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The Duration of a Child's Cancer Illness and Its Impact on Parents' Stress Levels

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ABSTRACT

***Background**: Childhood cancer is a life-threatening condition that affects not only children but also their parents, who often experience considerable psychological distress throughout the treatment process. The prolonged duration of cancer treatment may contribute to parental stress. However, evidence regarding this relationship remains limited.*
***Objective**: This study aimed to examine the association between the duration of a child's cancer illness and parental stress levels among parents of pediatric cancer patients.*
***Methods**: A quantitative cross-sectional study was conducted among 54 parents of children with cancer receiving treatment at Dr. Kariadi General Hospital, Semarang, Indonesia. Participants were recruited using consecutive sampling. Data on illness duration were obtained from medical records and categorized as less than one year and one to three years. Parental stress levels were assessed using the Perceived Stress Scale-10 (PSS-10). Descriptive statistics were used to summarize respondent characteristics, and the Chi-square test was performed to analyze the association between illness duration and parental stress levels.*
***Results**: Most respondents were female (57.4%), aged 36–45 years (38.9%), and had completed senior high school education (42.6%). The majority of children had experienced cancer for less than one year (72.2%). Moderate stress was the most frequently reported stress level among parents (68.5%). Although parents of children with a shorter illness duration tended to report higher stress levels, the Chi-square test revealed no statistically significant association between the duration of a child's cancer illness and parental stress levels ($\chi^2 = 2.961$, p-value = 0.228).*
***Conclusion**: The duration of a child's cancer illness was not significantly associated with parental stress levels. This finding suggests that parental stress may be influenced by various factors beyond illness duration, including caregiving burden, coping strategies, and social support. Therefore, continuous psychosocial support should be provided to parents throughout the cancer treatment trajectory regardless of illness duration.*

Keywords: Childhood cancer; Parental stress; Duration of illness;

Introduction

Childhood cancer remains a major global health challenge despite significant advances in diagnosis and treatment. The World Health Organization estimates that approximately 400,000 children and adolescents are diagnosed with cancer annually worldwide, with leukemia, brain tumors, lymphomas, and solid tumors being the most common malignancies. In Indonesia, there were approximately 11,000 cases of childhood cancer in 2015 (Alvionita & Arifah, 2021). A preliminary study at Dr. Kariadi General Hospital in Semarang found that the children with cancer in 2023 reached 686. Although improvements in treatment have increased survival rates, children with cancer often require prolonged and intensive therapy involving repeated hospitalizations, chemotherapy, invasive procedures, and long-term follow-up care. These treatment demands can substantially affect not only the child's physical and psychological well-being but also the functioning of the entire family system (Rothmund et al., 2023; Yang et al., 2025). Consequently, childhood cancer is increasingly recognized as a family-centered health condition that requires attention to both patient and caregiver outcomes.

Parents play a central role in managing their child's illness and are often responsible for treatment-related decision making, symptom monitoring, emotional support, and coordination of healthcare services. The continuous caregiving responsibilities associated with pediatric cancer frequently expose parents to substantial psychological distress, including anxiety, depression, post-traumatic stress symptoms, and elevated stress levels. Recent evidence

indicates that parents of children with cancer experience significantly higher psychological burdens than parents of healthy children, and these emotional difficulties may negatively affect family functioning, treatment adherence, and the child's quality of life (Ghazali et al., 2023; Yang et al., 2025). Furthermore, persistent parental stress has been associated with reduced caregiving capacity and poorer psychosocial adjustment within the family.

Parental stress is not static throughout the cancer trajectory but may fluctuate according to disease-related factors and treatment experiences. One important factor is the duration of the child's illness. The period immediately following diagnosis is often characterized by uncertainty, fear of treatment outcomes, inadequate knowledge regarding cancer management, and concerns about the child's survival. During this phase, parents frequently experience overwhelming emotional reactions and difficulties adapting to their new caregiving responsibilities. A prospective study demonstrated that parents of children with newly diagnosed cancer commonly experience heightened post-traumatic stress symptoms during the first year following diagnosis, highlighting the vulnerability of families during the early stages of treatment (Vogt et al., 2024). Similarly, evidence suggests that parenting stress is strongly influenced by parents' perceptions of their child's vulnerability and illness severity during active treatment (Kim et al., 2024).

