



SOCIAL DETERMINANTS OF FAMILY PREPAREDNESS IN PROTECTING CHILDREN DURING DISASTER SITUATIONS: A COMMUNITY-BASED DISASTER RISK REDUCTION APPROACH IN MAKASSAR CITY

Abd Hady Junaidi^{1*}, Hariani Hariani², Sri Angriani³, Muhammad Nur⁴

^{1,2,3,4}Poltekkes Kemenkes Makassar, Indonesia

**Corresponding author: hady@poltekkes-mks.ac.id*

Abstract

Family preparedness in protecting children during disaster scenarios remains a significant public health issue, particularly in regions characterized by heightened levels of disaster vulnerability. This investigation seeks to examine the social determinants influencing family preparedness within the context of child protection, utilizing a community-based disaster risk reduction framework.

This study employed a mixed-methods design incorporating a sequential explanatory strategy, beginning with a quantitative cross-sectional analysis involving 180 families in Makassar, selected through a probabilistic sampling technique. The quantitative data were subjected to bivariate testing and logistic regression analysis, followed by qualitative in-depth interviews that were thematically analyzed to enhance the interpretation of the results.

The findings indicate that the majority of households exhibit low to moderate levels of preparedness, despite possessing relatively adequate knowledge, thereby illustrating a disconnect between theoretical understanding and practical application.

A comprehensive multivariate analysis reveals that social support, information accessibility, and prevailing attitudes are the primary determinants influencing family readiness. Qualitative findings further demonstrate that preparedness is a social practice shaped by community dynamics, the prevalence of informal information sources, and the limited participation of children within the preparedness process.

The implications of this research underscore the importance of enhancing community-centered methodologies by integrating information systems, strengthening social networks, and ensuring the proactive participation of children in disaster risk mitigation efforts to achieve sustainable family preparedness.

Keywords: Family preparedness; child protection; disaster; social determinants; community-based disaster risk reduction

1. INTRODUCTION

Family preparedness for disasters has emerged as a critical global health issue, particularly in light of increasing climate-induced disasters (CINDs) exacerbated by climate change, urbanization, and environmental degradation. The rising frequency and intensity of events such as floods and droughts disproportionately affect vulnerable populations, especially in developing

regions like Bangladesh and Sub-Saharan Africa, where existing health and infrastructure challenges are magnified (Yeasmin, 2024). Individual and community preparedness is essential, as traditional government-led responses often fall short; psychological readiness and proactive behavior significantly influence the effectiveness of personal and family safety measures during emergencies. Furthermore, families with special healthcare needs face unique challenges, often lacking adequate disaster preparedness resources, which underscores the necessity for targeted educational initiatives and support systems to enhance resilience (Newman & Leochico, 2022). Overall, fostering a comprehensive approach to disaster preparedness that includes community engagement, education, and infrastructure resilience is vital for mitigating the impacts of these increasingly common disasters. The impact of disasters is not felt equally, as children are the most at-risk group due to their limited physical, psychological, and social abilities to respond effectively to emergencies (Peek et al., 2020; UNICEF, 2021). Beyond the risk of physical injury or death, disasters also have deep, long-term effects on children's mental health and development. This makes family preparedness a vital part of any strategy to reduce risks at the household level (Masten & Motti-Stefanidi, 2020; UNDRR, 2022).

Within the specific context of Indonesia, particularly in the Makassar region, disaster trends are ascending due to inherent coastal environmental characteristics, increasing population density, and the dominance of hydrometeorological disasters such as flooding and extreme climatic events (National Disaster Management Agency, 2024; Meteorology, Climatology, and Geophysics Bureau, 2024). Despite substantive risk exposure, family preparedness capacities show significant variation. This situation shows a "preparedness paradox" where being exposed to high risk does not automatically mean families are better prepared (Nugraheni et al., 2022; Patel et al., 2022).

In response, the Community-Based disaster risk reduction paradigm has emerged as a strategic framework that emphasizes the importance of active community involvement. This framework prioritizes not only increasing knowledge but also strengthening social capacity, building community networks, and effectively using local resources (Shaw et al., 2021; Gaillard et al., 2022). Many studies show that community involvement can improve preparedness by strengthening social capital and social cohesion (Aldrich & Meyer, 2021). However, most research on preparedness still focuses on individual components, such as gaining knowledge and behavioral responses, while failing to fully include social determinants within the family and community context (Rahman et al., 2022). Furthermore, empirical studies that explicitly investigate child protection in relation to family preparedness and child involvement are still very rare (Tanner et al., 2020; Wisner & Luce, 2021). These observations highlight a conceptual and empirical gap in understanding preparedness as a complex social phenomenon.

