



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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29. Connor, K. M. & Davidson, J. R. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depress. Anxiety* **18**(2), 76–82 (2003).
30. Edraki, M. & Rambod, M. Psychological predictors of resilience in parents of insulin-dependent children and adolescents. *Int. J. Commun. Based Nurs. Midwifery* **6**(3), 239 (2018).
31. Lovibond, S. & Lovibond, P. *Manual for the Depression Anxiety Stress Scales* (Psychology Foundation Australia, 1995).
32. Szabó, M. The short version of the depression anxiety stress scales (DASS-21): Factor structure in a young adolescent sample. *J. Adolesc.* **33**(1), 1–8 (2010).
33. Üzar-Özçetin, Y. S. & Dursun, S. İ. Quality of life, caregiver burden, and resilience among the family caregivers of cancer survivors. *Eur. J. Oncol. Nurs.* **48**, 101832 (2020).
34. Luo, Y. *et al.* The lived experience of resilience in parents of children with cancer: A phenomenological study. *Front. Pediatrics* **10**, 871435 (2022).
35. Zeng, C., Cao, W., Zhao, T., Li, L. & Hou, L. Hope level and associated factors among parents of retinoblastoma patients during COVID-19 pandemic: A cross-sectional study. *BMC Psychiatry* **21**(1), 1–10 (2021).
36. Rumpold, T. *et al.* Hope as determinant for psychiatric morbidity in family caregivers of advanced cancer patients. *Psycho-Oncology* **26**(5), 672–678 (2017).
37. Li, M. Y., Yang, Y. L., Liu, L. & Wang, L. Effects of social support, hope and resilience on quality of life among Chinese bladder cancer patients: A cross-sectional study. *Health Qual. Life Outcomes* **14**(1), 1–9 (2016).
38. Zhao, X., Sun, M. & Yang, Y. Effects of social support, hope and resilience on depressive symptoms within 18 months after diagnosis of prostate cancer. *Health Qual. Life Outcomes* **19**(1), 1–10 (2021).
39. Opsomer, S., Lauwerier, E., De Lepeleire, J. & Pype, P. Resilience in advanced cancer caregiving. A systematic review and meta-synthesis. *Palliat. Med.* **36**(1), 44–58 (2022).
40. Zhang, X., Zhang, H., Zhang, Z., Fan, H. & Li, S. The mediating effect of resilience on the relationship between symptom burden and anxiety/depression among chinese patients with primary liver cancer after liver resection. *Patient Prefer. Adherence* **17**, 3033–3043 (2023).

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Competing interests

The authors declare no competing interests.

Additional information

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