



Maternal health and knowledge and infant health outcomes in the Ariaal people of northern Kenya

Elizabeth M. Miller*

Department of Anthropology, University of Michigan, 101 West Hall, 1085 S. University Ave, Ann Arbor, MI 48109, United States

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ABSTRACT

There is a strong link between maternal knowledge and child well-being in many populations worldwide. Fewer studies have investigated the links between indigenous systems of medical knowledge and infant outcomes in non-Western societies, such as the Ariaal people of northern Kenya. This study has four goals. First, it defines culture-specific domains of health knowledge in Ariaal mothers using the cultural consensus method, a statistical model that measures knowledge shared by a set of informants. Second, it identifies factors that predict maternal health knowledge. Third, it investigates associations between maternal health knowledge and treatment-seeking behaviors. Finally, it associates health knowledge with biomarkers of infant health. Data collection took place in two separate periods. The first data collection period (October–November 2007) enrolled 41 women to participate in an open-ended interview or true-false consensus questionnaire. The second data collection period (November 2008–January 2009) used information from the cultural consensus analysis to assess how health knowledge impacted infant health outcomes and treatment. Women and infants in this data collection period ($n = 251$ pairs) underwent anthropometric measurement and participated in a questionnaire that included traditional medicine consensus questions. Data were analyzed using the cultural consensus capabilities in ANTHROPAC 4.98; univariate and multivariate statistics were performed in SAS 9.2. This study found consensus in the domains of infant illness, traditional medicine, Western medicine, and treatment decision-making. Proximity to a medical dispensary and use of public health infrastructure significantly predicted higher levels of maternal health knowledge. Mothers' knowledge of traditional medicine was positively associated with treating infants at a dispensary versus at home. Finally, women with greater knowledge of traditional medicine had infants who were significantly less likely to have been ill in the previous month. These results highlight the importance of both traditional and Western health knowledge for Ariaal mothers and infants.

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Introduction

Maternal knowledge of health is intimately associated with child well-being. Multiple studies have found that mothers' years of schooling are associated with improved child health and mortality (Basu & Stephenson, 2005; Caldwell, 1990; Caldwell & McDonald, 1982; Cochrane, Leslie, & O'Hara, 1982). For example, there is a strong relationship between maternal education and child nutritional status in Brazil (Frost, Forste, & Haas, 2005) and Lesotho (Ruel, Habicht, Pinstруп-Andersen, & Gröhn, 1992), and maternal education and infant mortality in Bangladesh (Muhuri, 1995). In addition, higher maternal education predicts increased health care-seeking

behaviors in some societies (Desai & Alva, 1998; Elo, 1992). These results are often, but not always, independent of correlated factors such as socioeconomic status, hygiene, husband's education and available health care facilities (Cleland & Van Ginneken, 1988; Desai & Alva, 1998). It is clear that formal maternal education can play a strong role in alleviating infant and child morbidity and mortality, and rightfully plays a prominent role in child-focused public health campaigns (Barrera, 1990). The focus on education as a proxy for maternal knowledge, however, discounts indigenous forms of health knowledge that are integrated in women's culture and society. In addition, it discounts the health knowledge of women who have had little to no formal education.

In contrast to the focus on education level as a proxy for maternal knowledge, recent research among the Tsimane' of Bolivia has attempted to tie indigenous forms of knowledge with child nutritional and health outcomes. McDade et al. (2007) found that

* Tel.: +1 847 913 2803.

E-mail address: emmill@umich.edu.

Tsimane' mothers' ethnobotanical knowledge has a positive effect on child health outcomes. Tanner et al. (2011) continued this research by finding an association between Tsimane' mothers' ethnobotanical knowledge and a decreased probability of helminth infection in their children.

Although McDade et al. (2007) and Tanner et al. (2011) addressed child health outcomes, infant health differs for several reasons. First, infants are a more sensitive measure of population health and nutrition than children owing to their high levels of mortality and morbidity under severe conditions (Reidpath & Allotey, 2003). Second, infancy is generally a period of intensive maternal care, which strengthens the effect of maternal knowledge on infant health outcomes compared to children's outcomes, whose care may be more distributed throughout communities. Finally, infants are entirely dependent on their parents for health care decisions. Older children have their own knowledge, culture and behavior that may be independent of parental involvement; studying infants eliminates this possibility. Because of this, infant populations are ideal for addressing the association between maternal health knowledge and infant well-being.

