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Developing a Model of Prolonged Grief Based on Adverse Childhood Experiences with the Mediating Role of Perceived Social Support among Survivors of the COVID-19 Pandemic

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ABSTRACT

This study aimed to investigate the direct and indirect effects of adverse childhood experiences on prolonged grief among survivors of the COVID-19 pandemic, with perceived social support as a mediating variable. The study employed a correlational design using structural equation modeling. The statistical population included bereaved individuals in Alborz Province who lost at least one first-degree family member due to COVID-19. A total of 361 participants were recruited through convenience sampling via online surveys conducted between June and November 2024. Data were collected using the Prolonged Grief Disorder Scale (PG-13-R), the Multidimensional Scale of Perceived Social Support (MSPSS), and the Childhood Trauma Questionnaire –Short Form (CTQ-SF). Descriptive statistics, Pearson correlations, multiple regression analyses, and structural equation modeling were applied to analyze the data. Model fit indices confirmed the adequacy of the tested model. Regression analyses indicated that social support from family ($\beta = -0.31$, $p < 0.001$), significant others ($\beta = -0.33$, $p < 0.001$), and friends ($\beta = -0.02$, $p < 0.001$) negatively predicted prolonged grief, explaining 42% of the variance. Adverse childhood experiences, including emotional abuse ($\beta = 0.47$, $p < 0.001$) and emotional neglect ($\beta = 0.54$, $p < 0.001$), significantly predicted prolonged grief, accounting for 53% of the variance. Structural equation modeling revealed that adverse childhood experiences directly increased prolonged grief ($\beta = 0.79$, $p = 0.05$) and indirectly heightened grief by reducing perceived social support ($\beta = -0.96$, $p < 0.001$). Bootstrap analysis confirmed the significance of this indirect pathway (95% CI = 0.41–0.66, $p < 0.001$). The findings demonstrate that prolonged grief among COVID-19 survivors is shaped both by early developmental adversities and by the availability of perceived social support. Trauma-informed interventions that simultaneously strengthen social support networks may be effective in alleviating prolonged grief.

Keywords: Prolonged grief, adverse childhood experiences, perceived social support, COVID-19 survivors, structural equation modeling

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Introduction

The COVID-19 pandemic has left a profound psychological imprint on individuals and communities worldwide, especially for those who lost close family members during the crisis. Grief in the aftermath of such losses often extends beyond the expected trajectory and may evolve into prolonged grief disorder, characterized by enduring distress, functional impairment, and difficulties in adaptation. Scholars have highlighted that grief is not only a universal human experience but also one that is strongly shaped by contextual, cultural, and developmental factors (1, 2). The pandemic context added unique complexities to grief, including social isolation, disrupted mourning rituals, and lack of community support, all of which increased the risk of maladaptive grief processes (3). Against this backdrop, it is critical to investigate how adverse childhood experiences and social support dynamics interact to influence prolonged grief in survivors of the COVID-19 pandemic.

The literature underscores that adverse childhood experiences (ACEs)—such as emotional neglect, physical abuse, and exposure to traumatic environments—are robust predictors of later mental health difficulties, including susceptibility to complicated grief. Childhood trauma is known to impair the formation of secure attachment bonds and to foster maladaptive emotion regulation patterns, which may resurface during times of bereavement (4, 5). Several studies have shown that trauma during early development lays the groundwork for vulnerability to psychopathology, including depressive symptoms, suicidality, and anxiety, particularly when individuals confront new traumatic losses (6, 7). In the context of prolonged grief, individuals with histories of childhood trauma may experience intensified feelings of abandonment, helplessness, and despair, making it more difficult to navigate the adaptive mourning process (8).

Adverse childhood experiences are also closely tied to maladaptive cognitive schemas, relational insecurities, and difficulties in utilizing social resources. Research demonstrates that individuals exposed to early trauma often struggle to establish or maintain supportive social relationships, and this limitation may diminish their access to protective factors in later life (9, 10). In bereavement, when social support is one of the most significant buffers against prolonged grief, the lack of perceived support can exacerbate symptoms and prolong recovery. This is consistent with findings indicating that childhood trauma negatively correlates with perceived social support and increases vulnerability to maladaptive responses to stress (11).

