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The geographies of the dynamic evolution of social networks for the flood disaster response and recovery

Ananda Y. Karunarathne [a], Gunhak Lee [b,*]

[a] Department of Geography, University of Colombo, 94 Kumaratunga Munidasa Mawatha, Colombo 03, 00700, Sri Lanka
[b] Department of Geography and Institute for Korean Regional Studies College of Social Sciences, Seoul National University 1 Gwanak-ro, Gwanak-gu, Seoul, 08826, South Korea

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ABSTRACT

Social networks and public supports have been becoming increasingly important in disaster management and mitigation. This paper demonstrates empirical and credible evidence of social network supports and their spatial and temporal dynamics of evolutionary patterns in flood disaster preparedness and recovery, as demonstrated by the case of the 2017 mass-flooding event in rural areas of Sri Lanka. For the case study, a number of flood-inundated households from several rural areas of Sri Lanka were selected for a questionnaire survey. Furthermore, semi-structured interviews, focus group discussions, and field observations were conducted to collect empirical data regarding social networking for different phases of the flood. The results reveal the significant empirical finding that social support networks play a crucial role for flood disaster preparedness and recovery before, during, and after flooding events. Social networks also play a role in the provision of information, food, water, and other basic needs including evacuation and moving-out belongings, provision of shelters, and cleaning up contaminated houses and public places, which are helpfully exchanged for securing and reviving flood-affected livelihoods. More importantly, network characteristics have changed over time for disaster phases; additionally, evolutionary changes in network connections have occurred in different geographic settings.

1. Introduction

Flood disasters have been becoming one of the challenging natural disasters significantly threating hundreds of thousands lives and their livelihoods over the world (IPCC, 2014; Lo, Xu, Chan, & Su, 2015; Haer et al., 2016; Ceddia, Christopoulos, Hernandez, & Zepharovich, 2017; Stewart et al., 2014; Lazarus, 2011; Karunarathne & Lee, 2020). Unforeseen climatic change and excessive anthropogenic activities for rapid economic development may be the most influential factors in this emerging disaster (IPCC, 2014; Lazarus, 2011). Many studies have addressed socioeconomic consequences caused by flood disasters and efficient remedies for flood disaster recovery and response. In particular, more recent research has examined the significant influence and implications of social networks on flood disaster recovery, preparedness, and management (Stewart et al., 2014; Haer et al., 2016; Ceddia, Christopoulos, Hernandez, & Zepharovich, 2017; Casagrande et al., 2015; Malone & Kinnear, 2015; Lo, Xu, Chan, & Su, 2015). Specifically, they have dealt with information sharing, immediate evacuation and lifesaving plans, and livelihood reviving activities for various spatial contexts in flood event.

It is worth noting that the social network of disaster management is a very important and somewhat specialized area (Jones and Faas, 2017). Therefore, this is one of the first researching seeking the mechanism of social networks at the micro-scale, such as household level networking on flood disaster management especially in the Sri Lankan context. In this regard, the objective of this paper is to demonstrate a behavior of social networks for a flood disaster, especially focusing on the spatial and temporal dynamics of social networks for flood preparedness and recovery. Specifically, we present the characteristics of social networks with regard to reciprocal supports and exchanges mobilized by social networks in flood disaster preparedness and recovery, and examine regional disparities in community collaborations and spatial and temporal dynamics of social networks before, during, and after the flood disaster event. On this context, this study seeks to address following research questions: What are the characteristics of social networks in flood disaster preparedness and recovery and what kinds of reciprocal

* Corresponding author. Department of Geography and Institute for Korean Regional Studies College of Social Sciences, Seoul National University 1 Gwanak-ro, Gwanak-gu, Seoul, 08826, South Korea.
E-mail addresses: anandageocmb@gmail.com (A.Y. Karunarathne), gunhlee@snu.ac.kr (G. Lee).

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