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ORIGINAL ARTICLE

Climate-driven migration: an exploratory case study of Maasai health perceptions and help-seeking behaviors

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Abstract
Objectives By 2050, over 250 million people will be displaced from their homes by climate change. This exploratory case study examines how climate-driven migration impacts the health perceptions and help-seeking behaviors of Maasai in Tanzania. Increasing frequency and intensity of drought is killing livestock, forcing Maasai to migrate from their rural homelands to urban centers in search of ways to support their families. Little existing research investigates how this migration changes the way migrants think about health and make healthcare decisions.
Methods This study used semi-structured qualitative interviews to explore migrant and non-migrant beliefs surrounding health and healthcare. Migrant and non-migrant participants were matched on demographic characteristics and location.
Results Migrants emphasized the importance of mental health in their overall health perceptions, whereas non-migrants emphasized physical health. Although non-migrants perceived more barriers to accessing healthcare, migrant and non-migrant help-seeking behaviors were similar in that they only sought help for physical health problems, and utilized hospitals as a last option.
Conclusions These findings have implications for improving Maasai healthcare utilization, and for future research targeting other climate-driven migrant populations in the world.

Keywords Climate change · Mental health · Rural-to-urban migration · Tanzania · Healthcare · Maasai

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Introduction

Climate-driven migration and health

By the year 2050, scientists predict that climate change will displace more than 250 million people from their homelands (McMichael et al. 2012). Increasing temperatures and frequencies of extreme weather events such as droughts, floods, and storms are turning people into "environmental refugees" (Jeacocke 2010). Because climate change causes environmental degradation, health problems, and destruction of economic resources, impacted populations move to places perceived to offer a better life (McMichael et al. 2012).

Environmental change vulnerability, which is a combined measure of a community's exposure to climatic change, its sensitivity to these changes, and its ability to adapt (Confalonieri et al. 2007; McLeman and Hunter 2010), is particularly high in Sub-Saharan African countries. These countries are projected to face intense effects of climate change (World Health Organization and World Meteorological Organization 2012), and bear some of the largest global disease burdens. Furthermore, many countries in this region have insufficient infrastructure to handle large societal changes such as increased climate-driven migration (Confalonieri et al. 2007).

Research has extensively explored the impacts of non-climate-driven migration on the mental and physical health of individual migrants (McKay et al. 2003; Bhugra 2004), but has yet to investigate whether a climatic driver of migration will influence or alter those health impacts (McMichael et al. 2012). Climate-driven migrations are often internal, from rural areas to urban centers within the same country (McMichael et al. 2012). Generally, urban environments place migrants' physical and mental health at risk (Friel 2011). Many suffer from homelessness, joblessness, social marginalization, and food insecurity (McMichael et al. 2012). These life circumstances can result in health challenges, such as depression, malnutrition, and infectious disease (McMichael et al. 2012).

The Maasai in Tanzania: a case study

This case study explores these issues with a focus on climate-driven rural-to-urban migration of a sample of Maasai people in Tanzania. The Maasai are pastoralists living in rural regions of Tanzania and Kenya. Cultural traditions include male circumcision, polygamy, arranged marriage, and a period of warriorship for the males (Biswas-Diener et al. 2005). Rural Maasai live in *bomas*, groups of six to ten Maasai mud huts that have no running water or electricity and are isolated from urban society. Men own and care for the livestock, whereas women manage the household and care for the children. They speak a language unique in Tanzania, kimaasai, and rarely obtain formal secondary education (Coast 2002).

Droughts have been driving the Maasai in Tanzania out of their rural homelands and into urban areas. In a 2012 study in Dar es Salaam, Tanzania, 81 % of Maasai migrants reported drought as the primary reason they moved into the city from their villages (Riley et al. 2012). Migration is driven by the loss of livestock, the main source of livelihood for Maasai people. Increased drought frequency and duration cause food and water shortages that render the Maasai incapable of sustaining their livestock, resulting in migration to cities in search of new opportunities. A common destination for Maasai migrants is the city of Arusha, which has a population of about 1 million (National Bureau of Statistics 2012) and is the largest tourist hub in Tanzania.

Development of an illness behavior conceptual framework

This study explores Maasai migrant and non-migrant beliefs and behaviors related to seeking help for health problems. Illness behavior is an umbrella term encompassing human response to sickness and suffering (Sirri et al. 2013). It is the observation of the body, interpretation of symptoms, and formulation of a plan to improve one's health (Christakis et al. 1994). Help-seeking behavior is a subcategory of illness behavior. Help-seeking behavior is the act of seeking assistance or advice in response to a change in one's perceived health (Cornally and McCarthy 2011).

