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Original Article

Correlation of Social Support with Care Burden and Post-Traumatic Growth in Mothers of Children with Leukemia

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Abstract

Introduction: Mothers of children with leukemia are affected by negative and positive consequences of the disease. Given the crucial role that mothers play in child care, this study investigated the correlation between social support, care burden, and post-traumatic growth in mothers of children with leukemia.

Methods: This descriptive-correlational study included 122 mothers of children under 14 years with leukemia. The study took place at the Tabriz Mardani Azari Children's Hospital. The data were collected via questionnaires including Northouse Social Support Questionnaire, Zarit Burden Interview (ZBI), and Post-Traumatic Growth Inventory (PTGI). The data were analyzed by SPSS software. Pearson correlation test, analysis of variance (ANOVA) and independent t test were used to analyze of data.

Results: There was a negative correlation between the total score of social support especially support from spouse and friends with mothers' care burden. The total score of social support had a positive correlation with mothers' post-traumatic growth. Additionally, support from spouses, friends, physicians, and nurses positively correlated with post-traumatic growth scores.

Conclusion: Identifying the support resources of mothers and reinforcing them can improve the mothers' well-being and increase the quality of child care by reducing the burden of care and improving post-traumatic growth.

Introduction

According to family systems theory, an illness within a family impacts not only the individual but also the entire family system. Consequently, cancer is considered as a family disease, influencing the relationships among family members and potentially leading to both short-term and long-term consequences.[1,2] Leukemia is the most common type of cancer in children. In 2020, the global incidence rate of childhood leukemia was 3.4 cases per 100,000 children, with a total of 67,008 new cases reported worldwide.[3] It marked by the abnormal growth of immature white blood cells in the bone marrow. This condition disrupts the production of healthy blood cells, leading to a suppressed immune system and a range of symptoms such as fever (with or without an infection), bone or joint pain, fatigue or weakness and easy bruising.[4]

Previous research indicates that parents of children with life threatening condition face significant challenges and disruptions to their normal lives.[5] As the primary caregivers, mothers tend to be more deeply involved in their child's diagnosis, treatment, and day-to-day care than other family members.[6] Over time, these responsibilities may cause mothers to neglect their self-care and the needs of other children, disrupting their daily routines and roles.[7,8]

The negative outcomes that mothers experience while caring for their children are commonly referred to as caregiving burdens, encompassing a broad spectrum of physical, emotional, social, and economic stresses.[8,9] Many caregivers experience feelings such as isolation, anxiety, and depression due to reduced social activities, which stem from the complexities of medical appointments, treatment decisions, and the emotional toll of caregiving.[10]

Researches has identified several factors that influence the care burden faced by parents of children with leukemia, including the parents' health and the number of available caregivers.[11,12] Various social factors and support resources significantly influence the care burden experienced by these parents.[13] Family members, spouse, friends, colleagues, and healthcare professionals all serve as vital sources of support for parents of children diagnosed with cancer.[14] Adequate support can help families navigate the challenges posed by their child's illness. By offering assistance and relevant information, support systems can enhance the mother's sense of control over her circumstances, providing her with a more realistic

perspective on child's condition.[11,15] This support may even facilitate positive psychological changes in mothers.[16] In essence, effective support during difficult psychological times can transform an individual's perception of the world, serving as a catalyst for psychological growth.[17]

Some parents have reported experiencing positive psychological changes in the aftermath of their child's illness.[18] These changes are often described as post-traumatic growth—a phenomenon that arises from grappling with difficult life circumstances. Such transformative experiences typically involve the process of finding meaning.[17] Consequently, individuals may strive to reconstruct their thoughts and perspectives, leading to the development of a renewed worldview, fresh ideas, and new aspirations.[19]

The literature review highlights the complex interplay between social support and the psychological well-being of caregivers facing the challenges associated with their children's health conditions. In support of the previous finding, Halldorsdottir et al[20] concluded in their review that social support may be most helpful in promoting post-traumatic growth of family members of childhood cancer survivors. Arab et al[21] found that satisfaction with social support significantly impacts the care burden in mothers of children with leukemia. In another study, mothers of children with beta-thalassemia reported low levels of social support alongside a high caregiving burden; however, no statistically significant relationship was established between social support and caregiving burden in this study.[22] Conversely, research involving mothers of children with physical disabilities revealed a notable positive correlation between support from family and friends and post-traumatic growth.[23] According to the model proposed by Calhoun and Tedeschi,[24] having a robust support system is crucial for facilitating post-traumatic growth. Additionally, studies by Kim[25] and Hong et al[26] indicate that certain aspects of social support significantly contribute to the post-traumatic growth in parents of children with leukemia.

