

Resilience Level, its Determinants and its Effect on Psychological Well-being: A Cross-Sectional Evaluation among School-Going Adolescents of Patna, Bihar, India

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Abstract

Background: Adolescents with higher resilience levels are reported to be less vulnerable to psychological illnesses. The study examined resilience level, its determinants and its effect on psychological well-being among school-going adolescents of Patna, Bihar, India. **Methods:** Adopting cross-sectional design we examined resilience levels among the study participants reading in the sixth, seventh and eighth standards of selected schools of Patna district using the Child Youth Resilience Measure-Revised questionnaire during March 2021. Psychological well-being was assessed using Patient Health Questionnaire-4. Data of in total 468 enrolled participants were analysed using SPSS 22.0. **Results:** The mean resilience score was observed to be 62.4 ± 8.8 . In multiple linear regression analysis using backward method; increasing age (unstandardised beta [β]: 0.564, standard error [SE]: 0.271, P : 0.038), male gender (β : 2.753, SE: 0.775, P < 0.001), high per capita monthly family income (≥ 18 USD [median]) (β : 1.829, SE: 0.743, P : 0.014), academic satisfaction (β : 2.003, SE: 0.962, P : 0.038), no history of abuse (physical or mental) in the past 30 days (β : 2.752, SE: 1.220, P : 0.025) and increasing self-esteem score (measured by Rosenberg Self-Esteem Scale) (β : 0.808, SE: 0.098, P : < 0.001) were found to be positive determinants of the total resilience level. Resilience was found to be positively correlated with psychological well-being (spearman rho correlation co-efficient [ρ]: 0.363, P < 0.001). **Conclusions:** Abuse, academic satisfaction and self-esteem were the modifiable determinates of resilience that could be elucidated in this investigation. Resilience level positively influenced psychological well-being.

Keywords: Adolescent, mental health, psychological, resilience, self-concept

INTRODUCTION

Adolescence is a transitional phase of life. It is time when one attains physical, psychological maturation and also does acquire various social values.^[1] A teenager is likely to face diverse challenges and stressful events concerning scholastic performance, sexual maturity, interpersonal relationships (with peers, teachers, caregivers and other family members) and economic issues. All these increase their volatility to adapt various high-risk behaviour (i.e., substance abuse, suicidal ideation, delinquency, etc.) and exert a negative impact on their psychological well-being.^[1-4] As per the World Health Organisation every sixth adolescent is likely to suffer from

conditions related to mental health. Moreover, half of all mental health-related issues emerge during the adolescence period (14 years), a vast majority of which remain undiagnosed and untraced.^[2]

Resilience is a quality which helps one to effectively tackle various life adversities. By definition, it is 'In the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social,

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cultural and physical resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provided in culturally meaningful ways.^[5] It had been seen that adolescents with higher resilience scores reported to have fewer instances of mental health-related issues as it strengthens positive indicators of mental health while buffering the negative ones.^[6-8] Thus, upkeeping higher resilience levels at adolescence is of immense importance to keep them protected from mental health-related problems. On the other hand, self-esteem is a perceived sketch of one's own abilities and limitations. Reported literatures suggests that higher self-esteem levels promote optimal psychosocial functioning and have a direct association with one's resilience level.^[9,10] The other determinants of resilience level among adolescents were reported to be age, gender, ethnicity, type of school, place of residence, birth order, physical activity status, scholastic performance, time spend with parents, type of family, physical or mental abuse, etc.^[11-15]

Sharing the largest demographic dividend (1/5th), adolescents (especially school-going ones) being a trapped audience provide us with a unique opportunity to intervene en masse for the promotion of health. Resilience being an enabling quality to deal with adversities and for maintenance of mental well-being was found not to be explored enough, especially in the Indian context. Moreover, resilience is not a rigid entity. It can be taught and learned. Resilience-focused interventions were reported to be helpful in improving the mental well-being of children and adolescents.^[16,17] Thus, for all these identifications of baseline resilience level, its various determinates are warranted. The current research investigated resilience level, its determinants and its effect on psychological well-being among school-going adolescents of Patna, Bihar, India. The findings of the study will help to identify various barriers and promoters of fostering resilience levels among adolescents to assure their mental well-being.

