

# Association between Demographic Profile with Behavioral and Emotional Problems in Children Affected by Flash Floods and Landslides in Nagari Tanjung Sani, Tanjung Raya District, Agam Regency

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## ABSTRACT

The disaster that occurred in July 2023 in Nagari Tanjung Sani, Tanjung Raya District, Agam Regency caused significant damage and potential short and long-term psychological impacts for children, who are vulnerable to trauma.

This study aims to determine the association between demographic profile with behavioral and emotional problems in children affected by flash floods and landslides in Nagari Tanjung Sani. The study used a cross sectional design with a total sampling method from children after flash floods and landslides in nagari tanjung sani, totaling 58 children. Tracked mental emotional disorders in children and adolescents aged 4-18 years using the Strengths and Difficulties Questionnaire.

Respondents participated are consisted of 30 females (52%) and 28 boys (48%), with most of the respondent was 39 childrens being school-aged (<11 years old). Strengths and Difficulties Questionnaire (SDQ) results showed 2 (3%) respondents experienced issues in the emotional component with majority respondent showed normal levels in the mental difficulties component. There was no association between demographic profile of

the children with the SDQ strength and difficulties scores.

This study highlights the importance of early detection and intervention to support children's mental health after disasters. More attention is needed from medical personnel and the community to address mental-emotional problems arising from disaster trauma, to prevent long-term impacts on the social and academic development of these children.

**Keywords:** *Strengths and Difficulties Questionnaire, Demographic Profile, Disaster, Emotional problem.*

## INTRODUCTION

West Sumatra is geographically situated in a disaster-prone region due to its location between the Indo-Australian and Eurasian tectonic plates and its equatorial position, leading to irregular weather patterns. In July 2023, heavy rainfall in the Lake Maninjau area triggered landslides and floods, resulting in property damage and two fatalities.<sup>1</sup>

Disasters can have both short and long-term impacts on children's psychological function, emotional adjustment, health, and development. Children are particularly vulnerable to disasters and traumatic events

due to their limited experience, skills, and resources to independently manage their developmental, socio-emotional, mental, and health needs. Understanding risk factors for post-disaster emotional mental disorders in children is crucial for proper intervention.<sup>2</sup>

Emotional mental health issues in children are significant concerns as they affect development, cause disability, and reduce productivity and quality of life. These disorders can lead to learning difficulties and impact social life.<sup>3</sup> The Strength and Difficulties Questionnaire (SDQ) is commonly used to screen for emotional mental disorders in children aged 4-18 years, allowing early detection and specialist referral when necessary.<sup>4</sup> A study by Indry A showed a reliability test with Cronbach's alpha of 0.493 and bivariate Pearson validity test of <0.5. This paper aims to discuss emotional mental health issues in children following the Maninjau landslides and floods.<sup>5</sup>

## MATERIALS & METHODS

This study used a cross sectional design two weeks after the disaster with total sampling of children affected by flash floods and landslides in Nagari Tanjung Sani, Tanjung Raya District, Agam Regency. The total population of children in the study area was 58. Demographic profile was collected from the parents and children. Mental and emotional disorders were assessed using the Strength and Difficulties Questionnaire (SDQ), a validated screening tool for children and adolescents aged 4-18 years.

The study subjects were children two weeks after experienced the flash floods and landslides in Nagari Tanjung Sani on July 2023. The inclusion criterion was children aged 4-18 years who were present during the disaster in the specified location. Children who were unwilling to complete the questionnaire were excluded from the study.

The SDQ was administered to assess five domains: emotional symptoms, conduct

problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior. This standardized questionnaire has been widely used in previous studies for screening mental health problems in children and adolescents.

## STATISTICAL ANALYSIS

Data analysis used inferential statistics to examine association between variables using SPSS version 27. The association between demographic profile and psychological trauma were determined using Mann-Whitney / Kruskal Wallis tests following normality testing. Descriptive analysis of categorical variables was presented as frequencies and percentages. Results were considered statistically significant at  $p < 0.05$ .

## RESULT

Out of 58 children affected by the Maninjau flood disaster in 2023, the majority were female (52%) and under 11 years of age (67%). The most represented age group was 11-year-olds (24%), followed by 8-year-olds (21%). Most children (58.6%) had normal nutritional status, while 39.7% were undernourished, and 1.7% were overweight.

Table 1. Demographic Profile of Respondents

Demographic Profile	n	%
Age Groups		
<11 years	39	67
11-18 years	19	33
Gender		
Male	28	48
Female	30	52
Nutritional Status		
Underweight	23	39.7
Normal	34	58.6
Overweight	1	1.7

The Strength and Difficulties Questionnaire (SDQ) results showed that all children scored within normal ranges for Strength and Difficulties, despite some children has borderline and abnormal in emotional and conduct problem.

**Table 2. Distribution of SDQ Scores**

SDQ Subscales	Normal		Borderline		Abnormal	
	n	%	n	%	n	%
Emotional	53	91	3	5	2	3
Conduct	55	95	3	5	0	0
Hyperactivity	57	98	1	2	0	0
Peer Problems	58	100	0	0	0	0
Total Difficulties	58	100	0	0	0	0
Prosocial	58	100	0	0	0	0

Statistical analysis using Kruskal-Wallis test showed no significant association between nutritional status and SDQ scores ( $p > 0.05$  for all domains). Similarly, Mann-Whitney U tests revealed no significant associations

between age groups (<11 years vs 11-18 years) and SDQ scores ( $p > 0.05$ ), nor between gender and SDQ scores ( $p > 0.05$  for all domains).

