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ALEXITHYMIA AND EMOTIONAL EATING: THE MEDIATING ROLE OF IMPULSIVITY AND THE MODERATING ROLE OF MINDFULNESS

Original Article

Pulwasha Anwar[1]*, Attia Rani[2], Hadeeqa Anmol[3], Aisha Jahangir[4], Sana Azam[5], Alishba Ijaz[6], Sana Afzal[6], Sayeda Iqra Geelani[7]

[1]Ph.D. Student, Department of Psychology, Institute of Social Sciences, Bursa Uludağ University, Bursa, Turkey.
[2]Lecturer of Psychology, Incharge at Counselling Center, Faculty of Humanities and Social Sciences, University of South Asia, Lahore, Pakistan.
[3]Consultant Clinical Psychologist, CMH, Lahore, Pakistan.
[4]Lecturer of Psychology, Iqra University North Campus, Karachi, Pakistan.
[5]Clinical Psychologist and Research Assistant, Pakistan Institute of Living and Learning, Lahore, Pakistan.
[6]BS Scholar of Clinical Psychology, Department of Humanities and Social Sciences, GIFT University, Gujranwala, Pakistan.
[7]ABA Therapist, Help Autism Center, Lahore, Pakistan.

Corresponding Author: Pulwasha Anwar, Ph.D. Student, Department of Psychology, Institute of Social Sciences, Bursa Uludağ University, Bursa, Turkey, pulwashakhansrk@gmail.com

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ABSTRACT

Background: Alexithymia, a trait marked by difficulties in identifying and expressing emotions, has been linked to various maladaptive behaviors, including emotional eating. However, there is limited research examining the underlying psychological mechanisms such as impulsivity and mindfulness, particularly in culturally distinct student populations. This study addresses the gap by exploring the mediating role of impulsivity and the moderating role of mindfulness in the relationship between alexithymia and emotional eating among university students in Pakistan and Turkey.

Objective: To investigate how impulsivity mediates and mindfulness moderates the relationship between alexithymia and emotional eating in young adults.

Methods: A cross-sectional correlational design was employed, and data were collected using purposive sampling from 280 university students (aged 18–25) in Pakistan and Turkey. The Perth Alexithymia Questionnaire, Barratt Impulsiveness Scale, Mindfulness Attention Awareness Scale, and Emotional Eating Scale were administered. Data analysis was performed using SPSS version 26 and Hayes' PROCESS Macro Version 4.2. Pearson's correlations, mediation (Model 4), and moderation (Model 1) analyses were conducted.

Results: Alexithymia was significantly and positively correlated with impulsivity ($r = .84$, $p < .01$) and emotional eating ($r = .95$, $p < .01$), while negatively and non-significantly correlated with mindfulness ($r = –.05$, $p > .05$). Impulsivity was positively related to emotional eating ($r = .92$, $p < .01$). Mediation analysis revealed a significant direct effect of alexithymia on impulsivity ($\beta = .50$, $SE = .01$, $p < .001$) and of impulsivity on emotional eating ($\beta = .53$, $SE = .03$, $p < .001$). Mindfulness did not significantly moderate the relationship between alexithymia and emotional eating ($\beta = .001$, $SE = .000$, $p > .05$).

Conclusion: Findings highlight impulsivity as a key mediator in the link between alexithymia and emotional eating. However, mindfulness did not demonstrate a moderating effect. These insights underline the need for targeted interventions to improve emotional regulation and reduce maladaptive coping strategies in university populations.

Keywords: Alexithymia, Emotional Eating, Impulsivity, Mindfulness, Psychological Stress, Student Health, Young Adults.