A conceptual framework of illness behavior (Fig. 1), which is a synthesis of several existing theories (Andersen 1995; Bailis et al. 2003; Leventhal et al. 2003; Jylhä 2009), underpins this study. There are three main questions an individual answers in this framework: (1) Do I have a health problem? (2) Do I want to seek help? (3) From whom do I seek help?

An internal or external input catalyzes the help-seeking process by making people attend to and evaluate their health statuses. Individuals must interpret these inputs to determine whether or not they have a health problem (Andersen 1995; Leventhal et al. 2003). Next, an individual must decide whether or not to seek help. Leventhal's Common Sense Model and Andersen's Socio-behavioral Model both assert that people constantly assess their own health and use those assessments to judge whether their health problems are of sufficient magnitude to seek help (Leventhal et al. 2003; Andersen 1995). Lastly, in developing countries, one usually decides between traditional healers and biomedicine (Kroeger 1983; Christakis et al. 1994). Many personal, environmental, and societal factors influence these decisions, as shown in Fig. 1.

Research questions

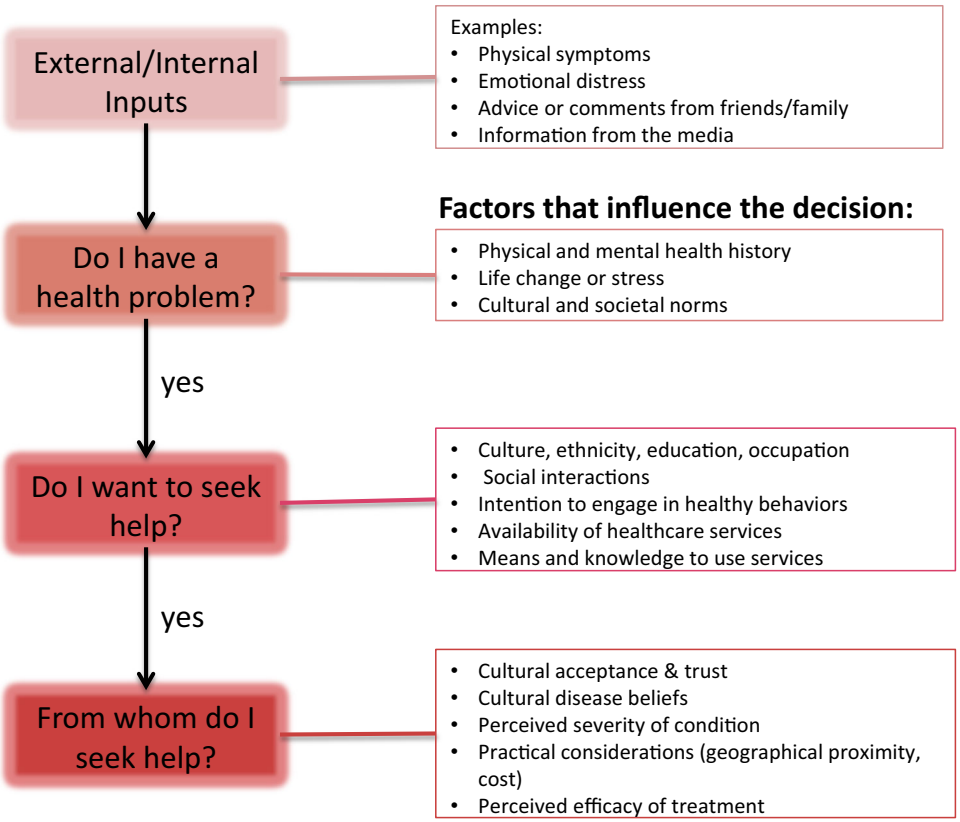
Using semi-structured qualitative interviews guided by the illness behavior conceptual framework presented in Fig. 1, this research focused on understanding and comparing the health perceptions and help-seeking behaviors of Maasai migrants and non-migrants. Little to no research has been done on illness behaviors of the Maasai, so it was necessary to build a foundation of knowledge using a rich qualitative methodology.

