlobal) to determine the cause of death with almost the same 'precision' and 'reliability' as a complete autopsy (Health Europa 2018; Fiestas 2018). By practitioners and researchers, it has been described as "a promising approach that can provide a more accurate and specific cause of death diagnosis than would otherwise be available" (MITS Surveillance Alliance). An increasing number of institutions and countries have expressed interest in using the MITS technique, and in response the Bill & Melinda Gates Foundation have funded a new global surveillance alliance called the MITS Alliance. The goal of the Alliance is to improve data on cause of death in low-income countries' (Fiestas 2018) so that "governments and health institutions can better plan and prioritize efforts to improve health outcomes" (mitsalliance.org). The Alliance currently has members from 16 countries, including Ethiopia.

In 2017 an international MITS project was launched with one study site in an area of Eastern Ethiopia with a "very high mortality rate (>100 deaths/1000 live-births)" and with "limited previous surveillance capacity, weak infrastructure, and political instability" (Seale et al. 2022). Demographic data contextualizes a community that is not only population dense (Population Census Commission 2008) and increasingly youthful (Pankhurst 2018, 163; cf. Ethiopian Central Statistical Agency 2016), but also one where under-5 mortality is simultaneously increasing for reasons that are clinically unknown (Assefa et al. 2016; Ethiopian Central Statistical Agency 2005; Ethiopian Public Health Institute 2019), given that the majority of under-5 and neonatal deaths in the study site are recorded with little

or no medical history (Assefa et al. 2016). Prior to the introduction of the study, verbal autopsies (VA) were the primary method for determining causes of child death and the most recent VA data suggest that severe malnutrition, gastro-intestinal disease, and acute lower respiratory tract infections are leading causes of death among children (Assefa et al. 2016; Dedefo et al. 2016).

In other words, before this international research study, there had not been any comprehensive research into the causes of severe illness in children in either the hospital or community (Dedefo et al. 2016). The aim of the MITS study was to identify causes of under-5 child and neonatal deaths and to share findings with local and national health stakeholders with the hope of influencing future public health policy in the region. To determine causes of death, the project relied on a transnational and multidisciplinary research team. At the time of writing, it employed over 40 staff from North America, the UK, Europe, and Africa, with 4 international researchers based in Ethiopia and approximately 40 Ethiopian researchers and supporting staff. The team consists of paediatricians, epidemiologists, histopathologists, microbiologists, social scientists, health officers, research nurses, psychosocial counsellors, administrators, drivers, and community consultants ranging from radio producers to representatives in local government offices and religious leaders. In short, it is a complex project that has cast its web over the implementing Ethiopian university and the surrounding community, but at the same time has created divisions between those associated with carrying out the study and those being studied.

In this article, we unfold how the research team came to be associated with *tuqatta*, an evil blood sucking and organ stealing spirit, and how it became central in the community's experience of the MITS procedure and their interactions with health practitioners and the research team. We focus on how this community express their experiences of interacting

with the research team as well as, for some, their experiences of taking part in, for them, a very sensitive research study aimed at understanding the causes of under-5 child death. In what follows we situate Ethiopia as a 'laboratory' in which studies like MITS can exist, then we explain the link between MITS and *tuqatta*; next we describe the rumours and feelings of suspicion the study is embroiled in, and finally we conclude by highlighting a lack of reciprocity between the study and its participants and discuss the unequal power relations inherent not only in this study but in many global health interventions.

Ethiopia as a 'laboratory'

The old city of Harar in Eastern Ethiopia is walled but possesses six main gates providing entry and exit to the winding alleys and bustling streets of its historic centre. At one time Harar was considered impenetrable and inaccessible to outsiders (Burton and Waterfield 1966), and the dominant, though debatable, historic narrative of the city has been one of marauding semi-nomads found outside the walls and elite traders sheltered within (Osmond 2014). While modern Harar now encompasses a 'new city' that extends far beyond the gates of the old, there is an analogy to be found in its local university campus that hosts a transnational research team. Much like the walls and gates of the old city, the university campus is surrounded by a barrier with few entry points. The university therefore exists somewhat separately from the rest of the community. It is heavily guarded by watchmen armed with batons and, when necessary, guns; it is primarily accessible only to the educated elite. Similar to the gates of the old city that once divided the trader elites and the less wealthy Others in the region, the gates of the university define a world of extremes in which those inside (and lucky enough to be part of elite research teams) inhabit a haven of Euro-American funding efforts in an impoverished region. The power relations between

