



Multidimensional Correlates of Stress Among Adolescents: Sociocultural, Parental and Digital Influences

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Abstract

Introduction: Adolescence is a period of increasing autonomy that may be influenced by social, digital, cultural, and family-related factors. Responsive parenting can provide a sense of security, belonging, and emotional support.

Objectives: To estimate stress levels and their association with selected sociocultural, digital, and parent–adolescent interaction factors among school-going adolescents in rural Haryana.

Materials and Methods: A school-based cross-sectional study was conducted among 300 adolescents in classes VIII–XII across 10 government senior secondary schools in Agroha Block, Hisar, Haryana. Participants were selected by simple random sampling with equal representation of boys and girls. Data were collected using a predesigned semi-structured interview schedule, and stress was assessed using the 10-item Perceived Stress Scale (PSS-10). Associations were assessed using Pearson's chi-square test, and crude odds ratios (ORs) with 95% confidence intervals (CIs) were estimated using bivariate logistic regression.

Results: Of the 300 participants, 166 (55.3%) had low stress, while 134 (44.7%) had moderate-to-high stress. Participation in cultural activities was not significantly associated with stress (OR=0.67, 95% CI: 0.42–1.07). Adolescents who did not visit religious places/religious websites had higher odds of moderate-to-high stress (OR=2.89, 95% CI: 1.59–5.26). Those spending >5 hours/day on social sites had higher odds of moderate-to-high stress compared with the merged reference group of those spending ≤5 hours/day or not visiting social sites (OR=3.43, 95% CI: 1.52–7.72). Significant overall associations were also observed for quality time with parents ($\chi^2=11.713$, $p=0.003$), parental outings during holidays ($\chi^2=7.747$, $p=0.021$), parental permission for creative activities ($\chi^2=4.973$, $p=0.026$), and internet access in the presence of parents ($\chi^2=8.415$, $p=0.015$). **Conclusions:** Moderate-to-high stress affected nearly half of the adolescents studied. Stress was associated with selected aspects of social-media use, religious engagement, and parent–adolescent interaction. Strengthening school-based stress-management services, supportive parent–adolescent communication, positive recreational opportunities, and awareness of balanced digital-media use may help promote adolescent well-being. Longitudinal and multicentric studies are warranted to clarify temporal relationships and identify independent determinants of adolescent stress.

Keywords: Cultural activities, Parent–adolescent interaction, Perceived stress, Religious engagement, School-going adolescents. Social media use

Introduction

Adolescence is a crucial stage of life marked by rapid physical, emotional, and social transitions that can increase susceptibility to stress and other mental health problems. Globally, approximately one in seven adolescents aged 10–19 years experiences a mental health condition, highlighting the importance of identifying factors that influence psychological well-being during this formative period.[1]

The sociocultural and religious aspects of adolescents play an important role in shaping their psychological well-being. Participation in cultural and artistic activities has been associated with promotion of health and well-being through pathways involving social interaction, emotional expression, self-esteem, and social connectedness.[2] Likewise, religious involvement may also provide social support, meaning, and coping resources during stressful life experiences, although the relationship between religious engagement and mental health may vary across individuals and contexts.[3,4]

The widespread availability of smartphones and internet services has led to a substantial increase in social media use among adolescents. Although social networking platforms can facilitate communication and information sharing, excessive use has been associated with adverse mental health outcomes, including stress, anxiety, depression, sleep disturbances, and reduced psychological well-being.[5,6] Evidence suggests that prolonged screen time and problematic social media use may contribute to higher perceived stress through mechanisms such as social comparison, cyberbullying, and disrupted sleep patterns.

Adolescence is a period of increasing autonomy and emotional development during which supportive and responsive parenting can provide a sense of security, belonging, and emotional support. Positive parent–adolescent relationships characterized by open communication, parental availability, shared activities, and opportunities for adolescents to express themselves have been associated with better psychological well-being and fewer emotional and behavioural difficulties.[7,8,9]

The quality and frequency of interactions between parents and adolescents may also influence their experience of stress. Spending quality time with

parents, having opportunities to communicate with them, participating in recreational activities, and being able to discuss personal concerns may strengthen family support and facilitate effective coping with stressful situations. Conversely, inadequate parental interaction, limited communication, or difficulties in sharing personal problems may reduce perceived social support and increase vulnerability to psychological distress.[7,8] Parental support for adolescents' interests and creative activities may further contribute to positive emotional development by providing opportunities for self-expression, autonomy, and social engagement.

