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Research Article

The Relationship between PTSD, Anxiety, and Depression in Palestinian Children with Cancer and Mental Health of Mothers

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Abstract

Aim: The aim of the study was to investigate the prevalence of PTSD, depression and anxiety among children with cancer and relationship to mother's mental health. A sample of 50 children with their mothers was selected from oncology department at El Nasser pediatric hospital in Gaza city. The results showed that 22% of children had partial PTSD and 18% had full criteria of PTSD, 62% of children had anxiety disorder, and 68% had depression. For mothers, 70.8% of mothers scored above cut-off point of GHQ-28. The results showed that there were no correlations between total general health and subscale of mothers with children PTSD, anxiety, and depression. However, there were relationship between depression and anxiety in children with cancer.

Conclusions: The results of this study revealed that mental health among parents of children with cancer in Palestine is higher compared with their counterparts in the other contexts. Based on the results, pediatric oncology nurses can raise parents' awareness about their mental health problems, by interventions intended to decrease the risks. Parents could gain experience and information in group discussion, which provides appropriate opportunity for mothers to reflect on their own life stories. This life story perspective provides a realistic foundation that can support parents' wellbeing and contribute to satisfying the needs of their children.

Keywords: Children with cancer; PTSD; Depression; Anxiety; GHQ-28; mothers

Declaration of Interest: None.

Introduction

Cancer diagnosis in children is rising around the globe [1]. The burden of cancer is increasing worldwide with 14 million new cancer cases yearly and 8.2 million cancer deaths occurring in 2014 according to WHO (WHO, 2014). According to Palestinian Cancer registry in Palestine, the number of cancer cases in the period 2009-2014 was 7069 cases [2]. According to MOH report at year 2009-2014, the total number of children with cancer was 476 (6.6%) of the total cancer cases in the Gaza Strip, 25.4% of children with cancer were diagnosed with Leukemia were, 16.3% had brain tumor, 11.6% had lymphoma, 6.3 had bone cancer, 6.1% had neuroblastoma, 5% had nephyoblastome, 2% had rhabdomyosarcoma, 1.4% had retinoblastoma (MoH, 2014 - http://www.moh.gov.ps/portal/cancer report-2009-2014. Retrieved on 9-04-2017).

While survival rates of children with cancer improve, other psychosocial outcomes, such as fatigue, depression symptoms, anxiety, and school performances, become more and more important, and increasing attention is being given to these outcomes both during and after treatment for childhood cancer [3] in a study of distress among 56 adolescents recently diagnosed with cancer, found that 12% reached the cut off score for potential clinical anxiety and 21% for potential clinical depression. Kazak and colleagues have proposed a medical traumatic stress model which conceptualizes stress symptoms across a spectrum from normal responses to a life threatening illness in a child through to more problematic and impairing symptoms [4]. Children with cancer have experienced a DSM-IV PTSD qualifying negative life event and as such are assumed to meet A1 criteria (DSM-TR, 2000). (Diagnosis of a medical illness such as cancer may no longer qualify under DSM-5). They had been diagnosed with an illness that is potentially life threatening, and as part of their treatment they will likely undergo numerous procedures that pose a threat to their physical integrity (e.g., surgery, chemotherapy, radiation therapy) [5] in study of children with cancer age 8-17 (n = 254) and age-, sex-, and race/ethnicity-matched controls (n = 142) completed self-report measures of stressful life events and psychological functioning. Children with cancer endorsed significantly more potentially traumatic events than control children. There were no differences between groups in number of other events experienced.