Social support itself has long been recognized as a central element in mitigating the impact of loss and trauma. Emotional, instrumental, and informational support from family, friends, and significant others can promote resilience, facilitate adaptive coping strategies, and reduce the intensity of grief (12, 13). However, the COVID-19 pandemic disrupted traditional support systems. Survivors were often isolated, and opportunities for communal grieving, religious rituals, and social gatherings were restricted. Such disruptions intensified the loneliness and despair of those bereaved during the pandemic, leaving many without the usual social mechanisms of comfort (2, 14). Moreover, survivors who had already faced relational difficulties due to adverse developmental histories may have been particularly disadvantaged, amplifying their risk of developing prolonged grief symptoms.

The interplay between social support and trauma is also evident in studies on migration, family disruption, and cultural identity. For example, shifts in family roles and social networks during migration highlight how reduced or inconsistent support structures heighten vulnerability to psychosocial distress (15). Similarly, occupational therapy research emphasizes the importance of storytelling and communal practices

in processing grief among children, pointing to the vital role of supportive contexts in making sense of loss (16). These insights underscore that grief cannot be fully understood outside the relational and social frameworks within which individuals are embedded.

In addition, caregiver behaviors and family responses during bereavement play a crucial role in shaping the trajectory of childhood and adolescent grief. When caregivers provide consistent emotional availability, guidance, and validation, young people are better able to engage in adaptive mourning processes. Conversely, inconsistent or maladaptive caregiver responses can foster prolonged and maladaptive grief patterns (3). This suggests that the quality of social support in adulthood may function as a continuation of earlier relational environments, further linking ACEs to prolonged grief outcomes through the mediating role of perceived social support.

Theoretical and empirical research converges on the notion that unresolved trauma from early life interacts dynamically with present relational resources. Case studies in palliative care reveal how unresolved childhood trauma and attachment insecurities complicate grief experiences in adulthood, particularly when facing new significant losses (8). Meta-analyses similarly highlight that ACEs are significantly associated with maladaptive schemas that underlie difficulties in loss adaptation (4). Such findings point to a dual pathway: adverse childhood experiences may increase grief vulnerability directly, and they may simultaneously undermine the capacity to access and benefit from social support, thereby indirectly exacerbating prolonged grief (9).

Emerging research on psychosomatic and affective consequences of childhood trauma further illustrates how early adversities continue to shape responses to stress and loss throughout the life span. Survivors of trauma report higher rates of psychosomatic symptoms and interpersonal difficulties, suggesting that prolonged grief may manifest not only as emotional pain but also as embodied distress (5). This resonates with studies that associate perfectionism, emotional dysregulation, and academic or social anxieties in young adults with histories of childhood trauma (7). Thus, grief following COVID-19 deaths may represent not only a current emotional struggle but also a reactivation of unresolved developmental wounds.

Moreover, the use of psychological interventions and digital tools highlights the importance of expanding accessible forms of grief support. Internet-based self-help interventions, for example, have been shown to support older adults coping with bereavement by reducing isolation and fostering coping strategies (17). Such approaches are valuable in pandemic and post-pandemic contexts, where face-to-face therapeutic services may be restricted. Similarly, culturally sensitive practices such as storytelling and community-based healing can complement formal interventions to support individuals with prolonged grief (16).

Cultural and contextual variables are also essential to consider. In Iran, as in many other countries, grief is traditionally managed through collective rituals, extended family support, and religious or spiritual frameworks. The COVID-19 pandemic disrupted many of these cultural practices, leaving bereaved individuals without essential cultural coping mechanisms (18). This aligns with cross-cultural research indicating that the absence of culturally embedded practices exacerbates grief severity and prolongs recovery (14). Therefore, any exploration of prolonged grief in this context must account for cultural disruptions as well as individual psychological factors.

