Mapping Social Networks of Infant Caregiving in Post-Conflict Northern Uganda
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Background
Conflict and malnutrition are two of the most significant social determinants of poor mental health, especially common mental disorders like depression (Miller & Rasmussen, 2010; Patel & Kleinman, 2003).

Northern Uganda has been ravaged by both, in the wake of a 20-year civil war that internally displaced over a million people and with a high prevalence (33%) of child stunting (ICF U, 2011).

Studies have found high rates of depression, including perinatal depression, in conflict-affected regions in northern Uganda (Rahman et al., 2013).

Perinatal depression particularly dangerous as it affects not just the mother but also the child, leading to problems in child attachment, socioemotional development, as well as nutritional status; recent meta-analysis showed that if maternal depression were eliminated, stunting globally could be reduced by 27% (Surkan, Kennedy, Hurley, & Black, 2011).

Social support constructs have been linked to maternal depression in both high-income countries and in LMICs (low- and middle-income countries); in Uganda, lack of support from the household has been associated with depressive symptoms in postpartum mothers (Kakyo et al., 2012).

In high-income countries, social support has also been linked to maternal caregiving behaviors and child outcomes, and identified as possible moderators or mediators between depression and maternal behaviors/child outcomes. Emerging evidence in LMICs: for example, recent Uganda study saw a relationship between maternal social support and maternal feeding behaviors (Ickes, Mandel, & Roberts, 2016).

Purpose and Projected Implications
The current study aims to capture and examine social networks (one's constellation of social relationships) involved in infant caregiving (or caregiving social network) in northern Uganda from a social network analysis perspective, and to explore the association between caregiver depression and caregiving social network.

Projected Implications.
Results may provide insight into how to strengthen caregiving networks, in order to provide the next generation in the community a more nourishing environment physically, and emotionally, interrupting intergenerational transmission of deleterious aftereffects of conflict and assisting the community in its movement towards sustainable development and alleviation of poverty.

Results may inform interventions targeting caregiver depression and child health, as follows:

In Uganda, child-rearing responsibilities and parenting decisions may be spread across multiple members of family and community in interconnected networks (Wusu, 2006; Nakinya, 2013); capturing social relationships and interactions across various domains of child wellbeing may inform how interventions can work with a caregiving social network to influence child health, particularly for caregivers with depression.

In addition, this study acts as a pilot phase for finalizing the caregiving social network measure, setting up a subsequent study examining caregiving social networks as a predictor for relapse in maternal depression following mental health intervention in a landmark RCT led by Dr. Lenka Verdeli (administering a mental health intervention, group interpersonal psychotherapy (IPT-G), to depressed mothers within the context of Food for the Hungry (FH) community nutrition promotion operations).

Methods
Participants
A convenience sample of 30 women in Kitgum who are primary caregivers of an infant under the age of 21 months. Collaborator Food for the Hungry (FH) staff who have established positive relationships with members of the community will accompany the interviewer (Chien-Wen Kao) in approaching the households.

Measures
Demographic information.
Basic demographic information: participant age, marital status, relationship to the child, total number of children they have, food insecurity of the household, gender and age of the child, and whether the child has been breast-fed and for how long.

Caregiving social network.
Administration of interview with two components: 1. A qualitative component to capture the participant’s conceptualization of infant caregiving and the ways in which various people may work together to take care of the child in the community, and 2. a quantitative measure to capture the people in the caregiving network.

The quantitative caregiving social network measure is based on the General Social Survey (Burt, 1965) and the social network analysis project (SNAP) measure (Kelly, Patel, Narayan, Prabhakaran, & Cunningham, 2014).

The main components of the caregiving social network measure are:

a. name generator questions to elicit all people involved in providing caretaking assistance or information:
   b. narrowing from the elicited list to five people perceived as the most involved
   c. questions about each of the five people, including caregiving areas they assist with, strength/intensity of their relationship with the participant and the child
   d. to assess for density of network, we will also assess whether each of these five people help each other take care of the participant’s child
   e. second name generator to elicit all people who is perceived to hinder care of the child
   f. in addition, cognitive interviewing questions and prompts will be included throughout the interview.

Depression.
The Patient Health Questionnaire (PHQ-9) will be used to measure depressive symptomatology (Kroenke, Spitzer, & Williams, 2001). This is a nine-item measure of depression with each item rated on a 4-point scale (“Not at all,” “Several days,” “More than half the days,” and “Nearly every day”) for how often symptoms were experienced in the past two weeks. The PHQ-9 has been validated for use in Uganda (Nakku et al., 2016).

Analysis
Calculate basic sample descriptives, including the participant age, marital status, relationship to the child, total number of children they have, food insecurity of the household, gender and age of the child, and whether the child is being breast-fed.

Calculate descriptives of social network characteristics: strength of ties, number of ties, network composition (percentage of family and percentage friends, average age, gender composition, and percentage with young children).

Create a map of each individual’s caregiving social network and calculate egocentric network density.

Bivariate correlations will be calculated between social network characteristics variables and PHQ-9 scores.

A multiple regression will be conducted regressing depression scores on social network variables.

Specific Aims and Projected Results/Hypotheses

Aim 1: To qualitatively explore how different members of a social network (including caregivers, their family members, peer network, community leaders, and healthcare providers) work together to take care of an infant (anticipated N = 30).

Hypothesis: Qualitative data will provide insight into how an interconnected network works together to care for young children in a post-conflict region and culturally specific roles members take on

Aim 2: To administer and pilot in this sample a social network survey measure that quantitatively captures the social network relationships through which infant caregiving assistance and information are passed, and to utilize both the above qualitative data (Aim 1) and cognitive interviewing responses to finalize the measure.

Hypothesis: The social network measure will be feasible to administer and acceptable and understandable to participants. It will also able to accurately capture the key relationships in the infant caregiving obtained from the qualitative data.

Aim 3: As an exploratory analysis, this third aim will examine the relationship between caregiver depression and the caregiving social network in the sample.

Hypothesis: Lower scores on the PHQ-9 will be associated with stronger social network characteristics (higher egocentric network density, higher tie strength intensity (quality and quantity of the caregiving support), and lower number of reported network ties).

Challenges and Lessons Learned
One of most important factors: consistent and strong partnering organization buy-in.
Don’t rely on email/electronic communication.
Plan timeline expecting unforeseeable delays.
Mobilize own social network creatively.
Balance feasibility and optimal scientific research design – keep it simple.

Figure 1. Example of social network.
Credit: http://www.martingrandjean.ch/introduction-to-network-visualization-graph/