



Age-wise Assessment of Psychological, Social, and Emotional Aspects among Adolescents Exposed to Disasters: Evidence from Kodagu District, Karnataka

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Abstract

Background: Adolescence is an important stage in life because disasters could affect their emotions and psychology at this stage. In the Kodagu district, frequent occurrence of flood and landslide may cause stress and fear in adolescent children.

Method: Descriptive and comparative designs were adopted. A purposeful sample of 379 students attending schools in grades eight, nine, and ten in Kodagu district was selected. The data gathering tool was a structured questionnaire focusing on socio-demographic variables, psychological factors, social factors, and emotional problems after the disaster. The analysis involved the use of descriptive statistics, Kruskal Wallis ANOVA test, and logistic regression.

Results: In most cases, there was no considerable difference with regard to demographic factors among the different age groups. There was a slight decrease in cognitive and academic performance with increase in age ($p = .05$). Differences based on age were observed with respect to self-image and internal well-being ($p = .009$), social interaction ($p = .001$), and functional and anticipatory anxiety ($p = .046$), with younger adolescents having better emotional functioning than their older counterparts. Logistic regression analysis identified mother's occupation, anxiety levels, physical and behavioural symptoms, relationship quality, intrusion symptoms, and avoidance and arousal as significant predictors of poor emotional health.

Conclusion: Disaster exposure affects adolescents in multifaceted ways. Age influences certain emotional and academic domains, while disaster-related symptoms persist across groups. School-based, family-centered, and age-sensitive interventions are recommended in disaster-prone regions.

Keywords: *Adolescents; Disaster Exposure; Emotional Health; Social Functioning; Kodagu District*

Introduction

Adolescence is a significant developmental phase that involves the process of growth, emotions, identity, and sociability occurring at once. Adolescents tend to seek help from family, schools, and peers to ensure self-confidence and stability. However, disasters have the potential to upset the balance quickly. Natural disasters often affect normal lives, destroy homes, cause separation among family members, and create issues of security and uncertainty about their futures. Thus, adolescents affected by disasters could develop anxiety, depression, posttraumatic stress disorder, lack of focus, poor sleep patterns, and reduced sociability (Jones et al., 2013; Kar et al., 2006; Goenjian et al., 2005; Lai et al., 2024; Olk et al., 2024).

Based on empirical data, the experience of disasters among teenagers can impact several spheres such as emotional state, educational performance, social skills, and behavior. For instance, researchers noted that repeated exposure to natural or man-made disasters leads to higher levels of distress among adolescents, and their adverse effects can last for quite some time without appropriate measures (Meltzer et al., 2021; Hansel et al., 2024; Simonds et al., 2022). Also, some scientists have stated that the presence of PTSD and depression disorders in the aftermath of disasters is frequent (Kar et al., 2006; Haws et al., 2023; Lai et al., 2012). In other words, adolescents usually experience problems with emotions not only but also at the same time, which indicates the probability that they are emotionally unstable even if they look fine from the outside.

Age is another important variable that affects how teenagers cope with stress caused by disasters. Younger teenagers are likely to depend more on their families for help, while older teenagers are at risk of having higher academic demands, higher social comparisons, and increased loss awareness. Such developmental factors might affect emotion regulation and performance in academics. There is scientific evidence showing that age is associated with depression symptom severity due to disasters and school difficulties in the absence of proper disaster management (Olk et al., 2024; Lai et al., 2024). Besides, social support and family functioning are essential protective variables. In cases where there is poor communication within families or inadequate social support, teenagers are likely to experience worse psychological outcomes (Yu et al., 2022; Zhang et al., 2024; Kuhn et al., 2014).

In disaster-prone areas, it is important not just to understand the impact of disasters on adolescents but to see how psychological, social, and emotional functioning is impacted differently according to the age groups. Information of this kind helps schools, families, and psychologists determine who among the adolescents is at risk and intervene based on age-specific measures. For the Kodagu region in Karnataka, which sees many adolescents subjected to repeated exposure to disasters, such research is especially relevant because of what it reveals about the effects of disasters on adolescents' emotional well-being.

