

Predictors of Resilience Among Parents of Children with Cancer: Cross-Sectional Study

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Purpose: Resilience is an ability to overcome adversities in response to a potentially traumatic event. It relieves parents' discomfort and builds personal capacity when facing a stressful situation like childhood cancer. Therefore, the study's objective is to assess the magnitude of resilience and its predictors among the parents of children with cancer at Jimma medical center, Ethiopia, 2020.

Methods: The institutional-based cross-sectional design was employed on 126 parents of children with cancer at Jimma Medical Center. All study populations who attend the hospital from February 25 to April 25, 2020, and fulfill the inclusion criteria were included. Data were entered into Epi data version 4.6.0.2 and analyzed by SPSS version 25. Descriptive analysis was used to describe the study variables. Furthermore, linear regression analysis was calculated to assess predictors of resilience.

Results: The level of resilience among parents' children with cancer were a mean scored 51.41 ± 12.02 . In this study, factors associated with resilience were receiving support from friends ($\beta = 5.67$, 95% CI = 1.58, 9.77; $P = 0.007$), attend recreational activities ($\beta = 13.8$, 95% CI = 5.32, 22.37; $P = 0.03$) and receiving health information from health care professionals ($\beta = 6.37$; 95% CI = (1.75, 11.00), $P = 0.007$), parents depression ($\beta = -0.827$, 95% CI = (-1.619, -0.034), $P = 0.041$) and parents stress ($\beta = -0.88$, 95% CI = (-1.54, -0.23), $P = 0.031$).

Conclusion: The magnitude of resilience among parents of children with cancer was low relative to other studies. Support from friends, attending recreational activities, and receiving health information from health care professionals were positively associated with resilience. In contrast, parents' depression and stress were negatively associated with resilience.

Keywords: resilience, Jimma Medical Center, parents of children with cancer

Introduction

Childhood cancer is a life-threatening illness and a leading cause of child mortality in low and middle-income countries.¹ As stated by a world health organization, every year, 300,000 new cases are diagnosed with cancer in children aged between 0–19 years.² The most common childhood cancers are leukemia, brain cancer, lymphomas, and solid tumors like neuroblastoma and Wilm's tumor.³ Each year, 100,000 children less than fifteen years of age lose their life by cancer, and most of the death, around 90% occurs in developing countries. Lack of specialized human power in cancer, correct diagnosis, and treatment and expensive cost of the drug, and diagnostic investigation causes decreased survival rates in low and middle-income countries.⁴

The global burden of cancer estimated the incidence rate of East African countries like Tanzania at 134 new cases per million, and the Extrapolation from

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clinical documents at Tikur Anbessa Specialized Hospital (TASH) Radiotherapy Centre estimates that there was 120,500 new cancer cases/year, even though GLOBOCAN estimates are much less than 51,000 per year. Based on extrapolating estimates of new pediatric cancer cases in Ethiopia, there are 6000 new cancer cases per million. The most common childhood cancer in Ethiopia is leukemia, lymphoma, retinoblastoma, Wilm's tumor, and bone and soft tissue sarcomas.⁵

Diagnosis of pediatric cancer implies one of the most significant challenges for the family: physical, mental, socioeconomic, and social effects on patients and their parents. These effects result in susceptibility and failure in parents' quality of life and functioning.⁴ However, parents of children with cancer can positively adapt and cope with childhood cancer diagnosis and treatment despite these difficulties. Parents' positive coping is indispensable for successfully provide care for their ill children. Coping is anything people do to adjust to the challenges and demands of stress or any adjustments made to lessen the negative impact of stress.⁶

A key reason behind effective coping with problems related to being parents of children with cancer is resilience. Resilience is an ability to overcome difficulties and the absence of psychological distress or adoption of a positive attitude in response to a potentially traumatic event. Commonly it is used to refer to parents' ability to understand unfavorable psychological conflict when confronted with stressful conditions. It includes adaptability and capability to recover from traumatic events and stressful circumstances.⁷