Considering the potential influence of social, cultural, digital, and family-related factors on adolescent well-being, the present study examined their association with perceived stress among school-going adolescents in rural Haryana, with particular emphasis on participation in cultural activities, engagement with religious places or websites, use of social networking sites, and selected aspects of parent–adolescent interaction.

Objectives

1. To estimate the stress levels among school-going adolescents in Agroha Block of Haryana.
2. To determine the association of cultural activities, religious visits, social media use, and parent–child interaction factors with stress levels among school-going adolescents.

Materials And Methods

Study design and setting

A school-based cross-sectional study was conducted in all 10-government senior secondary schools in Agroha Block, Hisar district, Haryana. Agroha Block, one of the 10 community development blocks of the district, was selected for operational feasibility, as Maharaja Agrasen Medical College is located within the block.

Inclusion criteria

School-going adolescents studying in classes VIII–XII who were willing to participate and had written parental/guardian consent were included.

Exclusion criteria

Adolescents who declined participation, lacked parental/guardian consent, or had physical disabilities or major illness were excluded.

Sample size estimation

The sample size was calculated using a prevalence of high stress of 25% [10], 95% confidence level, and 5% absolute precision, yielding a minimum sample of 288. The sample was increased to 300 to allow for potential non-response and ensure adequate representation.

Sampling technique

Thirty students were selected from each of the 10 schools, with six students from each class (VIII–XII). From each class, three boys and three girls were selected by simple random sampling using class roll numbers as the sampling frame.

Study tools and data collection

Data were collected using a predesigned and pretested semi-structured interview schedule covering family dynamics, parental behaviours, and other relevant factors. Perceived stress was assessed using the 10-item Perceived Stress Scale (PSS-10) [11], with each item scored from 0 (never) to 4 (very often). Items 4, 5, 7, and 8 were reverse scored. Total scores ranged from 0–40 and were categorized as low (0–13), moderate (14–26), and high (27–40).

Permission was obtained from the District Education Officer, Hisar, and written informed consent was obtained from parents/guardians. Data were collected in a designated room at each school, with the questionnaire explained in the local language. Participant anonymity and confidentiality were maintained throughout.

Data analysis

Data were entered in Microsoft Excel and analyzed using SPSS version 24.0. Descriptive statistics were used to summarize the study variables. The Pearson chi-square test (χ^2) was used to assess the association between categorical variables and stress level with $p < 0.05$ considered statistically significant. Bivariate logistic regression was performed to estimate crude odds ratios (ORs) with 95% confidence intervals (CIs).

Results

Table 1 illustrates a total of 300 participants were included in the analysis. Of these, 55.3% had low

stress, while 44.7% had moderate-to-high stress. It also depicts association of cultural activities, religious visits, and social media use with stress levels among participants. The findings indicate that participation in cultural activities was not significantly associated with stress level. Adolescents who did not participate in cultural activities had lower odds of moderate/high stress than those who participated (OR=0.67, 95% CI: 0.42–1.07). Visiting religious places/religious websites showed a statistically significant association with stress. Adolescents who did not visit religious places/websites had approximately 2.9 times higher odds of moderate/high stress compared with those who did (OR=2.89, 95% CI: 1.59–5.26). Time spent on social sites was significantly associated with stress. After merging the categories of not visiting social sites and ≤ 5 hours/day as the reference group, adolescents spending > 5 hours/day on social sites had approximately 3.4 times higher odds of moderate/high stress (OR=3.43, 95% CI: 1.52–7.72).

Table 2 shows the findings regarding parental involvement and internet access in relation to adolescent stress. Spending quality time with parents was significantly associated with stress level. After merging the categories “one parent” and “none of the parents” for odds ratio (OR) calculation, adolescents without quality time with both parents had 1.69 times higher odds of moderate/high stress compared with those spending quality time with both parents (95% CI: 0.95–3.01). Parents finding time to speak with adolescents during weekdays was not significantly associated with stress. The crude OR was 1.06 (95% CI: 0.60–1.87), indicating no statistically significant difference in odds of moderate/high stress. Parents taking adolescents for outings during holidays showed a statistically significant overall association with stress. After merging “one parent” and “none of the parents,” the crude OR was 1.47 (95% CI: 0.93–2.33). Comfort in sharing personal problems with parents was not significantly associated with stress. Adolescents who were not comfortable sharing problems with both parents had 1.35 times higher odds of moderate/high stress (OR=1.35, 95% CI: 0.83–2.17), but the association was not statistically significant. Parents allowing creative activities was significantly associated with stress. Adolescents whose parents did not allow such activities had 1.75 times higher odds of moderate/high stress compared with those whose parents allowed them (95% CI:

1.04–2.96). Accessing the internet in the presence of parents was significantly associated with stress overall. After merging “no” and “did not have internet facility,” the crude OR was 1.43 (95% CI: 0.89–2.04).