As the duration of illness increases, some parents gradually develop adaptive coping mechanisms, gain familiarity with treatment procedures, and establish supportive social networks that may alleviate psychological distress. However, prolonged illness can also generate cumulative burdens, including financial strain, caregiver fatigue, disruptions in employment, and long-term uncertainty regarding prognosis and recurrence. Therefore, the relationship between illness duration and parental stress remains complex and potentially bidirectional. While some studies report improvements in parental adaptation over time, others suggest that chronic caregiving demands continue to affect psychological well-being even after extended periods of treatment (Ghazali et al., 2023; Lee et al., 2023). These findings indicate that the duration of a child's cancer may be a critical determinant of parental stress but requires further investigation in different clinical and cultural settings.

In Indonesia, studies exploring the association between the duration of childhood cancer and parental stress are still scarce. Most existing research has concentrated on anxiety, caregiver burden, or quality of life without specifically examining how the length of illness influences parental stress responses. Therefore, this study aimed to analyze the relationship between the duration of a child's cancer illness and parents' stress levels among parents of pediatric cancer patients receiving treatment at Dr. Kariadi General Hospital, Semarang. The findings are expected to contribute to the growing evidence on psychosocial outcomes in pediatric oncology and provide guidance for developing early and targeted interventions to support parents throughout their child's cancer journey.

Methods

Study Design

This study employed a quantitative observational design with a cross-sectional approach to examine the relationship between the duration of a child's cancer illness and parental stress levels. The study was conducted using secondary data obtained from a previous research project investigating psychosocial outcomes among parents of pediatric cancer patients. The cross-sectional design was considered appropriate because it allows the assessment of associations between variables at a single point in time.

Setting

The study was conducted at the Pediatric Oncology Unit of Dr. Kariadi General Hospital, Semarang, Indonesia, a tertiary referral hospital providing comprehensive cancer treatment services for children from Central Java and surrounding provinces. Data collection was carried out between August and December 2024 during routine outpatient chemotherapy visits and inpatient treatment schedules. Parents were approached while accompanying their children during treatment sessions.

Research Subject

The study population consisted of parents of children diagnosed with cancer and undergoing treatment at Dr. Kariadi General Hospital. Participants were recruited using a consecutive sampling technique. Parents were eligible to participate if they (1) were the primary caregiver of a child diagnosed with cancer, (2) had a child currently receiving chemotherapy or other cancer-related treatment, (3) were aged 18 years or older, and (4) were willing to participate in the study. Parents with diagnosed psychiatric disorders or those unable to complete the questionnaire independently were excluded.

A total of 54 parents met the eligibility criteria and were included in the study. The independent variable was the duration of the child's cancer illness, categorized as less than one year and one to three years based on medical records and parental reports. The dependent variable was parental stress level.

Instrument

Parental stress was measured using the Perceived Stress Scale-10 (PSS-10) to assess the degree to which individuals perceive situations in their lives as stressful during the previous month. The PSS-10 consists of ten items scored on a five-point Likert scale ranging from 0 (never) to 4 (very often), yielding a total score between 0 and 40.

The Indonesian version of the PSS-10 has demonstrated satisfactory psychometric properties. Previous validation studies reported a validity test results of 0.609-0.913 and a Cronbach alpha value of 0.909 (Putri, 2024) . Total scores were categorized into three levels mild stress (0–13), moderate stress (14–26), and severe stress (27–40). Information regarding the duration of illness was obtained from patients' medical records and confirmed through interviews with parents.

Data Analysis

Data were analyzed using SPSS version 25 and descriptive statistics were used to summarize participants' demographic characteristics, duration of illness, and stress levels. Categorical variables were presented as frequencies and percentages. The association between the duration of the child's cancer illness and parental stress levels was examined using the Chi-square test. Statistical significance was established at a p-value of less than 0.05.