Life-threatening childhood illness/injury can lead to significant distress reactions in parents, with independent studies finding such reactions in several different illness groups. To date, there is limited research systematically comparing the prevalence of adverse parental psychological reactions across different childhood illness groups with an acute life threat [6] found that levels of PTSS in mothers and fathers of pediatric patients were significantly correlated, they failed to find an association between parent and child PTSS. Moreover, [7] examined rates of concordance of PTSD and PTSS in adolescent childhood cancer survivors and their parents and found no significant correlation existed between either parent (i.e., mother or father) and adolescent on rates of current and lifetime cancer-related PTSD [8] investigated PTSS for 171 parents of children with cancer and found that all but one parent exhibited PTSS. Among approximately 80% of parental couples, at least one parent had more than moderate levels of PTSS. Previous research reported that parents of children with cancer may have posttraumatic stress symptoms (PTSS) [9]. Pediatric cancer treatment exposes parents to various traumatic experiences, such as seeing their child being seriously ill and in pain, frequent hospitalizations and emergency visits, side effects of cancer treatment such as alopecia, and the financial burden of treatment [10,11] in study 103 Egyptians, acute Leukemic children and their 96 parents, psychiatric morbidity was evident in nearly 60% of leukemic children and their parents and was significantly increased in comparison to controls. Children mostly suffered from adjustment and oppositional defiant disorders. The most common discriminators between patient groups were conduct and attention problems being lowest in newly diagnosed patients, and social aggression being lowest in patients in remission. Risk factors for child psychopathology were older age, female gender, and parental psychopathology. [12] in a cross-sectional data of 194 parents of 145 children admitted to cardiology, oncology and pediatric intensive care units, for serious illnesses/injuries. Rates of acute traumatic stress, depression, anxiety and general stress symptoms in parents were comparable across the illness types, with 49 - 54% reaching criteria for acute stress disorder, 15-27% having clinical levels of depression and anxiety, and 25-31% for general stress. Anxiety was most strongly associated with acute traumatic stress, closely followed by stress and depression, with all correlations highly significant. Moreover, [13] in a study with a sample of 416 biological parents (comprising 207 mothers and 209 fathers) of children with cancer in Jordan showed that there was a significant difference in PTSD levels between mothers and fathers, with mothers having significantly higher PTSD levels than fathers. Results indicated that there was a significant negative correlation between parental PTSD levels with their age, and the time since their child was diagnosed with cancer. [14] in study of 41 mothers 25 fathers of infants under 2 years who either had a cancer diagnosis or was an infant sibling of an older child with cancer showed that 47.5% of mothers and 37.5% of fathers reported elevated, cancer-related posttraumatic stress symptoms. Rates of depression (12.2% of mothers and 12.0% of fathers) and anxiety symptoms (17.1% of mothers and 8.0% of fathers) were lower. Compared with parents of infant patients, parents of infant siblings reported significantly higher rates of depressive symptoms and trends toward higher rates of posttraumatic stress symptoms and anxiety symptoms. Parent anxiety was higher with increased time post diagnosis. The aims of this study were: 1) to find the prevalence rate of PTSD, anxiety, and depression, in children with cancer; 2) to elaborate the prevalence of mental health of mothers of children; 3) to explore the relationship between PTSD, depression, anxiety of children with cancer and their mother's mental health.

Method

Participants

The sample consisted of all children cases coming to diagnosed and treated in the Pediatric Oncology Unit, at El Nasser pediatric hospital in Gaza city (N = 50) (23 males and 27 females), and their mothers (N = 50).

Measures

A Predesigned Socio - Demographic Sheet

This questionnaire included; gender, age, place of residence, and family monthly income.

Medical History of the Children

This was filled by the mothers of the children and nurse responsible for the cases of children about the diagnosis of children.

Children Measures

Children Posttraumatic Stress Disorder Clinically Administered Scale in the Arabic version

A standardized 17 items, self-report measure designed to assess posttraumatic stress disorder of children of 6-12 years following exposure to a threatening illness and cancer as a traumatic event. It includes three subscales. Intrusion (5 items), Avoidance (7 items), items and hyperarousal (5 items), the scale has been found to detecting the likelihood of PTSD. The CPTSD used in this study was based on DSM criteria and has already been validated in the Arab culture [15]. In this study, the Cronbach's Alpha coefficient for the whole scale was high ($\alpha = 0.91$).

Revised Children's Manifest Anxiety Scale (RCMAS), (Reynolds and Richmond B. (1978, 1987) in the Arabic version (Thabet and Vostanis, 1998).

