



OPEN The mediation role of hope in the relationship of resilience with depression, anxiety, and stress in caregivers of children and adolescents with cancer

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This study aimed to determine the mediation role of hope in the relationship of resilience with depression, anxiety, and stress in caregivers of children and adolescents with cancer. This cross-sectional study was conducted on 200 caregivers of children and adolescents with cancer. Adult Hope Scale, Connor-Davidson Resilience Scale, and Depression, Anxiety and Stress (DAS) scales were used for data collection. The mediator and moderator model was tested using the SPSS macro PROCESS (Model 4, and 5). The mediator model (model 4) indicated that DAS significantly correlated with resilience ($\beta = -0.54$, $t\text{-value} = -5.01$, $p < 0.001$), and hope ($\beta = -0.84$, $t\text{-value} = -3.45$, $p = 0.0007$). Hope mediated the relationship between resilience and DAS among caregivers of children and adolescents with cancer (Effect = -0.18 , $SE = 0.06$, 95% CI -0.33 to -0.06). The mediator and moderator model (model 5) showed that female caregivers had a stronger correlation between resilience and DAS when compared to their male counterparts ($\beta = -0.56$, $t\text{-value} = -3.90$, $p\text{-value} = 0.0001$); also, hope mediated the relationship between resilience and DAS among caregivers of children and adolescents with cancer (Effect = -0.20 , $SE = 0.08$, 95% CI -0.37 to -0.04). In conclusion, hope was a mediator, and female caregivers were a moderator in the relationship of resilience with depression, anxiety, and stress, and its promotion might be effective among caregivers of children and adolescents with cancer. It seems that resilience, female caregivers, and hope may provide good protection against depression, anxiety, and stress in caregivers of cancer patients.

Keywords Anxiety, Cancer, Caregiver, Depression, Hope, Resilience

Childhood cancer affects family functioning¹, relationships, and quality of life². It was reported that caregivers of children with cancer had a moderate to high burden of care³. Moreover, these caregivers had cognitive, social, and physical problems⁴. Children's symptom burden predicted the parental stress and led to lower caregivers' quality of life^{5,6}. Caregivers of children with cancer experienced high levels of stress, which led to worse psychological adjustment⁷. Besides the stress, approximately half of the pediatric cancer patients' caregivers suffered from depression⁸. In addition, the majority of them reported distress⁴, anxiety, and depression disorders⁹.

Promoting resilience was an effective stress management in caregivers of children with cancer¹⁰. Resilience is the capacity to react to stress in a healthy condition where goals are achieved with negligible negative psychological and physical effects¹¹. It plays an important role in adapting cancer patients' caregivers to stressful situations¹². Paying attention to resilience is a critical component of cancer care¹³ because resilience improves cancer patients' quality of life¹⁴.

Moreover, caregivers of cancer patients were hopeful to treat and cure the illness and prolong the survival span. Snyder et al.¹⁵ theory defines hope as "a dynamic motivational experience that is interactively derived from two distinct types of cognitive tools in the context of goal achievement—namely pathways and agency thinking". Based on Snyder's hope theory, hopeful people have goal-oriented thoughts, develop strategies to achieve the goals, and are motivated to expend effort to achieve goals¹⁵. Therefore, hope, as a dynamic motivational

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children and adolescents with cancer. Another implication of this study is that it indicated that a portion of the relationship between resilience and DAS in caregivers of children and adolescents with cancer was mediated through hope, while resilience explained a portion of DAS that was independent of hope. This mediated moderator model indicated that the intermediate variable possibly confounded the relationship between resilience and DAS. Moreover, based on our findings, in follow-up studies one can predict DAS from the factors related to well-being, like resilience. Based on our findings, resilience, hope, and the moderator, which was caregivers' gender, explained 24% of the variance in DAS; it means that many well-being factors could be used in these studies. Because the correlation between resilience and hope was high, one could choose any of them. Resilience is a good option, and hope could also be included.

Conclusion

This study showed the direct effect of DAS and resilience with hope in the caregivers of children and adolescents with cancer. Moreover, the relationship between resilience and DAS was significantly mediated by hope in the caregivers of children and adolescents with cancer. In addition, female caregivers had a stronger correlation between resilience and DAS when compared to their male counterparts. It seems that resilient attitudes, female caregivers, and hope might provide a good protection against DAS.

Data availability

The datasets used and/or analyzed during the current study available from the corresponding author of this study on reasonable request.

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