

# Psychological distress and coping strategies in parents of children with cancer in Lebanon

Najla A. Lakkis\*, Joseph M. Khoury, Dina M. Mahmassani, Maria S. Ramia and Ghassan N. Hamadeh

Department of Family Medicine, American University of Beirut Medical Center (AUBMC), Beirut, Lebanon

\*Correspondence to:

Department of Family Medicine,  
Faculty of Medicine, American  
University of Beirut, Beirut,  
Lebanon. PO Box 11-0236, Riad  
El Solh, Beirut 1107-2020.  
E-mail: ne23@aub.edu.lb

## ABSTRACT

**Objectives:** To determine the prevalence of psychological distress (PD) among parents of Lebanese children with cancer and to investigate the associated stressors and coping strategies.

**Methods:** A cross-sectional study conducted at the American University of Beirut Medical Center–Children Cancer Center of Lebanon in 2012. Parents of all children with cancer admitted for treatment were eligible participants. The General Health Questionnaire (GHQ-12) was used to estimate the prevalence of PD. Coping strategies were measured via the Coping Health Inventory for Parents (CHIP). Bivariate and multiple regression analyses were conducted to evaluate the relationship between GHQ-12 (scores 0–36), stressors, family/social support, and coping strategies.

**Results:** One hundred fourteen parents (68.2%) completed the anonymous questionnaire. Based on GHQ-12, significant PD was considered among 56.0% of the parents. It was found to be significantly positively associated with the degree of family financial problems and significantly negatively associated with the child's disease duration. A significant negative relationship was also found between PD and Coping (CHIP) scale, coping pattern I (Maintaining Family Integration and an Optimistic Outlook for the Situation), pattern II (Seeking Social Support), yet not with pattern III (Seeking Information).

**Conclusions:** PD is prevalent among parents of Lebanese children hospitalized because of cancer. Screening for PD in the latter population is feasible, would identify those who are at risk for disruptive PD, and facilitate the provision of support towards better adjustment and coping. Alleviating parental PD may facilitate the realization of optimal health outcomes.

Copyright © 2015 John Wiley & Sons, Ltd.

Received: 22 July 2014

Revised: 10 July 2015

Accepted: 15 July 2015

## Background

The diagnosis of cancer in a child is among the most intense stressors that a parent can endure [1,2]. Parents feel overwhelmed with uncertainty regarding their child's uncontrollable life-threatening event [1,3]. Cancer interferes with family dynamics and daily functioning, and also inflicts stressors of varying intensities and durations, thus negatively impacting the parent's quality of life [1,4]. Although children and parents try to adjust to the situation, both may face a vicious circle of psychological distress (PD). This affects parental quality of life/well-being, the child's physical/emotional care, and subsequently the child's coping mechanism [2–6]. Moreover, the increased financial demands and/or employment disruptions constitute further burdens [1,7–10]. Studies revealed that parents of children with cancer are more likely to develop general psychological morbidities such as post-traumatic stress symptoms and disorder, generalized anxiety disorder, and depression [1,2,11–16]. Some parents are considered to be hidden sufferers because they usually repress their feelings [2,5].

Different coping mechanisms corresponding to various cancer stages are described in the literature [1,17,18],

yet most studies were carried out in Western countries. Social culture may play a role in shaping coping mechanisms among different populations [18]. According to McCubbin *et al.*, these coping mechanisms include handling new demands created by the child's sickness, securing additional resources, addressing existing stressors, and transitioning the family's situation, and expectations to ones that are more constructive, manageable, and acceptable [17].