Discussion

In the present study, 44.7% of adolescents experienced moderate-to-high stress, indicating a considerable burden of perceived stress in the study population. The findings suggest that selected aspects of adolescents’ social activities, digital-media use, and parent–child interactions were associated with stress. However, given the cross-sectional design, these associations should not be interpreted as causal relationships.

Participation in cultural activities was not significantly associated with stress. Evidence regarding recreational and family activities and adolescent well-being is variable. A cross-sectional study among 1,618 adolescents in Northern Ireland reported that greater family activity was associated with better mental well-being after adjustment for potential confounders.[12] The difference from the present finding may be related to differences in the nature and frequency of activities assessed, as well as differences in the outcome measure.

Visiting religious places or religious websites was significantly associated with stress in the present study. Adolescents who did not report such visits had approximately 2.9-fold higher odds of moderate-to-high stress (OR=2.89, 95% CI: 1.59–5.26). Previous research suggests that religious engagement and religious coping may be associated with psychological adjustment among adolescents. Terreri and Glenwick reported that positive religious coping was associated with better psychological adjustment, whereas negative religious coping was associated with psychological distress among urban adolescents.[13] A meta-analysis of 49 studies similarly found that positive and negative religious coping were generally associated with positive and negative psychological adjustment, respectively.[14] However, religious participation and religious coping are not identical constructs, and the present study did not assess the type or quality of religious coping. Therefore, the observed association should be interpreted cautiously.

Social media use showed a significant association with stress. Adolescents spending >5 hours/day on social sites had approximately 3.4 times higher odds of

moderate-to-high stress than the merged reference group of those spending ≤5 hours/day or not visiting social sites (OR=3.43, 95% CI: 1.52–7.72). This finding is consistent with a systematic review and meta-analysis of 18 studies involving 9,269 adolescents and young adults, which reported a significant positive association between problematic social media use and stress ($r=0.313$).[5] The relationship may, however, be bidirectional. Greater social-media use may coexist with reduced sleep, physical activity, or face-to-face interaction, while adolescents experiencing stress may also use social media as a means of coping or social connection. Thus, duration of social-media use alone should not be interpreted as a direct cause of stress.

The present study also highlights the potential relevance of parent–child interaction. Spending quality time with parents showed a significant overall association with stress ($\chi^2=11.713$, $p=0.003$). Adolescents who did not spend quality time with both parents had higher odds of moderate-to-high stress, although the crude OR after category merging was not statistically significant (OR=1.69, 95% CI: 0.95–3.01). Similarly, adolescents who were not comfortable sharing personal problems with both parents had higher odds of moderate-to-high stress, although the association was not statistically significant (OR=1.35, 95% CI: 0.83–2.17). These findings are broadly consistent with the Northern Ireland Schools and Wellbeing Study, in which greater family activity was associated with better adolescent mental well-being and poorer family cohesion was identified as a potential vulnerability for poor well-being.[12]

Parents taking adolescents for outings during holidays showed a significant overall association with stress ($\chi^2=7.747$, $p=0.021$); however, the crude OR following category merging was not statistically significant (OR=1.47, 95% CI: 0.93–2.33). This apparent difference illustrates the distinction between an overall χ^2 test across three categories and a specific dichotomized comparison used for calculating the crude OR.

Parental permission for creative activities was significantly associated with stress. Adolescents whose parents did not allow creative activities had higher odds of moderate-to-high stress than those whose parents allowed such activities (OR=1.75, 95%

CI: 1.04–2.96). This finding may be consistent with the broader literature emphasizing the importance of supportive family environments and opportunities for positive family interaction in adolescent well-being.[12] Nevertheless, the cross-sectional design does not establish whether limited opportunities for creative activities contribute to stress or whether both are influenced by other family characteristics.

Accessing the internet in the presence of parents was significantly associated with stress in the overall analysis ($\chi^2=8.415$, $p=0.015$); however, after merging categories for OR estimation, the crude association was not statistically significant (OR=1.43, 95% CI: 0.89–2.04). This suggests that the context of internet use may be relevant, but the present findings do not establish an independent relationship between supervised internet access and stress.