Resilience allows parents to achieve a balance of emotions. Parents need to have the resilience and experience positive adaptive skills to successfully manage their children's cancer and related difficulties.⁸ As a personal characteristic, resilience helps to ease parents' discomfort and build personal capacity.⁹

The metatheory of resilience could be a basis for an explanation for resilience. Most of the resiliency studies showed that priority identifying either internal or external factors for resiliency helps an individual to easily find protective factors to cope with or "bounce back" in case of stressful situations. According to Richardson, the theory of resilience was categorized into three called "waves". The first wave of research identifies qualities (protective factors) for a person to react positively to stressful events. The second research wave examined resilience in coping with stress, or difficulty, change, or opportunity. The third

wave explains the finding of motivational forces within an individual and a group that drives them toward self-actualization in life.¹⁰

Most of the theories have a common consensus on resilience, as it is a dynamic process that can be changed. There would be a wide range of different factors that determine an individual practice of the resilience process itself. Different studies in different countries showed that there are variations in resilience across the countries. For example, in the study conducted in Iran and china on parents' children with cancer, the mean resilience and standard deviation vary between 66.83–54.83 and standard deviation 14.28–12.88.^{7,8,11} There are different predictors which affect parents from being resilient these include: socio-demographic predictors,^{12–14} children health-related factors,^{15,16} psychological predictors,^{17,18} parents behavioral related predictors^{19–21} and service-related predictors.^{22,23}

Therefore, determining the level and associated factors of resilience can help build capacity for positive adaptation to different health problems.²⁴ Most studies on resilience have been conducted among parents of children with psychiatric illnesses and only included mothers. Thus, there is limited published research on resilience among parents of children with cancer involving both fathers and mothers. Besides this, it is studied insufficiently in Ethiopia, and no study was conducted particular to the study area. To fulfill this gap. We conducted this study to fill these gaps and assess parents' resilience and predictors among parents of children with cancer at Jimma medical center (JMC). The hypothesis of the study was a level of resilience and factors affecting it are not homogeneously distributed. This study's findings will contribute to healthcare providers' need to identify potentially vulnerable parents and provide better psychological and educational support.

Methods and Materials

Study Area, Period, and Study Design

The facility-based cross-sectional study design was used from February 25–April 25, 2020, at Jimma Medical Center, Jimma Town. Jimma town is in Ethiopia's south-west, 352 Km away from Addis Ababa (the capital city of Ethiopia). The hospital provides different services to the people living in Jimma town and its surroundings. Among the primary services, the pediatric hematology/oncology ward is the one that provides services to pediatric cancer patients. There are 22 beds with one oncologist, two

residents, and 15 nurses in this ward, and it serves over 300 new pediatrics cancer patients per year.²⁵

Participants

Because of a few patients' flow, the study included all parents of children with cancer who visited the hospital during the data collection period and fulfilled the inclusion criteria. We approached 126 parents during the given period and obtained complete data from 122 parents. In this study parent is defined as "a person who has a significant emotional bond with the patient; this is a family member who is a part of the patient's family life cycle, offers emotional-expressive, instrumental, and tangible support, and provides help and comprehensive care during the chronic illness, acute illness, or disability of a child".²⁶

In this study, children are those clients who are less than 18 years old, and parents or caregivers are those whose age is greater than 18 years old and live together with their child playing the role of caregiver to the sick child. Those parents' children with suspected or unconfirmed diagnoses and those parents with critically sick children at the time of the interview were excluded from the study.

Data Collection Tool and Procedures

The data was collected using an interviewee-administered structured questionnaire adapted from different works of literature.^{11,15,18,27-29} The tools include questions related to parent socio-demographic characteristics, child health, anxiety depression and stress, and parent resilience.

Stress and anxiety were measured using depression anxiety stress scales (DASS); this scale comprised 21 items responded through a 4-point Likert scale (0=never, 1=sometimes, 2=often, and 3=almost always). Thus, the scores could range from 0 to 63, with higher scores showing higher depression levels, anxiety, and stress. Each of the sub-scales examines depression, anxiety, and stress with seven items for each. In the present study, the reliability test (Cronbach's alpha coefficient) of the scale was 0.86.