those inside and those outside becomes even more evident as the researchers travel beyond the gates of the university to the rural community. The researchers travel in one of the several newly acquired 4x4s, wearing seatbelts, carrying packed lunches, and driving at speed past local forms of transport. They represent an Other world that is not accessible, or perhaps even understandable, for most people.

This scientific othering is not new and since the 1870s, when Africa was partitioned into various colonial conquests, the continent became a "living laboratory" for both colonial officials and scientists (Tilley 2011). As imperial ambitions turned towards Africa, new scientific fields began to emerge as colonial officials referred to experts in these fields to provide knowledge on how to govern their new territories. What resulted is a complex relationship between science and empire that had the power to both coerce and liberate (Tilley 2011, 25). In the medical sciences, research in the African 'laboratory' on tropical diseases led to shifts in scientific thought; in particular, there was less of a stress on disease eradication and more on the control of disease spread (Tilley 2011, 212). At the same time, in the field of social anthropology, colonial officials faced difficulties in addressing cultural and religious practices considered inappropriate, particularly witchcraft. Anthropological scholarship of the time raised questions about "comparative rationality, causality, evidence, and logic" (Tilley 2011, 294). Such concepts did not necessarily exist as a dichotomy where the rationality of science sat in contrast to the irrationality of magic or the supernatural; instead, these concepts were more fluid and context dependent (for more see Tilley 2011, 295).

Ethiopia has not necessarily been spared the legacy of serving as a 'living laboratory', even though it did resist falling under colonial rule (Triulzi 1982; Tilley 2011). And although, today, disease eradication, not just control, is a major scientific goal (Rinaldi 2009; Caplan 2009), the complex relationship between

science and empire persists through complex funding and research agendas (Stuckler et al. 2011; Kim 2021; Matthews and Ho 2008). Health research in Ethiopia is primarily undertaken by academic institutions, often in partnership with international organizations, whether development or academic, as well as international funders. Several Ethiopian universities are also home to demographic and research training centres that prove vital to global health research projects, which relies heavily on the input and support of local researchers and data collectors, as well as the growing desire for community engagement (Nyirenda et al. 2022; Reynolds and Sariola 2018).

In the Ethiopian context, and more specifically in the MITS study, health research often works alongside, informs, and supports the country's health system. The government health system includes tertiary referral hospitals in urban centres, secondary referral hospitals in peri-urban areas, primary health care units known as health centres in each district, and health posts in neighbourhoods. Health centres and health posts are staffed by doctors, nurses, and community health workers and are often the first point of contact with patients in the healthcare system. In many instances, including ours, researchers are often viewed with great suspicion through their association with the different layers of the public health care system. Sometimes this suspicion can have fatal consequences, as was the case in the Amhara region of Ethiopia, where three research scientists from Addis Ababa travelled to a rural village to investigate intestinal worms and trachoma at a school. Two of the researchers were killed by a mob who believed they were there to poison the children and the one survivor suffered life-changing injuries (Irungu and Berhanu 2019). This example illustrates that the stakes are high in health research, not only for the health outcomes and wellbeing of the community but also for the researchers themselves.

To tackle the country's public health challenges, the Ethiopian government launched the Health Extension Program (HEP) in 2004. Through the programme, community health workers called 'health extension workers' travel on foot from home-to-home delivering care and information set out by the federal government. Health extension workers are tasked with providing vaccinations, monitoring malnutrition, and encouraging women to attend antenatal care, amongst other things. The programme has contributed to significant improvements in maternal and child health, communicable diseases, hygiene and sanitation, and health knowledge and care seeking (Assefa et al. 2019). Despite these improvements the Health Extension Program is currently in crisis and facing challenges related to productivity and efficiency in the treatment and care provided. Additionally, several studies have shown that health extension workers commonly miss critical diagnoses and misdiagnose, leading to absent or incorrect management and treatment (Daka et al. 2020; Getachew et al. 2019). For many people in rural areas who rely on the health extension workers for routine care, these challenges have led to a sense of unease and even mistrust in the healthcare system, and in the rural research site in Eastern Ethiopia these feelings have been easily transferred to the MITS study, which the community rightly identifies as being aligned with government health systems and care.

