

ORIGINAL ARTICLE

IMPACTS OF NEGATIVE LIFE EVENTS ON MENTAL HEALTH OF UNDERGRADUATE STUDENTS; RECOVERING FROM ADVERSITY AND ENHANCING RESILIENCE: A CROSS-SECTIONAL STUDY IN PESHAWAR

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ABSTRACT

Background: Negative life events (NLEs) can substantially affect the mental health of students. Resilience, however, plays a protective role. This study aimed to assess the prevalence and severity of mental health problems associated with negative life events in undergraduate students and to explore the moderating role of resilience in lessening their impact.

Materials & Methods: A cross-sectional observational study was conducted over six months in private medical and non-medical colleges in Peshawar, Pakistan, Using the WHO sample size calculator, 340 undergraduate students were selected. Participants completed standardized, anonymous questionnaires, including a demographic survey, a negative life events scale, the DASS-21 mental health assessment tool, and the Connor-Davidson Resilience Scale (CD-RISC). Reliability was assessed using Cronbach's alpha, and statistical analyses such as correlation, regression, and mediation were conducted.

Results: The scales showed good reliability, with Cronbach's alpha values of 0.811 for NLE, 0.859 for mental health impact (MHI), and 0.798 for resilience (RES). Correlation analysis revealed a significant positive relationship between NLE and MHI ($r = 0.108$, $p = 0.047$) and a strong negative correlation between MHI and RES ($r = -0.376$, $p < 0.001$). Regression analysis indicated that NLE significantly predicted resilience ($\beta = -0.0546$, $p = 0.0359$), while resilience strongly predicted MHI ($\beta = -0.5233$, $p < 0.0001$). Mediation analysis confirmed that resilience partially mediated the relationship between NLE and mental health, with an indirect effect of 0.0286.

Conclusion: Negative life events harm students' mental health, but resilience serves as a protective factor. Strengthening resilience through targeted interventions can help mitigate these effects, highlighting its importance in educational settings.

KEY WORDS: Coping Behaviour; Mental Health; Negative Life Events; Psychological; Resilience; Stress.

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INTRODUCTION

NLEs have attracted a lot of interest, especially concerning their effects on undergraduate students' mental health. People who go from lower school to

higher education frequently experience a variety of pressures that might have a negative psychological impact.¹ Negative life events (NLEs) are stressful and challenging experiences that cause significant changes and difficulties in people's lives. These can be sudden and dramatic events like the loss of loved ones, serious illness, rape, or traumatic accidents.² Individuals who encounter more negative experiences are more stressed out and exhibit more severe signs of mental illness.³

The link between negative life experiences (NLEs) and mental well-being is intricate and multifactorial. Research indicates that students encountering multiple adverse life events frequently exhibit increased psychological distress and reduced life satisfaction.¹

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Mental well-being is a condition of wellness in which people can recognize their abilities, manage stress efficiently, and function optimally in daily life.⁴ In this sense, resilience functions as a mediator. The capacity of an individual within a social system to adapt and cope when faced with different challenges is known as resilience.⁵

A study conducted in the U.S. revealed that negative life events (NLEs) significantly affect mental health, with parental death (78.01%), sibling loss (31.17%), job loss (30.67%), spouse infidelity (22.74%), parental divorce (18.80%), and unemployment (17.74%) being major contributing factors.⁶ A Romanian study linked NLEs to psycho-emotional destabilization. In one year, participants reported one to five major life events (55.26%) to more than 16 (2.63%) that caused stress and anxiety.⁷ The same study in Japan found that 14.7% of NLEs were associated with high-risk mental disorders.⁸ A study conducted in Oman reported that high levels of stress, anxiety, and depression were prevalent, with 31%, 39.4%, and 56.1% of students respectively experiencing these issues. Such psychological challenges can lead to decreased motivation and lower academic achievement.⁹ Another Irish study found 24.5% co-morbidity in depression and anxiety.⁴ A study conducted during the COVID-19 pandemic found that students who perceived higher levels of resilience were better able to manage academic stressors and maintain their performance. This suggests that enhancing resilience through targeted interventions could be a viable strategy for supporting students facing adversity.¹⁰ Research indicates that strong social networks can buffer the effects of NLEs, helping students cope more effectively with challenges.¹¹

According to a study in Malaysia, 67% of respondents had family concerns, 39.2% had spouse or lover issues, 58.5% had educational issues, 37% had moderate depression, 27% had severe, 18% had mild, and 18% had normal. A 1-unit increase in family NLEs increased depression by 70.3%. However, a 1-unit increase in resilience reduced depression by 37.7%.¹² Another study in Turkey found that some people can recover from NLEs and become stronger and more resilient.¹³ This study emphasizes resilience and examines how negative life events (NLEs) affect students in private medical and non-medical colleges in Peshawar Pakistan, and their mental health. By identifying student difficulties and drawing on global research, we aim to inform targeted interventions and support systems to increase student well-being.