Resilience was measured using 25 items Connor-Davidson Resilience Scale, a 4-point Likert scale (0=never true, 1=seldom true, 2=sometimes true, 3=often true 4=always true). The scale's total continuous score can range from 0 to 100; the higher the score, the more resilient the parent is. It was developed by Connor and Davidson in the United States in 2003 with the reliability of Cronbach's alpha 0.89.³⁰ In the present study, the

Cronbach's alpha coefficients were 0.83. The tool was assessed and confirmed in different countries like China,³¹ India,³² Iran,³³ Turkey,³⁴ Korea,³⁵ and South Africa.³⁶ Also, it was translated and tested with different languages.³⁰

The data was collected using four data collectors and one supervisor. The selection criteria for data collectors were having a BSc in the nursing, not working in the Jimma medical center and data collection experience.

Data Quality Control

The tools were prepared in English and translated into local languages, Oromiffaa and Amharic, because these were the most widely spoken languages. Then it was re-translated back to English by another person to check the consistency. The tool was pre-tested with fifteen parents before actual data collection. Before data collection, careful modification of the tool was made. The pre-test was conducted at a similar setting at Tikur Anbessa specialized hospital pediatric oncology unit. Two-days training was given for data supervisors and collectors on how to collect and handle the data.

Data Processing and Analysis

Before data was entered into Epi data version 4.6.0.2, it was checked for omissions, legibility of handwriting, and completeness by the principal investigator and supervisor and then exported to SPSS Version 25 for analysis. Missing value and outliers were checked and corrected. Recoding, categorizing, computing, counting, and other statistical analyses were made. Descriptive analysis (including means, standard deviations, frequencies, and percentages) were used to analyses the independent-samples, and the data were presented with tables, graphs, and frequencies.

First, simple linear regression was done to select candidate variables for multiple linear regression. All variables having P-value ≤ 0.25 during linear regression were selected for the multiple linear regression. After the multiple linear regression analysis, variables having p-values < 0.05 were having a statistically significant association with parents' resilience. The strength of the association between independent and dependent variables was described using unstandardized β with 95% CI.

The final fitted model was constructed using forced entry by multiple linear regression analysis methods. Multicollinearity was checked by examining the variance inflation factors (VIF), and it showed no multicollinearity

on the final model: the value for each variable was less than ten.

Ethical Consideration

The study was conducted following the Declaration of Helsinki. Ethical clearance was obtained from the Ethics Review Board of Addis Ababa University, school of nursing and Midwifery (protocol No034/20/SNM). Further permission was received from the pediatric oncology unit at JMC. Each participant provided informed consent for the interviewee. To keep the physical privacy of respondents' different place was prepared for interview purpose. Participants were guaranteed their right to withdraw from the interview at any time and told as participation in this study or refusal to take part would not affect the ability to access health services or any other services.

Names and other personal information, which can violate the study subjects' confidentiality, were not taken or recorded. Any information was kept confidential. During data collection, parents having severe anxiety and severe stress were linked for further psychiatric consultation and treatment.

Result

Population

Socio-Demographic Characteristics of the Study Participants

Among 126 participants in the study period, 122 responded to the questionnaires fully, giving a response rate of 96.8%. Little more than half (54.1%) of the respondents were mothers. Concerning occupation, 70 (57.4%) mothers were self-employed whereas 85 (69.7%) of the fathers were self-employed. Besides, 86 (69.7%) of participants were rural in residents. Concerning marital status, 113 (92.6%) of the participants were married. Furthermore, 63 (51.6%) mothers cannot read and write, and 41 (33.6%) fathers had primary school education.