Etichal Consideration

This study received ethical approval from the Health Research Ethics Committee of STIKES Telogorejo Semarang and Dr. Kariadi General Hospital, Semarang, Indonesia (Approval Number: 0127/KE/STIKES/2024).

Result

Characteristics of respondents

Table.1 Characteristics of Respondents

Variable	Frequency (f)	Percentage (%)
Parent's Age		
17-25	4	7.4
26-35	18	33.3
36-45	21	38.9
46-59	11	20.4
Total	**54**	**100**
Parent's Gender		
Male	23	42.6
Female	31	57.4
Total	**54**	**100**
Parent's Level of Education		
No formal education	3	5.6
Elementary school	11	20.4
Junior high school	14	25.9

Senior high school/equivalent	23	42.6
Undergraduate/Postgraduate	3	5.6
Total	**54**	**100**
Duration of cancer in children		
<1 year	39	72.2
1-3 years	15	27.8
Total	**54**	**100**
Parent's Stress Levels		
Mild	14	25.9
Moderate	37	68.5
Severe	3	5.6
Total	**54**	**100**

Table 1 shows that the majority of respondents were aged 36–45 years (38.9%), female (57.4%), and had completed senior high school education (42.6%). Furthermore, most children had been diagnosed with cancer for less than one year (72.2%), and a substantial majority of the parents experienced moderate stress levels (68.5%).

Relationship Between Duration of Child's Illness and Parental Stress Levels

Table.2 Relationship Between Duration of Child's Illness and Parental Stress Levels

Duration of Illness	Mild Stress (%)	Moderate Stress (%)	Severe Stress (%)	Total (%)	χ^2	p-value
< 1 year	8 (20.5)	28 (71.8)	3 (7.7)	39 (72.2)		
1–3 years	6 (40.0)	9 (60.0)	0 (0.0)	15 (27.8)	2.961	0.228
Total	14 (25.9)	37 (68.5)	3 (5.6)	54 (100)		

Table 2 shows the association between the duration of a child's cancer illness and parental stress levels. Among parents whose children had been diagnosed with cancer for less than one year, the majority experienced moderate stress (71.8%), while 7.7% experienced severe stress. In contrast, among parents whose children had been diagnosed for one to three years, 60.0% experienced moderate stress and none reported severe stress. However, the Pearson Chi-square test indicated that the association between duration of illness and parental stress levels was not statistically significant ($\chi^2 = 2.961$, $p = 0.228$).

Discussion

Characteristic of respondents

The demographic characteristics of respondents may also contribute to the observed stress patterns. Most parents were in the late adulthood age group (36–45 years), which represents a life stage characterized by multiple responsibilities, including employment, financial obligations, and family caregiving. Managing a child's cancer treatment while simultaneously fulfilling occupational and household roles may increase psychological burden and stress. Previous studies have reported that parents caring for children with cancer often experience substantial emotional strain because they must balance caregiving responsibilities, employment demands, and family obligations throughout prolonged treatment trajectories (Ghazali et al., 2023; Kim et al., 2024).

Gender distribution may also explain variations in parental stress. The majority of respondents in this study were mothers, who traditionally assume primary caregiving responsibilities in many Asian cultures. Mothers frequently spend more time accompanying children during hospitalization, monitoring symptoms, and providing emotional support, making them more vulnerable to stress and psychological distress. Recent evidence indicates that mothers of children with cancer consistently report higher levels of anxiety, depression, and caregiving burden than fathers because of their greater involvement in daily care activities (Ghazali et al., 2023; Yang et al., 2025).

Educational level may further influence parents' ability to understand medical information, communicate with healthcare professionals, and utilize available support resources. Most respondents had completed secondary education, while only a small proportion had higher

education. Parents with lower educational attainment may experience difficulties interpreting complex treatment information, which can increase uncertainty and stress. Higher educational attainment has been associated with improved access to psychosocial resources, greater health literacy, and more effective coping strategies among parents of children with cancer (Kim et al., 2024; Ong et al., 2025). Therefore, educational background should be considered when designing psychosocial support programs for families of children with cancer.

