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Psychological Trauma Recovery After Flooding in Sibolga: A Clinical Approach Based on Community Local Wisdom

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Abstract

Flood disasters can cause prolonged psychological distress, particularly when formal mental health interventions are culturally disconnected from affected communities. This study examines psychological trauma recovery among flood survivors in Sibolga, North Sumatra, by integrating clinical approaches with community local wisdom. An explanatory sequential mixed-method design was employed. Quantitative data were collected from 150 adult flood survivors selected through purposive sampling using questionnaires measuring motivation, perception, attitude, and interest in trauma recovery. Qualitative data were obtained through semi-structured interviews, field observations, and discussions with survivors, religious figures, and community leaders. Quantitative data were analyzed using descriptive statistics and hypothesis testing, while qualitative data were examined through thematic analysis. The results showed that motivation significantly influenced survivors' attitudes and interest in trauma recovery but did not significantly influence their perceptions of formal psychological services. Qualitative findings identified collective meaning-making, spiritual practices, cooperation, family support, and trust in local leaders as important recovery mechanisms. These findings indicate that culturally embedded practices can strengthen emotional regulation, community participation, and acceptance of psychological interventions. The study proposes an indigenous clinical recovery model combining professional psychological support with culturally legitimate community practices.

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Introduction

Flood disasters are not only environmental and infrastructural events but also psychosocial crises that can produce prolonged psychological consequences for affected populations. Survivors may experience property loss, displacement, interruption of daily routines, livelihood insecurity, fear of recurring disasters, and reduced social functioning. These conditions can trigger acute stress, anxiety, depressive symptoms, trauma-related distress, and, in severe cases, post-traumatic stress disorder. Systematic reviews have shown that exposure to natural disasters is associated with increased psychological distress and psychiatric disorders. However, the severity and duration of

these outcomes vary according to disaster exposure, displacement, economic loss, previous trauma, and access to post-disaster support (Beaglehole et al., 2018; Goldmann & Galea, 2014; North & Pfefferbaum, 2013). The psychological impact of flooding is often intensified when survivors have limited access to timely mental health and psychosocial support. For this reason, contemporary disaster-response frameworks emphasize that recovery should extend beyond physical reconstruction and include psychological first aid, community-based psychosocial assistance, referral mechanisms, and professional clinical care. Such services should also be integrated into disaster preparedness and long-term community recovery systems rather than delivered only as short-term emergency responses (World Health Organization [WHO], 2025).

Previous evidence from Indonesia indicates that the psychological effects of flooding are socially unequal. Escobar Carías et al. (2022) found that flood exposure was associated with increased depressive symptoms and acute health problems among economically disadvantaged urban populations, while comparable effects were not observed among wealthier groups. More broadly, flood exposure has been associated with post-traumatic stress symptoms, anxiety, depression, disruption of daily functioning, and prolonged health consequences, particularly among socially and economically vulnerable populations (Golitaleb et al., 2022; Lowe et al., 2019).

This finding is important because it suggests that psychological vulnerability is shaped not only by disaster exposure but also by economic insecurity and unequal access to recovery resources. Nevertheless, the study primarily examined health outcomes among the urban poor and did not explain how cultural practices, community relationships, or locally trusted institutions influenced psychological recovery. Other disaster studies have emphasized that social cohesion, community participation, and culturally meaningful support can shape survivors' capacity to manage post-disaster stress. Therefore, the present study extends the socioeconomic explanation offered by Escobar Carías et al. (2022) by examining how psychological motivation interacts with culturally embedded recovery practices among flood survivors in a coastal community.

Clinical responses to disaster-related psychological distress should also be distinguished according to their timing, purpose, and level of intensity. Psychological First Aid is designed primarily for the immediate aftermath of a disaster. It focuses on ensuring safety, reducing initial distress, identifying urgent needs, strengthening practical support, and connecting survivors with appropriate services. Community-based Psychological First Aid can provide an early, non-specialized form of support by promoting safety, practical assistance, social connection, and referrals. However, it should not be presented as psychotherapy or as treatment for established psychiatric disorders (Jacobs et al., 2016). It is not intended to function as formal psychotherapy or as a treatment for established post-traumatic stress disorder. By contrast, trauma-focused psychotherapies are structured interventions used when trauma-related symptoms persist or significantly interfere with daily functioning. Brief psychosocial interventions and stepped-care approaches may also help disaster survivors by combining early support, symptom monitoring, referral, and access to more intensive professional intervention when needed (O'Donnell et al., 2020). Trauma-focused cognitive behavioral approaches generally involve repeated therapeutic sessions addressing trauma-related thoughts, emotions, avoidance, and maladaptive behavioral responses. Eye movement desensitization and reprocessing is also supported by systematic-review evidence for trauma-related and other mental health problems (Cuijpers et al., 2020). Thus, Psychological First Aid represents an early supportive response, whereas trauma-focused psychotherapy constitutes a more intensive clinical intervention for longer-term or persistent symptoms.

However, the effectiveness and acceptability of both early psychosocial support and longer-term clinical treatment may depend on their compatibility with survivors' cultural values and social environments. Culturally adapted interventions do not replace clinical assessment or evidence-based treatment. Rather, they modify communication, delivery strategies, explanatory models, and community participation so that services are more understandable and acceptable to the population

receiving them. In collectivistic settings, this adaptation may include cooperation with family networks, religious figures, community leaders, and local health workers. Meta-analytic evidence indicates that culturally adapted psychological interventions may improve their relevance and effectiveness when the adaptation addresses language, cultural values, explanatory models, social relationships, and the delivery context of the target population (Hall et al., 2016). Such integration is particularly important when formal mental health services are regarded as unfamiliar, stigmatizing, or disconnected from local understandings of distress.

Within Indonesian communities, gotong royong may contribute to post-disaster recovery through several observable social mechanisms. First, participation in cleaning damaged areas, distributing assistance, repairing houses, or supporting affected families gives survivors concrete roles in the recovery process. Performing these roles may reduce passivity by allowing individuals to contribute rather than remain positioned solely as aid recipients. Second, reciprocal assistance communicates that affected families remain valued members of the community, which may help preserve social recognition and dignity after material loss. Third, visible collective action can demonstrate that recovery responsibilities are shared, thereby reducing isolation and creating realistic expectations that damaged environments and livelihoods can be gradually restored. Research on Indonesian disaster settings has documented mutual assistance through shared labor, resource distribution, emotional support, and community rebuilding.

Nevertheless, these studies do not establish that gotong royong is itself a clinical therapy. Accordingly, the present study treats gotong royong as a potential community-based psychosocial resource whose perceived functions must be examined through participants' experiences rather than assumed in advance. Evidence from post-disaster communities in Indonesia also shows that gotong royong can facilitate resource mobilization, collective participation, solidarity, and community reconstruction after major disruption (Koopman, 2021). Sibolga provides a relevant setting for this investigation because it is a compact coastal municipality whose social and economic activities are closely connected to marine livelihoods, densely inhabited settlements, neighborhood networks, religious institutions, and surrounding coastal environments. Official regional statistics identify Sibolga as a municipality with a geographically limited urban area and socioeconomic conditions that differ from those of larger Indonesian metropolitan centers. In such a setting, flood-related disruption may simultaneously affect housing, informal employment, fishing-related livelihoods, mobility, family responsibilities, and neighborhood relations. The relevance of Sibolga therefore lies not in an unsupported claim that its culture is entirely different from that of every other Indonesian coastal city, but in the interaction between its compact coastal geography, livelihood dependence, close community networks, and limited accessibility of specialized mental health services. These characteristics make it possible to investigate how formal clinical support is interpreted within an interconnected coastal community.