INTRODUCTION

Alexithymia, often referred to as emotional blindness, is a neuropsychological trait characterized by significant difficulties in identifying, describing, and processing one's emotions. This condition is frequently associated with impaired emotional awareness, poor interpersonal communication, and a diminished ability to engage in adaptive emotion regulation strategies, leading to adverse psychological and behavioral outcomes (1,2). One such outcome is emotional eating—a maladaptive coping mechanism whereby individuals consume food in response to negative emotional states, such as anxiety, loneliness, or sadness, rather than physiological hunger (3,4). Emotional eating has been increasingly recognized as a behavioral pattern contributing to obesity, metabolic disorders, and compromised mental well-being, particularly among young adults navigating academic and social pressures. Emerging empirical evidence suggests a strong association between alexithymia and emotional eating. Individuals with poor emotional insight may turn to food as a substitute for unmet emotional needs, utilizing it as a readily available, albeit temporary, source of comfort (5). However, the pathway from emotional unawareness to dysregulated eating behavior appears to be more complex and may be influenced by intermediary psychological traits. Impulsivity—defined as the predisposition to act on urges without adequate reflection—has consistently been linked to both alexithymia and emotional dysregulation (6,7). Research indicates that individuals with high alexithymic traits exhibit elevated levels of impulsivity, which may amplify their vulnerability to emotionally driven, non-homeostatic eating behaviors (8). Thus, impulsivity could potentially serve as a mediating mechanism through which alexithymia contributes to maladaptive eating patterns.

In contrast, mindfulness has emerged as a psychological construct with significant therapeutic relevance in the regulation of emotions and behaviors. Defined as a conscious, non-judgmental awareness of the present moment, mindfulness has been associated with improved emotional clarity, reduced impulsivity, and healthier eating habits (9–11). It may offer a protective buffer against the negative consequences of alexithymia, enhancing an individual's ability to recognize and tolerate distress without resorting to impulsive coping strategies. Several studies have demonstrated that mindfulness training can attenuate emotional eating, particularly in populations exhibiting high levels of alexithymia (12). Furthermore, mindfulness is inversely correlated with both alexithymia and impulsivity, suggesting its potential as a moderating factor in this psychological triad (13). Cultural context further shapes emotional development and coping strategies. In countries like Pakistan and Turkey, sociocultural factors—such as collectivist values, stigma around emotional expression, and academic pressures—can exacerbate emotional suppression, particularly among university students. These environments often discourage open discussions about mental health, fostering conditions conducive to alexithymia and its behavioral consequences. While mindfulness practices have roots in both South Asian and Anatolian traditions, their integration into formal mental health care remains limited. As a result, culturally specific vulnerabilities and underutilized therapeutic tools co-exist in a space that demands targeted psychological research. Considering these interrelated psychological and cultural dimensions, the present study seeks to investigate the association between alexithymia and emotional eating among university students in Pakistan and Turkey. Specifically, it examines whether impulsivity mediates this relationship and whether mindfulness moderates it. By exploring these mechanisms within culturally distinct but psychosocially comparable student populations, this study aims to generate nuanced insights into emotional health and behavioral regulation in young adults. The objective is to better understand how difficulties in emotional processing contribute to maladaptive coping behaviors and to identify modifiable factors, such as mindfulness, that could inform culturally tailored interventions.

METHODS

The present study employed a cross-sectional correlational design to examine the relationship between alexithymia, impulsivity, mindfulness, and emotional eating among university students in Turkey and Pakistan. A purposive sampling technique was used to recruit participants aged between 18 and 25 years, enrolled in undergraduate or graduate programs. Inclusion criteria required that participants be currently enrolled university students within the defined age range, capable of understanding English, and willing to provide informed consent. Individuals with diagnosed psychiatric conditions or those currently undergoing psychological treatment were excluded to minimize potential confounding variables related to clinical symptomatology. Data collection involved the administration of four standardized self-report instruments. The Perth Alexithymia Questionnaire (PAQ), developed by Preece in 2018, comprised 24 items rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), with higher scores reflecting greater levels of alexithymia. The PAQ has demonstrated strong psychometric properties with a reported internal consistency of 0.87. Impulsivity was assessed using the Barratt Impulsiveness Scale (BIS), a 30-item instrument introduced by Barratt in 1975. Responses were recorded on a 4-point scale ranging from 1 (rarely/never) to 4 (almost always/always), with Cronbach's alpha values reported

between 0.69 and 0.83 in prior research. Mindfulness was measured using the Mindfulness Attention Awareness Scale (MAAS), developed by Carlson and Brown in 2005. This scale consists of 15 items, each rated from 1 (almost always) to 6 (almost never), where higher scores indicate greater mindfulness. The MAAS has demonstrated strong reliability in community samples, with Cronbach's alpha ranging from 0.73 to 0.91. Emotional eating was assessed via the Emotional Eating Scale (EES), originally developed by Arnow and Kenardy in 1995 (14-17). The 25-item scale uses a 5-point rating format from 1 (no desire to eat) to 5 (an overwhelming urge to eat), with an internal consistency coefficient reported at 0.80. All instruments used in the study were administered in English, and permissions for their use were obtained from the original authors.