METHODS

This was a crosssectionally designed the exploratory observational study, conducted among school-going adolescents of Patna, Bihar, India during March 2021. The adolescents reading in the sixth, seventh and eighth standards of selected schools of Patna district were the potential participants for this study. These students were interviewed within their school premises. After obtainment of informed written consent, the predesigned, pretested, structured questionnaire developed for the study was self-administered to them. The Institutional Ethical Committee (IEC) of All India Institute of Medical Sciences (AIIMS), Patna, Bihar, India, cleared the study protocol (Ref. AIIMS/Pat/IEC/2020/673, dated 05.01.2021).

Assuming expected standard deviation (SD) to be 8.6 (as reported by a multicentric study by Hölte *et al.*^[18] for Indian adolescents using Child Youth Resilience Measure-Revised [CYRM-R] scale) for the measured resilience level of the study population,

design effect of 2, 99.0% confidence and precision of 1.45, the minimum sample size for the study was calculated to be 468. Statulator (an online sample size calculator) was used for this sample size estimation which uses the following formula for sample size calculation: $N = (Z\sigma/E)^2$ where Z = confidence level (for 99% it is 2.576), σ = SD, E = margin of error or precision.^[19] There were in total six subdivisions in Patna district. Out of these six subdivisions, two subdivisions were selected. Then, from each selected subdivision one block was selected. This was followed by the selection of 2 schools from each selected block. All selections were made using simple random sampling (SRS) with the substitute.^[20-22] After the obtainment of permission of the concerned school authorities, the required number of samples from each selected school was decided based on probability proportionate to the size technique. The line list of the students enrolled in each selected school standard was prepared well in advance. On the day of data collection, the required number of samples from each selected school standard was done using SRS with the substitute. The random numbers were generated at the spot using OpenEpi software.^[23] The details of the recruitment process are depicted in Figure 1.

The structured questionnaire developed for the study comprised of sociodemographic (age, sex, reading standard, ethnicity, religion, number of family members, living status with family, educational level and occupation of parents and total monthly family income); addiction profile (type [cigarette, bidi, gutka, khaini, others, etc.], and frequency of substance use in the past 30 days); academic satisfaction; scholastic

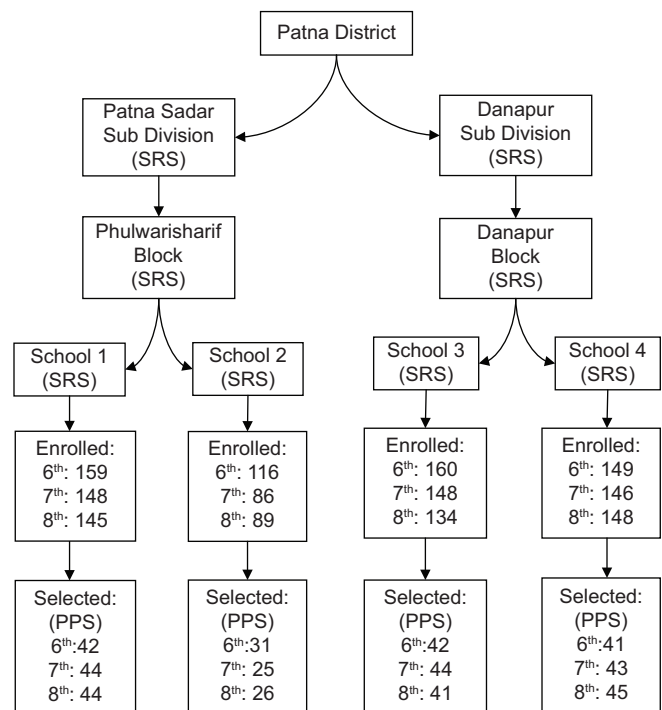


Figure 1: Flow chart showing recruitment of the study participants: ($n = 468$). SRS: simple random sampling, PPS: probability proportionate to size