Existing disaster mental health research leaves three limitations that are important for the present study. First, studies centered on psychological symptoms or socioeconomic vulnerability provide valuable evidence about who is most affected but often offer limited explanation of how survivors culturally interpret distress and decide whether to seek formal support. Without this explanation, programs may identify psychological needs correctly while still failing to achieve community acceptance. Second, studies of social capital, religiosity, and mutual assistance frequently describe these resources as indicators of resilience but do not clearly connect them with specific dimensions of help-seeking, such as perception, attitude, motivation, and willingness to participate in psychological recovery programs. Third, studies advocating cultural adaptation often provide broad principles but offer limited empirical explanation of how clinical and community mechanisms can be combined in a particular Indonesian coastal setting. The present study addresses these limitations by integrating quantitative analysis of motivation, perception, attitude, and interest with

qualitative analysis of spiritual practices, family support, cooperation, collective meaning-making, and trust in community figures. This integration is particularly important because mixed-method research requires an explicit connection between quantitative results and qualitative explanations rather than the separate presentation of two independent datasets (Fetters et al., 2013; Guetterman et al., 2015).

The contribution of this study should therefore be understood as contextual and integrative rather than as a claim that no previous research has connected culture and trauma recovery. Previous studies have already demonstrated the importance of cultural adaptation, social support, religious coping, and community resilience in disaster-affected populations. The present study builds on that literature by examining how these mechanisms operate alongside measurable psychological responses among adult flood survivors in Sibolga. Its specific contribution is the empirical integration of individual recovery orientation and community-based cultural mechanisms within one explanatory sequential mixed-method design.

In this study, the term indigenous clinical perspective refers operationally to an approach in which professional psychological principles are interpreted and delivered through locally meaningful social, spiritual, and cultural structures. The term does not imply that all traditional practices are inherently therapeutic or that community practices can replace professional mental health treatment. Instead, it refers to four analytically observable components: clinical assessment and structured psychological support; survivors' motivation, perception, attitude, and interest in recovery; culturally meaningful practices such as collective prayer, family assistance, and gotong royong; and the involvement of trusted religious, community, or local health figures as cultural mediators. An indigenous clinical perspective is therefore present when formal psychological support and local recovery resources are deliberately connected while maintaining ethical standards, clinical referral procedures, and professional boundaries.

Based on this conceptualization, the study investigates psychological trauma recovery as a multilevel process. At the individual level, it examines whether motivation is associated with perceptions, attitudes, and interests in recovery. At the community level, it explores how survivors experience collective meaning-making, spiritual coping, mutual assistance, and trust in local figures. At the integrative level, it considers whether these cultural mechanisms can increase the social acceptability of psychological support without being represented as substitutes for evidence-based clinical intervention. This more cautious formulation enables the study to make a specific contribution without overstating the novelty or therapeutic capacity of local wisdom.

Therefore, this study aims to explore psychological trauma recovery among flood survivors in Sibolga through a clinical approach based on community local wisdom. The study seeks to identify the psychological dynamics of trauma recovery and explain how indigenous cultural resources contribute to survivors' readiness, acceptance, and participation in recovery programs. Theoretically, this study contributes to the development of indigenous clinical psychology by proposing that trauma recovery is not merely an individual psychological process but a relational, spiritual, and cultural process. Practically, the findings are expected to inform psychologists, health workers, local governments, and disaster management agencies in designing post-disaster mental health programs that are clinically sound, culturally legitimate, and sustainable.

Based on this background, the present study addresses the following research questions:

1. How do flood survivors in Sibolga experience psychological trauma and recovery after flooding?
2. How do motivation, perception, attitude, and interest influence community engagement in trauma recovery programs?
3. How does local wisdom facilitate psychological trauma recovery when integrated with clinical psychological approaches?

Materials and Methods

Research Design

This study employed an explanatory sequential mixed-method design consisting of two consecutive phases: a quantitative phase followed by a qualitative phase. In an explanatory sequential design, quantitative findings are generated first and are subsequently used to guide qualitative participant selection, interview development, and the interpretation of results (Creswell & Plano Clark, 2018; McCrudden & McTigue, 2019). The quantitative phase was conducted first to examine the statistical associations between survivors' motivation for psychological recovery and their perception, attitude, and interest in trauma-recovery programs. The qualitative phase was subsequently conducted to explain, clarify, and contextualize the quantitative findings.

Priority was given to the quantitative phase, while the qualitative phase served an explanatory function. In particular, the qualitative inquiry was designed to explain why motivation was significantly associated with attitude and interest but not with perceptions of formal psychological services.

The research sequence can be represented as follows:

Quantitative → qualitative → integration and interpretation

Integration occurred at three stages. First, the quantitative findings were used to identify issues requiring further exploration during the qualitative phase. Second, the preliminary quantitative results informed the development of the interview guide and the purposive selection of qualitative participants. Third, the quantitative and qualitative findings were merged during interpretation through a joint display and narrative weaving. These stages corresponded to connecting, building, and merging procedures commonly used in mixed-method research. Connecting involved selecting qualitative participants based on quantitative findings, building involved developing interview questions from the statistical results, and merging involved comparing both forms of evidence through a joint display and integrated interpretation (Fetters et al., 2013; Guetterman et al., 2015).

This design was selected because statistical results alone were considered insufficient to explain how cultural values, family support, spiritual practices, gotong royong, service accessibility, stigma, and trust in local figures influenced survivors' acceptance of formal psychological services.

Study Setting and Participants

The study was conducted in flood-affected areas of Sibolga, North Sumatra, Indonesia. The quantitative phase involved 150 adult flood survivors.

The minimum sample size was estimated through an a priori power analysis for linear regression using a significance level of 0.05, statistical power of 0.80, and a medium effect size of ($f^{2}=0.15$). The calculation indicated that at least 77 respondents were required. Therefore, the final sample of 150 respondents exceeded the minimum requirement and was considered adequate for the planned statistical analyses.

Participants were recruited using purposive sampling. The inclusion criteria were: being at least 18 years old, residing in a flood-affected area of Sibolga, having directly experienced the flood or its consequences, being able to understand the study information, being able to provide informed consent, and voluntarily agreeing to participate.

Individuals who were medically unstable, unable to provide informed consent, or experiencing severe emotional distress at the time of recruitment were excluded to minimize the possibility of further psychological discomfort.

Potential participants were identified through coordination with neighborhood representatives, community health workers, religious figures, and community leaders. These stakeholders only assisted in disseminating information about the study and facilitating access to

affected communities. They were not involved in deciding who should participate and were not given access to individual responses.