This case study utilizes a matched sample of migrant and non-migrant Maasai to explore the following research questions: (1) how, if at all, do perceptions of what it means to be healthy differ between climate-driven Maasai migrants living in a developed urban setting and non-migrant Maasai living in a traditional rural village setting? (2) How do perceived health problems differ between these two groups? (3) How do help-seeking attitudes and behaviors differ between these two groups?

Methods

Selection of study sample

Interviews were conducted in two demographically matched Maasai populations: rural-to-urban migrants and permanent rural residents (i.e., non-migrants).



Adapted from: Andersen, 1995; Bailis, Segall, & Chipperfield, 2003; Jylhä, 2009; Leventhal, Brissete, & Leventhal, 2003

Fig. 1 Conceptual framework for illness behavior of Maasai in Tanzania, 2013

Migrant participants (8 males, 6 females) were recruited in Arusha, Tanzania. Most Maasai men in Arusha migrated from Longido district, which is the most isolated Maasai district. At a community meeting in Arusha, a purposeful sample of eight Maasai men was selected using the study's inclusion criteria: each male participant must be Maasai, living in Arusha, over 18 years old, and from Longido district.

Most female Maasai migrants originated from Simanjiro district. The project coordinator and translator recruited female participants ($n = 6$) by visiting them at their work places and explaining the study goals. Inclusion criteria were the same as for male migrants, except all female participants originated from Simanjiro district.

Non-migrant interviews took place in rural villages in Longido district for men ($n = 8$), and Simanjiro district for women ($n = 6$). None of the non-migrant participants had ever migrated to an urban area, and were purposefully chosen to have similar demographic characteristics to the migrant participants (Table 1). The two samples were matched based on socioeconomic indicators in the Maasai culture: age group, gender, number of wives, number of children, marital status, number of siblings, and education (Riley et al. 2012).

Data collection

Data collection spanned 8 weeks during July and August 2013, and consisted of 28 qualitative interviews. The major part of the interview consisted of open-ended questions that explored the participant's beliefs surrounding health and help seeking. This open-ended section of the interview was constructed based on the literature and guided by the newly developed illness behavior theoretical framework. Table 2 shows example interview questions and the full interview protocol is given in Online Resource 1.

Prior to recruiting study participants, all interview questions were reviewed by the Maasai project coordinator to ensure that the questions were culturally and linguistically appropriate. A pilot interview with a migrant Maasai man in Arusha resulted in revisions to the interview protocol.

All interviews used the same Maasai translator. Participants chose whether to speak Maasai or Swahili, and all but one chose to speak Maasai. Each migrant participant received a drink and/or a meal and each non-migrant participant received a blanket in thanks for their participation. These gifts were financially equivalent and were decided upon based on the greatest needs of the participants.

Table 1 Demographic matching between migrant and non-migrant Maasai in Tanzania

Indicator, males	Non-migrant ($n = 8$)	Migrant ($n = 8$)
Education		
None	3	2
Primary	3	4
Secondary	2	2
Age		
Young adult	4	4
Middle-aged	4	3
Elderly	0	1
Married	4	4
Number of wives	(1–2)	(1–2)
Mean number of children (range)	2 (0–4)	3 (2–5)
Unmarried	4	4
In younger half of siblings	1	2
Indicator, females	**Non-migrant ($n = 6$)**	**Migrant ($n = 6$)**
Education		
None	6	6
Primary	0	0
Secondary	0	0
Age range		
Young adult	1	1
Middle-aged	2	2
Elderly	3	3
Married	6	6
Number of wives husband has	(2–10)	(1–12)
Early wife[a]	2	3
Mean number of children (range)	6 (2–9)	5 (1–10)

[a] Early wife: in the first half of all wives

Table 2 Example questions from the interview protocol for migrant and non-migrant Maasai in Tanzania, 2013

Interview section	Example questions
Demographics	How many wives do you have? (for married men)
	How many children does your father have? (for unmarried participant)
	Which wife are you? (for married woman)
Health perception	Think about a day or time period when you remember feeling particularly healthy. Describe that time to me in as much detail as you can.
	What are two or three improvements to your health you would like to make?
	Imagine you are the healthiest you could be. Describe to me what that would look like. How would you look and how would you feel?
Help-seeking behavior	Tell me about a time when you sought help for a health problem. Explain to me what happened: what was the health problem for which you needed help? Where did you go? Did you seek advice from friends, family members, or anyone else? Etc.
	Have you ever gone to the hospital? (If yes) Describe the experience to me. Was it a positive or a negative experience?
	Was there ever a time you wanted to go to the hospital but decided not to or were unable to go? Why did you decide not to go or why were you unable to go?