performance; average sleep duration (in hours); average screen time for television, computer, mobile and other such electronic devices (in minutes); average time spend for outdoor games (i.e. cricket, football, etc.) (in minutes); history of (H/O) physical and/or mental abuse in the past 30 days; Patient Health Questionnaire-4 (PHQ-4) (4 items); Rosenberg Self-Esteem (RSE) Scale (10 items) and CYRM-R (17 items). Before adaptation, the developed study tool was first pretested among 30 school students (10 each from standard sixth, seventh and eighth) of a different school who were not included in the final sample. The study tool was administered in the local language Hindi. The internal consistency (Cronbach's alpha) of the Hindi translated PHQ-4, RSE and CYRM-R were found to be 0.661, 0.701 and 0.759, respectively.

Individuals who have used tobacco products at least once in the preceding 30 days of data collection were deemed as current tobacco users. The four items of PHQ-4 were scored as follows: not at all (0), several days (1), more than half days (2), nearly every day (3). Scores received for each item were summed to obtain the total PHQ score where higher score indicated higher severity of psychological symptoms. Those who have scored between 0 and 2 were considered as having psychological well-being.^[24] Item number 1, 3, 4, 7 and 10 of RSE were scored as follows strongly agree (1), agree (2), disagree (3), strongly disagree (4) whereas item number 2, 5, 6, 8 and 9 were reverse scored (strongly agree [4], agree [3], disagree [2], strongly disagree [1]). Scores of all 10 items of RSE were summed to obtain total self-esteem score where higher score indicated higher self-esteem level.^[25] All the 17 items of the CYRM-R scale were scored as follows: not at all (1), a little (2), somewhat (3), quite a bit (4), a lot (5). Scores of item number 1, 2, 3, 7, 9, 10, 12, 13, 14 and 16 were added to obtain personal resilience score whereas for the obtainment of caregiver resilience score item number 4, 5, 6, 8, 11, 15 and 17 were summed. The total resilience score was calculated by adding scores of all the 17 items where higher score indicated higher resilience level.^[5] On visual inspection of the quantile-quantile plot all the three-resilience scores (personal, caregiver and total) were found to be normally distributed.

Statistical analysis

Categorical variables were represented as proportions and percentages. Continuous variables were reported as mean (SD) or median (interquartile range [IQR]) depending on their normality. To compare mean resilience scores across different background characteristics of the study participants either independent samples *t*-test or one-way analysis of variance test was used depending on the number of categories of the categorising variables. The variables found to be significantly associated with resilience level of the study participants in bivariate analysis were considered for multiple linear regression analysis. Using the backward method, three separate multiple linear regression models were built for personal, caregiver and total resilience. The strength of association was reported in terms of unstandardised beta (β). To explore the association between resilience level and psychological

well-being spearman rho correlation test was used. For all inferential statistics, 95% confidence level was assumed. All analyses were performed using the IBM SPSS (Chicago, USA) (version 22).

RESULTS

The median age of the study participants was 13 years with IQR of 12–14 years. Male represented three-fifth (60.0%) of the study population. The median years of schooling of fathers and mothers of the study participants were 8 and 5, respectively, with about one-third of them being illiterate (fathers: 29.7%, mothers: 36.1%). One in every 20 participant surveyed (5.1%) were found to be current tobacco user with gutka (a chewing form of tobacco) being the most commonly preferred tobacco form (54.2%) followed by cigarette/bidi (37.5%) and khaini (a chewing form of tobacco) (20.8%). About four-fifths of them (81.0%) were satisfied with their academic performance with median score percentage secured in past year annual examination of 70% (IQR: 50%–80%). Most of them (35.5%) have reported their average sleeping hours to be 8 with median (IQR) of 8 h (7–9 h). The median screen time for television, computer, mobile and other such electronic devices was reported to be 200 min with IQR of 120–300 min, whereas the median time spent on outdoor games was opined to be 90 min with IQR of 30–180 min. One in every tenth study participant (10.7%) reported H/O of abuse in antecedent 30 days of the survey with 56.0% and 28.0% reported only mental and physical abuse, respectively, while others reported abuse of both kinds. The median self-esteem score of the study participants was estimated to be 27 with IQR of 25–30. Considering resilience level, the mean total resilience score was found to be 62.4 ± 8.8 while for personal and caregiver resilience it was 35.4 ± 5.9 and 26.9 ± 4.3 respectively. In univariate analysis; age, gender, reading standard, living status with family, mothers' educational level, working status, per capita monthly family income (PCMI), academic satisfaction, secured marks in the last year annual examination, screen time, History of (H/O) abuse and self-esteem level were found to be significant determinates of resilience level of the study participants [Table 1].

