Published Online: 2024 December 3 **Research Article**

The Role of Resilience and Defense Styles in Caregiver Burden Among the Mothers of Children with Cancer: A Descriptive-Correlational Study

Mohammad-Rasool Javeri [1], Fatemeh Ghaedi-Heidari [2, *], Sima Ghezelbash [2]

[1] School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran
[2] Department of Psychiatric Nursing, Nursing and Midwifery Care Research Center, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran

[*] ***Corresponding Author:*** Department of Psychiatric Nursing, Nursing and Midwifery Care Research Center, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran. Email: fatemeh.ghaedi@gmail.com

Received: 20 May, 2024; **Revised:** 30 June, 2024; **Accepted:** 18 September, 2024

Abstract

Background: The diagnosis of childhood cancer can be considered a multidimensional crisis for parents, particularly mothers.

Objectives: This study aimed to determine the predictive role of defense styles and resilience in the caregiver burden experienced by mothers of children with cancer.

Methods: This descriptive-analytical study focuses on mothers of children with cancer who were hospitalized in the pediatric wards of Seyed al-Shohada Hospital in Isfahan, Iran. A total of 136 participants were selected using convenience sampling. The study utilized the Defense Styles Questionnaire (DSQ-40), the Zarit Burden Scale (ZBS), and the Connor-Davidson Resilience Scale (CD-RISC) to collect data. The data were analyzed using STATA16.

Results: On average, mothers had a caregiver burden score of 38.65 and a resilience score of 93.51. The majority of mothers (62.5%) exhibited neurotic defensive styles. The regression test results indicated a significant inverse relationship between caregiver burden and resilience ($P = 0.002$), as well as a significant relationship between the child's sex and caregiver burden ($P < 0.05$).

Conclusions: Based on the study's findings, it is recommended that counseling and psycho-cognitive programs be designed, developed, implemented, and evaluated to enhance the resilience of mothers of children with cancer and thereby reduce their caregiver burden.

Keywords: Caregiver Burden, Defense Styles, Resilience, Mothers, Children, Cancer

1. Background

Cancer is the second leading cause of death worldwide (1). In recent years, there has been an increase in the prevalence of cancer in children, with Iran showing a higher incidence of childhood cancer compared to other countries (2). Childhood cancer generally refers to cancer cases in individuals under the age of 15, with common types including leukemia, sarcoma, and tumors of the central nervous system (3, 4).

Diagnosing cancer in children leads to numerous psychological, social, and financial challenges for parents. In the early stages of diagnosis, parents may experience anxiety, shock, depression, despair, and denial (5, 6). One of the significant challenges affecting parents of children with cancer is caregiver burden (7). Caregiver burden refers to the physical, psychological, social, or economic reactions that occur in the caregiver during care and is defined as the stress or negative experiences caused by caregiving (8). The lack of knowledge and experience regarding the disease process and treatment of children with leukemia, along with the unpredictable nature of the disease, can impose a high physical and mental burden on family caregivers (9). Wang et al.'s study (2017) found that parents of children newly diagnosed with leukemia

experienced a high caregiver burden, but spending less time on daily care for their sick child was associated with lower anxiety levels, better general health, and improved social support (10).

When a child is diagnosed with a disease, the mother's role as a caregiver significantly increases, making her more susceptible to depression than the father (11). Mothers tend to experience a higher caregiver burden than fathers (12). Research indicates that the type of illness the child has can affect the caregiver burden experienced by the mother, with mothers of children with cancer experiencing a higher burden compared to mothers of children with other diseases (13).

Psychological resilience is one factor that positively affects reducing the psychological consequences of caregiving. Resilience refers to an individual's ability to bounce back from difficult life events despite being exposed to extreme pressures (14). Resilience plays a crucial role in preventing or mitigating many psychiatric disorders (15). Mothers of children with cancer are often more psychologically and emotionally involved in their child's cancer and treatment, necessitating a high degree of resilience (6). A study by Rosenberg et al. found that parents of children with cancer had lower levels of resilience, more sleep problems, less satisfaction with their health, and reduced ability to express their concerns to the healthcare team (16). Additionally, a study conducted on mothers of children undergoing chemotherapy in Iran showed that the greater the caregiver burden, the lower the resilience (17).