Eligible participants were approached through household visits, local health facilities, community meeting points, and post-flood community activities. Recruitment continued until 150 complete and eligible questionnaires were obtained.

Quantitative Instrument and Variable Measurement

Quantitative data were collected using a 20-item questionnaire measured on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Each of the four constructs—motivation, perception, attitude, and interest—was measured using five items. Qualitative data were analyzed thematically through six stages: familiarization with the data, initial coding, development of candidate themes, review of themes, definition and naming of themes, and preparation of the interpretive narrative (Braun & Clarke, 2021).

Motivation referred to survivors' internal readiness to undergo psychological recovery, including recognition of recovery needs, confidence in recovery, persistence, and willingness to seek support. Perception referred to survivors' evaluation of formal psychological services, including perceived usefulness, accessibility, confidentiality, cultural compatibility, and stigma.

Attitude represented survivors' cognitive and emotional evaluation of trauma-recovery programs, including their perceived importance, appropriateness, comfort, acceptability, and usefulness. Interest referred to behavioral intention to participate, including willingness to seek information, attend recovery activities, continue participation, consult qualified professionals, and recommend recovery programs to others.

The initial questionnaire was reviewed by three experts in clinical psychology, public health or disaster management, and research methodology. The content-validity assessment produced item-level content validity index values ranging from 0.83 to 1.00 and a scale-level content validity index of 0.94.

The instrument was pilot-tested among 30 flood survivors who had characteristics similar to those of the main sample but were not included in the final analysis. Exploratory factor analysis produced a Kaiser–Meyer–Olkin value of 0.861, while Bartlett's test of sphericity was statistically significant at $p < 0.001$. Factor loadings ranged from 0.64 to 0.87 and supported the proposed four-construct structure.

Internal consistency was acceptable, with Cronbach's alpha coefficients of 0.86 for motivation, 0.82 for perception, 0.88 for attitude, and 0.85 for interest.

Quantitative Data Collection and Analysis

Questionnaires were administered directly by trained researchers and enumerators. Before completing the questionnaire, participants received verbal and written information about the study objectives, procedures, voluntary nature of participation, potential emotional discomfort, confidentiality safeguards, and their right to refuse or withdraw without penalty.

Participants completed the questionnaire independently whenever possible. For participants with reading difficulties, trained enumerators neutrally read each item without interpreting the question, suggesting responses, or influencing participants' answers.

Quantitative data were analyzed using descriptive statistics and three separate linear regression models. Descriptive statistics included minimum and maximum values, means, and standard deviations. The regression models examined the association between motivation as the predictor variable and perception, attitude, and interest as separate outcome variables.

Before hypothesis testing, data screening was conducted to assess statistical assumptions. Normality was evaluated using skewness and kurtosis, while multicollinearity was examined using

variance inflation factor values. Statistical significance was established at ($p<0.05$). Values below 0.001 were reported as ($p<0.001$), rather than ($p=0.000$).

Because the study used a cross-sectional design and nonprobability sampling, the regression findings were interpreted as statistical associations rather than causal effects.

Qualitative Participant Selection and Data Collection

The qualitative phase was conducted after the preliminary quantitative analysis had been completed. Qualitative participants were selected purposively to obtain information-rich cases capable of explaining the quantitative findings.

Selection considered variation in participants' motivation, perception, attitude, and interest scores. Particular attention was given to survivors who reported high motivation and interest but moderate or less favorable perceptions of formal psychological services. This pattern was central to explaining the nonsignificant association between motivation and perception.

The qualitative phase involved flood survivors and relevant community stakeholders, including religious figures, community leaders, and community health workers. Recruitment continued until the interviews provided sufficient thematic depth and no substantially new explanations emerged.

The final number and characteristics of qualitative participants should be reported explicitly based on the actual data, including the number of survivors and stakeholders interviewed.

Semi-structured interviews were used to explore participants' flood experiences, psychological distress, recovery needs, perceptions of formal mental health services, stigma, confidentiality concerns, service accessibility, family support, spiritual practices, gotong royong, and trust in local figures.

The interview guide was developed after the quantitative phase and included questions intended to explain the statistical findings. For example, participants were asked why survivors with a strong motivation to recover might remain uncertain about formal psychological services and what conditions could make such services more culturally acceptable.

Interviews were conducted in safe and private locations selected in consultation with participants. Interviews began with general and nonintrusive questions before proceeding to more sensitive topics. Participants were not required to describe traumatic experiences in detail.

With participants' permission, interviews were audio-recorded and supplemented with field notes. When recording permission was not granted, detailed contemporaneous notes were taken. Interviews conducted in Indonesian were transcribed verbatim. Quotations translated into English for publication were checked against the original transcripts to preserve their substantive meaning, tone, and contextual intention.

Field observations were also conducted to document relevant social interactions, mutual-assistance practices, community participation, and the broader context of post-flood recovery.

Qualitative Data Analysis and Trustworthiness

Qualitative data were analyzed thematically through six stages: familiarization with the data, initial coding, development of candidate themes, review of themes, definition and naming of themes, and preparation of the interpretive narrative.

Coding was directed toward explaining the quantitative findings while remaining open to unexpected themes emerging from participants' accounts. Initial codes included stigma toward psychological services, unfamiliarity with professional care, confidentiality concerns, limited access, cultural compatibility, family support, spiritual coping, collective meaning-making, cooperation, and trust in local figures.

Related codes were grouped into broader themes, including collective meaning-making, spiritual practices as coping resources, gotong royong as community-based psychosocial support, family support, and trust in local figures as a basis for service acceptance.

Several strategies were used to strengthen qualitative trustworthiness. Data-source triangulation was conducted by comparing accounts from survivors, community health workers, religious figures, and community leaders. Interview data were also compared with field observations and research notes.

The research team discussed coding decisions and theme development to reduce dependence on a single researcher's interpretation. An audit trail was maintained to document data-collection procedures, coding decisions, revisions to themes, and interpretive choices. Where feasible, selected participants were invited to confirm whether the researchers' interpretations adequately represented their experiences.

Mixed-Method Integration

Quantitative and qualitative data were initially analyzed separately and subsequently integrated to produce a comprehensive interpretation of the research questions.

Integration was undertaken through three main mechanisms. First, connecting occurred when the quantitative results informed the selection of participants and issues for qualitative exploration. Second, building occurred when the statistical findings were used to develop the semi-structured interview guide. Third, merging occurred when the quantitative and qualitative findings were compared through a joint display and narrative weaving.

The integration process focused on the following quantitative findings:

1. the high level of recovery motivation;
2. the high levels of attitude and interest;
3. the comparatively moderate perception of formal psychological services;
4. the significant associations between motivation and attitude and between motivation and interest; and
5. the nonsignificant association between motivation and perception.

The qualitative themes were aligned with each quantitative result to determine whether they confirmed, expanded, complemented, or diverged from the quantitative findings.

Confirmation occurred when qualitative evidence supported the direction of a quantitative finding. Expansion occurred when qualitative data provided cultural or contextual explanations not captured by the questionnaire. Complementarity occurred when the two forms of data explained different but related dimensions of the same phenomenon. Divergence occurred when the qualitative accounts did not fully correspond with the quantitative pattern and required an alternative interpretation.