The interaction of childhood trauma, social support, and grief has also been highlighted in studies examining attachment, resilience, and coping in individuals facing loss. Path analyses show that attachment

styles and social support jointly predict resilience and coping strategies in grieving populations (13). Furthermore, structural models indicate that depression, anxiety, and stress mediate the link between childhood trauma and maladaptive outcomes, reinforcing the role of social support as a protective mediator (11). Taken together, these findings underscore the necessity of conceptual models that integrate both developmental vulnerabilities and current relational resources.

In summary, the COVID-19 pandemic has created a unique context for exploring prolonged grief disorder, particularly among survivors who lost close family members under conditions of isolation and disrupted rituals. Adverse childhood experiences represent a developmental vulnerability that predisposes individuals to complicated grief reactions. Perceived social support, in turn, operates as both a protective buffer and a potential mediator of these effects. Existing literature across psychology, psychiatry, social sciences, and cultural studies provides compelling evidence that grief cannot be disentangled from early trauma histories or from the presence—or absence—of supportive social environments (7, 9, 10, 12, 13).

The present study builds on this body of evidence to propose and test a structural model of prolonged grief among survivors of the COVID-19 pandemic, with adverse childhood experiences as a predictor and perceived social support as a mediating variable.

Methods and Materials

Study Design and Participants

This study employed a correlational design within the framework of structural equation modeling (SEM). Such a design was selected because the main objective was to test a specific hypothesized model of relationships among variables. In SEM, observed data are expressed as covariance or correlation matrices, and a set of regression equations is formulated to explain the interrelationships among constructs. The statistical population consisted of all individuals in Alborz Province who had lost a first-degree family member due to COVID-19. Based on the recommendations of Jöreskog and Sörbom for SEM studies, a sample size of 420 participants was initially targeted. Participants were recruited using convenience sampling through online platforms. Electronic questionnaires accompanied by a clear explanation of the study objectives were distributed via websites and social media channels between June and November 2024. After data screening, 40 incomplete or invalid responses were excluded, resulting in a final sample of 361 participants. Inclusion criteria required participants to be survivors of the COVID-19 pandemic who had lost at least one immediate family member due to the virus, had given informed consent, and had completed the questionnaires. Exclusion criteria included the absence of these conditions or withdrawal of willingness to participate at any stage.

Data Collection

Three standardized instruments were used in this study. Prolonged grief symptoms were assessed using the PG-13-R scale developed by Prigerson and colleagues, originally introduced in 2006 and later revised in 2021 based on the DSM-5-TR criteria. The tool begins with two screening questions regarding the loss of a significant person within the past 12 to 24 months, followed by 11 items rated on a five-point Likert scale ranging from 0 (not at all) to 4 (very much). The PG-13-R has demonstrated strong psychometric properties, with Cronbach's alpha coefficients ranging between 0.83 and 0.93 and test–retest reliability indices around

0.86. Iranian validation studies have also reported excellent reliability, with Cronbach's alpha of 0.93 and six-week test–retest reliability of 0.89.

Perceived social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet and colleagues in 1988. This 12-item scale evaluates support received from three sources: family, significant others, and friends, each represented by four items. Responses are provided on a five-point Likert scale ranging from strongly disagree to strongly agree, yielding total scores between 12 and 60. Prior research reported internal consistency reliabilities between 0.86 and 0.90 across subscales and 0.86 for the total scale. Iranian adaptations have shown Cronbach's alpha coefficients of 0.89, 0.86, and 0.82 for family, friends, and significant others, respectively.

Adverse childhood experiences were assessed using the short form of the Childhood Trauma Questionnaire (CTQ-SF) developed by Bernstein and colleagues in 2003. The CTQ-SF consists of 28 items measuring five domains: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Responses are recorded on a five-point Likert scale, and total scores range from 25 to 125, with higher scores indicating more severe childhood trauma. The CTQ-SF has demonstrated high reliability, with Cronbach's alpha values ranging from 0.78 to 0.95 across domains, as well as acceptable concurrent validity with clinicians' trauma ratings. Iranian studies have reported Cronbach's alpha coefficients between 0.81 and 0.98 for the five subscales and concurrent validity correlations of 0.39 with the General Health Questionnaire. In the present study, Cronbach's alpha for the CTQ-SF was 0.78.