Lebanon is a middle-income Middle Eastern country with a 19.4 per 100 000 standardized age incidence rate (world) of cancer in children <15 years ( $n=225$ ) (average age: 7.6 years). Leukemia constitutes about one third of pediatric cancers, followed by brain, lymphoma, and bone malignancies [19]. Childhood cancer treatment costs in Lebanon are almost entirely covered by insurance and the Ministry of Health. To date, no published data exist about PD among parents of Lebanese children with cancer and their coping mechanisms, making this study the first to report on the prevalence of PD and associated stressors and coping mechanisms among parents of children with cancer in Lebanon. Given that the estimated prevalence of anxiety disorders (11.2%) and mood disorders (6.6%) in the general Lebanese population is similar to Western

European World Mental Health survey figures [20], despite existing political and economic crises, we expected the risk for PD among parents of children with cancer in Lebanon to be comparable to the figures of Western countries. Nevertheless, we also expect the most helpful coping mechanisms to differ from one country to another [17,18], taking into consideration the nation's health care delivery systems, social contexts/culture, and religiosity/spirituality. Lebanon and other Middle Eastern countries have been known for strong familial and social ties as well as high religiosity, all of which are presumed to serve as protective factors in PD. However, social support (both moral and materialistic) in Lebanon, habitually provided by family members and to a lesser extent by friends and neighbors, is likely reduced nowadays because of long working hours, and financial burdens (low average wages with high cost of living), and therefore is not playing a significant role in alleviating parental PD.

### Objectives

The primary objectives of this study are to determine the prevalence of PD among parents of Lebanese children on active therapy for cancer and to investigate the stressors and coping strategies associated with parental PD.

### Methods

#### Study design and participants:

This is a cross-sectional study conducted at the American University of Beirut Medical Center (AUBMC)–Children Cancer Center of Lebanon (CCCL) between January and October 2012. Parents of all children with cancer admitted for treatment were eligible to participate in this study.

#### Procedures

This research project was approved by the AUBMC Ethical Committee Review and by the CCCL administration. Parents of inpatients at the CCCL, present with their child, were approached and briefed about the study by a family medicine resident. Those who verbally agreed to consider participation were asked to sign an informed consent and to complete an anonymous self-administered Arabic questionnaire, at their own convenience.

#### Instruments/measures:

The questionnaire, developed after a thorough literature review, inquired about the child's demographics and illness (Table 1). It included items about parental demographic and socioeconomic characteristics, chronic health problems, psychiatric history, history of stressful events, and the social/lifestyle history. Social support items, rated on a four-point Likert scale, investigated the perceived

**Table 1.** Bivariate analyses of GHQ-12 (scores 0–36), a screening tool for psychiatric distress, with children-related covariates

Variables	No (%)	GHQ-12 Mean (SD)	Total (n = 114) p-value
Gender			0.51 <sup>b</sup>
Male	62 (54.4%)	21.0 (5.6)	
Female	52 (45.6%)	21.5 (4.5)	
Age/years			0.91 <sup>a</sup> (F: 0.12)
Mean/median (range)	8.0/8.0 (0–18 years)		
Disease age/months			0.02 <sup>a</sup> (F: 0.59)
Mean/median (range)	14.0/6.0 (1–100 months)		
<6 months	55 (48.2%)		
≥6 months and <12 months	17 (14.9%)		
≥12 months and <24 months	21 (18.4%)		
≥24 months	21 (18.4%)		
Disease type			0.03 <sup>b</sup>
Leukemia-lymphoblastic	54 (47.4%)	20.2 (4.4)	
Others	60 (52.6%)	22.2 (5.8)	
Therapy			0.20 <sup>b</sup>
First	94 (82.5%)	20.0 (4.6)	
Relapse	20 (17.5%)	21.6 (4.9)	
Child aware of his disease			0.03 <sup>b</sup>
No	68 (60.2%)	22.1 (5.0)	
Yes	25 (39.8%)	20.2 (4.3)	
Perceived child's mental health and behavior problem(s)			0.28 <sup>b</sup>
No	98 (87.2%)	21.1 (4.7)	
Yes	14 (12.5%)	22.6 (4.7)	
Education			0.23 <sup>a</sup> (F: 1.42)
Not applicable (very young)	16 (14.0%)	20.6 (6.0)	
No, stopped for good <sup>c</sup>	10 (8.8%)	21.8 (6.4)	
No, stopped temporarily <sup>d</sup>	42 (36.8%)	22.4 (4.2)	
Yes, at home	14 (12.3%)	18.8 (3.8)	
Yes, at a special school <sup>e</sup>	16 (14.0%)	21.0 (6.0)	
Yes, at a regular school	15 (13.2%)	20.3 (3.1)	

<sup>a</sup>ANOVA test was used

<sup>b</sup>t-test was used.