The final mixed-method interpretation was developed through narrative weaving, in which quantitative and qualitative findings were discussed together according to the research questions. Meta-inferences were drawn only when supported by a coherent interpretation of both data strands. Qualitative findings were not used to claim statistical generalizability, while quantitative associations were not interpreted as evidence of causality.

Ethical Considerations

This study did not obtain a formal ethical approval number and was not reviewed by an institutional ethics committee before data collection. Therefore, the authors do not claim that the study received institutional ethical approval or a formal ethical exemption.

Nevertheless, all research procedures were conducted with attention to fundamental ethical principles for research involving human participants, including respect for autonomy, voluntary participation, informed consent, protection of privacy and confidentiality, and minimization of psychological discomfort, consistent with the ethical principles of the American Psychological Association and the Declaration of Helsinki (American Psychological Association, 2017; World Medical Association, 2024).

Before data collection, each prospective participant received clear information about the study objectives, questionnaire or interview procedures, the type of information to be collected, the voluntary nature of participation, potential emotional discomfort, confidentiality safeguards, and the right to refuse or withdraw at any time without penalty.

Consent was obtained before questionnaire administration or interviews. Participants were included only after indicating that they understood the study information and voluntarily agreed to participate.

For participants who experienced difficulty reading, the study information and consent statement were read aloud using clear and understandable language. Consent was documented only after the participant demonstrated adequate understanding. The consent process was not conducted in the presence of community leaders or other persons who could create actual or perceived pressure to participate.

Participants were not required to answer questions that made them uncomfortable. They were allowed to skip particular questions, request a break, reschedule, or discontinue participation completely.

Because the study involved disaster survivors with potentially sensitive psychological experiences, interviewers monitored signs of emotional discomfort, including prolonged crying, agitation, withdrawal, difficulty continuing the interview, or an explicit request to stop. When such signs appeared, data collection was paused or terminated according to the participant's preference.

Participants were not required to describe traumatic experiences in unnecessary detail. Interviews focused primarily on recovery experiences, sources of support, perceptions of services, and coping mechanisms.

When a participant showed severe or persistent psychological distress, the researchers provided information about available local health or mental health services. Family support, community assistance, gotong royong, and spiritual practices were not presented as substitutes for professional assessment or treatment.

Participants' identities were protected through numerical or category-based codes. Names, addresses, telephone numbers, and other directly identifying information were excluded from the analytical dataset and publication. This interpretation is consistent with community-resilience research showing that collective identity, social networks, communication, and shared resources can reduce isolation and support psychosocial adjustment after disasters (First & Houston, 2022; Généreux et al., 2019; Norris et al., 2008).

Consent documentation was stored separately from questionnaires, audio recordings, interview transcripts, and analytical files. Electronic data were stored on password-protected devices or folders, while printed materials were kept in secure storage accessible only to the research team.

Interview quotations included in the manuscript were anonymized. Information that could reveal the identity of participants, family members, residential locations, or specific community actors was removed without altering the substantive meaning of the statements.

Community leaders, religious figures, health workers, and neighborhood representatives who facilitated field access were not informed about who agreed or declined to participate. They were also not given access to individual responses, recordings, transcripts, or analytical data.

The absence of formal ethical review is acknowledged as a procedural limitation of this study. The authors recognize that research involving disaster survivors and psychologically sensitive experiences should undergo ethical review before data collection. Future studies should obtain approval from an authorized ethics committee, establish a written distress-management protocol, and prepare a more structured psychological referral mechanism.

Results and Discussions

Results of Descriptive Analysis

Descriptive analysis was conducted to examine the general tendencies of survivors' motivation, perception, attitude, and interest in psychological trauma recovery. As presented in Table 1, interest in participating in trauma-recovery programs had the highest mean score ((M=4.01), (SD=0.55)), followed by attitude toward trauma recovery ((M=3.95), (SD=0.58)) and motivation to recover ((M=3.87), (SD=0.61)). Perception of formal psychological services had the lowest mean score ((M=3.42), (SD=0.74)).

These findings indicate that the participants generally demonstrated strong personal readiness, favorable attitudes, and considerable interest in psychological recovery. However, their evaluations of formal psychological services were comparatively less positive. This descriptive difference suggests that willingness to recover should be distinguished from acceptance of available professional services.

Table 1. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Motivation	150	2.10	5.00	3.87	0.61
Perception	150	1.95	5.00	3.42	0.74
Attitude	150	2.30	5.00	3.95	0.58
Interest	150	2.50	5.00	4.01	0.55

Before regression analysis, the assumptions of normality and multicollinearity were examined. Skewness and kurtosis values for all variables were within the acceptable range of -2 to +2, indicating no substantial deviation from normality. Variance inflation factor values ranged from 1.38 to 1.55, indicating that multicollinearity was not a concern.

Three separate simple linear regression models were estimated to examine the associations between motivation and perception, attitude, and interest. Motivation was not significantly associated with perception of formal psychological services ($\beta = 0.006$, SE = 0.082, t = 0.067, p = 0.947, 95% CI [-0.157, 0.168]). The model explained less than 0.1% of the variance in perception ($R^2 < 0.001$, adjusted $R^2 = -0.007$).

In contrast, motivation was positively and significantly associated with attitude toward trauma recovery ($\beta = 0.522$, SE = 0.070, t = 7.454, $p < 0.001$, 95% CI [0.384, 0.661]). The model explained approximately 27.3% of the variance in attitude ($R^2 = 0.273$, adjusted $R^2 = 0.268$).

Motivation was also positively and significantly associated with interest in participating in trauma-recovery programs ($\beta = 0.319$, SE = 0.078, t = 4.098, $p < 0.001$, 95% CI [0.165, 0.473]). This model explained approximately 10.2% of the variance in interest ($R^2 = 0.102$, adjusted $R^2 = 0.096$).

Because the data were collected using a cross-sectional design, these findings represent statistical associations. They should not be interpreted as evidence that motivation caused changes in perception, attitude, or interest.

Results of Assumption Testing

Before hypothesis testing was conducted, the data were tested to ensure that they met statistical assumptions. The normality test showed that all variables had skewness and kurtosis values within the acceptable range of −2 to +2. This means that the data were normally distributed and suitable for further statistical analysis.

The multicollinearity test showed that all Variance Inflation Factor values were below 5. The VIF values for motivation, perception, attitude, and interest were 1.42, 1.38, 1.55, and 1.49, respectively. These results indicate that there was no multicollinearity among the research variables.

Table 2. Results of Assumption Testing

Assumption Test	Variable	Value	Criterion	Result
Normality	All variables	Skewness and kurtosis between −2 and +2	Normal	Fulfilled
Multicollinearity	Motivation	VIF = 1.42	< 5	No multicollinearity
Multicollinearity	Perception	VIF = 1.38	< 5	No multicollinearity
Multicollinearity	Attitude	VIF = 1.55	< 5	No multicollinearity
Multicollinearity	Interest	VIF = 1.49	< 5	No multicollinearity

Based on these results, the data met the requirements for hypothesis testing. Therefore, further analysis could be conducted to examine the effect of motivation on perception, attitude, and interest in psychological trauma recovery.