Method

Research Design and Objectives

The study employed a descriptive and comparative design to assess age-wise differences in psychological, social, emotional functioning, and post-disaster emotional symptoms among adolescents in disaster-prone Kodagu district, Karnataka.

Sample and Sampling Procedure

A simple random sampling procedure was used to select participants. The sample comprised 379 school-going adolescents in 8th, 9th, and 10th standards from various schools in Kodagu district,

including 160 boys and 219 girls. The sample size was determined using the sample size table developed by Krejcie and Morgan (1970), which provides guidance based on population size.

Tools for Data Collection

Data were collected using a structured questionnaire developed from published literature on adolescent mental health and disaster exposure. The questionnaire included five sections measuring various aspects of adolescents' mental health and psychosocial functioning. All items utilized a five-point response format.

1. Socio-Demographic Profile Schedule

A socio-demographic schedule was used to collect background information, including age, gender, religion, category, class, and type of school, as well as parents' education and occupation. These variables facilitated understanding of participants' background characteristics and provided a description of the study sample.

2. Psychological Aspects Scale

This section comprised 21 items measuring psychological experiences and difficulties among adolescents, including anxiety, fear of disasters, repetitive disaster-related thoughts, mood swings, social withdrawal, challenges in daily activities, sleep problems, low self-esteem, and difficulty concentrating on academic tasks. Responses were recorded on a five-point scale from Always to Never, with higher scores indicating greater psychological difficulties.

3. Social Aspects

This section included 25 items assessing various dimensions of adolescents' social functioning, such as relationship quality with family members, teachers, classmates, and neighbors. Additional items evaluated emotional sharing, participation in school and community activities, perceptions of family and community environment, and interpersonal skills including communication, friendship formation, and concern for others. Responses were recorded on a five-point scale, ranging from Never to Always or Very Bad to Very Good, depending on the item.

4. Emotional Aspects

This section consisted of 28 questions regarding emotions, ranging from sadness, jealousy, anger, fears about the future, problems in expressing one's opinion, losing interest in life, feeling alone, and reactions to situations within society. Answers were given based on a scale of 1-5 (Always-Never). This section provided an idea of the emotional state of adolescents.

5. Post-Disaster Emotional Symptoms

This part consisted of 14 items that examined the emotional impact caused by the experience of a disaster. These included fear of future recurrence of a disaster, insomnia resulting from thoughts of the disaster, anxiety, nightmares, recurring memories of the traumatic event, insecurity, irritability, dissatisfaction with present circumstances, and ideas about relocating. The answers were measured using a five-point scale ranging from Always to Never.

Statistical Analysis: The data collected were analyzed using statistical methods. Descriptive statistics were used in the summarization of the data set, and this included calculations of means and standard deviations. Tests of difference between age groups with regards to psychological, social, and emotional variables were performed using Kruskal-Wallis H tests, and the p-value determined whether the findings were statistically significant. Logistic regression analysis was also carried out in order to determine factors predicting poor emotional health among adolescents.