Defense mechanisms, along with resilience, play a vital role in helping family caregivers adapt to stressful situations. Defense styles are primarily unconscious strategies aimed at protecting the ego from internal and external destructive risks and conflicts (18). These mechanisms shield individuals from the pressures caused by external and internal stressors, such as exposure to serious diseases like cancer, by controlling or modulating unacceptable motivations (19). The use of defense mechanisms is more prevalent among family caregivers compared to non-caregivers, and it often focuses on immature defense mechanisms. According to Abeni et al., caregivers tend to rely more on four immature defense mechanisms: Fantasy, withdrawal, repression, and projection (20).

The multidimensional impact of cancer on families, coupled with the possibility of premature death, makes cancer different from other chronic illnesses. As a result, family caregivers, particularly mothers, experience substantial stress. Therefore, identifying the coping mechanisms and emotional responses of mothers, who are often the closest caregivers to the sick child, is essential (21). However, previous studies have paid less attention to the subconscious processes, including the defense styles used by mothers of children with cancer in response to this disease, as well as the relationships between these defense mechanisms, resilience, and caregiver burden.

Given the negative consequences of high caregiver burden, early identification of factors contributing to it can play a crucial role in improving the health and well-being of both mothers and their sick children. Effective planning and intervention in this area require adequate information.

2. Objectives

Therefore, this study aimed to explore the relationship between defense styles, resilience, and caregiver burden in mothers of children with cancer.

3. Methods

This descriptive-correlational study was conducted from August to January 2022. The participants were mothers of children diagnosed with cancer and hospitalized in pediatric wards 1 and 2 of Seyed al-Shohada Hospital, affiliated with Isfahan University of Medical Sciences. Convenience sampling was used to select participants. The inclusion criteria were a willingness to participate and cooperate, the absence of other chronic diseases or congenital anomalies in the child, a minimum of three months having passed since the diagnosis of one of the common types of childhood cancers (including leukemia, lymphoma, and central nervous system tumors) confirmed by an oncologist (22), no mental illness or chronic diseases in the mother (as per self-report), the ability to read, write, and respond to questions, and no current caregiving responsibilities for another family member with a chronic illness. Mothers who did not fully complete the questionnaires were excluded from the study.

3.1. Sample Size and Sampling

The sample size was calculated using the formula below:

$$N = \left(\frac{Z_\alpha + Z_\beta}{C} \right)^2 + 3$$

where $\alpha = 0.05$, $\beta = 0.1$, $Z_\alpha = 1.96$, $Z_\beta = 1.2816$, and $C = 0.5$. Based on this calculation, the sample size was determined to be 113. To account for the possibility of

dropouts, an additional 20% was added, and the final sample size was set at 136.

3.2. Data Collection Tools

Data were collected using a demographic characteristics form, which gathered information on variables such as the child's age and gender, the mother's education level, marital status, occupation, income status, diagnosis, current treatment method, and place of residence. Additionally, three standardized instruments were employed: The Defense Styles Questionnaire (DSQ-40), the Zarit Burden Scale (ZBS), and the Connor-Davidson Resilience Scale (CD-RISC) to collect relevant data on defense mechanisms, caregiver burden, and resilience, respectively.

3.2.1. Defense Styles Questionnaire (DSQ-40)

The Defense Styles Questionnaire (DSQ-40) was developed by Andrews et al. and consists of 40 items. The DSQ-40 uses a 9-point Likert scale for scoring, ranging from 1 (completely disagree) to 9 (completely agree). This questionnaire identifies 20 defense mechanisms classified into three categories: Mature, immature, and neurotic. A score exceeding 10 in any of the defense mechanisms indicates that the individual is utilizing that particular defense mechanism (23). Heidarinasab and Shaeiri standardized the DSQ-40 among Iranian students, confirming its validity in assessing defensive styles. The reliability of the questionnaire was established using Cronbach's alpha coefficient, which was reported as 0.74 (24).

3.2.2. Zarit Burden Scale

The Zarit Burden Scale (ZBS) was developed by Zarit S. and Zarit J in 1987 and consists of 22 questions that assess caregiver burden. Each question is rated on a 5-point Likert scale, ranging from 0 (never) to 4 (always). The total score reflects the level of caregiver burden, with scores ranging from 0 to 88. A higher score indicates a greater level of caregiver burden (25). In a study by Navidian et al., the validity of the ZBS was confirmed, and its reliability was measured using the retest method, resulting in a Cronbach's alpha coefficient of 0.94 (26).