The incidence of childhood leukemia is increasing in Iran.[27,28] Ensuring the well-being of mothers as the primary caregivers of children is crucial. The current study investigated the correlation between social support, care burden, and post-traumatic growth in mothers of children with leukemia.

This research is grounded in Travelbee's theory of human-to-human relationships, with the study variables adapted from its concepts. The theory posits that interpersonal relationships aid patients and families in coping with disease-related suffering by finding meaning in their experiences and fostering rapport in the final stages.[29] Characteristics of social support, including emotional and informational support,[30] align with Travelbee's notions of empathy and sympathy. Suffering, as defined in Travelbee's framework, encompasses emotional, physical, and mental discomfort.[31] The concept of care burden refers to the multifaceted strain of disease, leading to emotional and behavioral issues for caregivers.[10] Thus, care burden can be viewed as a form of suffering within Travelbee's context. The ultimate goal of a relationship, according to Travelbee, is to find meaning and establish rapport.[32] This study operationalizes the search for meaning through the variable of post-traumatic growth, which arises from shifts in self-perception and approaches to experience.

Material and Methods

This research was conducted as a descriptive correlational study, following the STROBE guideline[33] for study design and reporting. The study took place from June to January 2022 at the Mardani Azari Children's Hospital affiliated with Tabriz University of Medical Sciences, the only referral center for pediatric care in northwest of Iran.

The study included mothers who met the following criteria: They were the primary caregivers of children aged 6 month to 14 years diagnosed with leukemia at least six months prior to the study. Exclusion criteria were including: The mother or child having other medical conditions; the mother's illiteracy; and single status. Eligible mothers participated in the study via convenience sampling and completed the questionnaires in a private room within the oncology unit. The sample size was determined based on a power of 80%, a confidence level of 95%, and a correlation coefficient of 0.27, according to Oh's study.[34] Using G*Power software, the initial sample size was calculated to be 102. To account for a potential attrition rate of 20%, a total of 122 mothers were ultimately included in the study.

The key variables in this study were social support, care burden, and post-traumatic growth. Additionally, various social and individual characteristics of both mothers and children were assessed as potential confounding variables. Maternal demographic information included age, number of children, education level, employment status, place of residence, and economic status. Child demographic information encompassed sex, age, birth order, duration of hospitalization, and type of leukemia. The data collection instrument consisted of questionnaires assessing social support, the burden of care, and post-traumatic growth.

The Northouse Social Support Questionnaire (1988) comprised 40 items across five dimensions: spouse, family members, friends, physicians, and nurses. Each dimension contained 8 items, scored using a five-point Likert scale ranging from 1 to 5, where 1 indicated "strongly disagree," 2 represented "disagree," 3 was "neutral," 4 stood for "agree," and 5 indicated "strongly agree." Scores for each dimension were calculated separately (ranging from 8 to 40), and the total score was derived from the sum of the dimension scores, yielding a range between 40 and 200.[35]

The Zarit Burden Interview (ZBI), developed by Zarit et al included 22 items with responses based on ordered frequency, scored from 0 (never) to 4 (nearly always). The

total score for this instrument ranged from 0 to 88, with a higher score indicating greater caregiver burden.[36]

The Post-Traumatic Growth Inventory (PTGI), created by Tedeschi & Calhoun featured 21 items divided into five subscales: Relating to others, new possibilities, personal strength, spiritual change, and appreciation of life. Each item was scored on a six-point Likert scale from 0 to 5, where 0 meant "I did not experience this change as a result of my crisis," and 5 indicated "very great degree." The total score could range from 0 to 105, with higher scores reflecting greater post-traumatic growth.[37]

The validity of the questionnaires was assessed through content validity and feedback from a panel of experts. To evaluate reliability, Cronbach's alpha coefficients were calculated for each questionnaire: Northouse Social Support Questionnaire (0.89), ZBI (0.85), and PTGI (0.85), demonstrating strong internal consistency.