Regarding religion, seventy-one (58.2%) of the study subjects belonged to Muslims. Concerning social support, 104 (85.2%) reported receiving support from family. The respondents' median monthly income was 2746.15 Ethiopian Birr (ETB), ranging between 500–8000 ETB. The mean (SD) distance of parent's from JMC was 58.30 \pm 49.8km ranging about 1 to 200km (Table 1)

Children Health-Related Factors, Parents' Behavioral Characteristics, and Service-Related Information

More than half of (64.8%) of children with cancer were females. Moreover, the children's mean age was 7.11 years

and 4.09 standard deviation with a range of 1–18 years old. More than health-related (4%) of the children have no history of relapse. Besides, 107 (87.7%) of households have more than one child. Leukemia was the most common malignancy type among children, experienced by 59 (48.4%) participants. The majority of parents, 116 (95.1%), were not reported to have experience of recreational activities. Though, many of the participants, 62 (50.8%), had frequent contact with their religious leaders.

Among the study participants, 92 (75.4%) got information from the health care providers. Regarding the treatment, more than half, 76 (62.3%) of the treatment was chemotherapy. In addition, the treatment duration was averagely eight months, with a standard deviation of 5.54 months (Table 2).

Psychological Characteristics of Participants

The mean and standard deviation score of depression was 19.04 \pm 6.48. As indicated in Figure 1, 50 (40.98%) had mild, and 6(4.91%) had moderate depression levels. Nevertheless, no one was diagnosed with severe and very severe levels of depression. Regarding level anxiety, the mean score and standard deviation were 15.14 and 6.58, respectively. Twenty-eight (22.95%) and 20 (16.39%) of the parents had mild and moderate anxiety levels, respectively. Besides, the mean and standard deviation score of stress was 15.64 \pm 6.98; 23 (18.85%) where mildly stressed, 10 (8.19%) where severely stressed, and 1(0.82%) where very severely stressed.

Level of Resilience Parents' Children with Cancer

The mean resilience among parents of children with cancer was 51.41, with a standard deviation of 12.02, ranging from 29 to 86. Sixty-five (53.3%) of study participants had a resilience score below the mean value. The result of an independent *t*-test showed that the magnitude of resilience among parents of children with cancer was different between mothers with a mean and standard deviation of 48.91 \pm 12.34 and fathers 54.48 \pm 1.99, respectively. "Sometimes fate or God can help me" had the highest mean score of 3.3 and 1.04 standard deviation. A mean, 0.98 \pm 1.02, score for the phrase "make unpopular or difficult decisions" was the least. (Table 3).

Factors Associated with Resilience

Among Parents of Children with Cancer

Simple linear regression analysis was done between each socio-demographic characteristics and resilience to select

Table 1 Socio-Demographic Characteristics of Parent's Children with Cancer at Jimma Medical Center, Oromia, Ethiopia, February 25, 2012 to April 25, 2020 (n=122)

Variables	Frequency	Percentage
Parent's gender		
Mother	66	54.1
Father	56	45.9
Place of residence		
Urban	35	29.5
Rural	87	70.5
Mothers' employment status		
House wife	31	25.4
Self employed	70	57.4
Government employed	19	15.6
Unemployed	2	1.6
Fathers' employment status		
Self employed	85	69.7
Government employed	37	30.3
Mothers educational level		
Cannot read and write	63	51.6
Primary	30	24.6
Secondary	11	9.0
Diploma and above	18	14.8
Fathers educational level		
Cannot read and write	38	31.1
Primary	41	33.6
Secondary	18	14.8
Diploma and above	25	20.5
Marital status		
Married	113	92.6
Divorced	8	6.6
Widowed	1	0.8
Religion		
Orthodox	26	21.3
Muslim	71	58.2
Protestant	23	18.9
Catholic	2	1.6
Support from family		
Yes	104	85.2
No	18	14.8
Support from friends		
Yes	38	31.1
No	84	68.9
From significant others		
Yes	59	48.4
No	61	51.6

Table 2 Child Health Related, Parents Behavioral and Service-Related Characteristics at Jimma Medical Center, Oromia, Ethiopia, February 25, 2020 to April 25, 2020 (n=122)