Participants were provided with a detailed informed consent form explaining the purpose of the study, confidentiality assurances, and the voluntary nature of participation. It was explicitly stated that they could withdraw at any time without facing any negative consequences. After providing written consent, participants completed the questionnaires either online or in paper form, with an average completion time of approximately 15 to 25 minutes. The study adhered to the ethical standards set forth by the American Psychological Association (APA 7) and received approval from the relevant Institutional Review Boards (IRBs) in both participating countries. Data was entered and analyzed using IBM SPSS Statistics version 26. Descriptive statistics were calculated to summarize participant demographics and scale scores. Pearson's correlation coefficients were used to examine bivariate relationships between variables. Mediation and moderation analyses were conducted using PROCESS macro by Hayes to test the hypothesized models involving impulsivity as a mediator and mindfulness as a moderator in the association between alexithymia and emotional eating.

RESULTS

The study analyzed data from 280 university students, comprising 240 Pakistani (86%) and 40 Turkish (14%) participants. The mean age was 21.49 years (SD = 5.42). The gender distribution included 135 men (48%) and 145 women (52%). The average weight and height were 61.19 kg (SD = 11.92) and 5.42 feet (SD = 0.36), respectively. Regarding socio-economic background, 41% of the participants identified as lower class, 30% as middle class, and 29% as upper class. Most participants reported experiencing safety and stability in their home environments (75%), while 13% indicated physical support and 12% reported emotional support. A total of 170 students (61%) were day scholars, whereas 110 (39%) were hostellers. Academic enrollment included 238 (85%) in bachelor's programs, 16 (6%) in master's, and 26 (9%) in PhD programs, with a mean CGPA of 3.29 (SD = 0.48). Bivariate correlation analysis revealed significant positive associations between alexithymia and both impulsivity ($r = .84$, $p < .01$) and emotional eating ($r = .95$, $p < .01$), whereas its relationship with mindfulness was negative but not statistically significant ($r = –.05$, $p > .05$). Impulsivity was also positively correlated with emotional eating ($r = .92$, $p < .01$), but negatively and non-significantly correlated with mindfulness ($r = –.06$, $p > .05$). Furthermore, the correlation between mindfulness and emotional eating was negative and non-significant ($r = –.05$, $p > .05$).

To test the hypothesized mediation model, Hayes' Process Macro Model 4 was used. Results demonstrated a significant direct effect of alexithymia on impulsivity ($\beta = .50$, SE = .01, $p < .001$) and a significant direct effect of alexithymia on emotional eating ($\beta = .46$, SE = .01, $p < .001$). Impulsivity also had a significant effect on emotional eating ($\beta = .53$, SE = .03, $p < .001$). The model accounted for 71% of the variance in impulsivity ($F(1,278) = 709.91$, $p < .001$) and 95% of the variance in emotional eating ($F(2,277) = 3060.41$, $p < .001$). The indirect effect of alexithymia on emotional eating through impulsivity was also significant ($\beta = .26$, standardized $\beta = .35$, 95% CI = .31 to .39), confirming the mediating role of impulsivity. For moderation analysis, Hayes' Process Macro Model 1 was employed to examine whether mindfulness moderated the relationship between alexithymia and emotional eating. The analysis showed that alexithymia remained a significant predictor of emotional eating ($\beta = .66$, SE = .04, $p < .001$). However, the direct effect of mindfulness on emotional eating was not significant ($\beta = –.11$, SE = .08, $p > .05$). Additionally, the interaction effect between alexithymia and mindfulness was non-significant ($\beta = .001$, SE = .000, $p > .05$), suggesting that mindfulness did not moderate the association between alexithymia and emotional eating.