MATERIALS AND METHODS

This cross-sectional analytical study was conducted to assess the impact of negative life events on the mental health of undergraduate students, focusing on resilience as a mediating factor. The study was carried out in private medical and non-medical col-

leges in private medical and non-medical colleges in Peshawar, Pakistan, over six months, from 16th February to 21st July 2024. The sample size was calculated using the WHO sample size calculator, resulting in 340 participants based on a population of 2000, with a 99% confidence level and a 5% margin of error. Participants were selected using a non-probability convenience sampling technique, and data were collected through a structured self-administered questionnaire comprising three standardized scales.

Undergraduate students from private medical and non-medical colleges who provided informed consent were included, while those unwilling to participate or diagnosed with mental health conditions or severe illnesses were excluded. Data were collected using a structured, self-administered questionnaire ensuring anonymity and confidentiality. Assistance was provided to participants to facilitate accurate responses. The questionnaire comprised demographic information, a negative life events scale measuring frequency and severity, the Depression Anxiety Stress Scale (DASS-21) for mental health assessment, and the Connor-Davidson Resilience Scale (CD-RISC) for evaluating resilience levels.

The internal consistency of the instruments was assessed using Cronbach's alpha, demonstrating good reliability for all scales. Descriptive statistics, including frequency and percentage distributions, were used to summarize demographic characteristics. Pearson correlation coefficients were computed to assess relationships between negative life events, mental health impact, resilience, and emotional distress. Ethical approval was obtained before conducting the study. Informed consent was taken from all participants, ensuring voluntary participation with no penalties for withdrawal. Confidentiality and anonymity were strictly maintained

RESULTS

A total of 340 respondents participated in study. Table 1 outlines Participants' demographic data. The gender distribution reveals that 155 individuals (45.6%) are male, whereas 185 individuals (54.4%) are female, indicating a greater proportion of female participants in the sample. All respondents identify as Muslim, accounting for 100% of the sample's religious affiliation. The majority of participants were enrolled in public-sector institutions (233; 68.5%), while 106 (31.2%) attended private-sector institution. Out of the total respondents, 215 (63.2%) were students from medical colleges, while 125 (36.8%) were from non-medical colleges.

Table 2 presents the reliability analysis using Cronbach's alpha. Negative Life Events (NLE) with 20 items showed good reliability ($\alpha = 0.811$). Mental Health Impact (MHI) had excellent consistency ($\alpha = 0.859$) across 10 items, while Resilience (RES) also demonstrated good reliability ($\alpha = 0.798$) with 10 items.

Table 3 presents the correlation analysis among Negative Life Events (NLE), Mental Health Impact (MHI), and Resilience (RES). NLE and MHI show a weak but significant positive correlation ($r = 0.108$, $p = 0.047$), while MHI and RES have a strong negative correlation ($r = -0.376$, $p < 0.001$), suggesting higher mental health impact is linked to lower resilience. NLE and RES also show a slight negative correlation ($r = -0.114$, $p = 0.036$), indicating resilience decreases with more negative life events.

Table 4 presents the regression analysis with resilience (RES) as the outcome variable. The R value (0.1138) indicates a weak positive correlation between NLE and resilience. The R-squared value (0.013) shows that NLE explains only 1.3% of the variance in resilience. The mean-squared error (MSE) is 31.2822, while the F-statistic (4.4382, $df1 = 1$, $df2 = 338$) and p-value (0.0359) confirm statistical significance at the 0.05 level. Despite low explanatory power, the findings suggest a meaningful link between NLE and resilience.