Data analysis was performed using IBM SPSS version 25.0. Descriptive statistics, including frequency (percentage) and mean (standard deviation), were used to report social support, care burden, and post-traumatic growth. Following an assessment of data distribution normality using the Kolmogorov-Smirnov test, the Pearson correlation test was employed to explore relationships among the variables. Additionally, analysis of variance (ANOVA) and independent t-tests were utilized to compare demographic characteristics. The Pearson correlation test was applied to examine relationships between the study variables and demographic factors. Statistical significance was set at $P<0.05$.

The study was approved by the Ethics Committee of Tabriz University of Medical Sciences (ethics code: IR.TBZMED.REC.1399.1084). Informed consent was obtained from all eligible mother. All study phases were conducted in accordance with the Declaration of Helsinki. The purpose of the study was explained to the mothers at the beginning of the study. They were informed about the voluntary nature of their participation in the study, the confidentiality of the information, and their right to withdraw from the study at any time. After receiving answers to their questions, the mothers signed a written consent form.

Results

The mean age of the mothers was 34.57 years, while the mean age of the children was 86 months. The demographic and disease related characteristics of both mothers and children are detailed in Table 1.

The mean total score for social support was 149.53 (18.67). Among the various sources of support, mothers reported receiving the highest levels of assistance from their families, while support from friends was the lowest. The mean care burden score was 33.15 (13.44), which falls below the midpoint on the scale, suggesting a relatively lower level of perceived burden. In terms of post-traumatic growth, the mean total score was 71.90 (14.40), with scores for all subscales also exceeding their midpoint (see Table 2 for details).

Table 1. Demographic characteristics of mothers and children with leukemia

Quantitative variables	**Mean (SD)**	**Mini-Max**
Mother's age (years)	34.57 (5.81)	21-51
Child's age (month)	86.36 (35.16)	15-162
Duration of the child's last hospitalization (days)	14.34 (12.35)	2-90
Duration of diagnosis (months)	35.70 (25.65)	7-123
Qualitative variables	**N (%)**	
Child gender		
Girl	46(37.7)	
Boy	76(62.3)	
Child's birth rank		
First child	61(50)	
Second child	49(40.2)	
Third child	11(9)	
Fourth child	1(0.8)	
Type of child's disease		
ALL	117(95.9)	
AML	5(4.1)	
Mother's education		
Primary	24(19.7)	
Middle school	18(14.8)	
High school	39(32)	
University	41(33.6)	
Mother's job		
Housewife	113(92.6)	
Working outside	9(7.4)	
Working at home	0(0)	
Number of family members		
3	47(38.5)	
4	60(49.2)	
5	14(11.5)	
More than 5	1(0.8)	
Place of residence		
City	58(47.5)	
Village	64(52.5)	
Monthly income		
Good	5(4.1)	
Average	51(41.8)	
Low	66(54.1)	

The results from the Pearson correlation test indicated a significant negative correlation ($P=0.004$) between the total score of social support and the mothers' care burden. Additionally, negative correlations were observed between support from spouses and friends and the mothers' care burden ($P<0.05$). Conversely, there was a positive correlation between the total score of social support and the total score of post-traumatic growth ($P=0.002$).