In multiple linear regression analysis using backward method; increasing age (β : 0.564, standard error [SE]: 0.271, *P*: 0.038), male gender (β : 2.753, SE: 0.775, *P* < 0.001), high PCMI (≥ 18 USD [median]) (β : 1.829, SE: 0.743, *P*: 0.014), academic satisfaction (β : 2.003, SE: 0.962, *P*: 0.038), no history of abuse (physical or mental) in past 30 days (β : 2.752, SE: 1.220, *P*: 0.025) and increasing self-esteem score (β : 0.808, SE: 0.098, *P* < 0.001) were found to be positive determinants of the total resilience level. Overall, the model predicted 19.7% variability of the outcome variable [Table 2].

Psychological well-being was observed in half of the study participants (53.4%). Those who were psychologically well had higher mean resilience scores (personal: 37.2 ± 5.4 ,

Table 1: Distribution of the study participants as per their resilience scores (n=468)

Variable	Total, n (%)	Personal resilience, mean±SD	P	Caregiver resilience, mean±SD	P	Total resilience, mean±SD	P
Age in completed years							
<13 (median)	160 (34.2)	34.4±5.5	0.005*	26.2±3.9	0.007*	60.6±7.9	0.001*
≥13	308 (65.8)	36.0±6.0		27.3±4.4		63.3±9.1	
Gender							
Male	281 (60.0)	35.9±5.9	0.038*	27.6±4.3	<0.001*	63.5±8.9	0.001*
Female	187 (40.0)	34.7±5.7		25.9±4.1		60.7±8.5	
Standard							
6	156 (33.3)	35.0±5.3	0.011 [#]	26.3±4.1	0.001 [#]	61.3±8.1	0.001 [#]
7	156 (33.3)	34.7±6.1		26.5±4.5		61.2±9.0	
8	156 (33.3)	36.6±6.0		27.9±4.0		64.5±8.9	
Ethnicity							
OBC	147 (31.4)	36.0±6.1	0.235 [#]	27.4±4.4	0.239 [#]	63.5±9.5	0.160 [#]
SC/ST	69 (14.7)	34.6±5.6		26.6±4.9		61.3±9.1	
Others	252 (53.8)	35.3±5.8		26.7±3.9		62.0±8.2	
Religion							
Hindu	247 (52.8)	35.5±5.9	0.722*	27.2±4.4	0.091*	62.8±8.9	0.291*
Muslim	221 (47.2)	35.3±5.9		26.5±4.1		61.9±8.7	
Living with family							
Yes	441 (94.2)	35.6±5.8	0.015*	27.0±4.3	0.052*	62.6±8.7	0.010*
No	27 (5.8)	32.8±6.8		25.4±3.9		58.1±9.5	
Fathers educational level							
Below middle (0-7)	225 (48.1)	35.1±6.2	0.195*	26.5±4.3	0.058*	61.6±9.1	0.074*
Middle and above (≥8)	243 (51.9)	35.7±5.6		27.3±4.2		63.0±8.5	
Mothers educational level							
Below primary (0-4)	198 (42.3)	34.7±5.6	0.025*	26.7±4.4	0.328*	61.4±8.2	0.048*
Primary and above (≥5)	270 (57.7)	35.9±6.0		27.1±4.2		63.1±9.2	
Mother work for pay							
Yes	37 (7.9)	35.8±6.2	0.677*	28.5±3.3	0.018*	64.3±8.6	0.156*
No	431 (92.1)	35.4±5.9		26.7±4.3		62.2±8.8	
Per capita monthly family income (USD)							
<18 (median)	227 (48.5)	34.8±5.8	0.018*	26.5±4.2	0.029*	61.3±8.8	0.008*
≥18	241 (51.5)	36.1±5.9		27.3±4.3		63.4±8.7	
Current tobacco user							
Yes	24 (5.1)	34.4±6.3	0.397*	26.8±3.4	0.877*	61.2±8.7	0.522*
No	444 (94.9)	35.5±5.9		26.9±4.3		62.4±8.8	
Satisfied with academic performance							
Yes	379 (81.0)	35.8±5.8	0.006*	27.2±4.0	0.005*	63.0±8.5	0.001*
No	89 (19.0)	33.9±5.7		25.8±5.1		59.7±9.6	
Secured marks in last year annual examination (%)							
<70 (median)	215 (45.9)	34.8±5.6	0.032*	26.9±4.3	0.855*	61.7±8.7	0.129*
≥70	253 (54.1)	35.9±6.1		26.9±4.2		62.9±8.9	
Average sleep duration (h)							
<8 (median)	173 (37.0)	35.1±6.2	0.354*	26.7±4.4	0.438*	61.8±9.2	0.320*
≥8	295 (63.0)	35.6±5.6		27.0±4.2		62.7±8.6	
Screen time (min)							
≤300 (75 th percentile)	360 (76.9)	35.8±5.9	0.019*	27.2±4.2	0.024*	62.9±8.8	0.008*
>300	108 (23.1)	34.3±5.5		26.1±4.3		60.4±8.5	
Time spent on outdoor games (min)							
≤90 (median)	249 (53.2)	35.5±5.8	0.878*	26.7±4.4	0.262*	62.2±8.8	0.659*
>90	219 (46.8)	35.4±5.9		27.1±4.2		62.6±8.9	
H/O abuse in the past 30 days							
Yes	50 (10.7)	33.6±6.2	0.016*	26.2±4.7	0.206*	59.8±9.0	0.026*
No	418 (89.3)	35.7±5.8		27.0±4.2		62.7±8.7	