The Revised Children's Manifest Anxiety Scale (RCMAS) is a 37-item self-report measure of anxiety for youth [16]. Respondents indicated whether or not they experienced each item using a yes/no format. The items are summed (yes, 1; no, 0) to yield an overall score. Internal consistency is acceptable, with alphas ranging from .78 to .85. Test-retest reliability ranges from .68 for a 9-month interval to .98 for 3 weeks. A cut-off 19 of total score to become 28 items has been found to predict the presence of anxiety disorder [15]. In this study, the Cronbach's Alpha coefficient for the whole scale was high (α = 0.93).

Children's Depression Inventory (Kovac, 1985, 1992, 2003) in the Arabic version (Gharib, 1985)

The Children's Depression Inventory (CDI) is a 27-item self-report measure of depressive symptoms for children. Each item includes three possible alternatives describing increasing levels of depressive symptomatology. The children selected one of the three alternatives that best described how they had been feeling during the past 2 weeks. The CDI is a well-validated measure of depression with internal consistency estimates ranging from .70 to .86; test-retest reliability was also found to be acceptable for a 1-month time interval, .82 [17,18]. The CDI has been adapted for use with Arab children [19]. In this study, the Cronbach's Alpha coefficient for the whole scale was (α = 0.70).

Mother's Measure

General Health Questionnaire (GHQ-28 items- [15,20] in the Arabic version Hamilton

To assess psychiatric morbidity of mothers, we used the General Health Questionnaire-28 (GHQ-28, a commonly used questionnaire of proven validity and reliability [20]. General Health Questionnaire 28 (GHQ-28) is a popular 28-item screening test that derived from factor analysis of General Health Questionnaire 60. The questionnaire has 4 subscales of Somatic Symptoms, Anxiety and Insomnia, Social Dysfunction and Severe Depression with 7 questions in each subscale. The scores are calculated by using binary (0-0-1-1) score. This scale was validated by [15]. In this study, the Cronbach's Alpha coefficient for the whole scale was high (α = 0.93).

Study Procedure

In these study, 50 mothers and children with cancer were interviewed by the researcher and others three professionals (one psychologies and other 2 psychiatric stuff nurse). They were trained for 4 hours on using the interview questionnaires with mothers and children in oncology unit. An official letter of approval from Local Helsinki committee in Ministry of Health was received and an approval litter from the director for the hospital was given. A written consent form was signed for mothers and their children to participate in the study, and includes the purpose of the study and the potential benefit and risk to subject. Each interview lasted for 20-25 minutes. There were some difficulties facing the researcher, in which some of the children with cancer had painful procedures and there were difficulties to communicate with them.

Statistical Analyses

Statistical analyses were carried out using IBM SPSS Statistics version 20.0. Continuous variables were presented as M ± SD and categorical variables were expressed as frequencies (%). The PTSD, anxiety depression of children with cancer, and mothers' general mental health were exhibited using the mean values, and SD. Spearman's correlation coefficient tested the association between The PTSD, anxiety depression of children with cancer, and mothers' general mental health. Prediction of mothers' mental health The PTSD, anxiety depression of children with cancer was tested by series of stepwise multiple linear regression analyses was conducted, with each child PTSD, depression, and anxiety as the predictor and total mother's mental health score as the dependent variable. A two-tailed p value < .05 was considered statistically significant.

Results

Sociodemographic Data

The study included mothers of 50 mothers and 50 children with cancer, age ranged from. According to place of residence 37% live in a city, 33.3% live in a camp, and 29.2% live in a village. According to family monthly income, 56% of the families earn less than 220$ per month, 28% earn $ 221-520, and 16% earn $ 521-750. According to mother's education, 8.0% finished elementary education, 24% had primary education, 40% finished secondary education, 22% had diploma, 4% had university degree, and 2% finished postgraduate education. According to mother's job, 95.8% were housewives and 4.2% were employee.