Table 2. The scores of received social support, post-traumatic growth, and caregiver burden of mothers

	Possible range	Average of range	Mean (SD)	Observed range
Social support total score	40-200	120	149.53 (18.67)	52-186
Sources of social support				
Spouse	8-40	24	30.04 (5.23)	8-40
Family	8-40	24	30.81 (5.10)	10-40
Friends	8-40	24	28.39 (5.65)	8-40
Nurses	8-40	24	30.66 (4.25)	8-38
Physicians	8-40	24	29.62 (5.67)	12-40
Posttraumatic growth total score	0-105	52.5	71.90 (14.40)	42.62-100
Factors of posttraumatic growth				
New possibilities	0-25	12.5	15.40 (4.71)	5-25
Relating to others	0-35	17.5	22.49 (6.56)	6-35
Personal strength	0-20	10	14.77 (3.74)	1-20
Appreciation of life	0-15	7.5	11.69 (2.34)	5.15
Spiritual change	0-10	5	7.53 (2.22)	0-10
Caregiver burden total score	0-88	44	33.15 (13.44)	3-66

Furthermore, support from spouses, friends, physicians, and nurses was positively correlated with the total score of post-traumatic growth ($P<0.05$) (see Table 3 for details).

Among the demographic characteristics, the results of the ANOVA test revealed statistically significant differences in total care burden scores based on family income ($P=0.001$, $F=6.94$) and the mother's occupation ($P=0.01$, $F=6.02$). Specifically, families with lower income levels and mothers identified as housewives reported higher care burden scores. However, no statistically significant relationships were identified between the mother's education, the number of family members, or the child's birth rank and the study variables ($P>0.05$).

Additionally, the Pearson correlation test found no significant correlations between the ages of the mother and child, and the length of hospitalization, with the study variables ($P>0.05$). Results from the independent t-test indicated no significant differences in the mean scores of the investigated variables based on family residence, the gender of the child, and the type of disease ($P>0.05$).

Discussion

This study aimed to explore the relationships between social support, caregiving burden, and post-traumatic growth among mothers of children with leukemia. As one of the first studies of its kind in Iran and the Middle East, it found a significant inverse association between social support—especially from spouses and friends—and caregiving burden, suggesting that greater social support may help alleviate caregivers' psychological stress.

Gabriel et al[38] found that caregivers of breast cancer patients who perceived their social support as high reported lower levels of caregiving burden. Similar findings were reported in studies involving parents of children undergoing liver transplantation[39] and parents of children with blood disorders.[40] Research by Wang et al[11] and Marsack-Topolewski[41] also identified social support as an important factor in alleviating caregiving burden. However, Kocaaslan et al[42] reported no statistically significant correlation between caregiving burden scores and social support among mothers of children with cancer. This discrepancy may be attributed to the timing of the study, as the mothers were assessed just one month after their child's diagnosis. Such a brief period may limit the development of effective social support networks. Additionally, Mashayekhi et al[22] found no significant relationship between received support and the caregiving burden of mothers of children with beta-thalassemia suggesting that the type of illness may also affect on results.

Another important finding of current study was the positive correlation between the total social support score and the total score of mothers' post-traumatic growth. Additionally, all sources of social support demonstrated a positive relationship with the overall score of post-traumatic growth. Among the subscales of post-traumatic growth, positive correlations were observed between the dimensions of relating to others, new possibilities, and personal strength with the total score of social support. A review of the literature revealed a lack of research specifically examining the relationship between social support and post-traumatic growth in mothers of children with leukemia. Consequently, findings from similar studies have been referenced. Nouzari et al[43] identified a positive correlation between post-traumatic growth and social support among caregivers of patients with gastrointestinal cancer, noting that the relationship between post-traumatic growth and family support was stronger than that with other support sources. Yeung and Lu[44] concluded that social support, by reducing perceived stress, facilitates post-traumatic growth in women with breast cancer. Furthermore, Ebrahim and Alothman[45]

Table 3. Correlations [a] between total scores and subscale scores of study variable (N = 122)