Table 1: Characteristics of Participants (N=280)

Characteristics	f	%	M	SD
Pakistani Students	240	86		
Turkish Students	40	14		
Age			21.49	5.42
Gender				

Characteristics	f	%	M	SD
Men	135	48		
Women	145	52		
Weight			61.19	11.92
Height			5.42	0.36
Socio-economic Status				
Lower Class	116	41		
Middle Class	84	30		
Upper Class	80	29		
Home Environment				
Emotional Support	33	12		
Physical Support	36	13		
Safety and Stability	211	75		
Student Categories				
Day Scholar	170	61		
Hostellers	110	39		
Current Academics				
Bachelor	238	85		
Master	16	6		
PhD	26	9		
CGPA			3.29	.48

Note. f= Frequency, %= Percentage, M= Mean, SD= Standard Deviation

Table 2: Correlational Analysis (N= 280)

Variables	1	2	3	4
1.Alexithymia	-	.84**	-.05	.95**
2.Impulsivity		-	-.06	.92**
3.Mindfulness			-	-.05
4.Emotional Eating				-

Note. **p<.01

Table 3: Mediation Analysis Using Hayes Process Macro 4.2, Model 4 (N=280)

	Consequences							
	Impulsivity (M)				Emotional Eating (Y)			
Antecedents		β	SE	P		B	SE	P
Alexithymia (X)	a	.5	.01	.001	c’	.46	.01	.001
Impulsivity(M)	-				B	.53	.03	.001
Constant	I	40.10	1.78	.001	I	-3.15	1.52	.04
	R2= .71	F (1,278) =709.91		P<.001	R2=.95	F (2,277) =3060.41		P<.001

Note. *p<.05, **p<.01, ***p<.001,

Table 4: Indirect Effect of Alexithymia on Emotional Eating Through Impulsivity

Indirect Path	Effect	Standardized Effect	LLCI	ULCI
Impulsivity	.26	.35	.31	.39

Table 5: Moderation Analysis Using Hayes Process Macro 4.2, Model 1 (N=280)

Variables	Betaβ	β	SE	p	R2	F	LLCI	ULCI
					.90	921.37		
Alexithymia	.66		.04	.001			.56	.75
Mindfulness	-.11		.08	-1.39			-.27	.04
M X A	.001		.000	.16			-.0005	.002