Items	N	%
Children sociodemographic data		
Sex		
Male	23	45.8
Female	27	54.2
Age group Mean age 9 years (SD = 3.33)		
6-8 years	23	46
9-12 years	27	54
Number of siblings		
4 and less	13	26.0
5-9	21	42.0
above 10	16	32.0
Mothers sociodemographic data		
Family monthly income		
Less than $ 220	28	56
$ 221-521	14	28
$ 521-750	8	16
Mother education		
Elementary	4	8.0
Primary	12	24.0
Secondary	20	40.0
Diploma	11	22.0
University	2	4.0
Post graduate	1	2.0
Father education		
Elementary	2	4.0
Primary	16	32.0
Secondary	21	42.0
Diploma	8	16.0
University	1	2.0
Post graduate	2	4.0
Father work		
Unemployed	9	18.0
Simple worker	16	32.0
Skilled worker	15	30.0
Employee	7	14.0
Merchant	3	6.0
Mother job		
House wife	46	92
Employee	4	8

Table 1: Sociodemographic characteristics of children with cancer (N = 50).

Diagnosis of Cancer in Children

As shown in table 2, distribution of children with cancer according to diagnosis, the most cases was diagnosed as acute lymphoblastic leukemia (ALL) 37 cases (74%) of total cases, acute myeloid leukemia (AML) 9 cases represent (18%), Hodgkin's, (2%) brain tumor represents (2%) and lymphoma (4%) of the total cases.

Diagnosis	N`	%
Acute lymphatic Leukemia	37	74
Acute myeloid leukemia	9	18
Hodgkin's	1	2
Brain tumor	1	2
Lymphoma without Hodgkin's	2	4

Table 2: Diagnosis of cancer in children.

Means and Standard Deviation of PTSD, Anxiety, and Depression in Children with Cancer

Children's post traumatic stress disorder scores ranged between 0 and 55. Total PTSD items mean was 35.06 (SD = 11.96). Intrusion subscale mean was 8.82(SD = 3.43), avoidance subscale mean was 13.78 (SD = 5.09), and arousal subscale mean was 11.56 (SD = 4.56). For anxiety, the minimum symptoms were 1 and maximum were 28 with mean anxiety 18.98 (SD = 6.37). Children reported symptoms of depression. The minimum symptoms were 0 and maximum were 36 with mean depression was 24 (SD = 10.14).

Prevalence of PTSD, Anxiety and Depression

In order to estimate the prevalence of PTSD, the sum of the 1 item from intrusion, three avoidances, and two arousal symptoms recoded in to diagnose PTSD. The results showed that 22 children had no PTSD (44%), 8 had one cluster of symptoms (16%), 11 had partial PTSD (22%), and 9 had full criteria of PTSD (18%). For anxiety, 31 of children had anxiety disorder (62%) and 19 had no anxiety (38%). For depression, 34 of children had depression disorder (68%) and 16 had no depression (32%).

	N	Minimum	Maximum	Mean	Std. Deviation
PTSD	50	0	55	35.06	11.96
Intrusion	50	0	16	8.82	3.43
Avoidance	50	0	23	13.78	5.09
Arousal	50	0	18	11.56	4.56

Anxiety	50	1	28	18.98	6.37
Depression	50	4	47	24.00	10.14

Table 3: Means and Standard Deviations of PTSD, Depression, and Anxiety in Children

Means of Mother's General Health

Table 4 showed that mean for total GHQ scale was 11.50, mean somatic symptoms was 2.98, anxiety and insomnia was 2.62, social dysfunction was 2.41, and severe depression was 1.96. Using 4/5 cut-off points, according GHQ-28 cases of mothers were 34 (70.8%) and 14 (29.2%) were not cases.

	N	%
Post traumatic stress disorder (PTSD)		
No PTSD	22	44.0
One cluster of symptoms of PTSD	8	16.0
Partial PTSD	11	22.0
Full PTSD	9	18.0
Anxiety		
Anxiety	31	62.0
No anxiety	19	38.0
Depression		
Depression	34	68.0
No depression	16	32.0

Table 4: Prevalence of PTSD, Anxiety and Depression

Relationship between Mother's Mental Health and Children with Cancer Mental Health

In order to find the relationship between mothers' mental health and children PTSD, depression and anxiety, Coefficient correlation test was conducted using Spearman correlation test. The results showed that there were no correlations between total general health and subscale of mothers with children PTSD, anxiety, and depression.

