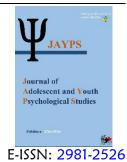


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# School Climate and Academic Resilience: The Mediating Role of Teacher–Student Relationship Quality

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#### ABSTRACT

**Objective:** This study aimed to examine the mediating role of teacher–student relationship quality in the relationship between school climate and academic resilience among Egyptian high school students.

Methods and Materials: A descriptive correlational design was employed involving 360 high school students from Egypt, selected based on Krejcie and Morgan's sample size table. Standardized self-report questionnaires were used to measure perceived school climate, teacher–student relationship quality, and academic resilience. Descriptive statistics and Pearson correlation analyses were conducted using SPSS version 27, while Structural Equation Modeling (SEM) was performed in AMOS version 21 to test the hypothesized mediating model. Model fit indices, as well as total, direct, and indirect path coefficients, were calculated to assess the validity of the proposed relationships among variables.

Findings: The results indicated that school climate was significantly associated with academic resilience (r = .53, p < .001), and with teacher–student relationship quality (r = .61, p < .001), which in turn was significantly correlated with academic resilience (r = .66, p < .001). SEM results showed a good model fit ( $\chi^2/df = 1.97$ , CFI = 0.96, RMSEA = 0.052), with school climate having a significant direct effect on both teacher–student relationship quality ( $\beta$  = 0.61) and academic resilience ( $\beta$  = 0.22). Importantly, teacher–student relationship quality significantly mediated the effect of school climate on academic resilience, with an indirect effect of  $\beta$  = 0.34 and a total effect of  $\beta$  = 0.56.

Conclusion: The findings highlight the crucial role of relational dynamics in translating institutional support into student psychological strengths. Interventions aimed at improving school climate should also prioritize strengthening teacher—student relationships to effectively enhance academic resilience in adolescents.

**Keywords:** Academic resilience; school climate; teacher–student relationship; mediation; structural equation modeling; adolescents



#### 1. Introduction

In the evolving landscape of educational psychology, the concept of academic resilience has emerged as a crucial construct in understanding how students adapt and thrive despite facing academic adversity. Academic resilience refers to the capacity of students to effectively deal with setbacks, stress, and pressure in academic settings while maintaining or regaining high levels of achievement and motivation (Fatima & Nadeem, 2022; S. & Sunil Kumar, 2024). As global academic pressures increase and challenges related to socioeconomic, emotional, and institutional factors become more complex, identifying the mechanisms that foster resilience has become a pressing concern for educators and researchers alike (Hansen, 2025; Munyaradzi & Patrick, 2025).

Among the various contextual and relational variables contributing to academic resilience, school climate has consistently been highlighted as a critical predictor. School climate encompasses the overall atmosphere of the school environment, including safety, relationships, teaching and learning practices, and the institutional culture (Go, 2022; Kara et al., 2025). A positive school climate is strongly associated with students' psychological well-being, motivation, and engagement, all of which are foundational to the development of resilience in academic contexts (Azpiazu et al., 2022; Sari & Yusra, 2024). Several studies suggest that students who perceive their school environment as supportive, safe, and respectful are more likely to display higher levels of academic resilience (Panganiban et al., 2025; Ye et al., 2024). These findings underscore the importance of school climate not only as a background factor but as a direct and measurable influence on student adaptability and success.

Furthermore, the teacher–student relationship has gained increasing attention as a relational mechanism that may mediate the relationship between school climate and academic resilience. The quality of this relationship—often characterized by emotional support, mutual respect, communication, and responsiveness—plays a pivotal role in shaping students' academic experiences (Park & Kim, 2024; Williams et al., 2022). A high-quality teacher–student relationship can serve as an emotional buffer, reduce academic anxiety, and foster a growth-oriented mindset, especially in challenging academic situations (Lobo, 2022; Nikmah et al., 2024). Park and Kim (2024) found that students who perceive their relationships with teachers as supportive exhibit significantly better school adjustment and

resilience outcomes, reinforcing the role of this relational dynamic as a key protective factor (Park & Kim, 2024).