Variables	Frequency	Percentage
Child's Gender		
Male	79	64.8
Female	43	35.2
History of relapse		
Yes	30	24.6
No	92	75.4
Number of children in the household		
One	15	12.3
Greater than one	107	87.7
Type of malignancy		
Leukemia	59	48.4
Lymphoma	26	21.3
Abdominal tumor	16	13.1
Musculoskeletal tumor	12	9.8
Ocular tumor	5	4.1
Other	4	3.3
Attend at recreational activities		
Yes	6	4.9
No	116	95.1
Contact with religious leaders		
Yes	69	56.6
No	53	43.4
Received health information from health care provider		
Yes	92	75.4
No	30	24.6
Type of treatment		
Chemotherapy	76	62.3
Surgery	1	0.8
Both	45	36.9

variables for multiple linear regression. Parents gender ($p=0.01$), mothers' educational status ($p=0.124$), mother's employment status ($p=0.009$), monthly family income ($p=0.001$) were selected from sociodemographic variables. Similarly, support from family ($p=0.165$), support from friends ($p=0.001$), and attending recreational activities ($p=0.214$) had P -value ≤ 0.25 and considered for further analysis. Similarly, the level of depression ($p<0.001$), level of anxiety ($p=0.013$), and level of stress ($p<0.001$) were a selected from psychological variables for further multiple linear regression analysis.

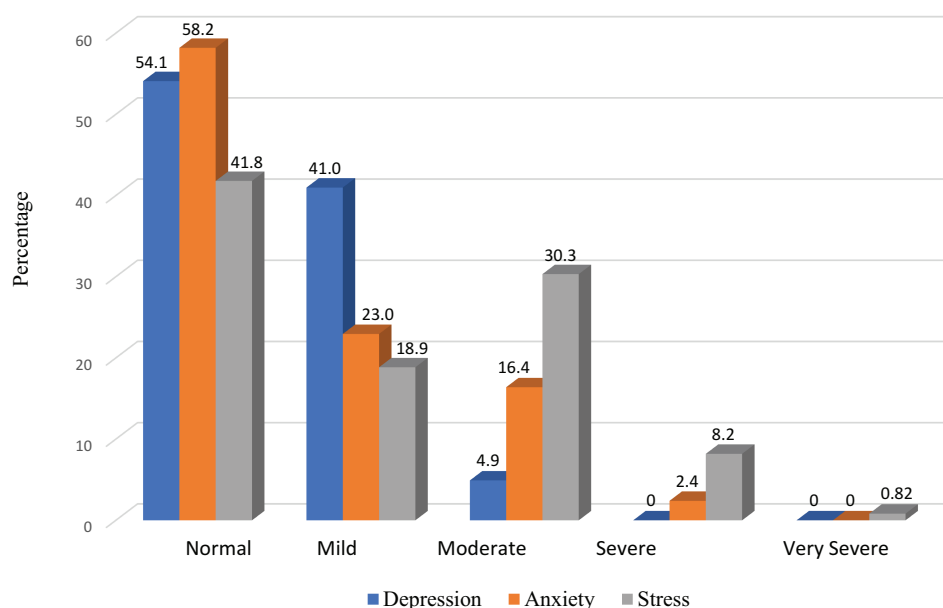


Figure 1 Psychological predictors for parent's of children with cancer at Jimma medical center, Oromia, Ethiopia, February 25, 2012 to April 25, 2020 (n=122).

Among service-related variables, parents behavioral and children's health-related characteristics; types of malignancy (abdominal tumor ($p=0.001$)), lymphoma ($p=0.040$), received health information from health care professionals ($p<0.001$) and types of treatment (both surgery and chemotherapy) ($p=0.016$) had relationship with the level of resilience at p -value ≤ 0.25 in simple linear regression. Consequently, we used them for multiple linear regression.

Accordingly, thirteen variables were entered into multiple-linear regression. In multiple linear regression analysis, social support, stress, depression, attending recreational activities, and received health information from health care professionals were significant predictors of resilience. The model can explain 45% of the variation in parents' children's resilience with cancer, and the remaining other factors can explain 55%. (R Square =0.45, unadjusted R Square=0.426) of the variability in the magnified of resilience among parents of children with cancer (Table 4).