Table 1. Demographic Profile of the Respondents

Variables	Description	Frequency	Percent	Cumulative Percent
Sex	Male	155	45.6	45.6
	Female	185	54.4	100.0
	Total	340	100.0	
Religion	Islam	340	100.0	100.0
	Total	340	100	
Type of Institution	Public	233	68.5	68.7
	Private	106	31.2	100.0
	Total	339	99.7	
Academic Field	Medical	215	63.2	63.2
	Non-Medical	125	36.8	100.0
	Total	340	100.0	

Table 2. Reliability Analysis

Variable	Code	Items	Score
Negative Life Events	NLE	20	0.811
Mental Health Impact	MHI	10	0.859
Resilience	RES	10	0.798

Table 3. Correlation Analysis

Correlations		NLE	MHI	RES
NLE	Pearson Correlation	1	.108*	-.114*
	Sig. (2-tailed)		.047	.036
		340	340	340
MHI	Pearson Correlation	.108*	1	-.376**
	Sig. (2-tailed)	.047		.000
	N	340	340	340
RES	Pearson Correlation	-.114*	-.376**	1
	Sig. (2-tailed)	.036	.000	
	N	340	340	340

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. Model Summary - Outcome Variable is Resilience

R	R-sq	MSE	F	df1	df2	P
0.1138	0.013	31.2822	4.4382	1	338	0.0359

Table 5 presents regression results with Resilience (RES) as the outcome variable. The constant term (21.6326) represents the predicted resilience level when Negative Life Events (NLE) is zero, with a significant t-value of 11.6078 ($p = 0.000$). The NLE coefficient (-0.0546) indicates that each additional negative life event decreases resilience by 0.0546 units. This effect is statistically significant ($p = 0.0359$), with a confidence interval of -0.1056 to -0.0036, confirming a negative relationship between NLE and resilience.

Table 6 summarizes the regression model with Mental Health Impact (MHI) as the outcome variable. The R value (0.3821) indicates a moderate positive association between Negative Life Events (NLE), Resilience (RES), and MHI. The R-squared value (0.146) suggests the model explains 14.6% of the variance in MHI. The Mean Squared Error (MSE) is 54.592. The model is statistically significant ($F = 28.8069$, $p = 0.000$), with at least one predictor significantly contributing to MHI variation.

Table 7 presents regression coefficients for Mental Health Impact (MHI). The constant term (33.8745) is significant ($p = 0.000$). Negative Life Events (NLE) has a coefficient of 0.0447 but is not statistically significant ($p = 0.1951$). In contrast, Resilience (RES) has a significant negative effect on MHI ($\beta = -0.5233$, $p = 0.000$), indicating that higher resilience reduces mental health impact. Confidence intervals confirm

the insignificance of NLE and the strong negative association of RES with MHI.

Table 8 summarizes the regression model for Mental Health Impact (MHI). The R value (0.1078) shows a weak positive correlation with Negative Life Events (NLE), while the R-squared value (0.0116) indicates that only 1.16% of MHI variance is explained. The model is statistically significant ($F = 3.9727$, $p = 0.047$), but the low R-squared suggests a minimal impact of NLE on MHI.

Table 9 shows the regression coefficients for Mental Health Impact (MHI). The constant term (22.555) is significant ($p = 0.000$), representing MHI when Negative Life Events (NLE) is zero. The NLE coefficient (0.0733) indicates a slight but significant increase in MHI per unit rise in NLE ($p = 0.047$), with a confidence interval of 0.001 to 0.1457.

Table 10 summarizes the effects of NLE on Mental Health Impact (MHI), with Resilience (RES) as a mediator. The total effect of NLE on MHI is 0.0733 ($p = 0.047$), indicating a significant overall impact. However, the direct effect (0.0447, $p = 0.1951$) is not significant, suggesting NLE does not directly affect MHI when resilience is considered. The indirect effect through resilience is 0.0286, with a confidence interval (0.0004–0.0581) excluding zero, confirming statistical significance. This indicates that resilience mediates the relationship between NLE and mental health impact.

Table 5. Table of Coefficients – Outcome Variable is Resilience

Variable	Coeff	SE	t	p	LLCI	ULCI
Constant	21.6326	1.8636	11.6078	0	17.9668	25.2984
NLE	-0.0546	0.0259	-2.1067	0.0359	-0.1056	-0.0036

Table 6. Model Summary - Outcome Variable is Mental Health Impact

R	R-sq	MSE	F	df1	df2	P
0.3821	0.146	54.592	28.8069	2	337	0.000

Table 7. Table of Coefficients – Outcome Variable is Mental Health Impact

Variables	coeff	se	t	p	LLCI	ULCI
constant	33.8745	2.9116	11.6344	0.000	28.1473	39.6016
NLE	0.0447	0.0345	1.2981	0.1951	-0.0231	0.1126
RES	-0.5233	0.0719	-7.2821	0.000	-0.6646	-0.3819