Research also indicates that teacher—student relationships are not formed in a vacuum but are influenced by the broader school climate. In schools characterized by collaborative norms, inclusive values, and clear expectations, teachers are more likely to engage positively with students and foster emotionally secure learning environments (Panganiban et al., 2025; Zhou et al., 2023). This cascading effect suggests a potential mediating pathway, where school climate influences the quality of teacher—student relationships, which in turn affects academic resilience. Although this conceptual pathway is theoretically robust, empirical investigations into the mediating role of teacher—student relationships remain limited, particularly in non-Western educational settings.

The importance of academic resilience becomes more pronounced when considering students in contexts of vulnerability, such as those in regions experiencing socioeconomic instability, educational inequality, or environmental stressors. For instance, a recent study conducted in Botswana revealed that academic resilience was significantly linked to students' self-concept and overall school satisfaction, pointing to the relevance of internal and contextual resources in fostering resilience (Dokobe et al., 2024). In Egypt, where students may encounter educational disparities and systemic challenges, understanding the interplay between school climate, relational support, and resilience is essential to developing inclusive and effective educational policies.

At the theoretical level, this study draws on ecological and socio-cognitive frameworks that emphasize the interaction between environmental factors and individual capacities in shaping student outcomes (Ajuwon et al., 2024; Asadzadeh et al., 2022). Bronfenbrenner's ecological systems theory, for instance, provides a useful lens through which to understand how proximal relationships (e.g., school climate) jointly influence developmental outcomes like resilience (Penna-de-Carvalho et al., 2022). Similarly, research grounded in positive psychology has emphasized the role of meaningful relationships and supportive environments in promoting students' psychological strengths and adaptive behaviors (Azpiazu et al., 2022).

Evidence from cross-national and large-scale studies further strengthens the argument for integrating environmental and relational factors when addressing academic resilience. For example, Ye et al. (2024)



demonstrated that while education expenditure may not uniformly enhance academic outcomes, variables such as school characteristics and teacher responsiveness were significantly associated with resilience across diverse education systems (Ye et al., 2024). Likewise, Zadok et al. (2024) highlighted how transformational leadership at the school level can improve organizational resilience, indirectly affecting students' academic behaviors and motivation (Zadok et al., 2024). These studies collectively emphasize the need to consider multilayered influences—ranging from institutional climate to interpersonal dynamics—in academic resilience research.

While many studies have addressed the individual impact of school climate or teacher–student relationships on resilience, the mediating role of relational quality within this linkage has been less explored in detail. Kara et al. (2025) found that school climate had a significant impact on adolescents' psychological resilience, but they called for future research to examine the psychological processes underlying this relationship (Kara et al., 2025). Moreover, Suwarti et al. (2024) showed that both classroom climate and goal orientation influence academic resilience, suggesting the importance of integrating psychological and contextual predictors in unified models (Suwarti et al., 2024).

In the specific context of adolescent learners, these dynamics become even more critical. Adolescents are at a developmental stage where external validation, teacher feedback, and school connectedness strongly influence selfperception and coping strategies (Lobo, 2022; Mahmoodimehr et al., 2023). The mediating role of teacherstudent relationship quality may thus provide a vital explanatory link in understanding how broader school structures translate into student-level psychological assets such as resilience. Zarinathi and Huwae (2024) also emphasize the reciprocal relationship between school engagement and resilience, reinforcing the idea that supportive environments and quality relationships can reinforce one another in developmental trajectories (Zarinathi & Huwae, 2024).

Furthermore, school-based interventions aimed at enhancing academic resilience have increasingly focused on climate and relational improvements. For example, Wellman et al. (2025) documented the outcomes of the "Climate READY" program, which demonstrated that cultivating environmental awareness and empowerment among youth can significantly improve resilience and academic engagement (Wellman et al., 2025). Similarly, Fatima and Nadeem (2022) highlighted that academic self-concept,

bolstered through supportive interactions with teachers, predicts higher resilience and academic performance (Fatima & Nadeem, 2022).

This growing body of evidence provides a compelling rationale for empirical studies that examine the combined and interactive effects of school climate and relational quality on resilience. However, despite the expanding international literature, there remains a notable gap in research from the Middle Eastern and North African (MENA) region. With most studies concentrated in Western, East Asian, or Sub-Saharan African contexts, localized investigations are necessary to account for the unique sociocultural, pedagogical, and policy-related conditions shaping education in Egypt and similar contexts (Ajuwon et al., 2024; Munyaradzi & Patrick, 2025).