Contd...

Table 1: Contd...

Variable	Total, n (%)	Personal resilience, mean±SD	P	Caregiver resilience, mean±SD	P	Total resilience, mean±SD	P
Self-esteem score							
<27	214 (45.7)	33.7±5.7	<0.001*	25.7±4.6	<0.001*	59.4±8.6	<0.001*
≥27	254 (54.3)	36.9±5.7		27.9±3.7		64.9±8.2	

*Independent samples *t*-test, #One-way ANOVA. OBC: Other backward class, SC: Scheduled caste, ST: Scheduled tribe, H/O: History of, SD: Standard deviation

Table 2: Multiple linear regression analysis showing determinants of resilience of the study participants (n=468)

Variables	β, SE, P		
	Personal resilience	Caregiver resilience	Total resilience
Age (years): Increasing	0.346, 0.187, 0.064	-	0.564, 0.271, 0.038
Gender: Male	1.100, 0.536, 0.041	1.670, 0.372, <0.001	2.753, 0.775, <0.001
Staying with: Family	1.876, 1.098, 0.088	-	-
Mother work for pay: Yes	-	1.592, 0.674, 0.019	-
Per capita monthly family income (USD): ≥18	1.063, 0.512, 0.038	0.645, 0.366, 0.078	1.829, 0.743, 0.014
Satisfied with academic performance: Yes	-	0.962, 0.470, 0.041	2.003, 0.962, 0.038
H/O abuse in the past 30 days: No	2.100, 0.834, 0.012	-	2.752, 1.220, 0.025
Self-esteem score: Increasing	0.468, 0.067, <0.001	0.348, 0.048, <0.001	0.808, 0.098, <0.001
R ²	0.142	0.156	0.197

H/O: History of, β: Unstandardised beta, SE: Standard error

caregiver: 28.1 ± 3.9 , total: 65.4 ± 7.9) compared to their counterparts (personal: 33.4 ± 5.8 , caregiver: 25.5 ± 4.2 , total: 58.9 ± 8.5). Resilience level was found to be positively correlated with psychological well-being (personal resilience vs. psychological well-being [spearman rho correlation co-efficient (ρ): 0.325, P : < 0.001], caregiver resilience vs. psychological well-being [ρ : 0.302, P : < 0.001], total resilience vs. psychological well-being [ρ : 0.363, P : < 0.001]) [Figure 2].