Based on these gaps, this study offers a new perspective by integrating social determinants and community-based approaches to analyze family preparedness in protecting children during disasters. The goal of this research is to identify the dominant factors that influence family readiness and to develop a contextual understanding based on local realities.

The urgency of this research stems from the high frequency of disasters in South Sulawesi, which have a wide impact on the community, especially children as a vulnerable group. Without adequate family preparedness, the risk of physical and psychosocial health impacts on children will only increase. Therefore, this study is essential to provide scientific evidence that can support the development of family and community-based interventions that are more adaptive and sustainable.

2. METHODS

This study employed a mixed-methods design with a sequential explanatory approach, consisting of a quantitative cross-sectional phase followed by a qualitative phase to strengthen the interpretation of the findings. The study was conducted in disaster-prone areas of Makassar City, South Sulawesi, Indonesia, involving families with children under 18 years old.

A total of 180 respondents were selected using multistage probability sampling. Three disaster-prone subdistricts were identified based on data from the Regional Disaster Management Agency (BPBD) of Makassar City, followed by systematic random sampling of households using

community registries. Inclusion criteria included families with at least one child under 18 years old, residing in the area for at least one year, and willing to participate. Sample size was determined using the Lemeshow formula with a 95% confidence level and 5% margin of error. The qualitative phase involved 12 purposively selected informants representing low, moderate, and high preparedness levels until data saturation was achieved.

The dependent variable was family preparedness for child protection during disasters, while independent variables included disaster knowledge, attitudes, social support, access to information, disaster experience, educational level, and occupation. Preparedness was assessed through indicators including emergency planning, evacuation procedures, preparedness simulations, emergency supplies, and child protection readiness. Preparedness scores were categorized into low, moderate, and high levels, while knowledge was categorized using Bloom's cutoff points. Attitude, social support, and information access were categorized based on median scores.

Data were collected using a structured questionnaire adapted from the Household Disaster Preparedness Instrument developed by the United Nations Office for Disaster Risk Reduction (UNDRR) and previous studies by Rahman et al. (2022), Patel et al. (2022), and Shaw et al. (2021). The instrument included five domains: disaster knowledge (10 items), attitudes (8 items), social support (7 items), information access (6 items), and family preparedness practices (12 items). All items used a 5-point Likert scale. Validity and reliability testing among 30 respondents outside the study sample showed Cronbach's alpha values ranging from 0.78 to 0.89.

Quantitative data were collected from January to March 2025 through face-to-face interviews conducted by trained enumerators. Qualitative data were obtained through in-depth interviews using a semi-structured interview guide exploring disaster preparedness perceptions, child protection practices, social support, information access, barriers to preparedness, and children's involvement in preparedness activities.

Quantitative data were analyzed using SPSS version 26. Descriptive statistics, Chi-square tests, and multivariate logistic regression were applied to identify determinants of family preparedness, with significance established at $p < 0.05$ and 95% confidence intervals (CI). Qualitative data were transcribed verbatim and analyzed using Braun and Clarke's thematic analysis approach. Integration of quantitative and qualitative findings was conducted during the interpretation stage.

3. RESULT

This section presents the findings on the social determinants of family preparedness for child protection during disasters in Makassar. The quantitative results describe the characteristics of the respondents, the levels of preparedness, and the relationships between variables. Meanwhile, the qualitative results provide a deeper understanding of the social dynamics that influence family preparedness.

Table 1. Distribution of Sociodemographic Characteristics of Respondents from Families with Children in Makassar (n = 180)

Variabel	Kategori	N	%
Gender	Female	124	68,9
	Male	56	31,1
Education Level	Primary education	30	16,7
	Secondary education	94	52,2
	Higher education	56	31,1
Occupation	Unemployed	45	25,0
	Informal sector	84	46,7
	Formal sector	51	28,3
Disaster Experience	Experience	113	62,8
	Not experience	67	37,2

Interpretation

The majority of respondents were female (68.9%), had a secondary education (52.2%), worked in the informal sector (46.7%), and had previous disaster experience (62.8%). These conditions indicate that most families have a fairly high level of risk exposure.