Note. ***p<.001, A= Alexithymia, M= Mindfulness

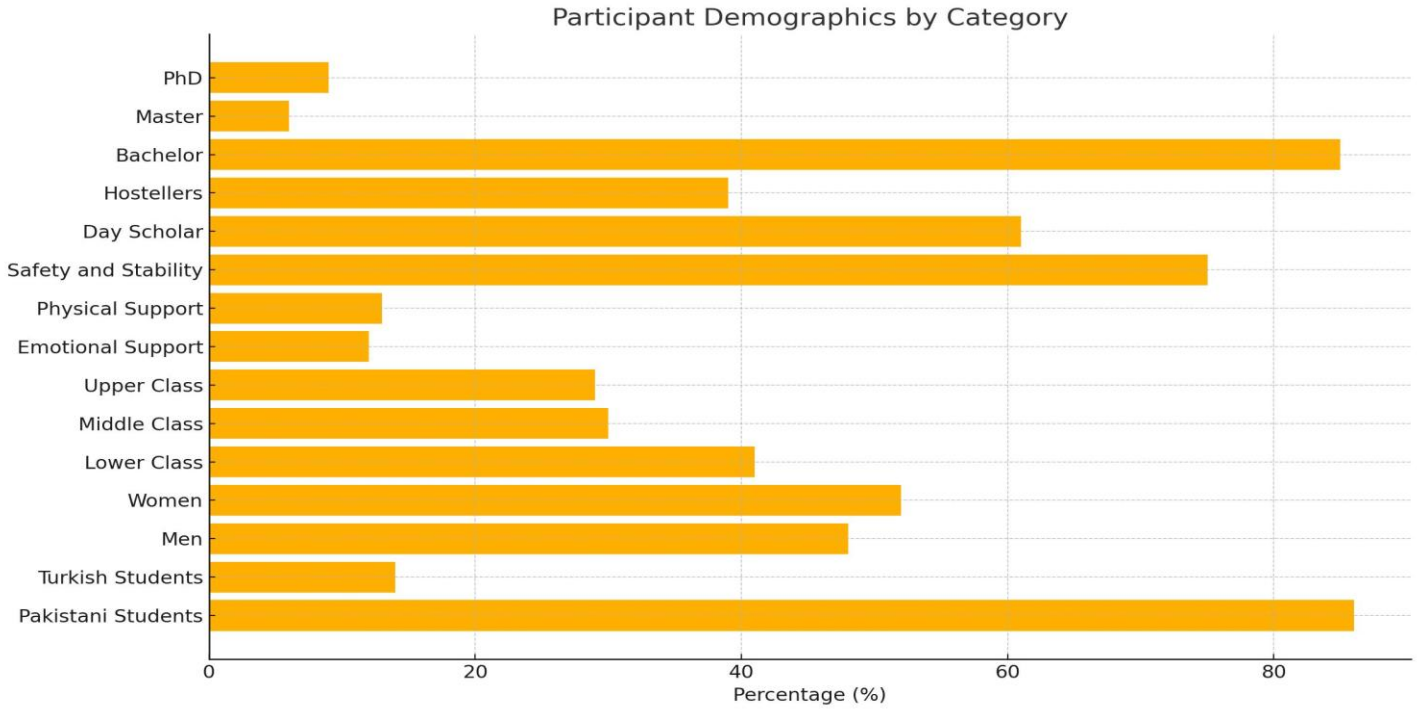

Figure 1 Particiants Demographics by Category

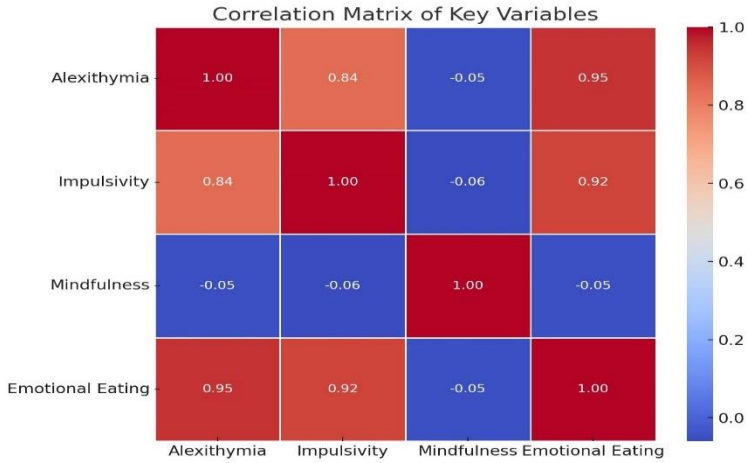

Figure 2 Correlation Matrix of Key Variables

DISCUSSION

The present study sought to integrate alexithymia, impulsivity, mindfulness, and emotional eating into a comprehensive psychological model to explore their interrelated dynamics among university students in Pakistan and Turkey. Although existing literature has addressed these variables independently, few studies have examined their simultaneous interaction in a single framework, particularly within non-Western educational contexts. By focusing on impulsivity as a mediator and mindfulness as a potential moderator, the study provided a culturally nuanced perspective on emotional regulation and maladaptive coping behaviors in young adults. The findings partially supported the initial hypothesis. Alexithymia was positively and significantly associated with both impulsivity and emotional eating, reaffirming the well-established notion that difficulties in emotional identification and articulation contribute to maladaptive behaviors. Impulsivity also demonstrated a strong positive association with emotional eating, highlighting its role in driving uncontrolled consumption in response to emotional distress. Conversely, mindfulness was negatively but non-significantly associated with alexithymia, impulsivity, and emotional eating. These results are consistent with previous studies conducted in diverse populations, which have reported similar directional trends in relationships, particularly between alexithymia and emotional dysregulation (15-17). The weak associations involving mindfulness, however, diverged from earlier experimental findings where mindfulness training showed clear improvements in eating-related behaviors, suggesting that contextual factors may influence its effectiveness in cross-sectional settings (18).