DISCUSSION

We evaluated resilience level, its determinants and its effect on psychological well-being among school-going adolescents of Patna district by adaptation of cross-sectional design. We documented that with increment in age and reading standard resilience levels have increased. Males were found to be more resilient in comparison to their female counterparts. Living with family, higher educational level of mother and her working status, higher PCMI, academic satisfaction, higher scholastic performance and self-esteem level found to be the other positive influencers of reliance level, whereas higher screen time and H/O abuse acted as deterrent for the same. The resilience level of the study participants exerted a positive effect on their psychological well-being.

The mean total resilience score of the adolescents of the present study was observed to be 62.4 ± 8.8 while for personal and caregiver resilience it was 35.4 ± 5.9 and 26.9 ± 4.3 , respectively. By contrast, mean resilience score of Indian adolescents reported by a cross-country network analysis using CYRM-R by Hölte *et al.*^[18] (personal resilience: 41.4 ± 5.2 ,

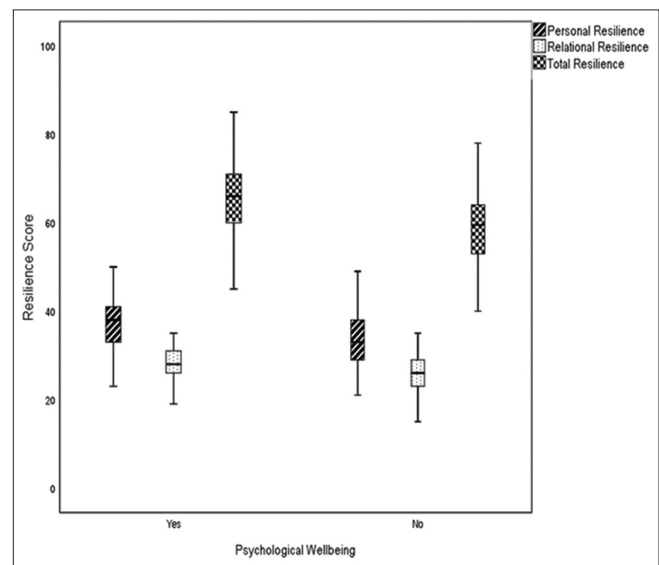


Figure 2: Resilience level and psychological well-being of the study participants (N = 468)

caregiver resilience: 29.5 ± 4.6 , total resilience: 70.9 ± 8.6) was higher compared to our observations. This reflects the need of resilience training among our study population. A study from the Purulia district of West Bengal by Sarkar *et al.*^[26] have reported that health empowerment interventions based on life skills education (LSE) are quite helpful in fostering resilience levels among adolescents. The said LSE intervention contained the following domains, namely motivation, discipline, nutrition, health and hygiene, relationship, self-awareness and sexuality.

Similarly, a study reported from urban Dehradun by Mathias *et al.*^[27] opined that health and resilience curriculum (HRC) among slum-dwelling out of school young women to be effective in fostering resilience. The said HRC was named as 'Nae Disha' and comprised modules based on the following themes: self-identity and esteem, identifying and managing emotions, mental health, communication skills, relationship skills and bouncing back forgiveness, self-care and drawing boundaries, planning skills and citizenship. Any or both of these two sets of interventions may be adopted based on the feasibility to foster resilience level among the school-going adolescents of the current study settings.