Therefore, the present study aims to fill this gap by investigating the mediating role of teacher–student relationship quality in the relationship between school climate and academic resilience among high school students in Egypt.

#### 2. Methods and Materials

# 2.1. Study Design and Participants

This study employed a descriptive correlational research design to investigate the mediating role of teacher–student relationship quality in the relationship between school climate and academic resilience among adolescents. The target population included high school students in Egypt. Using the Krejcie and Morgan (1970) sample size determination table, a sample size of 360 students was selected to ensure adequate statistical power and representation. Participants were recruited from public and private secondary schools using a multistage cluster sampling method. All participants were enrolled in grades 10 to 12 and provided informed consent prior to their inclusion in the study.

# 2.2. Measures

# 2.2.1. Academic Resilience

To measure the dependent variable of academic resilience, the Academic Resilience Scale (ARS-30) developed by Cassidy (2016) is employed. This 30-item self-report instrument is specifically designed to assess how students respond to academic adversity. It consists of three subscales: Perseverance, Reflecting and Adaptive Help-Seeking, and Negative Affect and Emotional Response.



Respondents rate each item on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), with higher scores indicating greater academic resilience. The ARS-30 has demonstrated strong internal consistency, with Cronbach's alpha coefficients exceeding 0.80 across subscales, and its construct and criterion validity have been confirmed in multiple studies involving adolescent and young adult populations.

### 2.2.2. Student-Teacher Relationship

The mediator variable, Teacher–Student Relationship Quality, is assessed using the Student–Teacher Relationship Scale (STRS) developed by Pianta (2001). This instrument includes 28 items and evaluates the perceived quality of teacher–student relationships from the teacher's perspective, though student-reported adaptations also exist. It consists of three subscales: Closeness, Conflict, and Dependency. Responses are rated on a 5-point Likert scale from 1 (Definitely Does Not Apply) to 5 (Definitely Applies). Higher scores in the Closeness subscale and lower scores in Conflict and Dependency reflect more positive relationship quality. The STRS has shown strong psychometric properties, including high internal consistency ( $\alpha > .85$  for most subscales) and demonstrated predictive and concurrent validity in educational and developmental research.

#### 2.2.3. School Climate

To evaluate the independent variable School Climate, the School Climate Survey – Student Version developed by Haynes, Emmons, and Ben-Avie (1997) is used. This comprehensive tool consists of 38 items and measures various dimensions of school climate, including Safety, Teaching and Learning, Interpersonal Relationships, and Institutional Environment. Each item is rated on a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4

(Strongly Agree). Higher overall scores reflect more positive perceptions of school climate. The SCS has been widely validated in adolescent populations, showing strong internal consistency (Cronbach's alpha values typically above 0.80), and its construct validity has been established through factor analysis and correlations with academic and behavioral outcomes.

#### 2.3. Data Analysis

Data were analyzed using SPSS version 27 and AMOS version 21. Initially, descriptive statistics (mean, standard deviation, frequency, and percentage) were calculated to summarize participant demographics and study variables. To assess the bivariate relationships between variables, Pearson correlation coefficients were computed. Structural Equation Modeling (SEM) was conducted using AMOS-21 to test the hypothesized mediation model, evaluating both direct and indirect effects. Model fit was assessed using standard indices such as Chi-square ( $\chi^2$ ), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Significance was set at p < .05 for all analyses.

# 3. Findings and Results

The final sample consisted of 360 students, of whom 205 (56.9%) were female and 155 (43.1%) were male. Regarding age distribution, 112 participants (31.1%) were 15 years old, 138 (38.3%) were 16 years old, and 110 (30.6%) were 17 years old. In terms of school type, 221 students (61.4%) attended public schools, while 139 (38.6%) were enrolled in private schools. These characteristics reflect a diverse adolescent population across different educational settings in Egypt.