It is within this complex healthcare system and the legacy of the Ethiopian 'laboratory' that the MITS study sits, and more specifically our description of the *tuqatta*. We acknowledge that as researchers (at one time) involved in the MITS study it is perhaps ethically dubious for us to critique global health interventions; however, we hope that by acknowledging our role in the study and by examining the ripple effects and meanings the study brings forth, we can highlight the impact of power relations in medical studies. This article is informed by observations

and experiences collected by the authors, an American and two Ethiopians, from 2017 to 2019. An additional 12 interviews, a focus group discussion, and a community discussion were conducted with members of the community who know of or have been approached to participate in the post-mortem tissue sampling. The regional language, Afaan Oromo, and the local dialect were used during data collection, and this contributed to building trust and rapport with the close-knit community. Gender differences between the researchers and those most often approached to take part in the study, namely mothers of the deceased children, arose. It proved challenging and at times unethical to ask grieving mothers how they felt about the MITS procedure, so this paper also includes insight from elders, youth, and men (and not just grieving fathers). All insights used in this paper are supplementary to the study and therefore inform research protocol but are formally beyond the scope of the study objectives.

MITS and the *tuqatta*

In this section we describe the MITS procedure and the *tuqatta*, the evil blood sucking vampire. We draw comparisons between the two as 'things' that take from people's bodies. Once a family has consented to MITS they are driven up to two hours from their home to the University in a 4x4 vehicle. The child's body is then taken to a room where the MITS procedure is conducted, and the family is given the opportunity to appoint a witness. MITS itself is a technique that uses an automatic core biopsy needle to collect tissue samples from various organs, which are then analysed through anatomopathological and microbiological techniques. Unlike complete diagnostic autopsy, the MITS technique "can be performed by trained technicians and with limited infrastructure" (Health Europa 2018). Tissue samples are taken from the brain, lung, liver, and bone marrow. In addition, the deceased child's stool, cerebral spinal fluid,

and blood and urine are collected, and nasopharyngeal/ oropharyngeal swabs are taken. Finally, measurements of the deceased child's height and head circumference are taken, as well as pictures of the body from several positions and angles (front, back, left side, right side) to identify any physical abnormalities. Thus, the start of the MITS process includes taking the child's body from its home, taking it from its family, and taking fluids and tissue for sampling, as well as pictures and measurements for analysis. Once everything is 'taken', the child's body is returned to its family riddled with puncture wounds from the needle. The researchers support the family in facilitating cleaning of the body and preparation for burial. In this way the body is being taken from the world of the living and automatically sent to heaven.

In the next phase of the MITS process, the samples taken from the body are examined, discussed, analysed and some are sent abroad. The samples undergo PCR (polymerase chain reaction) analysis to identify the DNA and RNA of organisms that might have infected the baby or child. "Other samples are cultured to detect microorganisms", and "the tissues are stained and examined by microscope" (Stiffler 2017). Some of the samples are sent to Atlanta for analysis at the US Centers for Disease Control and Prevention (CDC) for quality control. However, the goal is that the majority of samples are analysed in-country. The aim of such thorough sampling and analysis is to have the most accurate possible picture of the cause of death. This aim is built upon through a determining cause of death panel that includes experts from different disciplines who analyse the findings from the MITS procedure, along with any verbal autopsy data and clinical data that were also collected. This investigative approach is communicated to families during the consent process and is based on the promise that the leading and underlying causes of death will be identified and communicated not only to the

family but also to the relevant public health authorities.