3.2.3. Connor-Davidson Resilience Scale

The Connor-Davidson Resilience Scale (CD-RISC) was developed by Connor and Davidson in 2003 and consists of 25 questions. Each question is rated on a 5-point Likert scale, ranging from 0 (completely false) to 4 (always true). The total score ranges from 0 to 100, with higher scores indicating greater resilience (27). Rezaei and Rasouli standardized this questionnaire for adolescents in Iran. After confirming its validity, they reported a reliability score of 0.82 for the entire questionnaire using Cronbach's alpha coefficient (28).

3.3. Data Collection

To collect data, the researcher obtained written permission and made the necessary arrangements to attend Seyed al-Shohada Hospital in Isfahan. During face-to-face meetings with each mother, the researcher introduced himself and explained the purpose of the study. After obtaining written consent, the questionnaires were distributed. The researcher remained with the mothers throughout the entire response period to provide clarification and answer any questions they had regarding the questionnaire.

3.4. Data Analysis

The data were analyzed using STATA16, and a multiple regression test was employed to assess the predictive role of defense styles and resilience in the caregiver burden experienced by mothers of children with cancer. A significance level of less than 0.05 was considered for the analysis.

4. Results

The mean age of the mothers was 36.7 years (standard deviation = 6.11). The majority of the mothers had an education level below a diploma (41.18%), were housewives (85.29%), had a son (56.72%), were married (99.26%), and lived in urban areas (80.88%). Additionally, the income status of most mothers was below their living expenses (88.97%). The most common diagnosis for the children was leukemia (55.88%), and the most frequently used treatment method was chemotherapy (77.94%) (Table 1).

The results of the study indicated that the mean caregiver burden score was 38.65, with a standard deviation of 11.63. The caregiver burden scores ranged from 14 to 58. The mean resilience score among mothers was 93.51, with a standard deviation of 14.05, and the scores ranged from 53 to 118. Additionally, the majority of mothers predominantly used the neurotic defense style (Table 2).

The results of the multiple regression test revealed a significant inverse correlation between resilience and caregiver burden ($P < 0.05$), as well as a direct significant relationship between the child's sex and caregiver burden (Table 3). Furthermore, the mature and neurotic defense styles showed no significant

Table 1. Frequency of Demographic Information

Variables	No. (%)
Mothers' education	
Lower/upper secondary	56 (41.18)
Diploma/associate degree	32 (23.53)
Bachelor's	39 (28.68)
Master's/higher	9 (6.62)
Mothers' job	
Housewife	116 (85.29)
Employed	12 (8.82)
Self-employed	7 (5.15)
Others	1 (0.74)
Child's gender	
Female	59 (43.38)
Male	77 (56.72)
Marital status	
Divorced	1 (0.74)
Married	135 (99.26)
Place of residence	
Village	26 (19.12)
City	110 (80.88)
Income	
Less than living expenses	121 (88.97)
Higher than living expenses	15 (11.03)
Diagnosis	
Leukemia	76 (55.88)
Lymphoma	18 (13.24)
Nerve tumors	17 (12.50)
Others	25 (18.38)
Current treatment	
Chemotherapy	106 (77.94)
Radiotherapy	1(0.74)
Chemotherapy/radiotherapy	22 (16.18)
Others	17 (5.15)

Table 2. Frequency of Defensive Styles

Defense Styles	No. (%)
Mature	46 (33.82)
Immature	5 (3.68)
Neurotic	85 (62.50)

relationship with the caregiver burden of mothers of children with cancer ($P > 0.05$) (Table 4).

5. Discussion

The current study investigated the relationship between defense styles, resilience, and caregiver burden in mothers of children with cancer. The findings revealed that, on average, the mothers of children with cancer experienced a moderate level of caregiver burden, which aligns with previous studies conducted by Motlagh et al. (29), Chaghazardi et al. (7), and Ahmadi et al. (22). However, a study by Kahriman and Zaybak reported lower levels of caregiver burden among parents of cancer patients (30). Differences in the study population and the tools used to measure caregiver

Table 3. Factors Related to Caregiver Burden Using Multiple Regression Test

Caregiver Burden	Coefficient	Standard Deviation	*t*	P-Value	Confidence Interval (95%)	
Child's sex	4.07	1.89	2.15	0.03	0.32	7.81
Resilience	- 0.25	- 0.06	- 3.73	0.00	- 0.38	- 0.11
Cons	58	6.39	9.07	0.00	45.35	70.64