Table 1: Socio-Demographic Characteristics Cross-Tabulated by Age

Variable	Categories	Age 14 (n = 173)f (%)	Age 15 (n = 134)f (%)	Age 16 (n = 72)f (%)	χ^2	P-value
Gender	Male	73 (42.20%)	54 (40.30%)	33 (45.83%)	0.588	0.745
	Female	100 (57.80%)	80 (59.70%)	39 (54.17%)		
Class	8th	82 (47.40%)	67 (50.00%)	30 (41.67%)	243.688	0.001
	9th	85 (49.13%)	66 (49.25%)	40 (55.56%)		
	10th	4 (2.31%)	1 (0.75%)	2 (2.78%)		
Type of School	Government	2 (1.16%)	0 (0.00%)	0 (0.00%)	8.227	0.05
	Private Aided	90 (52.02%)	66 (49.25%)	41 (56.94%)		
	Private Un-Aided	33 (19.08%)	16 (11.94%)	4 (5.56%)		
Father Education	Primary	9 (5.20%)	7 (5.22%)	9 (12.50%)	4.959	0.549
	Higher Primary	37 (21.39%)	41 (30.60%)	12 (16.67%)		
	Matriculation	4 (2.31%)	4 (2.99%)	5 (6.94%)		
	PUC	0 (0.00%)	0 (0.00%)	1 (1.39%)		
Father Occupation	Daily Wage	96 (55.49%)	1 (0.75%)	0 (0.00%)	9.622	0.142
	Farmer	67 (38.73%)	46 (34.33%)	4 (5.56%)		
	Govt. Employee	10 (5.78%)	87 (64.93%)	68 (94.44%)		
	Private Employee	84 (48.55%)	52 (38.81%)	37 (51.39%)		
Mother Education	Primary	28 (16.18%)	30 (22.39%)	6 (8.33%)	3.874	0.694
	Higher Primary	61 (35.26%)	52 (38.81%)	29 (40.28%)		
	High School	43 (24.86%)	25 (18.66%)	14 (19.44%)		
	PUC	55 (31.79%)	38 (28.36%)	24 (33.33%)		
Mother Occupation	Daily Wage	49 (28.32%)	44 (32.84%)	18 (25.00%)	4.582	0.101
	Housewife	26 (15.03%)	27 (20.15%)	16 (22.22%)		

Table 1 reveals the socio-demographic features of respondents in three different age groups; aged 14 years (n = 173), 15 years (n = 134) and 16 years (n = 72). The number of females exceeded that of males in all age groups. Gender composition was statistically insignificant among the three age groups ($\chi^2 = 0.588$, $p = 0.745$). Most respondents were from the 8th and 9th standard classes. Age and class were significantly associated ($\chi^2 = 243.688$, $p = 0.001$). Private aided schools dominated and there existed some association between age and school category ($\chi^2 = 8.227$, $p = 0.05$). Majority of fathers attained higher primary education and were employed as farmers/daily wage laborers. This suggests the rural origin of the district of Kodagu. Majority of mothers also attained higher primary/PUC and were engaged as daily wage laborers.

Table 2: Age-wise Variations in Psychological Functioning

Psychological Aspects	Age 14 (Mean $\pm$ SD)	Age 15 (Mean $\pm$ SD)	Age 16 (Mean $\pm$ SD)	p value
Anxiety	13.87 $\pm$ 3.25	14.47 $\pm$ 3.53	13.81 $\pm$ 3.25	0.106
Emotional & Social Well-being	10.60 $\pm$ 2.84	11.04 $\pm$ 2.40	10.60 $\pm$ 2.87	0.401
Cognitive & Academic Function	18.09 $\pm$ 4.21	17.40 $\pm$ 4.23	16.72 $\pm$ 4.60	0.05*
Physical & Behavioural Symptoms	18.98 $\pm$ 3.50	18.61 $\pm$ 3.50	18.04 $\pm$ 4.33	0.279
Severe Psychological Distress	16.88 $\pm$ 2.83	16.58 $\pm$ 3.02	16.82 $\pm$ 2.69	0.744

Table 2 shows age-wise differences in psychological functioning among adolescents. No significant differences were found across age groups for anxiety ($p = 0.106$), emotional and social well-being ($p = 0.401$), physical and behavioural symptoms ($p = 0.279$), and severe psychological distress ($p = 0.744$). Cognitive and academic functioning differed significantly ($p = 0.05$), with 14-year-olds having the highest mean score (18.09 ± 4.21), which decreased with increasing age.

