

Brief Intervention Effectiveness on Stress among Nepalese People Indirectly Exposed to the Nepal Earthquake

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Abstract Nepal suffered a major 7.8 Richter Scale earthquake on April 25, 2015. At the time of the earthquake, 116 young adult Nepalese were studying in Israel. This study examined the effect of a single-session intervention that combined knowledge about stress responses and effective coping with drawing to reduce their stress 4 days after the earthquake. To examine the intervention effect, the SUDS values of the students were measured using a pre-post design. Participants reported high levels of distress at the start of intervention. Their levels of distress significantly decreased on completion of the intervention. Results extend prior findings of the efficacy of an easily implemented intervention for stress reduction among individuals indirectly exposed to disaster conditions.

Keywords Stress · Earthquake · Indirect exposure · Art-based intervention · Nepal

Earthquakes, similar to other natural disasters, are unpredictable and uncontrollable affecting large populations and causing injury, death, and destruction (Altindag et al. 2005). As such, they can lead to short and long-term psychological consequences (Kuwabara et al. 2008; Livanou et al. 2005; Spittlehouse et al. 2014), which negatively affect survivors' quality of life. Recent findings indicate that the adverse impact of earthquake-related experiences on quality of life can extend to the third decade after the disaster (Khachadourian et al. 2015). Even moderate-intensity earthquakes can cause serious and long-standing distress (Livanou et al. 2005). PTSD and major depression are the most common psychological outcomes resulting from earthquake (Oflaz et al. 2008). A new study has shown that PTSD remains a common post-earthquake mental health problem even five years after the disaster (Zhang et al. 2015). The reported prevalence of PTSD in victims of earthquake trauma ranges from 10% to 87% (Altindag et al. 2005). This variability might be due to methodological differences including differences in the intensity of the earthquakes studied (Başoglu et al. 2002).

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The efficacy of several types of interventions for the treatment of PTSD and depression symptoms after earthquakes has been documented including psychoeducation intervention with medication (Oflaz et al. 2008), cognitive-behavior therapy, particularly exposure techniques (Lopes et al. 2014), and single sessions of behavioral treatment (Başoğlu et al. 2007). The aim of the current study was to examine the effectiveness of a single-session intervention to reduce stress among Nepalese students currently enrolled in a special program in Israel. The brief intervention, carried out in response to the major 7.8 Richter scale earthquake that struck land locked Nepal, on April 25, 2015, combined knowledge about stress responses and effective coping with drawing.

Methods

In the south eastern part of Israel is the arid Arava region where the International Center for Agriculture Training (AICAT) hosts students from Nepal for one year of modern agricultural training. The students received mobile phone contact from family members about great devastation, death and injury to family members, destroyed or severely damaged homes, and the sparse resources. Their Nepalese representative approached the head of AICAT asking for assistance to address the grief and sadness among the students. On April 28, an AICAT staff member contacted a faculty member of the authors' Department, for a one session workshop on stress response and coping strategies to enable students to express their distress. Within a matter of hours of contact the workshop took place on April 29.

Sample

Participants were 116 Nepalese: 80 % men and 20 % women, mean age of 26, $SD = 2$ years (range 22–30 years). The great majority (90%) were students that graduated in Nepal with a degree on either biology or agriculture. The rest were representative from villages around Katmandu that study agriculture at AICAT. All students spoke English at some level.

Process of Workshop

The three hour workshop was based on previous studies conducted in Israel among students and health professionals (Findley et al. 2014; Isralowitz and Findley 2009; Huss et al. 2010; Sarid and Huss 2011). Upon arrival, a short lecture was given in English to all students. The lecture was simultaneously translated to Nepalese by a student representative. Short and long term stress responses to disasters and psycho-physiological manifestation of the stress response were described. Coping with grief and sadness through the use of social support and experience sharing were discussed as well. At the beginning of the lecture, students were asked to write down their current subjective level of distress rating (SUDS) between 1–10, with a higher number representative of a higher degree of stress (Wolpe 1969). This was the first point of measurement (t_1).

In the second stage of the intervention, students were randomly divided into three groups due to the logistical advantages of group work with three smaller groups rather than one big group. The rationale was to conduct a short term intervention using drawing as a way to express distress (Huss et al. 2010). Students in each group were asked to draw their current

emotions and thoughts relating to the earthquake on a standard sheet of copy paper using pastel colors. Also, they were asked to write down their thoughts and feelings. Students in each group presented their drawings describing in Nepalese what they drew, and shared their feelings. The wording was translated to English so the authors could understand as well. Following the drawing of their current condition, students were asked to draw a new picture that reflects the personal and collective resources that may help them cope with the repercussions of the earthquake upon their return to Nepal, including the resources they acquired during their studies in Israel. Again, students shared their pictures describing their feelings. They then were asked to draw a picture that integrates the stressful image and the resource picture. At the end of the three-hour workshop, participants' SUDS levels were measured a second time.

