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Sociometric and Participatory Community Mapping in Earthquake-Affected Myanmar: Findings From an Ongoing Mixed-Methods Study

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Abstract

Background: The March 2025 earthquake in Myanmar occurred amid ongoing conflict, displacement, and socioeconomic disruption. Understanding informal social relationships may complement individual-level assessment of psychological distress and inform community-based mental health and psychosocial support.

Methods: This interim cross-sectional analysis was embedded in an ongoing mixed-methods study in three camps in Mandalay, Sagaing, and Inle/Nyaungshwe, Myanmar. Data collection began on 26 January 2026. Adults were recruited by convenience sampling, and the 101 participants enrolled by the interim cutoff completed assessments of demographics, life stressors, coping, and psychological distress (Kessler Psychological Distress Scale, K-10). Preliminary logistic regression examined the association between positive coping and moderate-to-severe psychological distress. In selected participating communities, trained community volunteers also conducted criterion-based sociometric nominations and participatory community mapping to explore informal trust networks, potential social isolation, and locally meaningful community spaces.

Results: The mean age was 45.33 years (SD=12.36), and 79 (78.2%) participants were female. Forced displacement was reported by 43 (42.6%), property loss by 98 (97.0%), earthquake or natural disaster exposure by 99 (98.0%), conflict exposure by 99 (98.0%), and difficulty meeting basic needs by 88 (87.1%). The mean K-10 score was 25.19 (SD=5.8), with 64 (63.4%) experiencing moderate-to-severe distress. Religion or faith and social support were each reported as coping resources by 87 (86.1%) participants. Positive coping was associated with lower odds of moderate-to-severe distress (aOR=0.587, 95% CI 0.384-0.897, p=0.014); the model had poor discrimination (AUC=0.660). Sociometric mapping identified trusted individuals who did not necessarily hold formal leadership positions and individuals receiving few or no nominations. Participatory mapping identified spaces associated with gathering, safety, damage, and recovery.

Conclusions: Psychological distress was common, and reliance on faith and social support was widespread. Positive coping was associated with lower odds of moderate-to-severe distress, but discrimination was poor, and the cross-sectional design permits no causal inference. Mapping observations are descriptive. These interim findings are exploratory and require confirmation.

Categories: Psychology, Preventive Medicine, Epidemiology/Public Health
Keywords: conflict, disaster recovery, mhpss, myanmar, sociometry

Introduction

The March 2025 earthquake in Myanmar occurred within a broader context of armed conflict, displacement, economic instability, and prolonged social disruption [1]. The overlap of these stressors may affect psychological well-being while disrupting the social relationships through which individuals obtain emotional and practical support.

Community-based mental health and psychosocial support (MHPSS) approaches emphasize local resources, social relationships, and participation in recovery [2,3]. Social capital, including interpersonal trust and reciprocity, may contribute to community resilience [2]. However, humanitarian programs frequently engage communities through formal leadership structures, which may not correspond to informal relationships that influence help-seeking and support.

Sociometry provides a structured approach to identifying interpersonal relationships through criterion-based nominations [4]. Participatory mapping may complement this approach by identifying places associated with safety, social interaction, loss, belonging, and recovery [5]. Together, these approaches may provide information that is not captured through individual psychological assessment alone.

This report is part of an ongoing mixed-methods study of trauma exposure, coping, and psychological

distress in earthquake- and conflict-affected communities in Myanmar. For this interim, exploratory analysis, our aims were to (1) describe trauma exposure, coping strategies, and psychological distress among the first 101 participants; (2) explore the association between positive coping and moderate-to-severe distress; and (3) describe how sociometric nomination and participatory mapping were implemented and report early descriptive observations on informal trust, possible social isolation, and community spaces. No confirmatory hypotheses were tested.

Fieldwork for this study has been constrained by the ongoing civil conflict in Myanmar. Data collection was paused after initial data were obtained and resumed when access and safety allowed, and the timeline for completing the parent study remains uncertain. We therefore used a phased design, adapting procedures to local conditions and reporting data in stages. This report is a self-contained descriptive analysis with the aims stated above; the integrated mixed-methods analysis will be reported separately once data collection is complete.