Table 3: Age-wise Differences in Emotional Regulation and Post-Disaster Emotional Responses across Age Groups

Emotional Aspects	Age 14 (Mean $\pm$ SD)	Age 15 (Mean $\pm$ SD)	Age 16 (Mean $\pm$ SD)	p value
Self-Image & Internal Well-being	31.29 $\pm$ 6.01	29.58 $\pm$ 7.26	28.47 $\pm$ 7.09	0.009*
Social Interaction	47.80 $\pm$ 8.39	47.68 $\pm$ 7.80	43.78 $\pm$ 8.03	0.001*
Functional & Anticipation Anxiety	25.80 $\pm$ 4.91	25.82 $\pm$ 5.25	23.89 $\pm$ 6.14	0.046*
Post-Disaster Emotional	Age 14 (Mean $\pm$ SD)	Age 15 (Mean $\pm$ SD)	Age 16 (Mean $\pm$ SD)	p value
Intrusion Symptoms	24.23 $\pm$ 6.65	25.60 $\pm$ 5.62	24.85 $\pm$ 6.50	0.215
Avoidance & Arousal Symptoms	26.72 $\pm$ 6.13	28.02 $\pm$ 4.94	27.04 $\pm$ 5.90	0.282

Table 3 shows age-wise differences in emotional regulation and post-disaster emotional responses. Significant differences were observed across age groups in self-image and internal well-being ($p = 0.009$), social interaction ($p = 0.001$), and functional and anticipation anxiety ($p = 0.046$). Fourteen-year-olds reported the highest scores in all three dimensions. No significant differences were found in intrusion symptoms ($p = 0.215$) or avoidance and arousal symptoms ($p = 0.282$) across age groups.

Table 4: Logistic Regression Model Predicting Poor Emotional Health

Predictor Variables	B	S.E.	Wald	Sig. (p)	Exp(B)
Mother Occupation (Group 1)	-1.271	0.437	8.472	.004**	0.281
Anxiety	-0.23	0.06	14.582	.001**	0.795
Physical & Behavioral Symptoms	-0.208	0.051	16.486	.001**	0.812
Relationship Quality	-0.207	0.099	4.337	.037*	0.813
Intrusion Symptoms	-0.153	0.038	16.49	.001**	0.858
Avoidance & Arousal	-0.104	0.038	7.601	.006**	0.901

Table 4 shows the logistic regression model for poor emotional health among adolescents. All six predictor variables were statistically significant. Mother's occupation was the strongest predictor ($p = 0.004$), followed by anxiety ($p = 0.001$), physical and behavioural symptoms ($p = 0.001$), and intrusion symptoms ($p = 0.001$). Poor relationship quality ($p = 0.037$) and avoidance and arousal symptoms ($p = 0.006$) were also significant. Family, psychological, and post-disaster factors were associated with poor emotional health among adolescents in disaster-prone areas.

Discussion

This study examined the age-specific differences in psychological, social, and emotional adjustment of adolescents who have experienced a disaster in Kodagu district. It was found that the effects of a disaster on the lives of adolescents vary depending on their age group. It was found that there were age differences in cognitive functioning, academic achievement, self-image, social interactions, and anticipatory anxiety. However, no age difference was found in the levels of general anxiety and intrusions/avoidance behaviors after the disaster. This finding implies that although adolescents in disaster-prone environments might experience similar stress factors, they experience stress differently at different developmental stages. Previous literature has shown that exposure to disasters could lead to emotional disturbance, school disruption, and social problems in children and adolescents, especially if recovery is delayed or support is lacking (Koplewicz et al., 2012; Masten & Osofsky, 2010; Osofsky et al., 2011). It is worth noting that there was an age-related decrease in cognitive and academic skills, which means that the older group performed worse compared to the younger one. The reason behind this phenomenon may be related to the higher academic workload, more peer pressure, and increased worries about future education and career opportunities faced by the older students. In the aftermath of natural disasters, such stressors may become even stronger. It has been documented previously that traumatic events can affect the victims' ability to concentrate, memorize information, stay motivated, and attend classes, thus impacting their academic achievement (Abdalla et al., 2021; Peek & Richardson, 2010; Schonfeld & Demaria, 2016).