Table 3. Linear Regression Results

Predictor	Outcome	β	SE	t	p	95% CI	R^2	Adj. R^2	Interpretation
Motivation	Perception	0.006	0.082	0.067	0.947	[-0.157, 0.168]	<0.001	-0.007	Not significant
Motivation	Attitude	0.522	0.070	7.454	<0.001	[0.384, 0.661]	0.273	0.268	Significant positive association
Motivation	Interest	0.319	0.078	4.098	<0.001	[0.165, 0.473]	0.102	0.096	Significant positive association

The regression results indicate that motivation was moderately associated with attitude and weakly to moderately associated with interest. The largest association was found between motivation and attitude, suggesting that survivors with stronger recovery motivation tended to evaluate trauma-recovery efforts more favorably. However, motivation showed virtually no association with perception of formal psychological services.

The negative adjusted R^2 in the perception model indicates that motivation did not improve the prediction of perception compared with a model containing only the intercept. This finding reinforces the interpretation that perceptions of formal services were likely shaped by factors other than individual motivation, such as stigma, service accessibility, confidentiality, cultural compatibility, and trust in service providers.

Qualitative Findings

The qualitative phase explained the principal quantitative patterns, especially the nonsignificant association between motivation and perception and the significant associations between motivation and attitude and interest. The thematic analysis generated five interrelated themes: collective meaning-making, spiritual coping, family support, gotong royong, and trust in local figures.

Collective Meaning-Making

Participants commonly interpreted the flood as a shared community experience rather than solely as an individual misfortune. This collective interpretation appeared to reduce feelings of isolation and helped survivors understand emotional reactions such as fear, sadness, uncertainty, and grief as common responses to an extraordinary event.

This theme helps explain the relatively high scores for motivation, attitude, and interest. Survivors' readiness to recover was not based only on personal determination. It was also reinforced by the belief that recovery was a collective responsibility involving family members, neighbors, religious communities, and the wider local community.

Spiritual Coping

Communal prayer, religious gatherings, recitation, and spiritual reflection were described as sources of calmness, hope, acceptance, and meaning. These practices provided culturally familiar settings in which emotional distress could be expressed without necessarily being interpreted as a psychiatric disorder.

Spiritual practices should not be classified as clinical treatment. Rather, they functioned as culturally embedded coping resources that supported emotional regulation, hope, and social connectedness. Their relevance to the quantitative findings lies in their capacity to strengthen favorable attitudes and interest in recovery while also explaining why survivors might initially prefer familiar spiritual or community support over formal psychological services.

Family Support

Family members provided emotional reassurance, practical assistance, companionship, and encouragement to resume daily activities. Family support appeared to strengthen survivors' motivation and willingness to participate in recovery activities.

At the same time, strong reliance on family support may help explain why high recovery motivation was not accompanied by more favorable perceptions of formal psychological services. Survivors could possess a strong willingness to recover while still viewing family members as the most trusted and culturally acceptable source of initial assistance.

Gotong Royong as Community-Based Psychosocial Support

Gotong royong was reflected in collective activities such as cleaning damaged areas, repairing houses, distributing assistance, preparing food, and supporting affected households. Participation enabled survivors to assume active social roles rather than remain positioned solely as recipients of aid.

This mechanism helps explain the significant association between motivation and interest. Survivors with stronger readiness to recover were more willing to participate when recovery activities were collective, practical, and socially meaningful. Gotong royong appeared to strengthen agency, reciprocity, dignity, and social belonging.

Nevertheless, gotong royong should be understood as a community-based psychosocial resource rather than psychotherapy or a substitute for professional psychological care.

Trust in Local Figures

Religious leaders, community leaders, neighborhood representatives, and local health workers were perceived as trusted sources of information and support. Participants appeared more receptive to psychological assistance when such figures were involved in introducing, explaining, or facilitating services.

This theme provides an important explanation for the nearly absent association between motivation and perception. Internal readiness to recover was not sufficient to produce favorable

perceptions of formal psychological services. Perception was influenced by social legitimacy, confidentiality, familiarity, accessibility, stigma, and the involvement of trusted intermediaries.

Local figures may therefore function as cultural mediators. However, their role should remain within appropriate boundaries, including providing basic psychosocial support, communicating accurate information, recognizing warning signs, encouraging help-seeking, and facilitating referral to qualified professionals.

Integration of Quantitative and Qualitative Findings

The quantitative and qualitative findings were integrated through connecting, building, merging, joint display, and narrative weaving. The qualitative phase was not conducted as an independent parallel component. Instead, it was explicitly designed to explain patterns identified during the quantitative phase.

The quantitative analysis showed that motivation was moderately associated with attitude ($\beta = 0.522$) and weakly to moderately associated with interest ($\beta = 0.319$). The qualitative findings explained these associations by showing that survivors' readiness to recover was reinforced by family responsibility, collective meaning-making, spiritual commitment, mutual assistance, and the desire to resume meaningful social roles.

The quantitative analysis also showed that motivation had virtually no association with perception of formal psychological services ($\beta = 0.006$, $R^2 < 0.001$). The qualitative findings explained this pattern through themes of unfamiliarity with professional psychological services, stigma, confidentiality concerns, limited accessibility, cultural distance, and greater reliance on trusted local sources of assistance.

The integrated findings therefore indicate that motivation and service perception represent distinct dimensions of trauma recovery. Motivation reflects personal and relational readiness to improve, whereas perception concerns the perceived legitimacy, safety, accessibility, confidentiality, and cultural relevance of formal services.

Table 4. Joint Display of Quantitative and Qualitative Findings

Quantitative Finding	Qualitative Explanation	Type of Integration	Integrated Interpretation
Motivation was high (M = 3.87, SD = 0.61)	Hope, family responsibility, spiritual commitment, and shared community recovery strengthened readiness to recover.	Confirmation and expansion	Both individual and community-level resources supported motivation
Attitude was high (M = 3.95, SD = 0.58) and significantly associated with motivation ($\beta = 0.522$, $R^2 = 0.273$, $p < 0.001$)	Recovery activities were evaluated positively when delivered through familiar family, spiritual, and community settings	Confirmation	Motivation was associated with favorable evaluations of recovery, particularly when support was culturally meaningful.
Interest was highest (M = 4.01, SD = 0.55) and significantly associated with	Survivors expressed willingness to participate when activities were accessible, collective,	Confirmation and qualification	Motivation was associated with behavioral intention, although actual participation

motivation (β = 0.319, R^2 = 0.102, p < 0.001)	and supported by trusted local figures.		remained dependent on accessibility and service legitimacy.
Perception was comparatively moderate (M = 3.42, SD = 0.74)	Formal services were sometimes viewed as unfamiliar, stigmatizing, inaccessible, or culturally distant	Expansion	Readiness to recover did not automatically produce positive evaluations of formal psychological services.
Motivation was not significantly associated with perception (β = 0.006, R^2 < 0.001, p = 0.947)	Survivors often preferred family members, religious leaders, community figures, or local health workers as initial sources of support.	Complementarity	Service perception was shaped more by trust, stigma, accessibility, confidentiality, and cultural compatibility than by motivation.
Local wisdom emerged as an important recovery resource	Collective prayer, family support, gotong royong, shared meaning, and trusted leadership strengthened emotional security and connectedness	Expansion	Local wisdom functioned as a complementary psychosocial resource rather than a substitute for professional care.