This article was previously presented as a conference abstract at the 5th Mental Health Research Conference, Chiang Mai University, Chiang Mai, Thailand, in March 2026.

Materials And Methods

Setting and study design

This was an interim, descriptive cross-sectional study (with exploratory analytical components) of the quantitative arm of an ongoing mixed-methods study, reported following STROBE guidelines. Adults >18 years of age in three camps (Mandalay, Sagaing, Inle/Nyaungshwe) were recruited through a social welfare program by non-probability (convenience) sampling. No a priori sample-size calculation was performed. Fieldwork took place amid ongoing conflict. The 101 participants are all those enrolled by the interim cutoff date at the end of February 2026 because of security and access constraints before resuming. Procedures were adapted to local access and safety conditions. The analysis is exploratory and not intended for population-level inference.

Measures and quantitative analysis

Psychological distress was assessed using the Kessler Psychological Distress Scale [6]. Descriptive statistics were used to summarize demographic characteristics, major life stressors, coping strategies, and distress. Moderate-to-severe psychological distress was examined as the outcome in a preliminary logistic regression analysis. Positive coping was assessed based on reported coping resources. Associations are presented as odds ratios (ORs) with 95% confidence intervals (CIs). Model discrimination was assessed using the area under the receiver operating characteristic curve (AUC). Psychological distress was measured with the K-10 (Burmese translation, NSW Transcultural Mental Health Centre): 10 items scored 1-5 (range 10-50) for the past four weeks. The scores of 25-29 were classified as moderate and 30-50 as severe; moderate-to-severe distress (≥25) was the outcome. Because recruitment and data collection remain ongoing, the quantitative analysis was considered preliminary and hypothesis-generating.

A structured six-step protocol (see Figure *1*) was developed for implementation by community volunteers [7]. In selected participating communities, trained community volunteers conducted sociometric mapping using the following criterion-based question: “If you were feeling overwhelmed or distressed following the earthquake, who in this village would you approach first for a trusted conversation?”

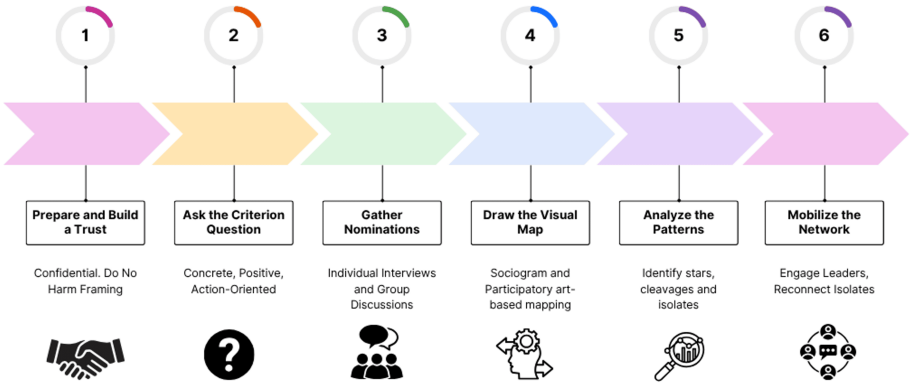


FIGURE 1: Six-step field implementation protocol for sociometric and participatory community mapping.

Figure 1 was designed using Canva (Canva Pty Ltd., Sydney, Australia).

Participants privately nominated one or two individuals. Nominations were aggregated into sociograms to identify highly nominated individuals and individuals receiving few or no nominations. The exercise was intended to explore informal trust relationships rather than calculate formal social network metrics.

Participatory mapping was conducted in small groups. Participants represented homes, gathering areas, damaged locations, important landmarks, and places perceived as safe or meaningful. Facilitators explored the significance of these locations to community recovery. The maps were interpreted as locally meaningful representations rather than geographically precise maps [8].

Ethical considerations

Participation was voluntary and based on informed consent. The study was approved by the Ministry of Social Welfare, Myanmar, with guidance from the Community Advisory Board [9] of the Inle region. Because social network information may be sensitive in conflict-affected settings, sociograms and community maps were treated as confidential and were not shared with village administrators or external stakeholders.