Data organization and analysis

All interviews were audio-recorded, verbatim transcribed, and compiled in NVIVO 10 qualitative data analysis software. Data analysis was guided by inductive and deductive thematic approaches (Miles et al. 2013). The researchers developed a coding framework containing both external and internal codes. Codes external to the study stemmed from previous research, while internal grounded codes prioritized the voice and perspective of the study participants. Codes

were applied to the transcripts in two passes. The first pass codes were categorical codes that served as the highest thematic level of coding. Second pass coding consisted of subcodes for the first pass categorical codes to add specificity and depth to the identified themes. Throughout the iterative process of coding and categorizing, analytic memos were used to explore possible connections between themes and subthemes, allowing the formulation of propositions through the constant comparison method (Glaser 1965). Assertions and propositions were tested using matrices and other data displays (Miles et al. 2013). Negative case analysis helped to verify conclusions made from propositions and assertions (Bernard and Ryan 1998).

Findings

Driving forces of migration

Although it was expected that both men and women migrated to Arusha due to climate change, interviews revealed that this was only true for male migrants. All Maasai migrants in this study were driven to migrate by the need for money to support their families. However, male and female migrants in this study were differentially driven to seek out monetary income (Fig. 2). In accordance with the literature, droughts drove men to migrate, because the dry climate killed the men's livestock, and left them with no livelihood. In contrast, women were driven to become the family breadwinners when their male providers either died or became unable to work. When their husbands had few livestock, the women looked for business opportunities in Arusha to support their families, such as selling jewelry, tobacco, and tea. Both male and female migrants left their families at home in the villages, and sent remittances to pay for more livestock, food, school fees, and healthcare.

Despite having different reasons for migrating, male and female migrant participants had very similar beliefs surrounding health perceptions and help-seeking behaviors. Hence, further findings of this study will not be segregated by gender.

Differences in perceptions of what it means to be healthy

All migrant and non-migrant participants identified both mental and physical health in their constructs of health (Fig. 3). Within mental health, study participants believed that a healthy person is both happy and has low levels of stress. Mostly, participants referred to being happy as a direct result of feeling no stress. A migrant woman said, "thinking and stress and worries, that is not healthy" (#14, migrant female).

Participants identified three important aspects of physical health: being energetic and strong, having a healthy weight, and not feeling sick. Study participants believed that "when you are healthy, you have energy, are strong, it means you can work" (#26, non-migrant male). Furthermore, most participants discussed a healthy weight by saying, "health means being huge, fat" (#12, migrant female). Lastly, participants acknowledged that a healthy person is "not sick and doesn't have any illness in his body" (#15, non-migrant female). Across all participants, feeling ill always indicated poor health, but lack of illness did not necessarily indicate good health if the person did not meet the other three criteria of energy/strength, healthy weight, and lack of stress.

While all participants identified these four aspects of health, migrants placed more importance on mental health and non-migrants on physical health in their perceptions of what it means to be healthy (Fig. 3). When asked about ideal health, health goals, and extremely healthy individuals,

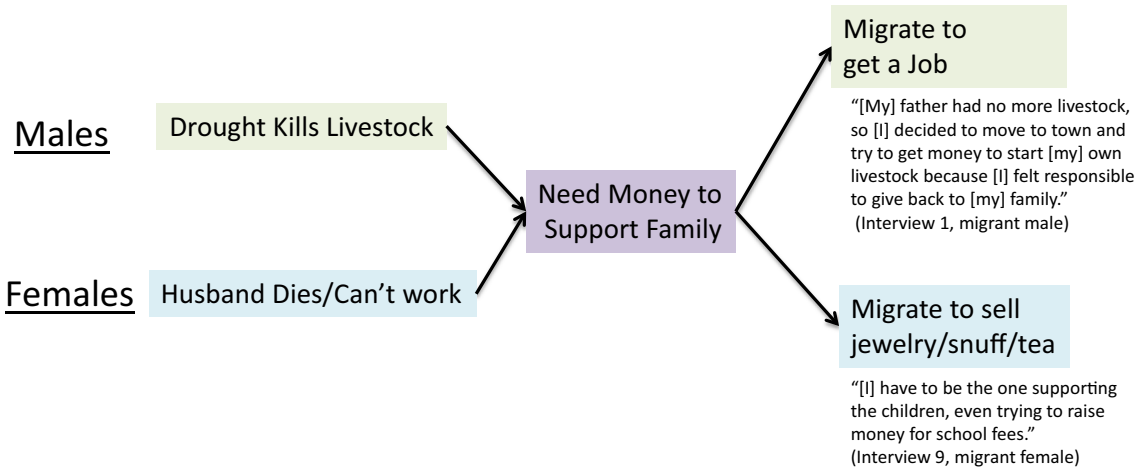


Fig. 2 The driving forces of Maasai migration for men and women in Tanzania, 2013