Table 8. Model Summary - Outcome Variable is Mental Health Impact

R	R-sq	MSE	F	df1	df2	P
0.1078	0.0116	62.9955	3.9727	1	338	0.047

Table 9. Table of Coefficients – Outcome Variable is Mental Health Impact

Variable	Coeff	SE	t	p	LLCI	ULCI
constant	22.555	2.6446	8.5286	0	17.353	27.757
NLE	0.0733	0.0368	1.9932	0.047	0.001	0.1457

Table 10. Total, Direct and Indirect Effect of NLE (X) on Mental Health Impact (Y)

Total effect of X on Y					
Effect	se	t	p	LLCI	ULCI
0.0733	0.0368	1.9932	0.047	0.001	0.1457
Direct effect of X on Y					
Effect	se	t	p	LLCI	ULCI
0.0447	0.0345	1.2981	0.1951	-0.0231	0.1126
Indirect effect(s) of X on Y:					
	Effect	BootSE	BootLLCI	BootULCI	
RES	0.0286	0.0147	0.0004	0.0581	

DISCUSSION

The study's goals were to examine the impact of NLEs on undergraduate students' mental well-being and the intermediary role of resilience in the relation between NLEs and mental health. NLEs are thought to have a big influence on students' mental states, which is leading to an increased number of students experiencing mental health problems. However, resilience serves as a critical buffer, with higher resilience levels correlating with better mental health outcomes. This study's findings align with existing research. For example, Peng et al.¹⁴ found that resilience, together with social support and personality traits, plays a crucial role in reducing the adverse impacts of life events on mental health. Similarly, Liu et al.¹⁵ demonstrated the mediating role of resilience in the relationship between NLEs and depression among adolescents. The current study corroborates these findings, demonstrating that the positive relationship between non-resilience and NLE-related mental health risk is mediated by general resilience, which underlines the importance of including a resilience factor in public mental health efforts. Furthermore, Wu et al.¹⁶ and Sun et al.¹⁷ also demonstrated that resilience had a favorable effect on mental health in Chinese students, supporting the findings of the present study.

An interesting point is that a relatively poor correlation was found between NLE and resilience, and this study contrasted with the findings of Tang et al.¹⁸, who evidenced a favourable link between negative life events and well-being. This difference could be due to cultural context or characteristics of the sample population, but it also implies that there are other variables that determine resilience that were not under the consideration of this study - perhaps social support or coping mechanisms (Mello¹⁹; Torres-Chávez et al.²⁰). As Xu et al.²¹ suggested, further research is necessary to explore these potential influences, particularly in diverse cultural contexts. One limitation of the study is its cross-sectional design, which restricts the ability to establish causal relationships between negative life events, resilience, and mental health. Furthermore, the findings' generalizability is

limited by their focus on a specific geographical and demographic group. Future research could address these limitations by employing longitudinal methodologies and incorporating more diverse samples, which would provide a better understanding of how resilience evolves over time and in various populations. Wu et al.²² and Xu & Yang²³ have similarly pointed out the need for such approaches to better understand resilience dynamics.

Further research on resilience-building interventions could prove invaluable. Abulfaraj et al.²⁴ and Sood & Sharma²⁵ suggest that targeted resilience training can improve mental health outcomes, especially in high-stress environments like universities. The study of tailoring these interventions to cultural and social contexts would provide valuable information for mental health professionals. For instance, Fan et al.²⁶ highlight the need for culturally sensitive approaches to resilience strategies in Chinese students, indicating the importance of a nuanced approach to resilience training across diverse populations.

CONCLUSIONS

The study highlights the intricate relationship between NLEs, Resilience (RES), and Mental Health Impact (MHI) among undergraduate students. Greater exposure to NLEs is linked to lower resilience and increased psychological distress, indicating a statistically significant but moderate impact on mental health. However, resilience plays a crucial mediating role, significantly reducing the negative effects of NLEs on mental well-being. Enhancing resilience through social, psychological, and educational interventions can be a valuable approach to supporting students' mental well-being and reducing the impact of negative life events.

Recommendations: To enhance student well-being, educational institutions should implement resilience-building seminars, peer support networks, and counseling services. Policymakers must prioritize mental health resources to help students cope with adversity effectively. Additionally, further longitudinal research is needed to assess the long-term impact of resilience-focused interventions on mental health.

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CONFLICT OF INTEREST

Authors declare no conflict of interest.

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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	NQ, WK
Acquisition, Analysis or Interpretation of Data:	NQ, WK, HK, MN, MBS, IS
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All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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