Although much is taken, the study aims to minimize the effect it has on the community and it first carried out social science research on the feasibility of conducting the study activities, namely the MITS procedure, in a tertiary government hospital and amongst the community. The pre-study hypothetical acceptance of the MITS procedure, along with information on practicalities that ought to be considered when implementing study activities (e.g. knowledge about burial timings and rituals), were explored. In addition, a 'rumour surveillance system' was established, with the aim of capturing any rumours and gossip about the study, as well as 'misinformation' being spread throughout the community about study activities. The system was developed by the social science team in response to experiences of other MITS study sites (specifically in Bangladesh) and other studies in Ethiopia (e.g. the trachoma study). The rumour surveillance system depends largely on a community advisory board sharing community concerns, knowledge, and understanding about the study at monthly meetings. In addition, some study staff are based full-time in the community and conduct participant observation in their daily tasks, noting what community members say and think about the study. There are also public events where community members can voice their feelings openly and directly about the study and the researchers. However, the occasion on which most rumours and gossip were captured was during the consenting process: a process that not only involves the deceased child's parents, but often the entire community. It is through this rumour 'system' that we learned that study researchers are thought to be *tuqatta*, an evil, blood sucking, and organ stealing spirit. In what follows we describe the rumour in detail and what they tell us about complex health interventions.

Rumour and suspicion

Tuqatta are described as evil spirits who primarily suck blood as part of sacrifices to the ancestors, or even to other evil spirits, at ritual ceremonies. Although the *tuqatta* is shapeless it finds a human host, usually in a dark coat, to carry out its activities. The community explained that the host could be an outsider and someone unknown or, less commonly, it could be someone familiar; in other words, anyone can be *tuqatta*. After the host is identified and their body is taken over their power is through touch; all they must do is touch their 'victim', always a child, who will become spellbound and be taken over by an evil spirit. They lure children with candy or other gifts and touch the child with a magic stick. Then the victim will then be compelled, without resistance, to follow the *tuqatta* to a location unknown and unidentifiable by the community, where their blood is sucked and their organs removed. One community member explained that the "*tuqatta* usually starts 'working' at midday and in the middle of the night." Several people described how the spirits need blood at the hottest time of the day or seek opportunities under the cover of the night.

Many families indicated that the cause of their young child's death was because the child innocently followed a *tuqatta* or was kidnapped and had their blood sucked. It is believed that *tuqatta* are expanding their activities to include organ theft and the kidnapping of children for their blood and organs due to the national demand for organs and the high price that they can fetch on the black market. When interviewed, one middle aged community member described the high value placed on organ theft, and the implied incentive for study researchers to steal the organs of the deceased children: "Children's organs are very fresh and sold at a high price ... that is the reason to suspect [the study of also stealing and selling organs]". The community is also fearful of the study because it is well known that medical students learn anatomy on cadavers.

They believe that the study is collecting bodies and organs for teaching purposes, which is not entirely false because pictures and data of the deceased child will be used by multidisciplinary panels aimed at determining the cause of death and might be used in future medical training. Many participants expressed fear that, because the study is working with the university medical campus and teaching hospital, organs might be taken for studying and learning. Additionally, stories about organ theft are common amongst patients admitted for surgery at the tertiary hospital and very common if a dead body is stored in the morgue before burial. The morgue is negatively thought of to the extent that the study had to build a separate space to conduct the MITS procedure because the community informed the MITS study that they would face a complete refusal from all potential participants if bodies were handled in the morgue. The community, along with the person who runs the morgue, explained that the general perception is that organs are stolen from dead bodies and the person running the morgue is not perceived as trustworthy.

These suspicions are driven by true stories about organ theft and a thriving black market. The stories circulate on social media and in the news (Tenpas n.d.), as do similar stories all over the world (for further stories and 'dark legends' see Champion-Vincent 1997, 2001; Scheper-Hughes 1990, 2005; White 1997; Niehaus 2000). Many of the stories emanate from news reports and academic articles about child trafficking, migration to the Middle East (Pessoa et al. 2014), and illegal trafficking (Beck et al. 2017). It is believed that migrants' organs are stolen by illegal traffickers while crossing borders on their way to the Middle East and Europe. These stories are not false; in fact there is much international press about organ theft for migrants as they travel across the Sahara Desert (Arsenault 2011; Gebru 2017; Nadeau 2016). Many Ethiopian communities themselves suffer from illegal child trafficking and subsequent organ theft (Megento and Wolde 2018; Gardner 2017).