The integrated interpretation suggests that post-flood trauma recovery involved two related but distinct processes. The first was recovery readiness, reflected in motivation, favorable attitudes, and interest in participating. The second was formal service acceptance, reflected in perceptions of professional psychological care. Social and cultural mechanisms may help connect these processes by increasing the familiarity, legitimacy, accessibility, and acceptability of psychological support.

Discussion

The findings of this study indicate that psychological trauma recovery among flood survivors in Sibolga was shaped by the interaction between individual recovery readiness and culturally embedded social resources. The quantitative results showed that motivation was positively associated with attitude and interest in trauma-recovery programs, whereas motivation was not significantly associated with perception of formal psychological services. The qualitative findings explained these statistical patterns through five interrelated mechanisms: collective meaning-making, spiritual coping, family support, gotong royong, and trust in local figures.

Taken together, the findings suggest that survivors' willingness to recover did not automatically translate into favorable evaluations of professional psychological services. Recovery motivation appeared to be strengthened by personal hope, family responsibility, social belonging, spiritual meaning, and opportunities to participate in community recovery. By contrast, perception of formal psychological services appeared to depend more strongly on service-related and contextual considerations, including accessibility, confidentiality, stigma, familiarity, cultural compatibility, and trust in those delivering or introducing the service.

This distinction is theoretically important because motivation and service acceptance represent different components of post-disaster recovery. Motivation reflects survivors' internal and relational readiness to improve their psychological condition, whereas perception reflects how

professional services are evaluated within a particular cultural and social context. The explanatory sequential mixed-method design made it possible to identify this distinction statistically and then explain it through participants' lived experiences.

Motivation and Attitude Toward Trauma Recovery

Motivation was positively and significantly associated with attitude toward trauma recovery. Survivors with stronger recovery motivation tended to evaluate recovery activities as more important, appropriate, useful, and acceptable. This relationship suggests that psychological readiness may be associated with a more favorable orientation toward programs intended to support emotional recovery.

However, motivation should not be interpreted solely as an individual psychological characteristic. The qualitative findings showed that survivors' motivation was embedded in family responsibilities, spiritual values, collective expectations, and the desire to resume meaningful social roles. Participants were motivated not only to reduce their own emotional distress but also to care for family members, return to daily activities, support neighbors, and contribute to rebuilding their communities.

This interpretation is consistent with community-resilience perspectives, which conceptualize post-disaster recovery as the result of interactions among individual capacities, interpersonal relationships, collective efficacy, social networks, communication, and institutional resources (Généreux et al., 2019; Norris et al., 2008). Individual motivation may therefore be strengthened when survivors perceive that they remain socially valued, supported, and capable of contributing to the recovery process.

The finding also indicates that favorable attitudes toward recovery may be reinforced when recovery activities are delivered through familiar and socially acceptable settings. Family gatherings, neighborhood meetings, religious activities, and community-based support may create less stigmatizing environments than formal clinical settings. This may help survivors evaluate recovery programs more positively without necessarily perceiving themselves as psychiatric patients.

Nevertheless, the association between motivation and attitude should not be interpreted causally. Because the research used a cross-sectional design, it cannot determine whether motivation preceded positive attitudes, whether favorable attitudes strengthened motivation, or whether other psychological and social factors influenced both.

Motivation and Interest in Recovery Programs

Motivation was also positively associated with interest in participating in trauma-recovery programs. Survivors with stronger recovery motivation reported greater willingness to seek information, attend recovery activities, consult professionals, continue participation, and recommend such programs to others.

The qualitative findings suggest that this association was strengthened when recovery activities were perceived as accessible, community-oriented, culturally familiar, and supported by trusted local figures. Participants appeared more willing to participate when activities were organized in familiar locations, used understandable language, respected local values, and involved people whom the community already trusted.

Interest should therefore be interpreted as a combination of personal readiness and perceived feasibility. A survivor may be motivated to participate but remain unable to do so because of transportation costs, work responsibilities, family obligations, service scarcity, or fear of stigma. The high interest score in this study reflects behavioral intention rather than documented service utilization.

This distinction is important because intention does not always lead to actual participation. Future research should therefore measure attendance, continuity of participation, referral

completion, and long-term engagement in psychological services. Longitudinal studies would also help determine whether motivation and interest remain stable or change as survivors move from the immediate post-disaster period into longer-term recovery.

Why Motivation Was Not Associated with Perception of Formal Psychological Services

The nonsignificant association between motivation and perception of formal psychological services is one of the most important findings of this study. It indicates that a strong desire to recover does not necessarily produce favorable views of psychologists, counseling services, trauma-focused interventions, or other forms of formal mental health care.

The qualitative findings provide several explanations for this pattern. First, some survivors were unfamiliar with the purpose and procedures of psychological services. Formal mental health care may have been perceived as something intended only for individuals with severe psychiatric disorders. Second, participants expressed concerns related to stigma, confidentiality, accessibility, and cultural distance. Third, many survivors considered family members, religious leaders, community figures, or local health workers to be more familiar and acceptable sources of initial support.

These findings are consistent with cultural psychiatry and global mental health research showing that help-seeking behavior and treatment acceptance are influenced by culturally constructed explanations of distress, stigma, trust, social relationships, and recognized pathways of care (Kohrt et al., 2014; Lewis-Fernández & Kirmayer, 2019). Psychological distress may be interpreted as a spiritual, relational, family, or community problem rather than as an individual clinical condition. Consequently, survivors may seek assistance through culturally legitimate systems before considering professional psychological services.

The qualitative phase therefore expanded the statistical result. The absence of an association between motivation and perception was not evidence that survivors lacked recovery needs. Instead, it indicated that different mechanisms shaped personal readiness and service acceptability. Motivation was primarily related to the desire to improve, while perception was related to trust, familiarity, confidentiality, cultural compatibility, and accessibility.

This result has practical implications for mental health programs. Service providers should not assume that motivated survivors will automatically seek professional care. Programs need to explain the purpose of psychological support clearly, use non-stigmatizing terminology, protect confidentiality, ensure affordable access, and involve trusted local intermediaries.

Collective Meaning-Making and Shared Recovery

Collective meaning-making emerged as a central mechanism in the recovery process. Participants understood the flood not only as an individual loss but also as a shared community experience. This interpretation reduced isolation and enabled survivors to understand emotional reactions such as fear, sadness, sleep disturbance, uncertainty, and grief as understandable responses to a common disaster.

Collective narratives may contribute to recovery by normalizing distress and reducing self-blame. When the wider community acknowledges emotional suffering, survivors may feel less ashamed or personally weak. Shared accounts of loss and recovery may also create opportunities for mutual recognition, emotional expression, and social support.

This interpretation is consistent with community-resilience research emphasizing the importance of shared identity, communication, social relationships, and collective resources in post-disaster adjustment (First & Houston, 2022; Généreux et al., 2019; Hikichi et al., 2017; Norris et al., 2008). Social connectedness can provide practical assistance and emotional reassurance while helping affected communities coordinate recovery activities.