	Mean	SD
GHQ-28	11.50	8.77
Somatic symptoms	3.73	2.98
Anxiety and insomnia	3.79	2.62
Social dysfunction	2.76	2.41
Severe depression	2.00	1.96

Table 5: Means of Mother's General Health Questionnaire Scale.

	GHQ for mothers	Somatic Symptoms	Anxiety and Insomnia	Social Dysfunction	Severe Depression
GHQ for mothers	1.00				
Somatic Symptoms mothers	.91**	1.00			
Anxiety and Insomnia others	.91**	.83**	1.00		
Social Dysfunction-mothers	.86**	.68**	.68**	1.00	
Severe Depression-mothers	.80**	.62**	.67**	.62**	1.00
PTSD	-.10	-.06	-.14	-.09	.06
Intrusion	-.14	-.16	-.18	-.10	.06
Avoidance	-.02	.03	-.08	-.03	.15
Arousal	-.16	-.11	-.14	-.15	-.07
Anxiety total	-.13	-.08	-.13	-.16	.12
Depression Total	-.14	-.12	-.11	-.11	.13

Table 6: Spearman Correlation Test between Mother's Mental Health and Children Mental Health

*p < 0.05, **p < 0.01, ***p < 0.001

Prediction of Mother's Mental Health by Children with Cancer Anxiety and Depression

In a multivariate regression model, total GHQ-28 scores of mothers was entered as dependent variables, with total PTSD, anxiety, and depression in children with cancer as the independent variables. Total PTSD (β = -0.08, t (47), p < 0.79) Total anxiety (β = -0.10, t (47), p < 0.59) and depression (β = -0.14, t (400), p < 0.65) in children with can-

cer was not predicting mental of mothers using GHQ-28 (β=-0.08, t (47), p < 0.83) R2 = .02, F (1, 47) = .48, p < .62.

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	14.535	4.209				6.052	23.017
PTSD	0.06	0.21	0.08	0.27	0.79	-.373-	0.49
Depression	-.120-	0.22	-.140	-.539-	0.59	-.567-	0.33
Anxiety	-.116-	0.37	-.085	-.316-	0.75	-.856-	0.62

Table 7: Multivariate Regression Model of Predictors of PTSD, Anxiety, and Depression in Children with Cancer to Mother Mental Health (GHQ-28)

F (3/47) = 0.33, p = 0.78.

Discussion

The result of this study found the cancer children in both sexes (male and female) represent 64% of depression, the high rates of depression included as moderate depression 28% and severe depression 36%. The study of [21] found there were children with cancer reported high rates of significant depression. The study of [22] reported that depression in children with cancer were significantly higher than children in the community. It seems likely that depression reflected the impact of treatment, chemotherapy and other invasive medical procedures on the children with cancer.

This is also consistent with the study by with cancer and parents. It seems likely that these difficulties of depression reflect the concern of the disease experienced by parents of children who are being treated for a life threatening illness. Depression may result due to children's fears about injections, and excessive vomiting experienced by children, or difficulty ingesting oral medication, which may lead to low self-steem and no capacity to cope with their illness. The parent observation may be influenced by the distress as experiencing which reflects negative feelings toward their children's illness. In comparison with study by Mariann., et al. (2005) found 21% for clinical depression, in children with cancer, because depression is often difficult to diagnose in cancer patients, as physical symptoms of depression such as disturbance in sleep, appetite, and concentration and decreased energy levels may occur as a consequence of cancer and its treatment. And according to pain from procedures and treatment is more common among the range of depression. However, the result is in concordance with previous finding by Varni., et al. (2004) showing that higher pain intensity is associated with higher depression and anxiety symptoms among children with cancer as a comparative study with community children the study found there is no significant differences between level of depression and sex of children with cancer. In comparison with the study by Marian., et al. (2005) girls reported higher level of anxiety and depression than boys, due to changed appearance, by losing hair.