The community also believes that the dead bodies of children contain substances of high value, particularly mercury. They explained that this perception emerged from generational knowledge passed down from elders, as well as from ancestral folklore. A community death notifier explained, "We believe that the reason the project [study] team traveled to the village to collect the dead body was for hidden reasons and could be the child's body has a substance of fabulous value called mercury".

The community often explained that the characteristics and methods of the *tuqatta* are continually evolving and adapting to the local and contemporary context. For example, the arrival of the study 4x4 vehicle has a new meaning for the community. Before the study started there was a custom that whenever a car entered the village a gathering of small children would welcome the guests. This was commonplace and considered ordinary in every rural village. Nobody considered the presence of a new car and the outsiders to be a threat because 4x4s often contain NGO workers who people feel support the community. But now it is considered life threatening for an unfamiliar 4x4 to arrive in a rural village. In some cases, it was observed that if the vehicle is identified as a MITS study vehicle, then families and mothers rush to their children and hide them in their house while shouting "we hope you don't find anything". Teenagers might then throw stones at the car. A former researcher said it felt like they were "considered perpetrators of death" as it is believed that either the *tuqatta* or MITS itself kills children.

The rumours have contributed to an overwhelming feeling of discontent, distrust, fear, and suspicion amongst the community. Additionally, feelings often associated with health facilities and medical practice in general, as well as the MITS study's association with them, has led to increased suspicion. The MITS process deviates from routine health-care (e.g. childhood immunization and nutritional support) and instead actively seeks out

dead children (through the death notification system). This approach to child health, which actually starts with child death, is shocking for the community. Additionally, the MITS process is completely new to the community. The researchers provided awareness and sensitization to procedures like biopsy (in sample taking), yet this is a community where there is little access to biomedical health services and exposure to modern health science. As a result, there is major suspicion of both MITS and the *tuqatta*, as, in both, young children are considered to be vulnerable and potential victims. Unfortunately, the communication between the researchers and the community is not always clear and this has led to frustrations and distrust on both sides. The community believe the researchers to be *tuqatta* while the researchers continue to push their research agenda and advocate the benefits of MITS. This misalignment illustrates unequal power relations and a feeling of a lack of reciprocity amongst the community.

Reciprocity and power relations

Reciprocity is complex and crosses the genres of the human and the non-human in this study site. Reciprocity is about exchange; MITS samples (from the point of view of the researchers) or children (from the point of view of the community) cannot simply be taken with nothing being returned. The emergence of the *tuqatta* in the form of the researcher suggests that there is an occult economy at play. In such cases witchcraft, or the supernatural, is a means to attain power and wealth (Austen 1993). There is a direct correlation between the researcher as *tuqatta* and their perceived wealth. The custom-built research laboratories, IT hardware and infrastructure, medical equipment, expensive vehicles, and researchers who have received training from leading research institutions stand in contrast to the poor facilities and low economic status of the community. A moral economy of witchcraft is a community governed by standards of

collective survival and a belief in a zero-sum universe, "a world where all profit is gained at someone else's loss" (Austen 1993, 90). Witchcraft in this form crosses hierarchical boundaries by allowing for the belief in 'magical means for material ends' (Comaroff and Comaroff 1999, 279).

The research team and their associated paraphernalia are a microcosm of a larger trend in global health research. In this trend economic inequality and knowledge and skills disparities underpin transnational research agendas that are aimed at addressing health crises. This difference extends beyond access to privileged materials and skills to the frames of understanding used to experience the world and the modes of expression, or resistance, used to describe them.

The inequality inherent in medical health research, along with the stories told about the study and the researchers themselves, leads to challenges for both global health research and the communities in which studies are conducted. Studies and research centres that fail to provide medical care and treatment alongside data collection tend to be looked upon poorly and quickly fall into disfavour with the community, as has been the case with this rural study site in Eastern Ethiopia. Given these circumstances, it is understandable that the community may mount acts of resistance, especially if they observe large sums of money being used for laboratory equipment and SUVs while they lack access to preventative and potentially life saving treatment.