Data analysis

Data analysis was carried out in two main stages. First, descriptive statistics such as frequency distributions, percentages, and graphs were used to summarize demographic characteristics and variables of interest. In the second stage, inferential statistics were applied to examine the hypothesized model. Structural equation modeling was the primary technique employed to evaluate the relationships among prolonged grief, adverse childhood experiences, and perceived social support, as well as to test the mediating role of social support. Pearson correlation coefficients were used to examine bivariate associations among variables, while multiple regression analyses provided additional insights into predictive relationships. Statistical significance was evaluated at the 0.05 level. All analyses were conducted after screening for missing data and outliers, ensuring adherence to the assumptions of SEM.

Findings and Results

The demographic characteristics of the participants in this study showed that out of the total 361 individuals, 212 (58.7%) were women and 149 (41.3%) were men. Regarding marital status, 163 participants (45.2%) were single, 132 (36.6%) were married, 36 (10%) had lost a spouse, and 30 (8.3%) were divorced. In terms of educational attainment, 38 individuals (10.5%) had less than a high school diploma, 129 (35.7%) held a high school diploma, 110 (30.5%) had a bachelor's degree, 64 (17.7%) had a master's degree, and 20 (5.5%) held a doctoral degree. With respect to the relationship to the deceased family member or significant person, 96 participants (26.6%) had lost a parent, 88 (24.4%) had lost a grandparent, 58 (16.1%) had lost a sibling, 38 (10.5%) had lost a spouse, 34 (9.4%) had lost a friend, 32 (8.9%) had lost another relative, and 15 (4.2%) had lost a child.

Table 1. Descriptive indices of the study variables

Variables	Minimum	Maximum	Mean	Standard Deviation
Prolonged grief	6	42	35.51	8.93
Adverse childhood experiences				
Sexual abuse	5	24	21.15	5.10
Physical abuse	4	23	18.04	5.32
Emotional abuse	5	25	23.66	4.54
Emotional neglect	5	24	22.37	4.92
Physical neglect	5	25	23.81	5.58
Perceived social support				
Family	4	18	14.76	3.06
Significant others	4	15	11.52	3.38
Friends	4	20	17.13	2.95

The descriptive results presented in Table 1 show that participants' scores on prolonged grief ranged from 6 to 42, with an average of 35.51 and a standard deviation of 8.93, indicating noticeable variability in grief intensity among the survivors. In terms of adverse childhood experiences, the mean scores were highest for emotional abuse (M = 23.66, SD = 4.54) and physical neglect (M = 23.81, SD = 5.58), followed by emotional neglect (M = 22.37, SD = 4.92), physical abuse (M = 18.04, SD = 5.32), and sexual abuse (M = 21.15, SD = 5.10). These findings suggest that neglect and emotional abuse were particularly salient in the reported childhood adversities. Regarding perceived social support, the highest mean score was observed for support from friends (M = 17.13, SD = 2.95), followed by family support (M = 14.76, SD = 3.06), and support from significant others (M = 11.52, SD = 3.38).

Table 2. Multiple regression analysis predicting prolonged grief based on perceived social support

Criterion Variable	Predictor Variables	B	SE	Beta	T	P	R	R^2
Prolonged grief	Family	-0.80	0.15	-0.31	-5.35	0.001	0.65	0.42
	Significant others	-1.10	0.22	-0.33	-3.23	0.001		
	Friends	-0.13	0.24	-0.02	-4.54	0.001		

The results of the regression analysis presented in Table 2 indicate that perceived social support significantly predicted prolonged grief among survivors. Family support (B = -0.80, β = -0.31, $p < 0.001$), support from significant others (B = -1.10, β = -0.33, $p < 0.001$), and support from friends (B = -0.13, β = -0.02, $p < 0.001$) all had negative predictive relationships with prolonged grief. This means that higher levels of perceived social support from these sources were associated with lower levels of prolonged grief symptoms. The overall model demonstrated a moderate to strong explanatory power, with R = 0.65 and R^2 = 0.42, suggesting that 42% of the variance in prolonged grief was accounted for by perceived social support dimensions.