**Table 1**Descriptive Statistics for Study Variables (N = 360)

Variable	Mean (M)	Standard Deviation (SD)		
School Climate	3.72	0.41		
Teacher-Student Relationship Quality	3.88	0.39		
Academic Resilience	3.94	0.36		

As shown in Table 1, the participants reported relatively high levels of perceived school climate (M = 3.72, SD = 0.41), teacher–student relationship quality (M = 3.88, SD = 0.39), and academic resilience (M = 3.94, SD = 0.36). The

low standard deviations suggest that participants' responses were fairly consistent across all three constructs.

Prior to conducting Pearson correlations and SEM analysis, key statistical assumptions were evaluated and





confirmed. Tests for normality indicated that skewness and kurtosis values for all study variables were within the acceptable range of  $\pm 2$  (e.g., academic resilience skewness = -0.35, kurtosis = 0.42). Linearity was visually assessed using scatterplots, which showed approximately linear relationships between variables. Multicollinearity was ruled out, as all Variance Inflation Factor (VIF) values were below

2 (maximum VIF = 1.42). Additionally, Mahalanobis distance analysis identified no significant multivariate outliers beyond the critical chi-square value ( $\chi^2(3) = 16.27$ , p < .001), and Homoscedasticity was verified through residual plots. These checks confirmed that the data met the assumptions required for valid correlational and SEM analyses.

 Table 2

 Pearson Correlation Coefficients Between Study Variables

Variable	1	2	3
1. School Climate	_		
2. Teacher-Student Relationship Quality	.61**(p < .001)	_	
3. Academic Resilience	.53**(p < .001)	.66** (p < .001)	_

Table 2 presents the Pearson correlation coefficients among the study variables. School climate was significantly correlated with teacher–student relationship quality (r = .61, p < .001) and academic resilience (r = .53, p < .001).

Teacher–student relationship quality also showed a strong positive correlation with academic resilience (r = .66, p < .001). These findings indicate moderate to strong associations among the variables.

Table 3

Model Fit Indices for the Structural Equation Model

Fit Index	Value	Threshold for Acceptability
$\chi^2$	114.27	_
df	58	_
$\chi^2/df$	1.97	< 3.00
GFI	0.94	≥ 0.90
AGFI	0.91	≥ 0.90
CFI	0.96	$\geq 0.95$
TLI	0.95	$\geq 0.95$
RMSEA	0.052	$\leq$ 0.08

As shown in Table 3, the fit indices indicated a good fit of the hypothesized structural model to the data. The chi-square to degrees of freedom ratio ( $\chi^2/df = 1.97$ ) fell within the recommended range. Goodness-of-fit index (GFI = 0.94), adjusted GFI (AGFI = 0.91), comparative fit index

(CFI = 0.96), and Tucker–Lewis index (TLI = 0.95) all met or exceeded recommended thresholds. The RMSEA value (0.052) indicated a close approximate fit, supporting the adequacy of the model.

 Table 4

 Total, Direct, and Indirect Path Coefficients Among Variables in the SEM Model

Path	В	S.E.	Beta	р
School Climate → Teacher-Student Relationship Quality	0.58	0.06	0.61	<.001
School Climate → Academic Resilience (Direct)	0.19	0.07	0.22	.004
Teacher–Student Relationship Quality → Academic Resilience	0.49	0.05	0.56	<.001
School Climate → Academic Resilience (Indirect)	0.28	0.04	0.34	<.001
School Climate → Academic Resilience (Total)	0.47	0.06	0.56	<.001

Table 4 summarizes the direct, indirect, and total path coefficients in the structural equation model. The direct path from school climate to teacher–student relationship quality

was strong and significant (B = 0.58,  $\beta$  = 0.61, p < .001). The direct effect of school climate on academic resilience was also significant but smaller (B = 0.19,  $\beta$  = 0.22, p = .004).