Relationship Between Duration of Child's Illness and Parental Stress Levels

This study found that there was no significant association between the duration of a child's cancer diagnosis and the level of stress experienced by parents (χ^2 = 2.961, p-value = 0.228). This finding is consistent with recent evidence suggesting that caregivers' psychological distress, in this case that of parents, does not correlate linearly with the duration of the illness but may be influenced by multidimensional psychosocial and clinical factors. Longitudinal studies in previous research on parents of children with cancer have shown that stress levels often remain high regardless of how long the child has had the disease, indicating that time alone is not a determining factor in alleviating or exacerbating caregiver stress(Litzelman et al., 2024; Siminoff et al., 2024).

This pattern can be explained by the adaptation and coping processes that parents, as caregivers, undergo over time. Although some parents may initially experience high levels of stress following the diagnosis, psychological adjustments and coping strategies such as acceptance, search for meaning, and faith-based coping may develop over time, leading to stabilization rather than a continuous increase or decrease in stress. Evidence suggests that patterns of change in caregivers' stress levels often fluctuate throughout the course of the illness, without a consistent relationship to the duration of the illness (Walbaum et al., 2024; Zaleta et al., 2023)

In addition, parents' stress levels appear to be influenced more by their child's functional status and the burden of caregiving than by the duration of the illness. Parents caring for children with higher levels of dependency or intensive care needs report significantly higher stress levels, regardless of how long the child has been diagnosed with cancer (Li et al., 2023; Moghaddam et al., 2023). This suggests that the demands of daily care and the perceived burden are more critical determinants of stress than the progression of the disease over time.

Another important factor is the role of social support and parents' ability to mitigate psychological stress over time. Research shows that strong family support, access to healthcare resources, and higher levels of resilience are associated with lower stress levels in parents, even in long-term care situations (Cui et al., 2024; Litzelman et al., 2024). These protective factors may weaken any potential association between the duration of the illness and parents' stress levels.

In addition to individual psychological factors, socioeconomic characteristics also play a significant role in determining parents' stress levels. Parents with financial constraints, limited access to healthcare services, and heavy workloads tend to report higher stress levels than those with greater economic resources. These findings suggest that caregiving stress is more influenced by external coping resources than by the duration of the child's illness. Inequalities in access to healthcare and financial support can exacerbate the psychological burden regardless of the duration of the child's cancer diagnosis (Liu et al., 2025; Santacroce & Kneipp, 2020)

Conclusion

This study found that most parents of children with cancer experienced moderate levels of stress, regardless of the duration of their child's illness. Although parents of children with a longer duration of illness tended to report slightly lower stress levels, the association between the duration of a child's cancer illness and parental stress was not statistically significant. These findings suggest that parental stress is likely influenced by multiple factors beyond illness duration alone, including caregiving demands, social support, coping mechanisms, and socioeconomic conditions. Therefore, healthcare professionals should provide continuous psychosocial assessment and support for parents throughout the cancer treatment trajectory,

regardless of the length of the child's illness. Further studies involving larger and more diverse populations are needed to identify other factors contributing to parental stress and to develop targeted interventions that promote parental well-being in pediatric oncology settings.

SUGGESTIONS

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design precludes the establishment of causal relationships between the duration of a child's cancer illness and parental stress levels. Second, the relatively small sample size and the use of a single-center setting may limit the generalizability of the results to broader populations. Third, parental stress was assessed using a self-reported questionnaire, which may be subject to response bias and social desirability bias. Additionally, several factors that may influence parental stress, such as family income, social support, coping strategies, cancer type, disease severity, and treatment phase, were not examined in the present study. Therefore, future research should employ longitudinal or multicenter designs with larger sample sizes and incorporate additional psychosocial, clinical, and socioeconomic variables to better understand the factors associated with parental stress throughout the childhood cancer trajectory.

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DECLARATION OF INTEREST

The authors declare that there is no conflict of interest

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