Table 3. Multiple regression analysis predicting prolonged grief based on adverse childhood experiences

Predictor Variables	B	SE	Beta	T	P	R	R^2
Sexual abuse	0.48	0.19	0.33	3.78	0.001	0.73	0.53
Physical abuse	0.55	0.14	0.29	4.27	0.001		
Emotional abuse	0.65	0.15	0.47	5.49	0.001		
Emotional neglect	0.97	0.26	0.54	6.53	0.001		
Physical neglect	0.50	0.17	0.26	4.02	0.001		

As shown in Table 3, adverse childhood experiences were strong predictors of prolonged grief. All five components contributed positively and significantly to the prediction model. Emotional neglect (B = 0.97, β = 0.54, $p < 0.001$) and emotional abuse (B = 0.65, β = 0.47, $p < 0.001$) were the strongest predictors, highlighting the role of early emotional maltreatment in the development of prolonged grief. Sexual abuse (B = 0.48, β = 0.33, $p < 0.001$), physical abuse (B = 0.55, β = 0.29, $p < 0.001$), and physical neglect (B = 0.50, β = 0.26, $p < 0.001$) also showed significant associations. The overall model was statistically significant with R = 0.73 and $R^2 = 0.53$, indicating that 53% of the variance in prolonged grief could be explained by adverse childhood experiences.

Before conducting structural equation modeling, all key assumptions were carefully examined and confirmed. The data showed acceptable multivariate normality, with skewness values ranging from –0.82 to 1.14 and kurtosis values between –0.91 and 1.27, both within the recommended thresholds of ±2. The absence of severe multicollinearity was verified, as tolerance values were above 0.40 and variance inflation factors (VIF) remained below 2.5 for all predictors. The adequacy of the sample size was confirmed, as the ratio of cases to estimated parameters exceeded the recommended 10:1 criterion. Model fit indices indicated that the hypothesized model provided a satisfactory representation of the observed data. Specifically, the chi-square/df ratio was 2.31, which falls below the acceptable cut-off of 3. The Comparative Fit Index (CFI) was 0.95, the Tucker–Lewis Index (TLI) was 0.94, and the Incremental Fit Index (IFI) was 0.95, all surpassing the recommended threshold of 0.90. The Root Mean Square Error of Approximation (RMSEA) was 0.056, with a 90% confidence interval between 0.048 and 0.063, remaining within the desirable range below 0.08. Finally, the Standardized Root Mean Square Residual (SRMR) was 0.041, well under the cut-off value of 0.08. Together, these results confirmed that the data were appropriate for SEM and that the proposed model achieved a good overall fit.