The study further validated the mediating role of impulsivity in the link between alexithymia and emotional eating. Individuals with high alexithymic traits, characterized by emotional suppression and unawareness, appeared more likely to act impulsively, which in turn predisposed them to emotional eating. This finding resonates with previous work suggesting that impulsivity, especially under emotional distress, acts as a dysfunctional substitute for emotion regulation, reinforcing unhealthy behavioral cycles (19,20). In the Pakistani sample, where cultural norms emphasize emotional restraint and discourage open discussion of emotional struggles, impulsivity may serve as a culturally conditioned outlet for suppressed affect. The academic and familial expectations imposed on students, combined with minimal access to emotional education or structured mental health services, likely exacerbate this reliance on impulsive coping strategies such as binge eating (21). In contrast, the hypothesis that mindfulness would moderate the relationship between alexithymia and emotional eating was not supported. The non-significant moderating effect of mindfulness may be attributed to several factors. One explanation lies in the generally low levels of mindfulness reported by students, possibly reflecting limited awareness, practice, or cultural acceptance of mindfulness-based interventions. Furthermore, alexithymic individuals often exhibit cognitive and emotional rigidity, which could interfere with the capacity to engage with or benefit from mindfulness practices. This diminished receptivity may have diluted the potential buffering effect of mindfulness on emotional dysregulation, despite its theoretical and empirical grounding in improving emotional awareness and behavioral control (22,23). The reliance on self-reported data, especially among participants with limited emotional insight, may also have contributed to these findings, given the known challenges in accurately reporting internal states among alexithymic individuals.

The study's strengths lie in its multidimensional conceptual model and the inclusion of both Pakistani and Turkish university students, allowing for cross-cultural insights. The integration of validated psychometric instruments and advanced statistical modeling using mediation and moderation frameworks contributed to the robustness of the findings. However, the limitations must be acknowledged. The cross-sectional design precludes any causal inference, limiting the interpretation of directional relationships. The sample was skewed toward Pakistani students, reducing the power to detect culturally specific trends or generalize the findings across both populations equally. The use of purposive sampling and reliance on self-report measures also introduced the potential for selection and response biases, particularly in constructs like alexithymia, where self-perception may not reflect underlying emotional processing deficits. To address these limitations, future research should adopt a longitudinal design to track changes in emotional processing, impulsivity, and mindfulness over time. Incorporating physiological or behavioral measures alongside self-report tools may offer a more accurate assessment of constructs such as impulsivity and mindfulness (24,25). Expanding the sample to include balanced representation from diverse educational institutions and occupational backgrounds would enhance the generalizability and cultural relevance of the findings. Moreover, implementing experimental designs that evaluate the efficacy of mindfulness-based interventions tailored to alexithymic traits may yield more actionable outcomes, especially if delivered through structured, culturally adapted programs. The study contributes to a growing understanding of how emotional dysfunction manifests in health-compromising behaviors such as emotional eating, particularly in culturally sensitive student populations. The results support the need for multi-tiered interventions that address emotional suppression, impulsivity, and the promotion of mindfulness in academic environments. Tailored strategies that incorporate emotional education, parental guidance, and accessible mental health resources can mitigate the progression from emotional

unawareness to behavioral dysregulation. Policymakers and educational leaders must consider embedding emotional resilience training into institutional curricula to foster psychological well-being in future generations.

Conclusion

This study highlighted the complex interplay between alexithymia, impulsivity, mindfulness, and emotional eating among university students, offering a culturally grounded perspective on emotional regulation. The findings underscore that impulsivity serves as a key psychological mechanism linking emotional unawareness to maladaptive eating behaviors, while mindfulness, despite its theoretical value, did not significantly buffer this relationship in the current context. These insights have practical implications for the development of mental health interventions aimed at improving emotional awareness and reducing impulsive coping strategies. By promoting early emotional education, fostering supportive environments, and integrating culturally sensitive mindfulness practices, educational institutions and mental health professionals can better support students in navigating emotional challenges and fostering healthier behavioral outcomes.

AUTHOR CONTRIBUTION

Author	Contribution
Pulwasha Anwar*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Attia Rani	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Hadeeqa Anmol	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Aisha Jahangir	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Sana Azam	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Alishba Ijaz	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Sana Afzal	Contributed to study concept and Data collection Has given Final Approval of the version to be published
Sayeda Iqra Geelani	Writing - Review & Editing, Assistance with Data Curation

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