We found that with increment of age resilience level of the study participants has also increased. Similar observations were made by a study in the Gaza strip among Palestinian school-going adolescents by Aitcheson *et al.*^[15] In our study, resilience increased with the reading standard. This was dissimilar to the observations of Banerjee *et al.*^[14] who conducted a cross-sectional study among school-going adolescents of Kolkata reading in standard 7th–9th. The study reported higher resilience level for students reading in standard 7th and 8th compared to those reading in 9th standard. The reasons for the observed difference might be due to the inclusion of samples from only one school and enrolment of more students from 9th standard compared to other standards in the Kolkata study^[14] which were unlike us. Males were found to be more resilient in our study. A study conducted among Nepalese adolescents by Singh *et al.*^[13] reported that females had 1.73 times higher odds of having low resilience compared to males which was concordant with our results. Although, a study conducted in Australia among refugee adolescents by Ziaian *et al.*^[6] opined that females to be more resilient than males. The reasons for disparity might be due to the use of nonprobabilistic sampling (snow-ball) and recruitment of multi-country origin refugee adolescents by Ziaian *et al.*^[6] which were unlike us. Adolescents who were living with their families were found to be more resilient in the present study. This was in line with the observations of Banerjee *et al.*^[14] which reported higher time spent with parents as an important correlate of resilience. Similarly, adolescents who had higher educated and working mothers were found to be more resilient in the present study. Although, these associations could not be illustrated in the studies conducted by Singh *et al.*^[13] and Banerjee *et al.*^[14] Those who had higher PCMI were more resilient in our study. A study from Croatia by Radetić-Paić and Černe^[28] reported significant association between family monthly income and students' family resilience which was in line with our observations.

Self-rated scholastic performance emerged as a significant determinant of resilience level in our study. Banerjee *et al.*^[14] also documented similar observations. We found that those who did not had H/O abuse (physical or mental) in the preceding 30 days of data collection were more resilient compared to others. Adeyera *et al.*^[11] reported that adolescents who have experienced sexual or physical abuse were almost about twice the least likely to be highly resilient. An Ugandan study by

Namy *et al.*^[12] reported that adolescents who have faced the violence of any kind documented lower resilience scores. All these were in concordance with our observations. Self-esteem emerged as one of the strongest correlates of resilience in the present study. A study from China by Tian *et al.*^[10] reported similar observation. This might be because higher self-esteem level promotes optimal psychosocial functioning and exerts a positive impact on one's resilience level. This also enables one to achieve their academic goals. On the other hand, abuse of any kind hinders optimal psychosocial functioning and acts as a deterrent for resilience.

The resilience level of the study participants in the present study exerted a moderate positive impact ($\rho = 0.363$) on their psychological well-being. A study from southern India by Satyanarayana *et al.*^[8] reported negative association between resilience and psychological distress with higher severity of distress associated with lower resilience score. Ziaian *et al.*^[6] reported that adolescents with depression were less resilient compared to others. Konaszewski *et al.*^[7] from Poland also reported a strong correlation (Pearson's correlation co-efficient (r) = 0.71) between resilience score and mental well-being. Thus, resilience is a quality which is vital concerning the mental well-being of an adolescent as the consistency was observed between prior literature and our observations concerning this.

Study limitations

As any other observational study, our investigation is also not devoid of biases. Due to adaptation of cross-sectional design, we could not ascertain the found determinants of resilience to be causal. The same could be said for the relationship between resilience and psychological well-being. Second, as we relied upon self-reported data for the study, so there were remote chances of reporting and social desirability-related biases. Although, due to pretesting and the use of pictograms for the responses of the scale items might have alleviated the chances of biases arising out of comprehension. Moreover, the responses were recorded in the presence of study investigators. Thus, responders always had option to seek help in case of any doubt.

CONCLUSIONS

The resilience level of the adolescents of the present study was found to be lower than prior reported literature which was really bothering. Abuse, academic satisfaction and self-esteem were the modifiable determinates of resilience that could be elucidated in this investigation. Thus, these might be kept in mind while formulating specific interventions (i.e. LSE, HRC) to intervene. Resilience level positively influenced psychological well-being. Parents and teachers of these adolescents must create an enabling environment at both home and school to protect them from unnecessary abusive instances, nurture their self-esteem and thereby fostering resilience level among them.

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Conflicts of interest

There are no conflicts of interest.

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