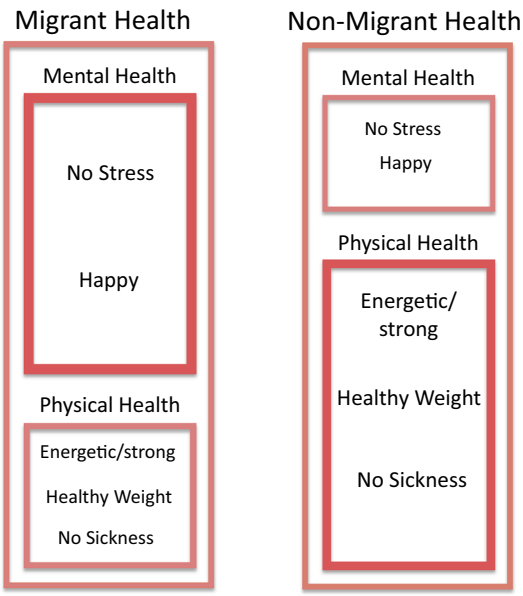


Fig. 3 Health perceptions of Maasai migrants and non-migrants in Tanzania, 2013

migrants discussed lack of stress much more often than being energetic, strong, and sick, whereas non-migrants talked about the importance of good physical health more often than the importance of good mental health.

Differences in perceived health problems

Migrant participants struggled with mental health problems like stress, unhappiness, and loneliness more than did non-migrant participants. Maasai in Arusha attributed their poor mental health to shouldering large responsibility, feeling trapped and hopeless, lacking social support, and feeling homesick.

Responsibility

Migrant participants felt a more intense and urgent sense of responsibility to provide for their families than did non-migrant participants. All migrant participants moved to Arusha in search of income to support their families at home. Many were solely responsible for providing for their wives, children, parents, and/or siblings, and they felt intense anxiety over being able to provide for them. A migrant man reflected on his stress surrounding his family's well-being:

> I feel like an elder and more responsible, I have been thinking about my wives, that they live well and eat well, and now I have children. I think of and worry about them all the time, that they go to school and eat well, and just to think about how I can make their lives comfortable. If I start thinking about all those things, I feel unhealthy because of worries about making life comfortable for my family. (#8, migrant male)

While non-migrants mentioned feeling responsibility and some anxiety surrounding their families' well-being, they did not emphasize it as much as migrants did. Migrant participants discussed responsibility, stress, and unhappiness more frequently than did non-migrants, and with greater intensity.

Lack of social support

Lacking social support and being far from home contributed to the poor mental health of male migrant participants. Migrant men felt homesick, missed their families, worried about the states of their children or siblings at home, and all had the ultimate goal of moving home. When the men returned home, they said it was "the only time they felt fresh again" (#3, migrant male). Home provided the social support they were missing, they got to see their livestock, and they were able to sleep peacefully. Being away from family in the stressful living conditions of Arusha made them feel isolated and lonely.

Some men described getting angry when their employers did not allow them to go home, and many voiced having had feelings of losing hope and wanting to give up and go home. Almost all migrant male participants worked as night guards for residences in Arusha. Night guard work is stressful because the men are accountable to their employers for anything that gets stolen or broken, and there is always the threat of dangerous thieves that will "slaughter and cut you all over" (#4, migrant male). However, the men feel trapped in Arusha, with no other way to provide for their families. While home provides social support, moving home without income would place them in the stressful situation that forced them to migrate in the first place. This no win cycle enhances a feeling of hopelessness and lack of control for migrant men specifically.

Migrant women did not discuss feeling homesick as often as migrant men. This could be because women had a stronger sense of community in Arusha. They all worked together during the days and slept in a rented room together at night. Additionally, they had more freedom to travel home, since they were self-employed selling jewelry, tea, and snuff.