The psychiatric disorder of anxiety the research found that 65% of children with cancer, and as a comparative. Our rate of anxiety much more that rate of anxiety found in study of Marrian., et al. (2005) which reported that 21% of children with cancer compared with control study who treated in general hospital. Rating of anxiety due to pain procedure and treatment, highly distressing and worst aspects of distress, losing hair, fatigue were rated with highest and the same time worry about not getting well, mucositis, nausea, pain from procedure and treatment and worry about missing school.

Our study showed that 22% of children reported partial PTSD and 18% had full PTSD. In comparison with other study Meesk., et al. (2002), found that children with cancer and survivors reported clinically significant levels with PTSD than the population, and the survivors with PTSD reported poor quality of life. The study of Niels and Marianne., et al. (2005), found that the children survivors with cancer reported 14% of sever level of PTSD when compared with a group of non-ill children. Where the study of Libov., et al. (1999) found the children with cancer reported PTSD symptoms, reveal that 61% intrusive recollections, flashback experience 14% avoidance 3%, hypervigilance the most common arousal 41%. The result of their study found that there was consistency with the researcher study in Gaza. [21] found that children with cancer have significant PTSD symptoms, including intrusion and avoidance which return to the high tendency of emotional and behavioral problems scores for pediatric oncology patients and suggested that they should receive psychological care. While the study of [23] reported and examine the association between

children with cancer long term quality of life and psychological outcome, revealed that survivors with PTSD reported clinically significant levels on all psychological distress. The research found there is no sex difference in PTSD with cancer children, but there are statistically significant differences between PTSD in children with cancer and the case control study.

Our results showed that there was no correlation between children PTSD, anxiety, depression, and mothers mental health which was consistent with existing literature that documents decreasing levels of distress in both children with cancer and their parents over time [24] (Vrijmoet-Wiersma., et al. (2008), these symptoms appeared to decline over time as families adjusted to the child's diagnosis and treatment. Surprisingly, other types of symptoms, including parental anxiety, child depression, and parental and child PTSS, did not show a relationship with time since diagnosis. Similarly, [25] in a study was conducted to in the South East of Iran. Using the Impact of Event Scale - Revised, for parents of children with cancer, 200 parents in two hospitals supervised by Kerman University of Medical Sciences. The results, mothers had higher post-traumatic stress symptoms compared with fathers.

Adjusted odds ratio showed that the prevalence of post-traumatic stress symptoms among mothers was 2.49 times more than that among fathers. Based on the cut-off value of ≥ 33, more than 75.5% of parents had PTSS (42% of mothers and 33.5% of fathers). Others, [26] in study examined the associations between parent and child symptoms of depression, anxiety, and post-traumatic stress in families of children with cancer, and how these symptoms were affected by passage of time since diagnosis. Parental symptoms of depression were associated with multiple types of child symptoms (depression, anxiety, and post-traumatic stress). Furthermore, parental anxiety was linked to child anxiety, and parental post-traumatic stress was linked to child post-traumatic stress, female child participants reported significantly higher levels of anxiety than male child participants. Furthermore, children whose participating parents were mothers reported higher anxiety symptoms than those whose participating parents were fathers [27-39].

Limitations

Since data collection was done during child hospitalization, parents may have had stress due to the child's invasive procedure and thus their responses may have been affected by their child's current status in hospital. The other limitation of this study could be using convenience sampling. Moreover, type of treatment as an important predictive factor and its correlation with parents' PTSS, was not assessed in this study.

Conclusions

The results from this study revealed that mental health among parents of children with cancer in Palestine is higher compared with their counterparts in the other contexts. The mental-health problems among mothers of children with cancer were higher than found in other studies. There was no association between mother's mental health and children PTSD, anxiety, and depression and. Based on the results, pediatric oncology nurses can raise parents' awareness about their mental-health problems, by interventions intended to decrease the risks. Parents could gain experience and information in group discussion, which provides appropriate opportunity for mothers to reflect on their own life stories. This life story perspective provides a realistic foundation that can support parents' wellbeing and contribute to satisfy the needs through their children.

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