Prior to the beginning of the workshop, the authors described the objective of the study and emphasized that participation in the workshop did not require participation in the study. The data collected, SUDS and drawings, were anonymous. Reporting of the workshop data collected was approved by the BGU Department Ethics Committee and AICAT management.

Results

During the first stage of the art intervention, which focused on the participants' earthquake-related experiences, images of dead people, dead cattle and destroyed villages were drawn. When describing their drawings within the group setting, most emphasized their feelings of stress and sadness due to the injury of their loved ones and the loss of their homes and possessions; and, some expressed guilt over not being able to help their families during the immediate post disaster time period. During the second stage of the art intervention, in which participants were instructed to relate to their sources of coping and resilience, most participants drew images of their significant others and of a supportive community. Many drew symbols of the knowledge and skills they acquired during their agriculture studies in Israel. In the third stage, when participants were asked to integrate the stressful image and the resource picture, the majority chose to add the resilience factors they identified to the stress-related drawing. In their explanation of the third-stage drawings, many expressed cautious optimism linked to their social support networks and skills acquired from their studies in Israel to revitalize their villages.

Participant SUDS levels before and after the workshop were analyzed using descriptive statistics and paired t-test. The means and the standard deviations are presented in Table 1.

Statistically significant differences were found between the SUDS levels at t1 and t2 ($t = 12.81$ ($df = 115$), $p \leq 0.001$). Students' level of distress decreased after the intervention, suggesting its efficacy.

Table 1 Descriptive statistics
($n = 116$)

	T1	T2
Mean (SD)	8.78 (0.91)	7.06 (1.68)
Mode	9.0	7.0
Median	9.0	7.0
Min-Max	6-10	2-7

Discussion

The purpose of this study was to investigate the effects of a single-session intervention on Nepalese student distress resulting from the major earthquake that struck their country, family members and living conditions. The vast majority of earthquake trauma related studies focus on people directly exposed to the event. However, the present study examines a group of Nepalese indirectly exposed to the April earthquake. Despite not being directly affected, participants reported high levels of distress prior to the brief intervention provided. This finding is congruent with previous findings showing that mental health distress following an earthquake is also evident among indirectly-exposed populations (Shultz et al. 2012), especially among those with strong affiliation to direct impact victims, even several years after the event (Allen et al. 2012; Messiah et al. 2015).

The present study results show student distress levels significantly decreased on completion of the intervention. As noted above, the efficacy of different types of interventions for stress reduction among earthquake survivors has been documented. However, to our knowledge, this is the first study in Israel to investigate the efficacy of a brief intervention used for stress reduction among an indirectly-exposed group. The lower levels of stress that emerged after our intervention are consistent with previous findings indicating the effectiveness of a single-session art-based intervention in reducing stress in other disaster conditions such as war (Huss et al. 2010). The positive outcome of the present intervention may be related to the acquisition of knowledge about common stress responses and coping strategies, contributing to "normalization" of the students' emotional and behavioral reactions; identification of the earthquake-related stressors and emotions, resources at their disposal and importance of their role in the reconstruction of Nepal on their return there, due to the resources they acquired during their studies in Israel.

The study results need to be considered with regard to its limitations. The first is related to the cross-sectional design that does not allow determination of the long-term impact of the brief intervention provided and its effectiveness in preventing future PTSD among the participants. Follow-up studies are needed to investigate the long-term effectiveness of this intervention. Additionally, the study does not provide information about which component of the intervention contributed to participant stress reduction. It may be that the support provided by AICAT personnel, and the rapid response from the authors' Department personnel, have also contributed to participant stress reduction. Previous findings indeed indicate that perceived support moderates the stressor-distress relationship after disasters (Arnberg et al. 2012). The third limitation is related to the lack of control group in the study. Nevertheless, this limitation is inherent to this type of quick-response disaster intervention, where the research must necessarily be done quickly and with top regard for the well-being of all the people involved.

Despite these limitations, the study results extend prior findings by showing efficacy of an easily implemented tool for stress reduction among individuals indirectly exposed to disaster conditions. Further research is needed to investigate the effectiveness of this tool in reducing stress among indirect victims of additional disasters.

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