Collective meaning-making may also strengthen motivation and interest by positioning recovery as a shared responsibility. Survivors may become more willing to participate when they understand that their involvement contributes not only to personal improvement but also to family and community recovery.

Spiritual Practices as Culturally Embedded Coping Resources

Spiritual practices were described as important sources of emotional calmness, hope, acceptance, and meaning. Communal prayer, recitation, religious gatherings, and spiritual reflection provided familiar ways to interpret suffering and manage uncertainty.

These practices may support recovery through several mechanisms. They can provide emotional containment, reinforce hope, create regular opportunities for social interaction, and offer explanations for suffering that are consistent with participants' beliefs. Religious gatherings may also reduce isolation and facilitate informal emotional support.

However, spiritual practices should not be classified as clinical treatment. They are more appropriately understood as culturally embedded coping resources that may complement professional psychological support. Religious and spiritual coping can provide meaning and social support, although spiritual beliefs may also become sources of distress when suffering is interpreted through guilt, punishment, or abandonment (Ano & Pargament, 2013).

Psychological services should therefore acknowledge spiritual resources without presenting them as replacements for clinical assessment or evidence-based intervention. Culturally responsive care can respect spiritual beliefs while maintaining clear professional boundaries and referral procedures.

Family Support and Recovery Readiness

Family support emerged as another important mechanism connecting individual motivation with recovery participation. Family members provided emotional reassurance, practical assistance, companionship, transportation, financial support, and encouragement to resume normal activities.

Such support may increase recovery readiness by reducing the practical and emotional burden associated with participation. Survivors may be more willing to attend a recovery program when family members approve, accompany them, help with domestic responsibilities, or normalize the decision to seek assistance.

At the same time, reliance on family support may partly explain why motivation was not associated with perception of formal services. Survivors could be highly motivated to recover while considering the family to be the most trusted and culturally appropriate source of care. Formal services may only be considered when family support is insufficient, or symptoms become persistent and severe.

Family involvement may therefore serve as both a protective factor and an entry point for professional intervention. Programs can include family psychoeducation, guidance on recognizing warning signs, and information about referral pathways. However, confidentiality and survivor autonomy must remain protected, particularly when family relationships are themselves sources of stress.

Gotong Royong as a Community-Based Psychosocial Resource

Gotong royong was identified as a central form of community-based support. Participants described collective activities such as cleaning damaged areas, repairing homes, preparing meals, distributing assistance, and helping affected families.

These activities may contribute to psychological recovery by restoring agency, dignity, reciprocity, and social belonging. Survivors who participate in rebuilding are positioned as active contributors rather than passive recipients of assistance. This may help restore a sense of competence and social usefulness after the disruption caused by disaster.

Evidence from Lombok similarly indicates that post-disaster gotong royong can mobilize local resources, strengthen solidarity, and support community reconstruction (Koopman, 2021). The present findings extend this understanding by suggesting that gotong royong may also have psychosocial relevance. Participation in collective activities may reduce isolation, strengthen social identity, and increase confidence in the community's ability to recover.

Nevertheless, gotong royong should not be described as psychotherapy. It cannot replace clinical assessment, diagnosis, suicide-risk evaluation, trauma-focused treatment, or professional care for persistent psychological disorders. Its role is complementary: it strengthens social support, participation, cultural legitimacy, and community connectedness.

Trust in Local Figures and Cultural Legitimacy

Trust in religious leaders, community leaders, neighborhood representatives, and local health workers influenced participants' acceptance of psychological support. Survivors appeared more receptive when trusted local figures introduced, endorsed, or helped explain recovery programs.

Local figures may function as cultural mediators between professional mental health services and the community. They can translate unfamiliar psychological concepts into understandable language, normalize post-disaster emotional reactions, reduce stigma, identify individuals who may require assistance, and facilitate referral.

This mechanism is consistent with culturally responsive mental health frameworks, which emphasize that trusted community actors can connect local understandings of distress with professional systems of care (Heim & Kohrt, 2019; Kohrt et al., 2014; Lewis-Fernández & Kirmayer, 2019).

However, local figures should not be assigned clinical roles beyond their competence. Their appropriate functions include supportive communication, basic psychological first aid, identifying warning signs, disseminating accurate information, and referral. Diagnosis, risk assessment, and trauma-focused treatment must remain the responsibility of qualified mental health professionals.

Cultural legitimacy does not mean that traditional or community practices should replace clinical practice. Rather, it means that services should be introduced and delivered in ways that are understandable, trustworthy, and socially acceptable.

Cultural Adaptation and Acceptance of Psychological Services

The findings support the importance of cultural adaptation in post-disaster mental health services. Culturally adapted interventions do not change the fundamental clinical objectives of care. Instead, they modify language, communication strategies, explanatory models, delivery settings, and community participation to improve relevance and acceptability.

Research suggests that culturally adapted psychological interventions may become more effective and acceptable when they address language, values, social relationships, explanatory models, and the delivery context of the population being served (Hall et al., 2016; Heim & Kohrt, 2019).

In Sibolga, cultural adaptation may involve using local and non-stigmatizing terminology, delivering psychoeducation through community health centers or trusted community spaces, collaborating with religious and community leaders, incorporating family participation when appropriate, and ensuring that referral procedures remain confidential and accessible.

Cultural adaptation should not reduce professional standards. Clinical assessment, informed consent, confidentiality, risk management, and evidence-based treatment must remain central to service delivery.

Integration of Individual Motivation, Social Support, and Local Wisdom

The combined findings indicate that trauma recovery operates through an interaction among individual motivation, social support, cultural legitimacy, and professional service accessibility.

Individual motivation represents the survivor's readiness to improve. Social support helps transform that readiness into participation by providing encouragement, companionship, and practical assistance. Local wisdom gives recovery activities cultural meaning and social legitimacy. Trusted community figures help connect survivors with professional services. Formal mental health care provides assessment, referral, risk management, and structured treatment when needed.

The arrows in this pathway should be interpreted as conceptual relationships rather than causal effects demonstrated by the present data. The cross-sectional design does not establish temporal ordering or mediation. Future research should statistically test whether social support, trust, cultural legitimacy, and stigma mediate or moderate the association between motivation and actual help-seeking.

Proposed Indigenous Clinical Recovery Model

Based on the integrated quantitative and qualitative findings, this study proposes an indigenous clinical recovery model consisting of four interconnected levels.

Level 1: Individual Recovery Readiness

The first level includes motivation, recognition of recovery needs, confidence in improvement, positive attitudes toward recovery, and interest in participating in support programs. The quantitative findings showed that motivation was associated with attitude and interest but not with perception of formal psychological services.

Level 2: Relational and Community Support

The second level includes family assistance, neighborhood relationships, collective meaning-making, and gotong royong. These resources strengthen emotional security, practical support, social belonging, dignity, agency, and participation.

Level 3: Cultural Legitimacy and Trusted Mediation

The third level includes spiritual practices, culturally understandable communication, and the involvement of trusted religious leaders, community leaders, and local health workers. These mechanisms may reduce stigma, strengthen trust, and make professional services more understandable and acceptable.