Results

The interim sample comprised 101 participants, with a mean age of 45.33 years (SD=12.36). Of these, 79 (78.2%) were female. Participants were recruited from Mandalay (38, 37.6%), Sagaing (25, 24.8%), and Inle/Nyaungshwe (38, 37.5%). Forced displacement was reported by 43 (42.6%) participants. Participant characteristics and selected life stressors are summarized in Table *1*.

Characteristic	n (%) or mean (SD)
Female	79 (78.2)
Bamar/Myanmar ethnicity	64 (63.4)
Shan/Innthar/Danu/Paoh ethnicity	37 (36.6)
Mandalay	38 (37.6)
Sagaing	25 (24.8)
Inle/Nyaungshwe	38 (37.6)
Forced displacement	43 (42.6)
Loss of family members	12 (11.9)
Separation from family members	26 (25.7)
Loss of property	98 (97.0)
Earthquake/natural disaster exposure	99 (98.0)
Conflict exposure	99 (98.0)
Difficulty meeting basic needs	88 (87.1)
Religion/faith as coping	87 (86.1)
Social support as coping	87 (86.1)
Physical/mental self-care	82 (81.2%)
Emotion regulation	63 (62.4%)
K-10 score	25.19 (5.8)
Moderate/severe distress	64 (63.4%)

TABLE 1: Selected characteristics and major life stressors among the preliminary sample (N=101)

Life stressors were widespread. Property loss was reported by 98 (97.0%) participants, earthquake or natural disaster exposure by 99 (98.0%), conflict exposure by 99 (98.0%), and difficulty meeting basic needs by 88 (87.1%). Loss of a family member was reported by 12 (11.9%) participants and separation from family members by 26 (25.7%).

Religion or faith and social support were each reported as coping resources by 87 (86.1%) participants. Physical or mental self-care was reported by 82 (81.2%), and emotion regulation by 63 (62.4%). The mean K-10 score was 25.19 (SD=5.8), with 64 (63.4%) participants experiencing moderate-to-severe psychological distress. In the preliminary logistic regression analysis, positive coping was associated with lower odds of moderate-to-severe psychological distress (aOR=0.587, 95% CI 0.384-0.897, p=0.014). The AUC of 0.660 indicates poor-to-fair discrimination: a randomly chosen participant with moderate-to-severe distress would have a higher model-predicted risk than one without in about 66% of pairs. The model is not a prediction or screening tool and has no demonstrated clinical utility; the association is reported only as an exploratory signal (see Figure *2*).