Table 4. Predictive Role of Defensive Styles in Caregiving Burden Using Multiple Regression Test

Caregiver Burden	Coefficient	Standard Deviation	*t*	P-Value	Confidence Interval (95%)	
Mature defense style	5.73	5.42	1.06	0.29	-4.98	16.46
Neurotic defense style	9.14	5.29	1.73	0.87	-1.33	19.61
Cons	31	5.14	6.02	0.00		

burden may partially explain this discrepancy. Based on our observations, in Iranian culture, mothers generally assume the primary caregiving role for their sick children, believing that no one can care for their child as well as they can. Given the extended caregiving responsibilities that Iranian mothers undertake, it is not surprising that they experience a significant caregiver burden.

The results of this study also showed that the mothers exhibited high levels of resilience, consistent with previous studies by Mohammadsalehi et al. (31), Toledano-Toledano et al. (32), and Maatouk et al. (33). However, these findings contrast with the studies by da Silva et al. (34) and Üzar-Özçetin and Dursun (2020) (35), where da Silva et al. reported that most participants had moderate resilience (34), and Üzar-Özçetin and Dursun found caregivers had low resilience (35). Differences in the duration of caregiving for a child with cancer may explain the discrepancy in resilience levels between the mothers in this study and those in the previous research. Resilience is a multidimensional concept that can evolve over time and is considered a potentially modifiable factor (32).

Furthermore, the results of this study revealed that the majority of mothers used neurotic defense styles. This suggests that mothers of children with cancer may adopt less effective coping mechanisms, such as neurotic defense styles, due to the exhausting nature of caregiving. However, if they can balance their defense mechanisms and employ more mature defense styles, they may achieve better adaptation (36). Abeni et al. similarly found that family caregivers predominantly used immature defense mechanisms (20), which is partially consistent with the present study's findings.

The study also found a significant inverse correlation between resilience and caregiver burden (P = 0.002). This is in line with Manzari et al.'s study (2023), which examined the relationship between caregiver burden and resilience in family caregivers of COVID-19 patients (37), and Rasulpoor et al.'s study, which explored the relationship between caregiver burden, resilience, and coping styles in mothers of children with autism (38). Resilient individuals tend to view challenges as opportunities for growth and prefer change over stability. The caregiving process for children with cancer can be a heavy burden, creating a stressful and overwhelming experience for mothers. Thus, resilience can play a crucial role in alleviating caregiver burden by helping mothers manage the psychological and physical challenges of caregiving (37).

Contrary to expectations, the results of this study found no significant relationship between defense styles and caregiver burden in mothers of children with cancer. A review of the literature showed no similar findings that align with these results. However, a study on caregivers of older stroke patients found that caregivers experiencing a higher burden of care were more likely to use negative coping strategies, such as escape-avoidance and distancing (which relate to denial, distraction, or detachment) (39). The discrepancy may stem from differences in the target populations and the data collection tools used.

The results of this study indicated that a child's gender was the only demographic variable that significantly predicted the caregiver burden of mothers of children with cancer. Consistent with previous research (22, 29), the caregiver burden was found to be significantly associated with the gender of the sick child. Specifically, mothers of male children with cancer experienced a greater burden than mothers of female children. However, some studies did not find a significant effect of a child's gender on the burden of

care (8). It is possible that gender indirectly influences caregiver burden by affecting other factors that contribute to its increase. For example, research has shown that girls tend to exhibit more adaptive behaviors than boys when faced with new situations, including accepting cancer treatments (38). This could potentially make it easier for mothers to manage the challenges of caregiving.

The present study has a few limitations. It focused exclusively on mothers of children with cancer, so the findings cannot be generalized to caregivers of children with other chronic conditions. Additionally, the use of self-report questionnaires for data collection may have resulted in subjective responses.

The study revealed that the caregiver burden among mothers of children with cancer was moderate, while their resilience levels were high. The majority of mothers used neurotic defense styles. Furthermore, the results showed that an increase in resilience was significantly associated with a decrease in caregiver burden. However, no significant relationship was found between defense styles and caregiver burden. These findings suggest that interventions, as well as psychological and counseling programs aimed at enhancing resilience, could be beneficial in reducing the caregiver burden among mothers of children with cancer.