Keeping constant all other variables in the model, a one-unit increase in social support from friends increases the parents' resilience by 6.6 (95% CI=(2.96, 10.37); $P=0.011$). The result also showed that keeping other factors constant one-unit increase health information from health care provider increases the parents' resilience by 6.37 (95% CI=(1.754, 11), $P=0.012$). Similarly, a one-unit increase in attending recreational activities increases the parents' resilience by 13.8 (95%

CI (5.32, 22.37), $p=0.03$). However, there is a negative linear association between depression, stress, and resilience among parents of children with cancer. Keeping other factors constant one-unit increase in depression score decreases resilience of the parents by -0.827 (95% CI= $(-1.634, -0.048)$; $P=0.038$). Keeping other factors constant one-unit increase in stress score decrease resilience of parents by -0.88 (95% CI= $(-1.54, -0.23)$, $P=0.031$ (Table 4).

Discussion

This study assessed the magnitude of resilience and its predictors among parents of children with cancer at Jimma medical center, and it showed that the level of resilience among parents' children with cancer was low. Support from friends attends recreational activities receiving health information from health care professionals were positively associated with resilience. At the same time, parents' depression and stress were negatively associated with resilience.

The present study showed that the total mean and standard deviation of parents' resilience score was 51.41 and 12.02. This finding is comparable with the result of two types of research done in China, which showed that the mean (SD) of resilience score among parents of children with cancer were similar to our study.^{37,38} This finding may imply that parents with cancer were in danger of developing

Table 3 The Frequency Distribution of Level of Resilience Among Parents' Children with Cancer at Jimma Medical Center, Oromia, Ethiopia, February 25, 2020 to April 25, 2020 (n=122)

Measuring Items	Not True at All N (%)	Rarely True N (%)	Sometimes True N (%)	Often True N (%)	True Nearly N (%)	Mean± SD
Able to adapt to change	12(9.8)	36(29.5)	35(28.7)	37(30.3)	2(1.6)	1.84±1.02
Close and secure relationships	5(4.1)	27(22.1)	37(30.3)	41(33.6)	12(9.8)	2.23±1.03
Sometimes fate or God can help	1(0.8)	9(7.4)	19(15.6)	16(13.1)	77(63.1)	3.30±1.03
Can deal with whatever comes	1(0.8)	19(15.6)	50(41.0)	43(35.2)	9(7.4)	2.33±0.85
Past success gives confidence for new challenge	4(3.3)	30(24.6)	43(35.2)	41(33.6)	4(3.3)	2.09±0.91
See the humorous side of things	33(27)	28(23.0)	39(32.0)	22(18)	0(0.0)	1.41± 1.07
Coping with stress strengthens	8(6.6)	36(29.5)	43(35.2)	34(27.9)	1(0.8)	1.87± 0.92
Tend to bounce back after illness or hardship	26(21.3)	33(27.0)	44(36.1)	18(14.8)	1(0.8)	1.47±1.01
Things happen for a reason	8(6.6)	24(19.7)	33(27)	26(21.3)	31(25.4)	2.39±1.24
Best effort no matter what	1(0.8%)	18(13.1)	42(34.4)	56(45.9)	7(5.7)	2.43± 0.82
You can achieve your goals	4(3.3)	33(27.0)	30(24.6)	37(30.3)	28(14.0)	2.26± 1.11
When things look hopeless, I do not give up	5(4.1)	24(19.7)	33(27.0)	42(34.4)	18(14.8)	2.36± 1.08
Know where to turn for help	2(1.6)	10(8.2)	29(23.8)	40(32.8)	41(33.6)	2.89± 1.02
Under pressure, focus and think clearly	17(13.9)	23(18.9)	27(22.1)	38(31.1)	17(13.9)	2.12± 1.27
Prefer to take the lead in problem solving	38(31.1)	34(27.9)	34(27.9)	13(10.7)	3(2.5)	1.25± 1.08
Not easily discouraged by failure	38(31.1)	36(29.5)	31(25.4)	17(13.9)	0(0.0)	1.22± 1.04
Think of self as strong person	46(37.7)	31(25.4)	31(25.4)	11(9.0)	3(2.5)	1.13± 1.09
Make unpopular or difficult decisions	50(41)	38(31.1)	22(18.0)	111(9.0)	1(0.8)	0.98± 1.01
Can handle unpleasant feelings	6(4.9)	36(29.5)	56(45.1)	23(18.9)	2(1.6)	1.83± 0.85
Have to act on a hunch	2(1.6)	30(24.6)	37(30.3)	46(37.7)	7(5.7)	2.20± 0.93
Strong sense of purpose	9(7.4)	20(16.4)	35(28.7)	39(32.0)	19(15.6)	2.32± 1.14
In control of your life	28(23.0)	11(9.0)	28(23.0)	30(24.6)	25(20.5)	2.11±1.43
I like challenge	24(19.7)	26(21.3)	18(14.5)	25(20.5)	29(23.8)	2.07±1.47
You work to attain your goals	4(3.3)	14(11.5)	30(24.6)	36(29.5)	38(31.1)	2.74±1.11
Pride in your achievements	5(4.1)	24(19.7)	24(19.7)	29(23.8)	40(32.8)	2.61±1.12
Parents' resilience (over all Mean)						51.4±12.1