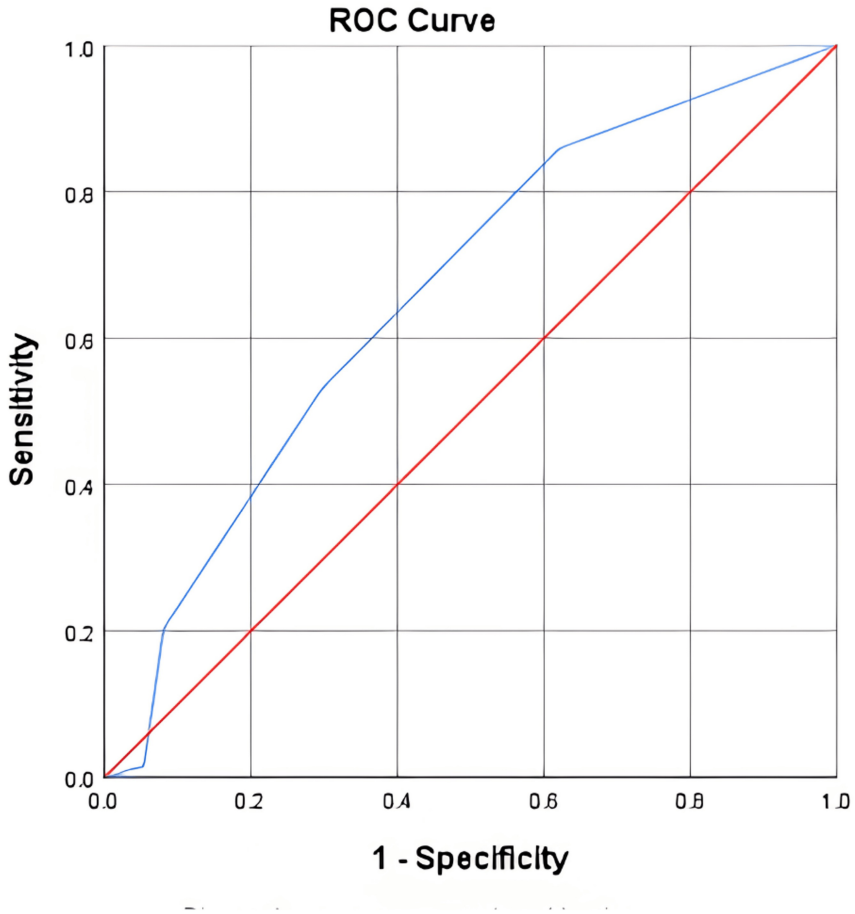


FIGURE 2: The receiver operating characteristic (ROC) curve for the association between positive coping and moderate-to-severe distress (AUC: 0.660).

The blue line represents the ROC curve based on predicted probabilities from the model; the red diagonal line represents the line of no discrimination (random classification). The area under the curve (AUC) was 0.660.

The image was calculated and generated using IBM SPSS Statistics for Windows, Version 26 (Released 2019; IBM Corp., Armonk, New York).

Sociometric mapping identified highly nominated individuals who did not necessarily occupy formal administrative or leadership positions. Individuals receiving few or no nominations were also identified as potentially socially isolated. Participatory mapping identified gathering spaces, damaged landmarks, recovery spaces, and locations perceived as safe or meaningful. The principal observations from the community mapping component are summarized in Table *2*.

Domain	Observation	Programmatic Implication
Informal leadership	Frequently nominated trusted individuals often lacked formal administrative positions	Community engagement strategies should include informal leaders alongside official structures
Social isolation	Isolated individuals were commonly older adults with language barriers or adolescents affected by multiple disruptions	Mapping may help identify individuals requiring proactive outreach
Community spaces	Participatory maps highlighted recovery spaces, damaged landmarks, and locally important gathering sites	Spatial information may complement conventional psychosocial assessments
Community cohesion	Shared recovery spaces appeared most prominent immediately after the disaster and less central over time	Repeated mapping may help monitor changes in social connectedness
Ethical considerations	Social network information was potentially sensitive in conflict-affected settings	Confidentiality safeguards should be integral to implementation

TABLE 2: Key observations from sociometric and participatory mapping implementation

Discussion

This preliminary analysis provides an early description of psychological distress, coping, and community-level social patterns within an ongoing mixed-methods study in earthquake- and conflict-affected Myanmar. Among the 101 participants, 64 (63.4%) experienced moderate-to-severe psychological distress despite widespread use of potentially supportive coping resources, including religion or faith and social support, each reported by 87 (86.1%) participants. Positive coping was associated with lower odds of moderate-to-severe distress in the preliminary analysis. Because recruitment and data collection are continuing, these findings should be interpreted as interim estimates rather than definitive population-level conclusions.

The finding that social support was reported by 87 (86.1%) participants is consistent with broader evidence indicating that social relationships and social capital can be important determinants of mental health following disasters and conflict. A systematic review of post-disaster and post-conflict populations found that individual-level cognitive social capital was inversely associated with psychological problems, including post-traumatic stress, anxiety, and depression, while structural social capital in the form of community networks may also be psychologically protective [2,4]. However, the review noted that much of the available evidence is cross-sectional, limiting causal inference [10]. Identifying informal sources of trust may therefore be relevant to community engagement and locally appropriate psychosocial support [11]. A more recent scoping review similarly identified community resilience and social capital as potentially important for mental health during public health emergencies and disasters, while emphasizing substantial heterogeneity in how these constructs are defined and measured [12]. These findings provide a rationale for examining community relationships alongside individual psychological measures in the ongoing Myanmar study.