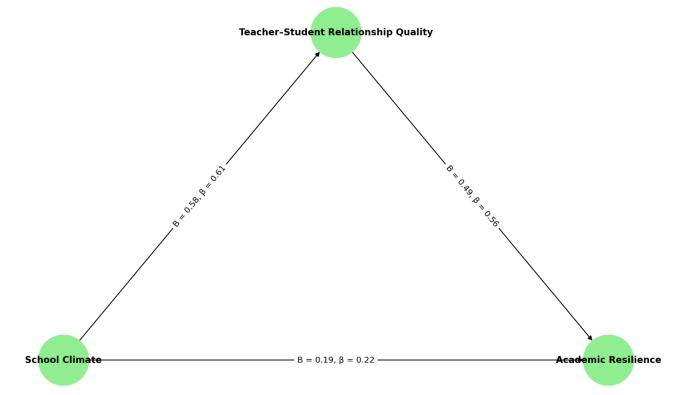


The path from teacher–student relationship quality to academic resilience was strong and significant (B = 0.49,  $\beta$  = 0.56, p < .001). The model also revealed a significant indirect effect of school climate on academic resilience through teacher–student relationship quality (B = 0.28,  $\beta$  =

0.34, p < .001). The total effect (direct + indirect) of school climate on academic resilience was substantial (B = 0.47,  $\beta$  = 0.56, p < .001), confirming the mediating role of relational quality.

Figure 1
Structural Model of The Study

Structural Model of School Climate, Teacher-Student Relationship Quality, and Academic Resilience



#### 4. Discussion and Conclusion

The findings of this study provide empirical support for the hypothesized model that teacher—student relationship quality mediates the relationship between school climate and academic resilience in Egyptian adolescents. The results of the Pearson correlation analysis indicated significant positive relationships between school climate and academic resilience, school climate and teacher—student relationship quality, and teacher—student relationship quality and academic resilience. Structural Equation Modeling (SEM) further confirmed that school climate has both a direct and indirect effect on academic resilience, with the indirect effect operating through the mediating role of teacher—student relationship quality. These findings affirm the theoretical proposition that a supportive school environment

fosters positive relational dynamics between students and teachers, which in turn strengthens students' capacity to cope with academic challenges.

These outcomes align with a growing body of research emphasizing the foundational role of school climate in shaping academic outcomes and emotional competencies. A positive school climate—characterized by emotional safety, mutual respect, inclusive practices, and high academic expectations—has consistently been associated with improved student well-being and academic functioning (Azpiazu et al., 2022; Sari & Yusra, 2024). The present study confirms this association in the Egyptian educational context, adding to cross-cultural evidence that school climate exerts a protective effect on students' psychological resilience and educational engagement (Go, 2022; Kara et al., 2025).



The mediating role of teacher-student relationship quality is particularly notable in this study. The quality of interpersonal relationships between students and teachers was found to significantly predict levels of academic resilience, supporting the findings of Park and Kim (2024), who demonstrated that teacher-student relationships serve as emotional and behavioral regulators in students' adjustment processes (Park & Kim, 2024). Similarly, Nikmah et al. (2024) reported that adolescents with high levels of perceived support and closeness in teacher-student relationships exhibited better resilience and self-esteem (Nikmah et al., 2024). This mediating relationship emphasizes that while school climate provides the broader environmental framework, it is the micro-level relational processes that ultimately shape students' emotional capacity to overcome academic stressors.

Moreover, the direct relationship between school climate and teacher-student relationship quality found in this study prior research that underscores corroborates institutional culture influences interpersonal dynamics. When schools foster environments that value cooperation, openness, and emotional security, teachers are more likely to develop nurturing and responsive relationships with their students (Panganiban et al., 2025; Zhou et al., 2023). This is consistent with the work of Zadok et al. (2024), who suggested that transformational leadership within schools often a byproduct of a strong organizational climate indirectly strengthens student motivation and resilience through relational pathways (Zadok et al., 2024). Our findings reinforce this systemic view by illustrating that relational quality does not operate in isolation but is shaped by the surrounding climate.

Furthermore, the strong link found between teacher-student relationship quality and academic resilience underscores the emotionally regulatory role of this relationship in academic settings. Teachers who provide emotional scaffolding, constructive feedback, and a sense of trust can help students navigate adversity with more confidence and less distress (Lobo, 2022; Mahmoodimehr et al., 2023). In this regard, the findings of the current study are in line with those of Hansen (2025), who reported that school-level relational variables predicted resilience more robustly than family or community-level factors in Swedish students (Hansen, 2025). This suggests that despite cultural differences, the universal importance of emotionally supportive teacher–student interactions remains pivotal in fostering resilience.