Table 4 Multiple Linear Regression Analysis Predicting Parents' Resilience at JMC, Oromia, February, 25, 2020 to April 25, 2020 (n=122)

Predictors	Crud Unstandardized β 95% CI of β	Adjusted Unstandardized β 95% CI of β
Gender		
Mother	-5.57(-9.79, -1.34) **	-0.515(-4.48, 3.45)
Father	1.00	1.00
Educational status of mother		
Cannot read and write	1.00	1.00
Primary	1.69(-3.61, 6.92)	2.84(-1.02, 6.71)
Secondary	6.08(-1.69, 13.83) *	4.7(-1.24, 10.75)
Diploma and above	-2.23(-8.58, 4.12)	-0.49(-6.78, 5.79)
Mother employment		
House wife	-6.67(-11.65, -1.69) *	-3.09(-7.74, 1.55)
Government employed	1.67(-4.31, 7.65)	1.58(-3.73, 6.89)
Self-employed	1.00	1.00
Support from friends		
Yes	7.42(2.94, 11.9)	6.6(2.96, 10.37) **
No	1.00	1.00
Support from family		
Yes	4.27(-1.78, 10.33) *	1.144 (-4.03, 6.32)
No	1.00	1.00
Malignancy		
Lymphoma	-5.529(-10.81, -0.25) **	-0.84(-6.06, 4.39)
Abdominal tumor	-10.52(-16.88, -4.17) **	-2.7(-7.804, 2.46)
Leukemia	1.00	1.00
Depression	-1.5(-2.14, -0.92) **	-0.83(-1.62, -0.03) **
Anxiety	-0.82(-1.46, -0.17) **	-0.16(-0.95, 0.62)
Stress	-1.12(-1.71, -0.53) **	-0.88(-1.54, -0.23) **
Treatment duration	0.25(-0.14, 0.65) *	0.08(-0.27, 0.44)
Treatment Type		
Chemotherapy and surgery	-5.39(-9.81, -0.98)	5.8(-14.14, 25.81)
Chemotherapy	1.00	1.00
Health information from HCP		
Yes	10.12(5.44, 14.86)	6.377 (1.754, 11) **
No	1.00	1.00
Attend recreational activities		
Yes	6.27(-3.67, 16.22) *	13.8(5.32, 22.37) **
No	1.00	1.00

Notes: Constant=58.9, R=0.674, R Square =0.454, Adjusted R Square=0.426; **Significant at p value <0.05, * Significance value <0.25. Dependent variable: Parent resilience. Max VIF 2.01 (no Multi-collinearity: VIF <10).

physical and mental problems that contribute to having difficulty recovering from the traumatic situation.