Acknowledgements

We wish to express our deepest appreciation and sincere gratitude to everyone who has contributed to this work. In particular we would like to thank all mothers for their cooperation. The research team is also grateful to Isfahan University of Medical Sciences for the financial support of the research.

Footnotes

Authors' Contribution: Study concept and design: M. R. J., F. G. H., and S. G. H.; Analysis and interpretation of data: F. G. H. and M. R. J.; Drafting of the manuscript: M. R. J. and F. G. H.; Critical revision of the manuscript for important intellectual content: M. R. J., F. G. H., and S. G. H.; Statistical analysis: F. G. H.

Conflict of Interests Statement: The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Ethical Approval: This study was approved by the Ethics Committee of Isfahan University of Medical Sciences (IR.MUI.NUREMA.REC.1401.054).

Funding/Support: This study was funded by the Deputy of research and technology of Isfahan University of Medical Sciences. This study was part of a master's thesis (No.: 3401213).

Informed Consent: Informed consent was obtained from all participant. The mothers were assured that not participating in this study would not cause any disruption in the child's treatment process.

References

1. World Health Organization. *cancer*. 2021. Available from: https://www.who.int/news-room/fact-sheets/detail/cancer.
2. Hassanipour S, Fathalipour M, Delam H, Ghorbani M, Abdzadeh E, Arab-Zozani M, et al. The Incidence of Childhood Cancer in Iran: A systematic review and meta-analysis. *Iranian Journal of Pediatric Hematology & Oncology*. 2019. https://doi.org/10.18502/ijpho.v9i3.1170.
3. Borrescio-Higa F, Valdes N. The Psychosocial Burden of Families with Childhood Blood Cancer. *Int J Environ Res Public Health*. 2022;**19**(1). [PubMed ID: 35010854]. [PubMed Central ID: PMC8744617]. https://doi.org/10.3390/ijerph19010599.
4. Mirzaie M, Yazdy F, Navidi Z. [Survey personal and disease characteristics of children with Cancer hospitalized in 17 Shahrivar hospital, Rasht]. *J Holistic Nurs Midwifery*. 2009. FA.
5. Jamali A, Ghaljaei F, Keikhaei A, Jalalodini A. Effect of Peer Education on the Resilience of Mothers of Children with Leukemia: A Clinical Trial. *Medical - Surgical Nursing Journal*. 2019;**8**(2). https://doi.org/10.5812/msnj.92686.
6. Rahimi S, Fadakar Soghe R, Tabri R, Kazemnezhad leili E. [Related factors with Quality of Life among preschool children with cancer]. *Journal of Holistic Nursing And Midwifery*. 2014;**24**(1):30-9. FA.
7. Chaghazardi M, Janatolmakan M, Rezaeian S, Khatony A. Care burden and associated factors in caregivers of children with cancer. *Ital J Pediatr*. 2022;**48**(1):92. [PubMed ID: 35698160]. [PubMed Central ID: PMC9195224]. https://doi.org/10.1186/s13052-022-01291-w.
8. Ahmadi M, Rassouli M, Karami M, Abasszadeh A, Poormansouri S. Care burden and its Related Factors in Parents of Children with Cancer. *Iran Journal of Nursing*. 2018;**31**(111):40-51. https://doi.org/10.29252/ijn.31.111.40.
9. Liu Y, Ma L, Mo L, Shen X, Zhong D. The demands of caregivers of children with acute lymphoblastic leukaemia in different therapy stages and the exploration of possible interventions: A longitudinal investigation survey at a Tertiary Medical Institution. *Nurs Open*. 2023;**10**(4):2273-81. [PubMed ID: 36479623]. [PubMed Central ID: PMC10006608]. https://doi.org/10.1002/nop2.1481.
10. Wang J, Shen N, Zhang X, Shen M, Xie A, Howell D, et al. Care burden and its predictive factors in parents of newly diagnosed children with acute lymphoblastic leukemia in academic hospitals in China. *Support Care Cancer*. 2017;**25**(12):3703-13. [PubMed ID: 28714044]. https://doi.org/10.1007/s00520-017-3796-3.