Table 4. Pathways and standardized coefficients in the final research model

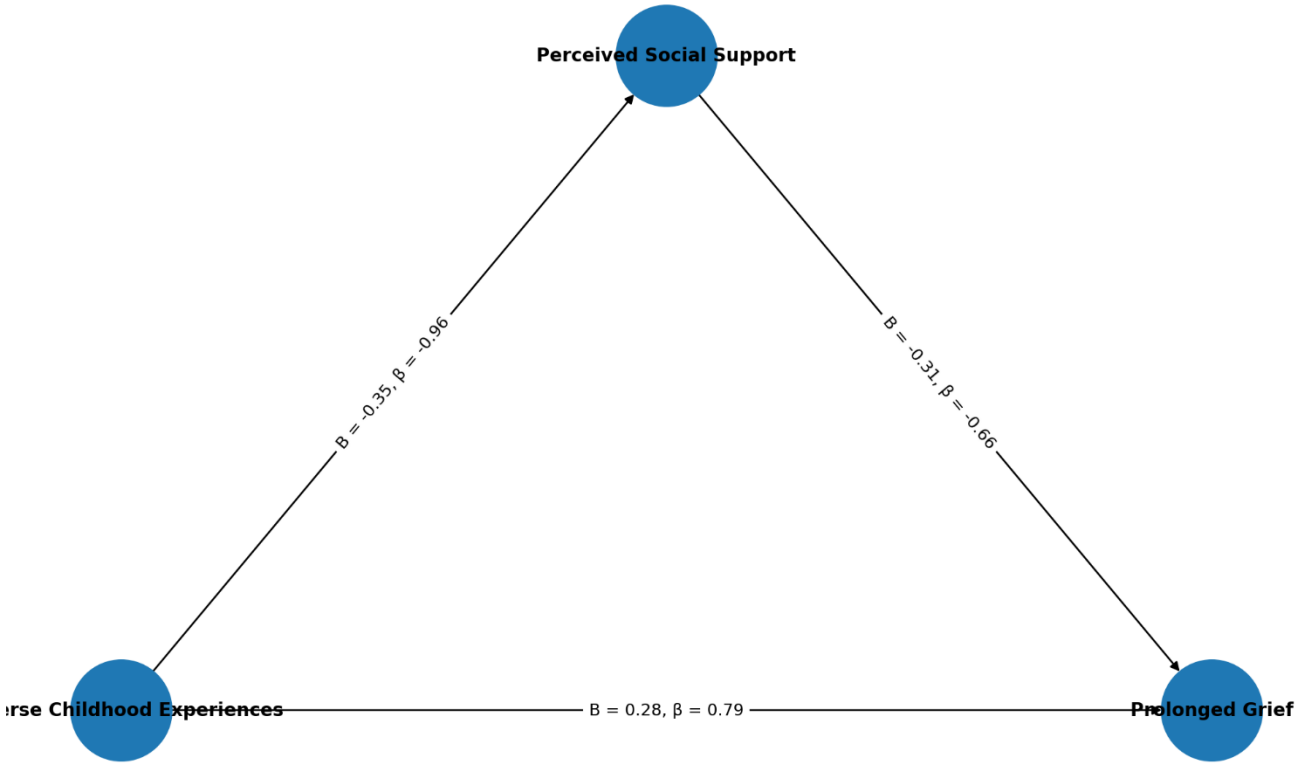
Pathways	Standardized Coefficients	Unstandardized Coefficients	t	P	Result
Adverse childhood experiences → Perceived social support	-0.96	-0.35	-5.46	0.001	Confirmed
Adverse childhood experiences → Prolonged grief	0.79	0.28	3.33	0.05	Confirmed
Perceived social support → Prolonged grief	-0.66	-0.31	-4.63	0.001	Confirmed

The path analysis results in Table 4 indicate that adverse childhood experiences had a strong and negative effect on perceived social support (β = -0.96, $p < 0.001$), meaning individuals with more severe childhood trauma reported lower levels of perceived support from family, friends, and significant others. In addition, adverse childhood experiences directly predicted higher levels of prolonged grief (β = 0.79, p = 0.05), showing that early traumatic events increase vulnerability to complicated grief responses in adulthood. Perceived social support also had a significant negative predictive effect on prolonged grief (β = -0.66, $p < 0.001$), suggesting that individuals who felt more supported by their social networks reported lower grief intensity. Together, these findings confirm the hypothesized direct and indirect relationships among the study variables in the final SEM model.

Table 5. Bootstrap results for indirect effects of adverse childhood experiences on prolonged grief via perceived social support

Indirect Pathways	Indirect Effects	Lower Bound	Upper Bound	Significance
Adverse childhood experiences → Perceived social support → Prolonged grief	0.41	0.41	0.66	0.001

The bootstrap analysis shown in Table 5 provides further evidence of the mediating role of perceived social support. The indirect pathway from adverse childhood experiences to prolonged grief through social support was significant (indirect effect = 0.41, 95% CI [0.41, 0.66], $p < 0.001$). This result demonstrates that, in addition to its direct influence, adverse childhood experiences exert an indirect effect on prolonged grief by diminishing perceived social support, which in turn heightens grief severity. The significance of this mediating pathway underscores the importance of social resources in buffering the long-term impact of early trauma on grief responses following the COVID-19 pandemic.