		Social support	Spouse	Family	Friends	Nurses	Physicians
Caregiver burden	*r*	-0.25	-0.25	-0.16	-0.19	-0.11	-0.11
	P	0.004*	0.004*	0.68	0.03**	0.2	0.2
Posttraumatic growth	*r*	0.27	0.24	0.06	0.29	0.18	0.19
	P	0.002*	0.008*	0.46	0.001*	0.03**	0.03**
New possibilities	*r*	0.31	0.31	0.08	0.31	0.2	0.18
	P	0.001*	<0.001*	0.34	0.000*	0.02**	0.04**
Relating to others	*r*	0.19	0.04	0.04	0.27	0.1	0.18
	P	0.03**	0.6	0.64	0.002*	0.23	0.03**
Personal strength	*r*	0.29	0.32	0.12	0.21	0.23	0.18
	P	0.001*	<0.001*	0.18	0.017**	0.01*	0.04**
Appreciation of life	*r*	0.07	0.15	0.07	0.07	0.06	0.03
	P	0.44	0.09	0.39	0.42	0.47	0.68
Spiritual change	*r*	0.004	0.03**	0.003*	0.03	0.004*	0.01**
	P	0.96	0.7	0.97	0.73	0.96	0.87

[a] Pearson correlation; *$P<0.01$; **$P<0.05$.

found a positive relationship between social support and post-traumatic growth in mothers of children with autism spectrum disorder, emphasizing that support from friends was a significant predictor of their overall post-traumatic growth score. This positive correlation has also been corroborated by studies conducted by Alon[46] and Feng et al[47] further reinforcing the connection between social support and post-traumatic growth in this population.

Receiving support from family and other sources has a positive impact on mothers. In the concept analysis of social support, benefits such as psychological well-being, a sense of stability, recognition of self-worth, positive affect, and healthy coping skills are identified as key outcomes of social support.[30] Travelbee's theory, which is applicable to life-threatening illnesses,[48] has been used in this study. The variables examined in the current study were derived from the concepts outlined in Travelbee's theoretical framework, and the findings are consistent with the relationships proposed within the theory. Social support represents a form of human-to-human interaction that enhances coping strategies and alleviates the caregiving burden or distress associated with illness through interpersonal connections.[15,16] Additionally, this interpersonal process can influence mothers' spiritual values and philosophical beliefs regarding illness and suffering, helping them find meaning in their experiences of suffering and illness.[17,45]

This study highlights the significance of providing psychological care for mothers of children with leukemia. Oncology nurses play a crucial role in promoting health and enhancing coping abilities through both supportive and educational interventions. In their supportive role, nurses serve as the primary source of social support for mothers. By addressing the mothers' psychological and emotional needs, nurses help empower them to effectively manage challenges. It is essential for nurses to incorporate supportive care into their routine care plans. Regarding educational responsibilities, nurses can enhance the social support that mothers receive by teaching effective support strategies to spouses, family members, and friends. By fostering social support, nurses can facilitate positive psychological changes and post-traumatic growth for mothers of children with leukemia, ultimately improving their overall well-being.

This study relies on self-reported data from mothers, which may introduce potential bias. It should also be noted that fathers were not included in the study, as mothers are often the primary caregivers of their children. Future research is encouraged to investigate the relationship between social support, caregiving burden, and growth in fathers. Additionally, it is recommended that the impact of social support on mothers' caregiving burden and post-traumatic growth be explored through interventional studies.

Conclusion

Care is the fundamental aspect of disease management in children with leukemia, and it is essential that mothers, as primary caregivers, receive additional support to provide effective care. According to the positive effects of social support, identifying mothers' support resources and reinforcing them can improve mothers' well-being by reducing the burden of care and improving post-traumatic growth. The research is grounded in Travelbee's theory of human-to-human relationships, which posits that interpersonal relationships can mitigate suffering.

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Research Highlights

What is the current knowledge?

- Mothers are affected by the various consequences of their children's disease.
- Leukemia is a childhood disease that requires long-term and complex care.

What is new here?

- Receiving social support alleviates the caregiving burden experienced by mothers of children with leukemia.
- Mothers of children with leukemia who receive sufficient social support tend to achieve greater posttraumatic growth.

Authors' Contribution

Conceptualization: Mahni Rahkar Farshi, Mahnaz Jabraeili.
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Funding acquisition: Mahni Rahkar Farshi.
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Writing–review & editing: Hanieh Neshat, Mahni Rahkar Farshi.

Competing Interests

The authors have no conflict of interest to declare.

Data Availability Statement

All data generated or analyzed during this study are included in this published article.

Ethical Approval

There are no ethical issues.

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