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# Psychosocial and environmental distress resulting from a volcanic eruption: Study protocol



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## KEYWORDS

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Psychosocial distress;  
Environmental  
distress;  
Natural disaster;  
Mixed methods

## Summary

**Aim:** To examine the psychosocial and environmental distress resulting from the 2010 eruption of the Merapi volcano and explore the experience of living in an environment damaged by a volcanic eruption.

**Background:** Natural disasters cause psychosocial responses in survivors. While volcanic eruptions are an example of a natural disaster, little is currently known about the psychosocial impact on survivors. Volcanic eruptions also cause degradation of the environment, which is linked to environmental distress. However, little is currently known of this phenomenon.

**Design:** An explanatory mixed method study.

**Methods:** The research will be divided into three phases. The *first phase* will involve instrument modification, translation and testing. The *second phase* will involve a survey to a larger sample using the modified and tested questionnaire. The *third phase* will involve the collection of interviews from a sub set of the same participants as the second phase.

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*Discussion:* Quantitative data will be analyzed to determine the extent of psychosocial and environmental distress experienced by the participants. Qualitative data will be analyzed to explain the variation among the participants. The results of the study will be used to develop strategies to support survivors in the future and to help ameliorate distress.

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## Introduction

There has been a proliferation of disasters in the last few years including natural disasters, disasters associated with climate-change, and human-made disasters (Simpson, Weissbecker, & Sephton, 2011). One massive natural disaster that occurred in Indonesia in the last three years is the eruption of Mount Merapi in the Yogyakarta region, Indonesia. This mountain is located on Java Island, on the borderlines of Sleman District, Yogyakarta Special Region Province and Magelang, Klaten, and Boyolali Districts, Central Java Province. In the last eruption of Mount Merapi, on October 26 and November 5, 2010, 386 people died, and over two hundred people were injured, mostly due to severe burns. The eruption forced more than 300,000 people from four districts in Yogyakarta and Central Java to be evacuated to cramped emergency shelters (Surono et al., 2012). This disaster inflicted a financial loss up to US\$400 million, resulted in the loss of a large area of fertile land, and impacted many settlements (Wartatmo, 2010). This paper describes a study protocol to explore the psychosocial distress related to the volcanic eruption and the emotional distress resulting from living in an environment damaged by the volcano.

## Background

Many scientists have conducted research on the psychosocial impacts of natural disaster. However, research related to the psychosocial impact specifically related to volcanic eruptions and the environmental distress resulting from these disasters is limited.

From the research conducted to date, it is evident that a volcanic eruption causes several psychosocial problems including depression and posttraumatic stress disorder (PTSD) (Araki, Nakane, Ohta, & Kawasaki, 1998; Goto, Wilson, Kahana, & Slane, 2006; Howard et al., 1999; Ohta et al., 2003). Goto et al.'s (2006) research concluded that the loss of goods and uncertainty related to the future plays an important role in causing these symptoms. Meanwhile, survivors who undergo several relocations are more likely to suffer from psychosocial distress compared to those who only experience it once. Some demographic data such as age, marital status, social economy, education, and duration of living around the mountain are related highly to the occurrence of psychosocial problems (Goto et al., 2006). This could be because eruptions do not occur over a short period of time like earthquakes, and because of the frequency of eruptions by some active volcanoes which may burden the people living around it and finally result in psychosocial problems.

People living in damaged environments may feel distressed by the changes they see. Studied to date by two research teams (Connor, Albrecht, Higginbotham, Freeman, & Smith, 2004; Higginbotham, Connor, Albrecht, Freeman, & Agho, 2007), the studies support Albrecht's claim (2002), that people can feel 'homesick' at home when the landscape around them is significantly changed or damaged. Albrecht defined the term 'solastalgia' that he proposed is the distress or sadness a person feels when his or her home environment is negatively changed. Solastalgia may result in people feeling unfamiliar in their own environment, even though they continue to live where they always have. This distinguishes solastalgia from nostalgia; that is, survivors experience a type of homesickness even though they have not moved from their homes (Warsini, Mills, & Usher, 2014). Although Albrecht (2005) hypothesized that solastalgia may result from the damage resulting from natural disasters, to date this has not been tested. The research that has been reported about volcanic eruptions mostly discusses the survivors' responses to the disaster or to living in a relocation area or a shelter. However, the fact that eruptions can have a lasting impact on the environment and even trigger a second disaster, has received little attention to date. In addition to that, research on the role of place attachment and its impact on the survivors' experience in overcoming the environmental change caused by an eruption, has not previously occurred.

## The study

### Aims

The aims of the research are to measure the psychosocial and environmental distress resulting from the 2010 eruption of the Merapi volcano and explore the experience of living in an environment damaged by a volcanic eruption.

Specifically, we aimed to answer the following research questions:

1. How has the eruption of Merapi affected the psychosocial health of people who live near the volcano?
2. What is the level of environmental distress caused by living in an environment damaged by a volcanic eruption?
3. What is the experience of living in the shadow of a very-active volcano and how does this impact on the mental health of the local community?

### Design

An explanatory mixed method design (Creswell & Plano Clark, 2011, p. 82) will allow the researcher to assess a phenomenon using a quantitative approach and then obtain

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