Discussion and Conclusion

The aim of the present study was to develop and test a structural model of prolonged grief among survivors of the COVID-19 pandemic, with adverse childhood experiences as a predictor and perceived social support as a mediating variable. The results revealed several significant findings. First, adverse childhood experiences were positively and strongly associated with prolonged grief, demonstrating that individuals with higher levels of early trauma reported more severe and persistent grief symptoms after losing a loved one to COVID-19. Second, perceived social support was negatively associated with prolonged grief, indicating that greater support from family, friends, and significant others was related to reduced grief

severity. Third, perceived social support mediated the relationship between adverse childhood experiences and prolonged grief, meaning that early traumatic experiences not only had a direct impact on grief responses but also exerted an indirect effect by weakening perceived social support. These findings collectively highlight the interconnected roles of developmental vulnerabilities and relational resources in shaping grief trajectories in the context of pandemic-related losses.

The direct association between adverse childhood experiences and prolonged grief aligns with a broad body of literature underscoring the lasting impact of early trauma on adult psychological functioning. Childhood trauma has been consistently linked to maladaptive schemas, insecure attachment, and impaired emotion regulation, which increase vulnerability to mental health difficulties in later life (4, 5). Individuals who experienced emotional neglect, physical abuse, or other forms of adversity during childhood often internalize negative beliefs about themselves and others, leading to heightened feelings of abandonment and hopelessness in adulthood (6). When confronted with the death of a loved one, such unresolved developmental wounds may be reactivated, intensifying grief responses. This mechanism helps to explain why the current study found strong predictive effects of childhood trauma on prolonged grief. Previous work has also documented associations between early trauma and outcomes such as suicidality, depressive symptoms, and heightened emotional dysregulation (7, 10), all of which are recognized correlates of complicated grief.

The significant role of social support in mitigating prolonged grief symptoms is consistent with prior research highlighting its protective effects in times of loss. Social support offers both emotional comfort and practical assistance, enabling individuals to adapt to bereavement and restore a sense of stability. Studies on involuntary childlessness and grief have shown that greater support is associated with lower levels of distress and improved coping strategies (12). In the context of COVID-19, however, many survivors reported reduced opportunities for communal grieving and social contact, leaving them vulnerable to prolonged grief reactions (1, 2). Our findings that support from family, friends, and significant others predicted reduced grief severity resonate with research showing that caregiver behaviors and family responses play crucial roles in shaping grief outcomes, particularly in childhood and adolescence (3). Social support is not only a buffer against current stressors but also a reflection of relational capacities that may be compromised in those with histories of adverse experiences.

The mediating role of perceived social support found in this study further illustrates the interactive nature of trauma and relational resources. The indirect pathway demonstrated that adverse childhood experiences reduce perceptions of support, which in turn heightens grief severity. This finding is supported by studies showing that individuals with trauma histories are more likely to report difficulties in establishing supportive relationships and benefiting from social resources (9, 11). Case studies also indicate that unresolved childhood trauma and insecure attachment complicate relational processes in adulthood, particularly when coping with new significant losses (8). By undermining trust in others and diminishing relational resilience, early trauma creates a pathway through which individuals may perceive themselves as isolated during bereavement, thereby exacerbating prolonged grief. This mediating mechanism underscores the importance of interventions that not only address trauma histories but also strengthen social support networks in order to reduce grief severity.

The findings also resonate with research on the psychosomatic and psychosocial consequences of childhood trauma. Studies have demonstrated that survivors of trauma often present with higher levels of psychosomatic symptoms, emotional dysregulation, and interpersonal difficulties (5). These features are highly relevant in the context of prolonged grief, which is not only an emotional experience but also frequently manifests as physical and functional impairment. By linking ACEs to prolonged grief through both direct and indirect effects, the current study adds to the growing evidence base that adverse developmental histories should be considered in understanding bereavement outcomes. Importantly, these findings highlight the need for culturally sensitive grief interventions. In Iran, for example, the COVID-19 pandemic disrupted traditional collective rituals and mourning practices, depriving survivors of culturally embedded support mechanisms (18). This cultural disruption likely compounded the effects of diminished social support in traumatized individuals.