Similarities and differences in help-seeking attitudes and behaviors

Do I want to seek help?

Migrant and non-migrant participants utilized similar help-seeking frameworks. They sought help for physical signs

and symptoms such as pain, swelling, fever, cough, and chest pain. Notably, neither migrant, nor non-migrant participants cited stress or depression as internal inputs that catalyzed a help-seeking response. They emphasized that improved life circumstances, not healthcare treatment, would alleviate mental health challenges.

From whom do I seek help?

Although herbal and western medicines were both used, migrant and non-migrant participants agreed upon an order in which they were normally sought out. Herbal medicine was almost always the first line of treatment for a health problem. This type of traditional medicine makes someone "have diarrhea and vomit and it gets all the dirt out" (#3, migrant male). If the herbal medicine was ineffective, and the person continued to feel sick or got worse, then he or she would go to the hospital. Consequently, hospitals were used as a last resort treatment.

Factors that influence help-seeking decisions

While this chronology of treatment usage remained constant between migrants and non-migrants, non-migrants perceived more barriers to accessing western healthcare. Both migrants and non-migrants identified long wait times and distrust as barriers to accessing western healthcare, but non-migrants also discussed transport cost, distance to the hospital, healthcare cost, and resource shortages at hospitals and clinics as barriers (Fig. 4).

Discussion

The results of this exploratory case study illuminate a mismatch between Maasai migrants' perceived health problems and health perceptions, and their help-seeking behaviors. Migrants suffered more from mental health issues and placed higher importance on mental health, but they continued to only seek help for physical health problems. Additionally, migrant participants perceived fewer barriers to accessing western healthcare, and yet still reported using clinics and hospitals as a last option. Findings also revealed that male migrants are climate driven, but female migrants are driven by the lack of a male provider. Hence, these results have implications for both climate-driven male migrants and financially driven female migrants. Implications for policy, practice, and research are discussed below.

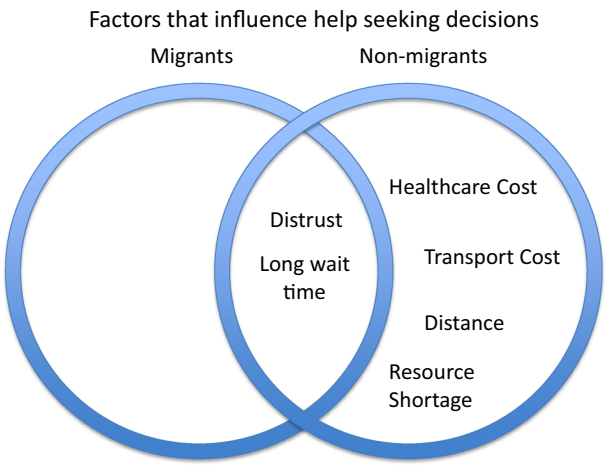


Fig. 4 Factors that influence help-seeking decisions for non-migrant and migrant Maasai study participants in Tanzania, 2013

Emphasis on mental health

The trauma migrants experienced may partially explain why migrants emphasized the importance of having good mental health more than non-migrants did. Individuals tend to construct their ideal health state based on the current challenges they are facing (Gollwitzer and Oettingen 1998). Migrants felt lonely, isolated, homesick, and anxiety ridden in Arusha, which led them to place a higher importance on feeling happy and less stressed. A study of Ethiopian refugees in the UK revealed similar findings: refugees valued happiness and overall well-being much more than their non-refugee Ethiopian counterparts (Papadopoulos and Lay 2003). The study attributed this shift in health perception to the increased personal trauma and isolation faced by refugees. Similarly in this study, it is likely that difficult migration experiences resulted in poor mental health for migrants, which brought mental health to the forefront of their ideal health states.

Healthcare underutilization

Although reducing the social inequities and hardships that lead to these mental health problems is important in the long run, health care resources available now to migrant Maasai in Arusha could greatly improve their mental and physical well-being if more extensively utilized. Several possible explanations exist for why migrant participants used western healthcare in Arusha as a last resort and only for physical maladies. First, migrants may not have been aware of the healthcare options available to them. Arusha has many hospitals and clinics, and the Arusha Mental Health Trust provides free psychiatric health services as well as psychological counseling to underprivileged people in the city. However, new migrants may not know about these options, and therefore not utilize them. Future research needs to investigate the level of knowledge Maasai migrants have about their local healthcare options.