**Table 3. Association between Demographic Profile with SDQ Scores**

Variables	Emotional	Conduct	Hyperactivity	Peer Problems	Prosocial
Nutritional Status <sup>1</sup> p-value	.625	.942	.703	1.000	1.000
Age <sup>2</sup> p-value	.708	.218	.485	1.000	1.000
Gender <sup>2</sup> p-value	.713	.516	.301	1.000	1.000
<sup>1</sup> Kruskal-Wallis Test <sup>2</sup> Mann-Whitney U Test <sup>3</sup> Mann-Whitney U Test All p-values > 0.05 indicate no significant association					

These findings suggested that the children's mental and emotional health remained largely unaffected by the disaster, regardless of their demographic profile.

## DISCUSSION

This study revealed that all children affected by the natural disaster maintained normal difficulty and strength levels. This contrasts with research in Lombok, which found 54.5% of children in the abnormal category for difficulty scores, although strength scores showed more children in the normal range (51.3%).<sup>6</sup> Similarly, Widyatmoko et al.'s study of 335 elementary school students in Yogyakarta after the 2006 earthquake showed that 30% of children exhibited mental-emotional disturbances, particularly PTSD symptoms. Common manifestations included avoidance of earthquake-related thoughts (57%) and concentration difficulties (53%). Teachers reported decreased academic performance, reduced learning motivation, absenteeism, and

emotional dysregulation among affected students.<sup>7</sup>

The Society for Research in Child Development identifies several risk factors for mental health problems post-disaster, including exposure to violence after the disaster, witnessing life-threatening events, perceived danger during the disaster, and prolonged school absence.<sup>8</sup> However, our study, conducted two weeks post-flood, found children actively engaging with peers and receiving substantial community support, which may have served as protective factors maintaining their mental-emotional well-being.

This study found no significant association between nutritional status and SDQ scores ( $p > 0.05$  for all subscales). This differs from Jansen et al.'s findings, which showed higher SDQ scores among overweight adolescents, particularly in emotional and peer problems.<sup>9</sup> Similar results were reported by Kowalski et al., who analyzed 6,541 German children aged 3-17 years and

found higher total SDQ scores among obese children.<sup>10</sup> Kulaga et al. further supported these findings, noting increased emotional and peer problems among overweight or obese children.<sup>11</sup>

The association between nutrition and mental health is particularly relevant in Indonesia's context, where the double burden of malnutrition (both under- and over-nutrition) poses unique challenges. Haapala et al.'s 2020 research suggests that healthier lifestyles, including better nutritional status, correlate with improved SDQ scores and higher cognitive function.<sup>12</sup> This study found no significant association between age and SDQ scores ( $p > 0.05$ ). This contrasts with longitudinal studies indicating that total SDQ difficulty scores typically decrease with age, though emotional problems remain stable during childhood and increase during adolescence.<sup>13</sup> The association between age and SDQ scores reflects complex interactions between biological, psychological, and socio-environmental factors, including neurobiological development and emotional regulation capabilities.<sup>14</sup> Life transitions such as school entry, puberty, and increasing academic demands can influence emotional and behavioral symptoms captured by SDQ.<sup>15</sup> Similarly, gender showed no significant association with SDQ scores ( $p > 0.05$ ) in our study. This differs from Goodman et al.'s meta-analysis, which found boys typically scoring higher in hyperactivity/inattention and behavioral problems, while girls scored higher in emotional and prosocial behavior.<sup>16</sup> Gómez-Beneyto et al. noted that gender differences in SDQ scores become more pronounced with age, particularly during adolescence, with girls showing greater increases in emotional problems.<sup>17</sup> Overall, There are no significant association between demographic profile with SDQ score. There are some children with abnormal in emotional score (3%) and borderline in conduct score (5). This study different from Saleh et al, The SDQ results showed that most of the children were at the

abnormal stage for difficulties (54.5%), and most of them were at a normal stage for strength (51.3%) after affected with Lombok earthquake on 2018.<sup>18</sup>

The cross-sectional design limited our observations to a single time point, preventing the assessment of changes over time. Additionally, factors such as family conditions, social support, and previous traumatic experiences were not comprehensively examined. Future longitudinal studies incorporating these variables would provide valuable insights into the long-term impact of disasters on children's mental health.

Despite these limitations, our findings highlight the importance of immediate post-disaster support systems and their potential role in maintaining children's mental health. The results suggest that strong community support and maintained social connections might serve as crucial protective factors in the immediate aftermath of natural disasters.

## CONCLUSION

This study examined post-disaster child mental health following the 2023 Maninjau flood. Regarding mental-emotional characteristics, all children demonstrated normal levels in both difficulty and strength dimensions on the SDQ assessment, contrasting with previous studies that typically show significant post-disaster impacts. Assessment of mental-emotional problems revealed a notable absence of psychological disturbances, despite evaluation occurring just two weeks post-disaster, possibly due to strong community and parental support. Analysis of demographic profile showed no significant association between mental-emotional problems and either age or gender, suggesting that immediate post-disaster support systems may override typical demographic variations in mental health presentation. These findings highlight the potential protective role of maintaining strong social connections in the immediate aftermath of natural disasters.

The limitation of this study is a cross-sectional study design, which only observes research subjects at a limited point in time and is only intended to demonstrate the conditions that exist at the time of the study. Behaviour changes that may have already occurred or will occur cannot be observed. This research does not comprehensively examine other factors such as family conditions, social support, and previous traumatic experiences.

### **Declaration by Authors**

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**Conflict of Interest:** The authors declare no conflict of interest.

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