Acts of resistance can take many forms and despite all the efforts the study made to facilitate smooth entry to the community and to gain consent, communities would sometimes forbid the researchers to enter. There might be threats of, or actual, physical violence, or shouting and heated conversations about the study, resulting in mobs forming and the researchers fleeing to their vehicles. One former study researcher said, "I personally feared to interact with children in the locations where there is relatively less concern about *tuqatta*."

I worry ‘what if the child dies?’ and then the whole community will have justification to say that we are *tuqatta*. Every move we made in the community was with maximum carefulness. Although I personally do not believe in this myth of the *tuqatta* the nature of the work and the fast spread of rumours in the community made my every move cautious.” There are also threats against community members seen as aligning with or helping the study. One community-based death notifier feared for his life and called the research team to say, “please do not tell them [the family, the community] my name if they ask you who informed you about the death they will kill me.” Such reactions indicate that trust is a central concern for the community, and efforts by the study team were falling short.

Issues of trust and such reactions are not necessarily new. Nguyen, working on the 2014 Ebola epidemic in both Guinea and the DRC, notes that “building trust starts with relationships with patients and families” (Nguyen 2019). He writes that attacks on Ebola health workers and treatment units were labelled as ‘resistance’, but remain poorly understood. According to Nguyen there are two forms of resistance. The first is resistance by individuals and families to prevention activities aimed at them that are ultimately driven by fear linked to a sense of outrage and powerlessness. The second is resistance involving planned, armed attacks on symbols of the international response, driven by anger and the perception that funding is not being adequately redistributed and is largely benefitting outsiders. He writes, “since 2014, anthropologists have pointed out that resistance to Ebola control efforts reveals ongoing, legitimate concerns about the conduct of interventions, respectful treatment of local populations, and resource distribution” (Nguyen 2019, 1299).

The Ethiopian study team faced both resistance from individuals and families, and resistance involving attacks and threats of violence. Building on Nguyen’s understanding of what drives resistance, the study community

was driven by fear and anger to protect their children from evil spirits and to fulfil a responsibility to fight the *tuqatta*. The study team learned that the community were fearful of the return of the *tuqatta*. They were angry that nobody seemed to care about daily deaths from malnutrition and other preventable infectious diseases, the lack of clean water, or medical care delivered in health centres without electricity. They were angry that the study team seemed to only care about dead babies, not about helping babies and children when they were still alive. In this frame of understanding it only makes sense that the *tuqatta* took shape in the form of the researchers and that the community fought back as a protective measure.

Conclusion

The *tuqatta* takes the shape of the researchers who lure children to them (perhaps with their shiny 4x4s or community engagement activities). One touch from a researcher and a child is taken away to an unknown location (the tertiary referral hospital over 30km away), their blood and organs are taken (through the MITS technique), and their body is returned with evidence to prove all these suspicions (up to 30 punctures that leak fluid from sample taking). The risk of being touched by a member of the research team is high. They might shake one’s hand in greeting during the consent process or they might touch someone when taking a cup of coffee at the local café. It is believed the researchers need children for the MITS procedure and once they get what they need they return the child’s body. MITS is a way of representing the ways that the *tuqatta* changes and adapts to new situations. The ways in which the community describe such an evolution and adaption of the *tuqatta* are not surprising and have been a consistent theme in anthropological accounts of witchcraft (e.g. Evans-Pritchard 1976).

All researchers involved in the MITS process are suspected to be *tuqatta* by the

community; they all have a hand in 'taking' something and therefore could all potentially be *tuqatta*. This rumour proves difficult for the study, whose research agenda and its applied components are set out in the study protocol and monitored by the international funding body and the international research institutions that lead the study. Researchers on the ground can manoeuvre their priorities within these given parameters but are limited to the depth and scope of the protocol. Such practical constraints were challenged when stories about the *tuqatta* took hold.