The present finding was lower than the result of the research, which was done in Iran.¹¹ In the same way, in another study in which was conducted, Iran and India also showed the same report.^{39,40} This difference may be due to differences in the medical service and socioeconomic status. Better medical technologies might be available in Iran

and India compared to our country, leading to a better prognosis on child health status leading to low parents' resilience.

Based on this finding, there was a statistically significant difference in mean resilience between mothers and fathers of children with cancer. The finding was supported by previous research findings done in Iran.⁸ This might because culturally, women are more compassionate to take

of their child and acceptable by society as usual. Furthermore, this could be because mothers have more attachment with their children than their fathers.

The way people perceive social support was different in a different culture and a different society. In the Middle East and Asian countries, people fear to receive social support about childhood cancer due to fear of stigma. Studies showed that giving social support may not always be helpful; it may lead parents to have low resilience.⁴¹ However, in the present study receiving social support is a positive predictor of parent's resilience; having a history of support from friends resulted in an increment of resilience among parents of children with cancer. This might be due to differences in culture, societal, educational level, working habits, and religion. So, understanding societal culture is crucial to finding the best ways to help and enhance parents' resilience.

In this study, there is a negative association between parental depression and stress with resilience. This study was supported by a study conducted in Iran and China.^{42,43} This finding is also supported by the study conducted in Jordan, Greek, and Bangladesh.^{28,44,45} This implies that parents' psychological disturbance will contribute to declining their level of resilience. Those who had no depression on parents' children with cancer had a better level of resilience.

There is a significant positive association between receiving health information about cancer from health care professionals and resilience in the present study. Receiving health information about cancer treatment from health care professionals resulted in an increment of resilience. Providing information at an appropriate time could help avoid unnecessary distress; this helps parents to have better resilience. The finding is supported by a study conducted in Switzerland, which showed that the medical staff, especially health care providers, can most directly impact improving psychological factors that helped to decrease parental distress that helps parents have a better adaptation to the stressful situation.⁴⁶

Consistent with this idea study conducted in Finland reported, lack of information about the diseases and treatment plan created distrust in health care providers and leads parents to be worried and frustrated, which contributes to low resilience.²³ This indicates that parents need to have the right information about the diseases and their treatment plan, and also need to know every procedural and therapeutic information. This may be due to their prior

misinformation about the disease, characteristics, or treatment, fearing the hectic hospital environment.

Similarly, attending recreational activity is one of the positive predictors for resilience. This indicates that the parent's participation in different shared recreational activities helped develop a better positive adaptation. Parents' having an enjoyable time can yield attachments, happiness, learning, humor, and the pleasure of shared experiences. Previous studies also support the finding.^{20,47}

Limitation of the Study

Since our study population was small, it limits our generalizability of the findings on parents' children with cancer and difficult to incorporate additional predictors. So, it needs a large sample size to incorporate other aspects of parents' resilience in children with cancer. Being self-report is a limitation for this paper, which can increase social desirability bias.

Conclusion and Recommendation

In conclusion, the magnitude of resilience among parents of children with cancer was low relative to previous studies. More than half of the study participants were having a resilience score below the mean value. Receiving support from friends, attending recreational activities, and receiving health information from health care professionals are positive predictors of resilience, whereas parents' depression and stress negatively predict resilience.

Improving regular health education and communication programs, implementing a multidisciplinary team approach, promoting social support systems, focusing on parents of children with cancer, and conducting further study with larger samples were recommended.

Abbreviations

DASS, Depression, Anxiety and Stress Scale; ETB, Ethiopian Birr; GLOBOCAN, Global Burden of Cancer; HCP, health care provider; HH, house hold; JMC, Jimma Medical Center; QOL, quality of life; SD, standard deviation; TASH, Tikur Anbessa Specialized Hospital.

Data Sharing Statement

The data supporting our findings are kept confidential and stored by the corresponding author both in hard and soft copies. If someone wants our data, we will voluntarily share it, and he/she can contact the author through the email and phone address in the corresponding author's information.

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Author Contributions

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed on the journal to which the article will be submitted; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

Disclosure

All authors report no conflicts of interest in this work.

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