Moreover, our results are consistent with evidence that social support functions as a mediator and moderator in a variety of psychosocial contexts. Research on migration, family disruption, and identity demonstrates that reduced or inconsistent support structures increase vulnerability to distress (15). Similarly, occupational therapy and community-based approaches emphasize the therapeutic role of storytelling and communal practices in helping children process grief and loss (16). These insights align with our findings that survivors who perceive greater support experience less severe grief symptoms. They also point toward the value of creative and community-based practices as potential interventions for grief, particularly when conventional support networks are compromised.

In addition to the central findings, the current study builds upon emerging digital and self-help approaches to grief support. Online interventions have been shown to provide accessible resources for individuals experiencing bereavement, particularly older adults or those isolated from conventional therapeutic services (17). In pandemic contexts, such interventions may be critical in supplementing traditional support systems and addressing the heightened risk of prolonged grief. Integrating these findings with the mediating role of social support suggests that digital interventions could be designed not only to provide coping strategies but also to strengthen perceptions of support, thereby mitigating the impact of early trauma on grief outcomes.

The results further confirm that grief cannot be disentangled from developmental histories of trauma or from the presence and quality of relational resources. By demonstrating both direct and mediated effects, the present study highlights the necessity of comprehensive grief models that integrate both individual vulnerabilities and social-contextual factors. This integrative perspective is consistent with structural and path analyses showing that attachment styles, social support, and resilience jointly shape bereavement outcomes (11, 13). It is also in line with evidence that depression, anxiety, and stress mediate the impact of childhood trauma on adult functioning, thereby reinforcing the interconnectedness of trauma, relational support, and grief (7).

Taken together, these findings make several contributions to the literature. First, they provide empirical support for the theoretical proposition that prolonged grief is not merely a response to the loss event itself but is strongly shaped by prior developmental experiences. Second, they demonstrate that perceived social support is not simply a concurrent protective factor but also a mediator that channels the impact of early trauma on grief outcomes. Third, they highlight the importance of considering cultural and contextual

disruptions, such as those experienced during the COVID-19 pandemic, when evaluating grief trajectories. By addressing these interconnections, the study adds to the growing body of work emphasizing the multi-layered nature of grief and the need for holistic approaches to bereavement care.

Despite its contributions, this study is subject to several limitations. First, the use of convenience sampling and online data collection may limit the generalizability of findings, as participants with access to digital platforms and willingness to complete electronic surveys may differ from those without such access. Second, the cross-sectional design precludes causal inferences, meaning that while associations between childhood trauma, social support, and prolonged grief were identified, the temporal direction of these relationships cannot be definitively established. Third, all measures were self-reported, raising the possibility of response bias, social desirability, or memory distortions in reporting childhood experiences and current grief symptoms. Fourth, cultural variables were not directly measured, despite their evident relevance in shaping grief practices during the pandemic. Finally, the sample was drawn from a single province, which may limit the representativeness of findings across broader populations.

Future research should employ longitudinal designs to clarify the causal mechanisms linking adverse childhood experiences, social support, and prolonged grief over time. Such studies would help to determine how early trauma trajectories evolve across the lifespan and intersect with later bereavement experiences. Expanding research to include culturally diverse populations and cross-national samples would further illuminate how cultural rituals and practices buffer or exacerbate grief outcomes. Mixed-methods approaches that combine quantitative structural modeling with qualitative interviews could enrich understanding of the lived experiences of survivors, particularly regarding how they interpret social support and cope with disrupted mourning practices. In addition, examining the role of digital and community-based interventions could shed light on innovative ways to enhance support networks for bereaved individuals in post-pandemic contexts.

From a practical perspective, the findings suggest that interventions for prolonged grief should explicitly address developmental trauma histories as well as current social support dynamics. Clinicians and counselors should assess not only the grief symptoms but also the presence of adverse childhood experiences and perceived support systems. Therapeutic approaches that integrate trauma-informed care with grief counseling may be particularly effective. In addition, efforts to strengthen social support networks—whether through family interventions, peer support groups, or community-based programs—are likely to reduce grief severity and foster resilience. Given the disruptions of the COVID-19 pandemic, integrating digital self-help interventions, online support groups, and culturally adapted community practices may provide accessible and effective means of addressing prolonged grief among survivors.

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Authors' Contributions

All authors equally contributed to this study.

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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