The results also mirror the conclusions drawn by Suwarti et al. (2024), who showed that achievement goal orientation and classroom climate significantly influenced academic resilience among Indonesian high school students, with teacher responsiveness acting as a moderator (Suwarti et al., 2024). Likewise, Go (2022) found that school climate, mediated by resilience, had a significant impact on teacher burnout, further highlighting the reciprocal nature of resilience-building relationships in educational settings (Go, 2022). These converging lines of evidence indicate that the effects of school climate extend beyond academic instruction, shaping the broader affective experience of schooling.

It is also worth noting that this study expands the current literature by focusing on a MENA-region country, contributing to the cross-cultural validation of academic resilience models. While much of the existing research has been conducted in Western and East Asian contexts, few studies have empirically tested these relationships in North Africa or the Arab world. In this light, the findings echo those of Ajuwon et al. (2024), who emphasized that building resilient educational communities in Africa requires context-specific understanding of relational and systemic factors (Ajuwon et al., 2024). Similarly, Dokobe et al. (2024) found that academic resilience in Botswana was closely linked to self-concept and relational support, affirming the transregional applicability of these constructs (Dokobe et al., 2024).

In the Egyptian context, the implications of these findings are far-reaching. As educational systems grapple with challenges such as large class sizes, limited resources, and social inequality, investing in school climate reform and teacher development can yield measurable improvements in student resilience. This aligns with the conclusions of Wellman et al. (2025), who demonstrated that youth empowerment programs rooted in environmental and relational engagement effectively boosted student adaptability and motivation (Wellman et al., 2025).

Beyond academic performance, the development of psychological resilience is fundamental to lifelong learning, well-being, and social participation. Research by Asadzadeh et al. (2022) introduced the concept of transformative resilience, emphasizing that resilience is not merely a return to baseline functioning but a capacity for growth through adversity (Asadzadeh et al., 2022). In the school setting, this means that teacher–student interactions and the overall school environment should be structured not just to prevent failure, but to empower students to thrive in the face of it.



The current findings support this approach and validate the school as a critical site for the development of adaptive capacities.

Lastly, this study contributes to the policy discourse on school improvement and student support systems. As outlined by Penna-de-Carvalho et al. (2022), efforts to enhance students' psychosocial adjustment should include targeted initiatives that enhance teacher affective skills and foster inclusive school norms (Penna-de-Carvalho et al., 2022). Our findings support this position by showing that when schools invest in climate-building and relational quality, they create the conditions under which resilience naturally flourishes.

# 5. Limitations & Suggestions

Despite the strengths of this study, several limitations must be acknowledged. First, the use of a cross-sectional design precludes causal inference, making it difficult to determine the directionality of relationships. Longitudinal studies would be necessary to track developmental changes in resilience and its predictors over time. Second, all data were based on self-report questionnaires, which may introduce social desirability bias and shared method variance. Incorporating teacher and parent perspectives or observational measures would strengthen the validity of findings. Third, although the sample was drawn from various Egyptian schools, it may not fully represent all socioeconomic and regional diversity within the country. Future studies should aim for greater demographic representation to improve generalizability.

Future research should employ longitudinal or mixed-method designs to explore how the dynamic interplay between school climate, teacher-student relationships, and resilience evolves over time. Studies could also test additional mediators or moderators such as academic self-concept, peer relationships, or socioeconomic background. Moreover, cultural comparisons involving students from other MENA countries or different educational systems could shed light on the universality versus context-specificity of the proposed model. Experimental interventions aimed at modifying school climate or teacher behavior could also test the causal pathways suggested by this model.

From a practical perspective, school administrators and educators should prioritize fostering a positive school climate characterized by fairness, emotional safety, and student empowerment. Training programs that enhance teachers' relational and emotional competencies can amplify the effects of a supportive climate. Additionally, educational policymakers should develop resilience-building frameworks that integrate environmental, relational, and psychological dimensions into curriculum design and school governance. Strengthening both structural and interpersonal supports within schools can create a synergistic effect that boosts students' ability to face academic adversity with confidence and perseverance.

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#### **Declaration of Interest**

The authors of this article declared no conflict of interest.

#### **Ethical Considerations**

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

#### Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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# **Authors' Contributions**

All authors equally contributed to this article.

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