Overall, the findings indicate that social-media use and selected dimensions of family and social interaction are associated with adolescent stress. Previous research similarly emphasizes the importance of family cohesion, social connectedness, religious coping, and patterns of social-media use in adolescent psychological well-being.[12–14] However, differences in study populations, measurement tools, definitions of exposure, and outcomes should be considered when comparing these findings.

Conclusion And Recommendations

In conclusion, 44.7% of school-going adolescents experienced moderate-to-high stress, with significant associations observed with social-media use, religious engagement, and selected aspects of parent–child interaction. These findings highlight the importance of supportive family relationships, healthy digital-media practices, and positive recreational and social activities in promoting adolescent well-being. Schools should strengthen stress-management and counselling services, while parents should be encouraged to improve communication, spend quality time with adolescents, and support creative and recreational activities. Awareness regarding balanced social-media use should also be promoted. Further multicentric and longitudinal studies are recommended to clarify temporal relationships and identify independent determinants of adolescent stress.

Limitations

The study was limited by its cross-sectional design, which precludes establishing causal relationships. The use of self-reported information may have introduced recall and reporting bias, and some subgroups had small sample sizes, which may have limited the precision of estimates.

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Ethical Statement

Ethical approval was obtained from the Institutional Ethics Committee of Maharaja Agrasen Medical College, Agroha (Hisar), Haryana. Written informed consent was obtained from the parents/guardians of all participating adolescents, and confidentiality and anonymity of participant information were maintained throughout the study.

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Table 1: Association of cultural activities, religious visits, and social media use with stress levels among participants

Parameters	N	Stress Level		χ^2	p	Odds Ratio	95% Confidence Interval
		Low Stress N (%)	Moderate+ High Stress N (%)				
Participation in cultural activities							
Yes	167	85 (50.9)	82 (49.1)	2.998 (df=1)	0.083	0.67	0.42–1.07
No	133	81 (60.9)	52 (39.1)				
Visiting religious places/religious web sites							
Yes	232	142 (61.2)	90 (38.8)	14.287 (df=1)	<0.001	2.89	1.59–5.26

No	68	24 (35.3)	44 (64.7)				
Number of hours spent per day on social sites*							
Not visiting social sites ^a	152	74 (48.7)	78 (51.3)	22.926 (df=2)	<0.001	3.427	1.521-7.722
≤ 5 hours ^b	117	83 (70.9)	34 (29.1)				
> 5 hours ^c	31	09 (29.0)	22 (71.0)				
Total	300	166	134				

Note: * For calculation of Odds ratio, a & b have been merged

Table 2: Association of parent–child interaction factors with stress levels among school going adolescents

Parameters	N	Stress Level		χ^2	p	Odds Ratio	95% Confidence Interval
		Low Stress N (%)	Moderate+ High Stress N (%)				
Spent quality time with parents*							
Both parents ^a	242	140 (57.9)	102 (42.1)	11.713 (df=2)	0.003	1.689	0.948-3.008
One parent (either father or mother) ^b	44	15 (34.1)	29 (65.9)				
None of the parents ^c	14	11 (78.6)	03 (21.4)				
Parents found time to speak to the study subjects during week days*							
Both parents ^a	241	134 (55.6)	107 (44.4)	4.433 (df=2)	0.109	1.057	0.596-1.872
One parent (either father or mother) ^b	45	21 (46.7)	24 (53.3)				

None of the parents ^c	14	11 (78.6)	03 (21.4)				
During holidays parents took them for outing*							
Both parents ^a	157	94 (59.9)	63 (40.1)	7.747 (df=2)	0.021	1.471	0.931-2.325
One parent (either father or mother) ^b	129	61 (47.3)	68 (52.7)				
None of the parents ^c	14	11 (78.6)	03 (21.4)				
Comfortable to share personal problems with parents*							
Both parents ^a	197	114 (57.9)	83 (42.1)	5.200 (df=2)	0.074	1.347	0.834- 2.174
One parent (either father or mother) ^b	88	41 (46.6)	47 (53.4)				
None of the parents ^c	15	11 (73.3)	04 (26.7)				
Parents allowed to do creative activity like cut and glue							
Yes	210	125 (59.5)	85 (40.5)	4.973 (df=1)	0.026	1.75	1.04–2.96
No	90	41 (45.6)	49 (54.4)				
Accessed internet in presence of parents*							
Yes ^a	197	115 (58.4)	82 (41.6)	8.415 (df=2)	0.015	1.43	0.885-2.039
No ^b	71	41 (57.7)	30 (42.3)				
Did not have internet facility ^c	32	10 (31.3)	22 (68.8)				
Total	300	166	134				

Note: * For calculation of Odds ratio, b & c have been merged