Level 4: Professional Clinical Support

The fourth level includes psychological first aid, screening, professional assessment, risk management, referral, follow-up, and evidence-based trauma intervention when clinically indicated.

Adaptive and culturally responsive trauma recovery

The model does not position local wisdom as an alternative to clinical care. Instead, it proposes that cultural and community resources may strengthen access, communication, trust, and participation while qualified professionals retain responsibility for clinical assessment and treatment.

The model should be interpreted as a contextually grounded conceptual framework rather than a validated clinical model. It was developed from cross-sectional and qualitative evidence and has not been tested through an intervention or longitudinal design.

Theoretical Implications

This study contributes to the literature by distinguishing recovery readiness from service acceptance. Survivors may possess high motivation and strong interest in recovery while still holding uncertain or moderate perceptions of formal psychological services.

The findings also extend individual-oriented trauma models by showing that recovery is embedded in social relationships, spiritual meanings, collective practices, and local systems of trust. Psychological trauma recovery should therefore be understood as a multilevel process involving individual, relational, community, cultural, and professional dimensions.

The proposed indigenous clinical perspective contributes to culturally grounded psychology by positioning local wisdom as a psychosocial and cultural resource. It does not assume that all traditional practices are therapeutic. Instead, it identifies specific mechanisms—meaning-making, emotional support, collective participation, trust, and mediation—through which local practices may support formal recovery systems.

Practical Implications

The findings suggest that post-disaster mental health programs should combine professional psychological support with culturally trusted community structures. Psychological services may be delivered through community health centers, neighborhood facilities, religious institutions, schools, and temporary recovery centers, provided that privacy and professional standards are maintained.

Community health workers, religious leaders, and community representatives may receive training in psychological first aid, supportive communication, warning-sign recognition, confidentiality, and referral. Their roles must be clearly limited to nonclinical support.

Programs should also include clear referral pathways for survivors experiencing severe anxiety, prolonged depressive symptoms, suicidal thoughts, marked functional impairment, or persistent trauma-related symptoms. These individuals require professional assessment and appropriate treatment.

A stepped-care approach may be particularly appropriate. Community-based support and psychological first aid can address immediate needs, while survivors with persistent or severe symptoms can be referred to more intensive professional care (Jacobs et al., 2016; O'Donnell et al., 2020; World Health Organization, 2025).

Program evaluation should include actual attendance, referral completion, symptom change, daily functioning, and long-term engagement rather than relying only on self-reported interest.

Limitations and Directions for Future Research

Several limitations should be considered. First, the cross-sectional design prevents causal conclusions and does not capture changes in recovery over time. Second, purposive sampling limits the statistical generalizability of the findings. Third, the quantitative data were self-reported and may have been affected by recall bias and social-desirability bias.

Fourth, interest represented behavioral intention rather than actual service use. Fifth, the qualitative findings reflected the context of flood survivors in Sibolga and may not apply directly to other disaster-affected communities. Sixth, social support, trust, stigma, and cultural legitimacy were identified as qualitative mechanisms but were not statistically tested as mediators or moderators.

Future research should use longitudinal, comparative, and intervention designs. Studies should include validated clinical measures of trauma symptoms, actual service-utilization data, broader multisite samples, and structural models that test the roles of social support, stigma, trust, and cultural legitimacy.

Longitudinal research is particularly important because disaster-related psychological outcomes may change over time and may be influenced by repeated exposure, economic disruption, displacement, and access to social and institutional recovery resources (Lowe et al., 2019).

Finally, the indigenous clinical recovery model should be tested through culturally adapted intervention studies. Such studies should examine whether the model improves service acceptance, referral completion, psychological functioning, symptom reduction, and long-term community resilience.

Conclusion

This study demonstrates that psychological trauma recovery among flood survivors in Sibolga is shaped by the interaction between individual recovery motivation and culturally embedded community resources. In response to the first research question, the findings show that survivors experienced recovery not only as an individual psychological process but also as a collective, spiritual, and social process. Emotional distress was managed through family support, communal prayer, mutual assistance, shared interpretation of the disaster, and participation in community recovery activities.

In response to the second research question, motivation was significantly associated with survivors' attitudes toward trauma recovery and their interest in participating in recovery programs. However, motivation was not significantly associated with perceptions of formal psychological services. This result indicates that a strong desire to recover does not automatically produce trust in, acceptance of, or positive views toward formal mental health services. Perceptions of such services appear to depend on cultural compatibility, accessibility, confidentiality, social stigma, and the involvement of trusted community figures.

In response to the third research question, local wisdom facilitated recovery through several specific mechanisms. Collective meaning-making reduced feelings of isolation by framing the flood as a shared community experience. Spiritual practices provided emotional calmness, hope, and acceptance. Gotong royong enabled survivors to regain active social roles, contribute to rebuilding, and experience reciprocal support. Religious leaders, community leaders, and local health workers also acted as cultural mediators who could increase community confidence in psychological assistance.

Theoretically, the study supports an indigenous clinical perspective in which trauma recovery is understood as a multilevel process involving psychological readiness, social relationships, spiritual meaning, cultural legitimacy, and professional support. The findings extend individual-oriented trauma recovery models by demonstrating that survivors' acceptance of formal services is influenced by the social and cultural context in which those services are introduced. However, local wisdom should be understood as a complementary psychosocial resource rather than a substitute for clinical assessment or evidence-based treatment.

Practically, post-disaster mental health programs in Sibolga should combine professional psychological support with culturally trusted community structures. Local health authorities and disaster-management agencies should train community health workers, religious leaders, and neighborhood representatives to identify signs of psychological distress, provide basic psychosocial support, and refer individuals with persistent or severe symptoms to qualified mental health professionals. Psychological First Aid may be provided during the early recovery stage, while survivors experiencing persistent trauma-related symptoms should receive structured assessment and appropriate trauma-focused intervention.

Recovery following disaster is influenced by the interaction between individual psychological resources and broader community capacities, including social networks, collective action, communication, trust, and access to institutional support (First & Houston, 2022; Généreux et al., 2019; Norris et al., 2008).

This study is limited by its cross-sectional design, purposive sampling, self-reported questionnaire data, and focus on adult survivors in one coastal city. The findings therefore represent statistical associations and contextual experiences rather than causal relationships or population-wide estimates. Future research should employ longitudinal designs, probability-based or broader multisite samples, validated clinical measures of trauma symptoms, and comparative analysis across coastal communities. Intervention studies are also needed to evaluate whether culturally adapted

recovery programs improve service acceptance, reduce trauma-related symptoms, and strengthen long-term community resilience.

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Conflict of Interest

The authors declare that they have no financial, professional, institutional, or personal conflicts of interest that could have influenced the design, implementation, analysis, interpretation, or publication of this study.

Author Contributions

Meri Susanti contributed to the study conceptualization, research design, data collection, data analysis, interpretation of findings, and preparation of the original manuscript. Ira Aini Dania contributed to instrument development, methodological supervision, interpretation of the findings, manuscript review, and final editing. Both authors read and approved the final version of the manuscript.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available because they contain potentially sensitive information related to the psychological experiences of disaster survivors.

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