This study examined maternal knowledge of health and infant nutritional and health outcomes among Ariaal mothers and infants of northern Kenya. The Ariaal are a group of settled pastoralists who use both medicinal plants and Western medical facilities for health care, but lack basic public health infrastructure in many areas. Most women in this population lack formal schooling but nevertheless make important health care decisions for their infants. This study had four major objectives. First, it developed a cultural consensus model for infant illness and treatment to determine the nature and scope of health knowledge in Ariaal women. Second, it explored how community and individual characteristics predict health knowledge in Ariaal mothers. Third, it examined the association between indigenous maternal health knowledge and treatment-seeking behaviors for sick infants. Fourth, it tested the association between indigenous maternal health knowledge and measures of infant health outcomes in the Ariaal population.

Cultural consensus

Cultural values and beliefs underpin Ariaal mothers' knowledge of health and helps motivate their treatment decision-making process. Because culture is a collective property and not an individual characteristic, however, it can be difficult to associated cultural variables with outcome measures of health and well-being (Dufour, 2006). Cultural consensus techniques can overcome this hurdle by allowing cultural beliefs to be collectively defined while assessing each individual's knowledge of that set of beliefs. Individual variation in cultural competence can then be associated with health outcomes, integrating biology and culture into the bio-cultural model (Dufour, 2006).

Cultural consensus is a mathematical model for investigating information about cultural domains and the knowledge of informants within a culture (Romney, 1999; Romney, Weller, & Batchelder, 1986). This analysis is based on the assumption that cultural knowledge can be shared by members of a culture and can be reliably and validly measured. It assumes that the researcher does not know the answers to the questions about each cultural domain and that cultural knowledge may be unequally distributed between individuals. This method allows individuals within the culture to define a cultural domain while assessing individuals' knowledge of the cultural domain. Cultural domains in this study relate to health knowledge: illness concepts, treatment decisions, and Western and traditional medicine.

Field site

The Ariaal people are a group of settled pastoralists residing in Marsabit District, Kenya (Fig. 1). The Ariaal are an ethnic group that is closely tied to the Samburu and Rendille populations of northern Kenya, sharing kinship, cultural, and linguistic elements with both (Fratkin, 1998). In general, the settled pastoralists of this study keep cattle. They supplement their food resources with varying degrees of subsistence agriculture and market economy; however settlement appears to have brought few to no improvements to Ariaal

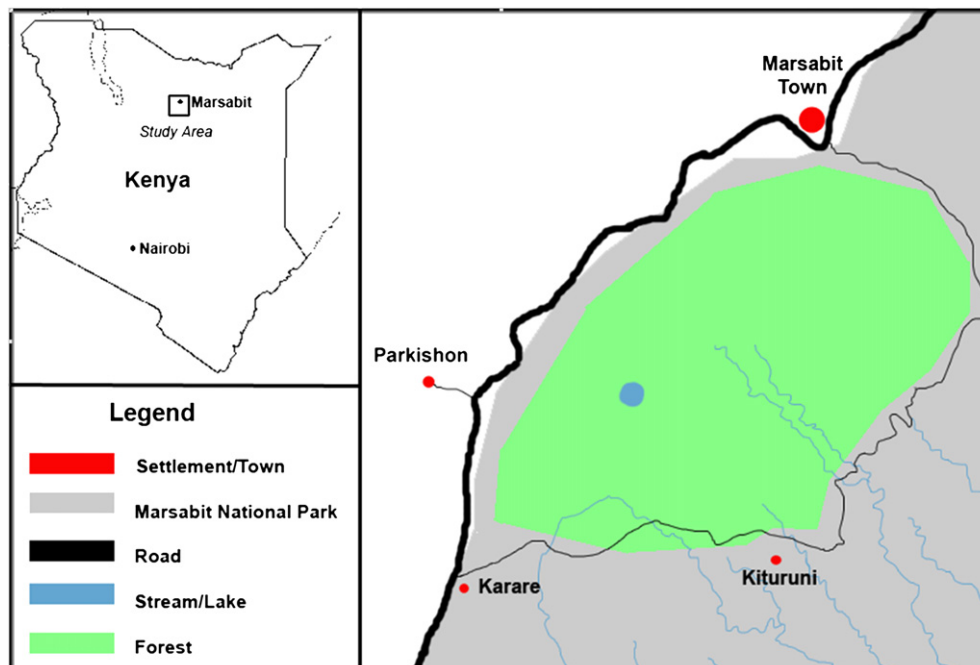


Fig. 1. Map of study area, Marsabit District, Kenya.

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