Stigma may also be preventing migrants from accessing mental health resources in particular. Although no research has been done on the use of mental healthcare in the Maasai population, existing research from other countries shows that both self and public stigma can prevent an individual from seeking help for mental health problems. Individuals do not want to label themselves as having a mental illness, and also do not want to receive that label from society (Corrigan 2004). Furthermore, research shows that minority ethnic groups who are already confronted with prejudice and discrimination, such as the Maasai in Arusha, suffer increased stigma when faced with mental illness (Gary 2005).

Lastly, some participants referred to the "cure" for poor mental health as being improved life circumstances, such as increased wealth. Maasai may believe that healthcare treatments would not have any effect on their mental health. They perceive poor mental health as a result of stressful or negative life circumstances. The only way to feel better is to increase the quality of their everyday lives.

Future research needs to investigate if, and how, these themes contribute to the underutilization of healthcare resources by Maasai migrants, thereby enhancing efforts to make available healthcare more attractive and relevant to Maasai migrants.

Mental Health Interventions in Arusha

The increase in migrant mental health challenges and the emphasis migrant participants placed on mental health indicate that mental health interventions could be effective in this population. Interventions could focus on educating migrants about available mental health services, the benefits they would provide, and their accessibility.

Additionally, interventions might introduce mental health services targeted directly towards the Maasai migrants in Arusha. These services could be community-based programs, which recruit and train Maasai community members to provide psychological counseling to Maasai migrants that is both culturally and linguistically appropriate. Tsai's research on Asian Americans in the US shows that mental health services need to be tailored to the cultural perceptions of ideal mental health states, as these perceptions can differ greatly across cultures (Tsai 2007). It would also therefore be important to understand Maasai perceptions of mental health more thoroughly to formulate effective interventions.

Mutual aid societies are a more prevention-oriented intervention. Migrant participants struggled with homesickness, loneliness, and feeling isolated. Having a formal and consistent setting in which they could go for support, and to identify and solve problems, could positively influence their mental health. Maasai men in Arusha meet every week to discuss personal, financial, and health-related problems. This meeting could be extended to all Maasai in Arusha, or a new setting, such as a community center, could be established.

Implications for research and policy

Overall, the findings of this study have implications for both future science and policy. The methodology used in this study can be used to study migration, health perceptions, and help-seeking behaviors in other vulnerable populations. Specifically, future research should investigate reasons for healthcare underutilization by Maasai migrants in urban regions. Policy makers should implement appropriate interventions to improve the mental health of Maasai migrants.

Strengths and limitations

The thoughtful and scientifically rigorous research methodology has several strengths. First, the project had a strong community partner who integrated the researchers into the community, and enhanced the cultural acceptability of the interview protocol. Second, the migrant and non-migrant samples were matched on demographic characteristics and location. This allowed for stronger conclusions to be drawn about the influence of migration on health perceptions and help-seeking behaviors. Lastly, the study is context specific. Few existing studies have gone into this amount of depth with the Maasai population. These aspects of the study design enhanced the confidence associated with the conclusions made.

However, this study had some potential limitations. Due to limited funding, the research was a small convenience sample. The exploratory findings and implications should be further investigated and verified through research using larger and more systematic samples. Another possible limitation arose from the use of a translator. Threats to validity when using a translator exist if the translator does not have full understanding of the research project, or has biased ideas about the research (Kapborg and Berterö 2002). To address this challenge, training was conducted to familiarize the translator with the research aims and the interview protocol, and to ensure that he would translate questions verbatim during each interview. Additionally, the Maasai project coordinator periodically checked the translations to improve reliability and validity.

Conclusion

This case study illuminates the ways in which rural-to-urban migration can influence migrant health perceptions, perceived health problems, and healthcare decisions. Given

the recent refugee crisis in the European Union, research related to migrants' individual level health perceptions and behaviors is timely and important. The climate is changing at unprecedented rates, and rates of financially driven rural-to-urban migration are climbing. Many refugee health program services are exclusively offered to political refugees, disregarding the plights of climate refugees and within-country migrants (Biermann and Boas 2010). Further research is needed to inform policies and interventions that will mitigate the impacts of increasing rural-to-urban migration in developing countries.

Compliance with ethical standards

Ethics approval The Stanford Institutional Review Board gave human subjects approval for this research in April, 2013 and informed oral consent was obtained from every participant.

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