Table 2. Distribution of Family Preparedness Levels for Child Protection During Disasters in Makassar (n=180)

Categories	N	%
Low	75	41,7
Moderate	70	38,9
High	35	19,4

Interpretation

The majority of families fall into the low to moderate preparedness categories. These findings suggest that the capacity to protect children during disasters is still not optimal.

Table 3. Distribution of Family Preparedness Components for Disasters in Makassar

Components	Yes (%)	No (%)
Disaster knowledge	68,3	31,7
Evacuation plan	32,2	67,8
Preparedness simulation	27,8	72,2
Child emergency kit	21,1	78,9

Interpretation

Although the respondents' knowledge is relatively good, the actual implementation of preparedness remains low. The low ownership of emergency kits and the lack of simulation activities highlight a gap between knowledge and practice.

Table 4. Bivariate Analysis of Social Determinants and Family Preparedness in Makassar

Variables	p-value
Knowledge	0,001
Attitude	0,003
Experience	0,012
Social support	0,000
Access to information	0,002
Education level	0,087
Occupation	0,112

Interpretation

Knowledge, attitudes, experience, social support, and access to information are significantly associated with family preparedness ($p < 0,05$). On the other hand, education and occupation did not show a significant relationship.

Table 5. Dominant Factors Influencing Family Preparedness for Child Protection During Disasters Based on Logistic Regression Analysis in Makassar

Variables	OR	95% CI	p-value
Social support	3,21	1,85–5,57	0,000
Access to information	2,78	1,52–4,96	0,001
Attitudes	2,45	1,33–4,51	0,004

Interpretation

Social support is the most dominant factor influencing family preparedness. Families with strong social support are significantly more likely to be prepared for disasters.

Qualitative Findings and Data Integration

The interviews reveal that family preparedness is understood as a collective practice, heavily influenced by the social environment. Informants emphasized that being prepared for disasters is more effective when supported by coordination among neighbors and strong social networks. This finding strengthens the quantitative results, which identified social support as the dominant factor. Additionally, most disaster-related information is obtained through informal channels, such as word-of-mouth and local social media groups. While these channels are effective for spreading information quickly, they also have the potential to cause information distortion.

The qualitative findings also show that children have not yet been actively involved in preparedness practices. They are still positioned as objects of protection, which explains the low levels of simulation activities and operational readiness within families.

Overall, the integrated findings demonstrate that family preparedness is a multidimensional phenomenon influenced by social support, access to information, and the construction of roles within the family. The gap between knowledge and practice emphasizes the need to strengthen the social capacity of the community and to actively involve children in disaster risk reduction strategies.

4. DISCUSSION

The findings of this study indicate that family preparedness for child protection during disasters in Makassar remains in the low to moderate category. This condition underscores that high disaster risk exposure has not been accompanied by adequate preparedness capacity. Furthermore, these findings reinforce the understanding that family preparedness is not merely an individual responsibility but a social phenomenon shaped by interactions among individuals, families, and the wider community. The qualitative findings support this interpretation, as several informants described preparedness primarily as “knowing what to do during floods,” yet such understanding was rarely translated into concrete preparedness actions within the household context. This suggests that disaster awareness alone is insufficient to generate sustainable preparedness behavior without supportive social and environmental conditions.

The inadequacy of preparedness despite relatively adequate levels of knowledge indicates a persistent knowledge–action dichotomy. This observation is consistent with previous studies reporting that increased disaster knowledge does not always lead to corresponding behavioral changes (Patel et al., 2022; Rahman et al., 2022). From a health behavior perspective, knowledge serves only as a predisposing factor, whereas preparedness behavior is also influenced by attitudes, social norms, perceived risks, and enabling environments. The qualitative findings revealed that some families tended to postpone preparedness activities because disasters were perceived as unpredictable events that could not be fully prevented. This perception explains the continued low participation in preparedness practices, including evacuation planning, simulation exercises, and preparation of emergency supplies.

Social support emerged as the most influential determinant of family preparedness. This finding aligns with Aldrich and Meyer (2021), who emphasized the importance of social capital in strengthening community resilience. Social support not only facilitates information exchange but also promotes trust, collective norms, and cooperative behavior during emergencies. The

qualitative analysis demonstrated that families living within socially cohesive communities were generally more prepared to respond to disasters. Informants explained that coordination among neighbors, mutual assistance, and community communication networks played important roles during emergency situations. Within the framework of community resilience, these social networks function as adaptive resources that strengthen collective responses and enhance community safety (Patel et al., 2022). Therefore, improving preparedness solely through individual-based interventions may be insufficient without strengthening the broader social environment.