Emotional outcomes The emotional outcomes further show distinctions in the process of development. Younger adolescents were noted for having more positive self-concept, better interactions, and low anticipatory anxiety in comparison to older adolescents. The possible reason for the above mentioned lies in the higher degree of emotional maturation among younger adolescents and the knowledge of the risks involved in the situation at hand. Older adolescents understand the consequences of disaster-caused losses much better and tend to make comparisons among themselves, possibly affecting their self-confidence and emotions. There exists ample evidence in the literature that adolescence is associated with great emotional development, which makes people particularly vulnerable to stress (Compas et al., 2017; Nolen-Hoeksema & Watkins, 2011; Sprague & Phan, 2018).

Such vulnerabilities may be intensified in a disaster scenario, making it vital to provide age-appropriate emotional support. Furthermore, no age-related disparities were noted in intrusion and avoidance emotions after a disaster. It means that memories associated with a trauma and the corresponding fear responses remain unchanged irrespective of whether one belongs to early or middle adolescence. Trauma experiences may affect adolescents equally, regardless of their various socio-emotional and cognitive strengths. There is scientific evidence that PTSD symptoms can last long when untreated, based on findings from longitudinal studies (Felix et al., 2019; McLaughlin et al., 2014; Weems & Overstreet, 2008). Since no age-related difference was detected among post-disaster symptoms in this study, it implies the necessity to pay attention to follow-up interventions for all adolescents affected by a disaster. Added yet another dimension of knowledge. Predictors of emotional maladjustment included anxiety, physical/behavioral issues, parent-child relationship, intrusion symptoms, avoidance and hyperarousal symptoms, and mother's job.

This suggests that emotional well-being among teenagers involves both intrinsic distress and external influences within the family setting. The role played by family circumstances is very crucial following disaster occurrences. Under situations where family-related distress is very high, adolescents tend to have limited emotional capacity to handle such experiences (Lai et al., 2018; Morris et al., 2017; Prime et al., 2020). The profession held by mothers could be indicative of their household responsibilities, caregiving duties, and economic pressures. All these aspects could have an impact on the availability of time and effort that mothers dedicate to their children (Cobham et al., 2016; Furr et al., 2010; Hoven et al., 2005).

Implications

The results obtained above show that there is an urgent need for the establishment of support services within schools that are situated in regions prone to natural disasters. Screening exercises can be carried out to establish adolescents who may be having difficulty managing their emotions, concentration problems, and social isolation issues. Training will be necessary for teachers in order to help them identify the early symptoms of trauma. It will also be important for counselors to assist in restoring confidence and overcoming fears of adolescents. Parents must be advised on how best to listen and offer reassurances to their kids as well as keep their regular schedule despite being exposed to traumatic experiences. (Nugent et al., 2016; Rolfsness et al., 2021; Pfefferbaum et al., 2013). In regions such as Kodagu, where disasters recur, support efforts should be ongoing rather than episodic.

Strengths and limitations

Strengths are the use of a large sample of school-going adolescents, evaluation based on multiple areas of functioning, and comparison within age groups, which highlights the differences between them. The emphasis on an area vulnerable to disasters adds to its practical significance, and the use of regression analysis helped identify the factors associated with mental illness. However, there are some limitations associated with the cross-sectional approach used by researchers and the possible bias involved in the subjective reporting of data. It is important to mention that only school-going adolescents were considered in this study, whereas disaster exposure was not thoroughly assessed.

Conclusion

This study reveals that there is exposure to disasters that impacts the adolescent population of Kodagu both generally and in age-specific ways. The older adolescents seem to be more prone to experiencing difficulties in academics and emotionally. Meanwhile, the presence of disaster effects occurs among all ages. Emotional wellbeing involves the factors such as family environment, relationships, and anxiety.

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