11. Ghufran M, Andrades M, Nanji K. Frequency and severity of depression among mothers of children with cancer: Results from a teaching hospital in Karachi, Pakistan. *British Journal of Medical Practitioners*. 2014;**7**(1).
12. Piran P, Khademi Z, Tayari N, Mansouri N. Caregiving burden of children with chronic diseases. *Electron Physician*. 2017;**9**(9):5380-7. [PubMed ID: 29038725]. [PubMed Central ID: PMC5633241]. https://doi.org/10.19082/5380.
13. Boztepe H, Cinar S, Ay A, Kerimoglu Yildiz G, Kilic C. Predictors of caregiver burden in mothers of children with leukemia and cerebral palsy. *J Psychosoc Oncol*. 2019;**37**(1):69-78. [PubMed ID: 30422097]. https://doi.org/10.1080/07347332.2018.1489441.
14. Karimirad MR, Seyedfatemi N, Noghani F, Amini E, Kamali R. Resiliency family caregivers of people with mental disorders in Tehran. *Iranian Journal of Nursing Research*. 2018;**13**(1):57-63. https://doi.org/10.21859/ijnr-13018.
15. Hatami F, Hojjati H, Mirbehbahani N. [The Effect of ROY Compatibility Model on Care Resiliency in Mothers of Children Treated with Chemotherapy]. *J Nurs Edu*. 2018;**6**(5):64-70. FA.
16. Rosenberg AR, Wolfe J, Bradford MC, Shaffer ML, Yi-Frazier JP, Curtis JR, et al. Resilience and psychosocial outcomes in parents of children with cancer. *Pediatr Blood Cancer*. 2014;**61**(3):552-7. [PubMed ID: 24249426]. [PubMed Central ID: PMC4066960]. https://doi.org/10.1002/pbc.24854.
17. Shogi M, aliabadi Z, Mohammadi R. Relationship between Resilience and Caregiving Burden of Mothers of Children with Cancer Undergoing Chemotherapy. *Nursing and Midwifery Journal*. 2024;**22**(2):93-102. https://doi.org/10.61186/unmf.22.2.93.
18. Bonafede M, Granieri A, Binazzi A, Mensi C, Grosso F, Santoro G, et al. Psychological Distress after a Diagnosis of Malignant Mesothelioma in a Group of Patients and Caregivers at the National Priority Contaminated Site of Casale Monferrato. *Int J Environ Res Public Health*. 2020;**17**(12). [PubMed ID: 32560553]. [PubMed Central ID: PMC7345082]. https://doi.org/10.3390/ijerph17124353.
19. Granieri A, La Marca L, Mannino G, Giunta S, Guglielmucci F, Schimmenti A. The Relationship between Defense Patterns and DSM-5 Maladaptive Personality Domains. *Front Psychol*. 2017;**8**:1926. [PubMed ID: 29163301]. [PubMed Central ID: PMC5673655]. https://doi.org/10.3389/fpsyg.2017.01926.
20. Abeni MS, Magni M, Conte M, Mangiacavalli S, Pochintesta L, Vicenzi G, et al. Psychological care of caregivers, nurses and physicians: a study of a new approach. *Cancer Med*. 2014;**3**(1):101-10. [PubMed ID: 24402889]. [PubMed Central ID: PMC3930394]. https://doi.org/10.1002/cam4.163.
21. Mollaee F, Borhani F, Abbaszadeh A. [Correlation of burden of care and spiritual health in family caregivers of cancer patients]. *Nurs Midwifery J*. 2019;**17**(4):292-9. FA.
22. Ahmadi M, Rassouli M, Gheibizadeh M, Karami M, Poormansouri S. Predictors of Caregiver Burden among Parents of Children with Cancer. *Iranian Journal of Pediatric Hematology & Oncology*. 2019. https://doi.org/10.18502/ijpho.v9i4.1574.
23. Andrews G, Singh M, Bond M. The Defense Style Questionnaire. *J Nerv Ment Dis*. 1993;**181**(4):246-56. [PubMed ID: 8473876]. https://doi.org/10.1097/00005053-199304000-00006.
24. Heidarinasab L, Shaeiri M. [Factorial Structure of the Defense Style Questionnaire (DSQ-40)]. *J Modern Psychol Res*. 2011;**6**(21):77-97. FA.
25. Zarit S, Zarit J. *The memory and behavior problems checklist: 1987R and the burden interview (technical report)*. **6**. University Park, PA: Gerontology Center, The Pennsylvania State University; 1987.