Access to information also significantly influenced family preparedness. The findings indicate that most disaster-related information was obtained through informal communication channels, including interpersonal communication, community leaders, and social media platforms. This finding supports Gaillard et al. (2022), who argued that community-based communication is often more effective because it is contextually relevant and trusted by local residents. The qualitative findings further revealed that social media groups and neighborhood communication networks were frequently used to disseminate disaster warnings and evacuation information. However, several informants expressed concerns regarding inconsistent information and the spread of misinformation during emergencies. This suggests that although informal communication channels improve accessibility, stronger integration with formal disaster communication systems remains necessary to ensure information accuracy and preparedness effectiveness.

The study also confirms that children's involvement in preparedness activities remains limited. Quantitative findings showed low participation in disaster simulations and limited preparation of child-specific emergency supplies. The qualitative findings strengthened this result, as many parents perceived children primarily as passive recipients of protection rather than active participants in preparedness activities. Several informants stated that children were rarely involved in evacuation planning or preparedness simulations because parents feared that such activities might increase children's anxiety. These findings support Peek et al. (2020), who highlighted the dominance of adult-centered approaches in disaster preparedness. In contrast, child-centered disaster risk reduction approaches emphasize that involving children in preparedness education and simulation activities can improve family readiness and resilience (Tanner et al., 2020). Children who actively participate in preparedness activities may also act as agents of change within their households.

Conceptually, these findings confirm that family preparedness is a multidimensional social practice influenced by interconnected social determinants, including social support, access to information, and family role dynamics. The integration of quantitative and qualitative findings demonstrates that preparedness cannot be adequately explained through individual knowledge alone. Instead, preparedness behavior is shaped by broader social structures and community interactions. These findings reinforce the relevance of the Community-Based Disaster Risk Reduction (CBDRR) framework as a holistic and participatory approach to disaster preparedness and child protection.

The theoretical implication of this study lies in strengthening the integration between social determinants of health and community-based disaster preparedness approaches. Family preparedness is shaped not only by individual characteristics but also by structural and environmental influences. Practically, these findings suggest that disaster preparedness interventions should prioritize strengthening social networks, improving integrated access to disaster information, and actively involving children in preparedness activities. For health professionals, particularly community nurses, these findings reinforce their strategic role as facilitators of community empowerment and capacity building rather than solely providers of health education. This approach aligns with the empowerment paradigm within community health nursing.

This study has several limitations. The cross-sectional design limits the ability to establish causal relationships, while the urban setting may reduce the generalizability of the findings to other geographical contexts. Future studies are recommended to apply longitudinal or interventional designs involving broader geographical settings to better understand changes in preparedness behavior over time.

Overall, family preparedness for child protection during disasters is a complex and multidimensional phenomenon that requires holistic, participatory, and community-oriented strategies to strengthen sustainable disaster resilience.

5. CONCLUSION

This study demonstrates that family preparedness for child protection during disasters in Makassar remains at a low to moderate level despite relatively adequate disaster knowledge, indicating a persistent gap between knowledge and practical preparedness behavior. Family preparedness is strongly influenced by social determinants rather than solely by individual characteristics, with social support, access to information, and preparedness attitudes identified as significant contributing factors. These findings confirm that preparedness is a socially constructed process shaped through interactions within families and communities.

The qualitative findings further reveal that preparedness practices are influenced by social dynamics, particularly the dominance of informal communication systems and the limited involvement of children in preparedness activities. Adult-centered approaches remain a barrier to strengthening child-inclusive preparedness practices. Therefore, improving family preparedness requires community-oriented strategies that strengthen social networks, integrate formal and informal disaster information systems, and actively involve children in preparedness education and simulation activities.

Based on the findings, this study recommends the development of community-based disaster preparedness programs involving health workers, local governments, schools, and community leaders to strengthen family resilience. Disaster preparedness education should not only focus on increasing knowledge but also emphasize practical simulation activities, household evacuation planning, and child-centered preparedness approaches. In addition, integrated disaster communication systems and routine community-based preparedness training are needed to improve sustainable family preparedness and child protection during disasters.

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