The sociometric component provides a complementary community-level perspective. Highly nominated individuals were not necessarily formal leaders, suggesting that interpersonal trust may not correspond with administrative authority. This observation is consistent with previous sociometric work showing that empirically mapped social influence can differ from formal organizational authority [7]. In the present study, this approach may help identify locally trusted individuals who could potentially contribute to community engagement and MHPSS activities, although their actual effectiveness in such roles remains to be evaluated.

Participatory mapping provided a complementary spatial perspective. Whereas sociometric nominations addressed whom participants would approach for trusted conversation, participatory mapping identified places associated with gathering, safety, damage, and recovery [13]. Sociometric nominations addressed whom participants trusted, whereas maps identified places associated with gathering, safety, damage, and recovery. These approaches may consequently capture different dimensions of community functioning [14,15]. This distinction is important because community recovery is experienced not only through interpersonal relationships but also through access to places that support interaction and collective meaning. Research using participatory mapping following Hurricane Katrina found that community-generated spatial assessments could reveal variation in how residents understood recovery that was not fully captured by externally defined quantitative indicators [16]. In the present study, the maps therefore provide an additional contextual layer that may be useful in subsequent qualitative and mixed-methods analyses.

The preliminary association between positive coping and psychological distress also warrants cautious interpretation. Positive coping was associated with lower odds of moderate-to-severe distress among the 101 participants, of whom 64 (63.4%) met the study threshold for moderate-to-severe distress. However, the cross-sectional nature of this interim analysis does not establish temporal direction or causality. The modest

AUC of 0.660 also indicates limited discriminative performance [17]. The association should therefore be regarded as a preliminary signal for the ongoing study rather than evidence that positive coping independently prevents psychological distress.

The present analysis does not establish that informal leadership, social connectedness, or network position protects against psychological distress. Similarly, receiving few nominations should not be interpreted as a diagnosis of social isolation or psychological vulnerability, and therefore such observations should instead inform further assessment and, where appropriate, carefully planned outreach [14,18]. The role of social support is particularly relevant in disaster-related psychological recovery. A cross-sectional study of earthquake survivors found evidence of an association between social support and post-traumatic stress outcomes, although the included studies varied considerably in design and measurement [19]. More broadly, post-disaster social support research suggests that supportive interactions may be mobilized after disasters but can also deteriorate as disruption persists [20].

This interim analysis has important limitations. First, non-probability convenience sampling through a social welfare program makes selection bias likely, and 78.2% of participants were women, so findings may not generalize. Second, no sample-size calculation was performed; with 64 outcome events, estimates are imprecise (aOR 95% CI 0.384-0.897), and stepwise selection risks overfitting. Third, the cross-sectional design precludes causal inference, and reverse causation is plausible. Fourth, stressors and coping were binary self-reported checklists without severity, frequency, or a stated reference period. Fifth, income, occupation, marital status, and prior mental-health history were not collected, so residual confounding is likely. Sixth, discrimination was poor (AUC 0.660). Seventh, mapping observations are descriptive, come from selected camps, were interpreted by the study team without network metrics, and may reflect social desirability. Finally, results are interim and may change as recruitment continues. Lastly, data collection was interrupted by security and access constraints, and procedures were adapted accordingly, so enrollment timing and conditions may have differed between camps. Findings come from an interim, partial dataset.

Conclusions

In this interim, exploratory analysis of 101 participants, psychological distress was common, and reliance on faith and social support was widespread. Positive coping was associated with lower odds of moderate-to-severe distress, but discrimination was poor, and the cross-sectional design permits no causal or protective inference. Early mapping suggested that trusted individuals need not hold formal positions and identified possibly isolated people and locally meaningful spaces; these observations are descriptive. Completing the parent study and integrating survey, qualitative, and mapping data are needed before conclusions are drawn about social connectedness and recovery.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Tay Zar Lin, San San Oo, Aung Min

Acquisition, analysis, or interpretation of data: Tay Zar Lin, San San Oo

Drafting of the manuscript: Tay Zar Lin, San San Oo

Critical review of the manuscript for important intellectual content: Tay Zar Lin, Aung Min

Supervision: Tay Zar Lin

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. The Ministry of Social Welfare, Myanmar, and the Community Advisory Board of the Inle region issued approval 20260102. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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