26. Navidian A, Pahlavanzadeh S, Yazdani M. [The Effectiveness of Family Training on Family Caregivers of Inpatients with Mental Disorders]. *Iran J Psychiatry Clinical Psychol*. 2010;**16**(2):99-106. FA.
27. Connor KM, Davidson JR. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depress Anxiety*. 2003;**18**(2):76-82. [PubMed ID: 12964174]. https://doi.org/10.1002/da.10113.
28. Rezaei AS, Rasoli M. [Psychometric properties of the Persian version of "conner-davidson resilience scale" in adolescents with cancer]. *J Urmia Nurs Midwifery Faculty*. 2022;**13**(9):739-47. FA. https://doi.org/10.30476/jhsss.2021.91999.1277.
29. Motlagh ME, Mirzaei-Alavijeh M, Hosseini SN. Care Burden in Parents of Children with Leukemia: A Cross-Sectional Study in the West of Iran. *Int J Pediatr*. 2019;**7**(6):9541-8. https://doi.org/10.22038/ijp.2019.38584.3305.
30. Kahriman F, Zaybak A. Caregiver Burden and Perceived Social Support among Caregivers of Patients with Cancer. *Asian Pac J Cancer Prev*. 2015;**16**(8):3313-7. [PubMed ID: 25921137]. https://doi.org/10.7314/apjcp.2015.16.8.3313.
31. Mohammadsalehi N, Asgarian A, Ghasemi M, Mohammadbeigi A. Cancer resilience in parents of children with cancer; the role of general health and self-efficacy on resiliency. *J Cancer Res Ther*. 2022;**18**(4):1119-23. [PubMed ID: 36149170]. https://doi.org/10.4103/jcrt.JCRT_464_19.
32. Toledano-Toledano F, Luna D, Moral de la Rubia J, Martinez Valverde S, Bermudez Moron CA, Salazar Garcia M, et al. Psychosocial Factors Predicting Resilience in Family Caregivers of Children with Cancer: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2021;**18**(2). [PubMed ID: 33477253]. [PubMed Central ID: PMC7830523]. https://doi.org/10.3390/ijerph18020748.
33. Maatouk I, He S, Becker N, Hummel M, Hemmer S, Hillengass M, et al. Association of resilience with health-related quality of life and depression in multiple myeloma and its precursors: results of a German cross-sectional study. *BMJ Open*. 2018;**8**(7). e021376. [PubMed ID: 30061438]. [PubMed Central ID: PMC6067407]. https://doi.org/10.1136/bmjopen-2017-021376.
34. da Silva JS, Moraes OF, Sabin LD, Almeida FO, Magnago T. Resilience of family caregivers of children and adolescents in treatment of neoplasms and associated factors. *Rev Bras Enferm*. 2021;**74**(6). e20190388. [PubMed ID: 34431932]. https://doi.org/10.1590/0034-7167-2019-0388.
35. Uzar-Ozceti N, Dursun SI. Quality of life, caregiver burden, and resilience among the family caregivers of cancer survivors. *Eur J Oncol Nurs*. 2020;**48**:101832. [PubMed ID: 32949940]. https://doi.org/10.1016/j.ejon.2020.101832.
36. Merlo E, McNabney S, Frisone F, Sicari F, Paunica M, Motofei C, et al. Compassion and suppression in caregivers: twin masks of tragedy and joy of caring. *Journal of Mind and Medical Sciences*. 2020;**7**(1):61-8. https://doi.org/10.22543/7674.71.P6168.
37. Manzari ZS, Rafiei H, Ghaderi MS, Abedi F, Mafi MH. Relationship between Resilience and Caregiver Burden Among Home Caregivers of COVID-19 Patients. *Home Healthc Now*. 2023;**41**(1):42-8. [PubMed ID: 36607209]. [PubMed Central ID: PMC9812295]. https://doi.org/10.1097/NHH.0000000000001133.
38. Rasoulpoor S, Salari N, Shiani A, Khaledi-Paveh B, Mohammadi M. Determining the relationship between over-care burden and coping styles, and resilience in mothers of children with autism spectrum disorder. *Ital J Pediatr*. 2023;**49**(1):53. [PubMed ID: 37158976]. [PubMed Central ID: PMC10169368]. https://doi.org/10.1186/s13052-023-01465-0.
39. Kazemi A, Azimian J, Mafi M, Allen KA, Motalebi SA. Caregiver burden and coping strategies in caregivers of older patients with stroke. *BMC Psychol*. 2021;**9**(1):51. [PubMed ID: 33794995]. [PubMed Central ID: PMC8017750]. https://doi.org/10.1186/s40359-021-00556-z.