We argue that, in health research, unfamiliar medical sample taking procedures like MITS can be interpreted as malevolent. The community and the study's researchers are actively engaged in a co-production of identities as researcher and *tuqatta*, and in a co-production of technological understandings of MITS. For the community, the researchers who touch or are associated with the MITS procedure become the living embodiment of *tuqatta*. For the researchers, the community's miscomprehension can be linked to their misunderstanding of – and lack of familiarity with – medical research practices and objects (such as the extraction of bodily fluid and tissue during the MITS procedure). This effect is compounded by the social isolation and economic disparity embodied by community. We suggest that local frames of understanding should not be dismissed as 'rumours' or simply as something to overcome in health research; rather, they require serious attention and indicate the need for open dialogue between researchers and the public. It is important that researchers attempt to understand and respect the logic and frameworks that local communities create and deploy around the study. If researchers fail to consider the social, emotional, and even mysterious ways that communities understand health interventions, then researchers will continue to exist a world away from the community.

Our article shows that while technologically innovative health research is important

in the effort to gain evidence-based empirical data for improved health policy planning, co-production of research priorities – with the participants themselves as well as with high level officials – needs to be better incorporated into global health. These moves towards co-production include the need for establishing a community-based medical research council (local community health advisory board); better contextualization of health research in emerging and evolving political contexts; increased involvement of community members in research planning and implementation, including schemes to recruit and train young scientists to a career in research; and serious consideration of the socio-cultural and religious contexts that the study and health related technology are situated within.

Asking people to quickly accept a health technology like MITS runs several risks for both the success of the study and the health of the community. However, the health of the community is at risk through two potentially diverging logics. On the one hand, the study might conceive of risk as communities not receiving important health knowledge and interventions due to their failure to accept and participate in the study. On the other hand, the community might understand the risks associated with participating in the study as grave, given existing concerns community members have towards people and objects that move and act in a similar way to forces like the *tuqatta*.

This Ethiopian case study shows that mysterious and powerful figures, like the *tuqatta*, are not static in society. They move throughout a community and change their *modus operandi*, evolving with economic, political, and religious transformations. Listening to and taking seriously the concerns *tuqatta* pose to a community can reveal much more than underlying suspicions and fears. Understanding forces like the *tuqatta* can aid health researchers' knowledge of the political economy of health and the effects of social inequality on people's health. Additionally, global health must acknowledge

that technological innovations like MITS used in research have the power to evoke fear, distrust, and suspicion, not because of unfamiliarity with the 'modern', but because of the social meaning ascribed to a technology that can have multiple uses (clinical and mystical).

Finally, it is not uncommon for communities to express frustration with the global health agenda. In this study emphasis is placed on MITS as a tool with the power to accurately and reliably identify causes of death in children under 5. As the study has placed an increased focus on the power of MITS, so has the community, albeit with differing understandings of its power and potential. Yet, for the community, a focus on the power of MITS to prevent future deaths through its diagnostic capabilities is not necessarily needed. Instead, they continually identify causes of child death through economic, political, and social frameworks. For many people, illness and death are caused by a lack of clean water, chronic malnutrition, and poor health care and infrastructure. The community regularly took researchers to the health centre to show them the lack of available water and medicines, and if researchers were to also consider seriously the stories people tell about the *tuqatta* then the negative impact of the political economy

and social inequality on people's health could have a renewed emphasis in global health research.

In conclusion, this paper speaks to wider discussions about public engagement with science, where many funders now prioritize greater dialogue with publics in setting agendas, negotiating research activities, and handling and responding to risks. This illuminates potentially "wholly different framings that often divide scientists and publics, rooted in their different cultural worlds and material concerns" (Fairhead et al. 2006, 1110). Medical research in Africa is situated in the contexts of globalization and inequality, indicating that public dialogue might be a difficult but vital part of the "process of linking research in resource-poor settings to the services demanded by poor people" (Farmer 2002, 1266). We echo the arguments put forth by Beisel et al. (2016) and Fairhead et al. (2006) that local understandings of knowledge that present challenges to global health research should not be dismissed as 'rumours', misunderstandings, or a lack of information. Rather, they require serious attention and indicate the need for open dialogue between researchers and the public.

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