<sup>c</sup>There is no intention to resume schooling.

<sup>d</sup>There is an intention to resume schooling once medically cleared.

<sup>e</sup>A school for students who delayed their education, e.g., because of cancer.

emotional/moral and tangible support from partners, relatives, and friends/others.

The Coping Health Inventory for Parents (CHIP) scale was used to measure coping strategies (45 Likert scale items) [17]. The CHIP identifies three coping patterns: coping pattern I (maintaining family integration, cooperation, and an optimistic definition of the situation), coping pattern II (maintaining social activities and relationships, self-esteem, and psychological stability), and coping pattern III (understanding the medical situation through communication with other parents and consultation with medical staff). Their internal consistencies (Cronbach alpha) were reported to be 0.79, 0.79, and 0.71, respectively [17]. The CHIP scale was translated into Arabic and back-translated to English by another blinded translator to ensure content validity. It was then tested on 20 parents not included in this study.

PD was measured using the 12-item General Health Questionnaire version (GHQ-12), whose items are rated on a four-point scale [21]. Using the Goldberg scoring style (all items coded 0-0-1-1), individuals who scored  $\geq 3$  on the GHQ-12 were considered to have PD [21]. The Arabic GHQ-12 was validated by El-Rufaie and Daradkeh in 1996 in primary care settings [22].

### Statistical analysis

SPSS-17 was used for data analysis. The GHQ-12 score was the outcome-studied variable. Two sets of analyses were performed using different scoring methods for GHQ-12.

In the first set, the binary scoring method was employed, with GHQ-12 score ranging from 0 to 12. A score  $\geq 3$ , as recommended by Goldberg, indicated PD. The GHQ-12 (scores 0–12) was determined for the study sample and then stratified by gender to calculate the prevalence of probable PD.

In the second set of analyses, continuous Likert scoring was used, with GHQ-12 score (0–36) being the outcome variable utilized in the bivariate and multiple regression analyses. The Likert scoring method produces wider and smoother score distributions and more degrees of freedom in the analysis. This is useful in the case of our study with a relatively small sample size. The GHQ-12 (scores 0–36) had a near normal distribution (median: 21.0, mean: 21.2, skewness and Kurtosis values ( $\pm$ standard error):  $0.09 \pm 0.22$  and  $-0.30 \pm 0.44$ , respectively, Shapiro–Wilk normality test  $p$ -value: 0.52, i.e.,  $>0.05$ ). Hence, the  $t$ -test and the one-way analysis of variance (ANOVA) were used in the bivariate analyses. Variables that were significantly associated with the GHQ-12 (scores 0–36) in the bivariate analyses were utilized in the backward multivariate linear regressions, with the exception of ‘current use of psychotropic(s)’, as it may be an effect of PD. Similarly, ‘perceived mental health status in general’, was avoided, not to underestimate other significant variables. The following criteria were used in the backward regressions: probability-of- $F$ -to-enter  $\leq 0.050$  and probability-of- $F$ -to-remove  $\geq 0.100$ .

Finally, the reliability test, Cronbach’s alpha, was 0.93 for the total CHIP scale, and 0.84, 0.89, and 0.79 for the coping patterns I, II, and III, respectively. The CHIP scale and coping patterns I and III were non-normally distributed (Shapiro–Wilk normality test,  $p$ -value  $< 0.05$ ); therefore, Spearman’s rho correlation coefficient was used to examine their relationship with the GHQ-12 (scores 0–36). On the other hand, coping pattern II was normally distributed (Shapiro–Wilk normality test,  $p$ -value 0.16, i.e.,  $>0.05$ ); hence, Pearson’s correlation coefficient was used to examine its relationship with the GHQ-12 (scores 0–36). Also, the relationship between each item of the CHIP scale and the GHQ-12 (score 0 to 36) was computed. Items of each coping pattern significantly

associated with the GHQ-12 (scores 0–36) were further integrated into diverse backward multivariate linear regression analyses.

## Results

### Response rate

Parents (68.2%) invited to participate (29 fathers [52.7%] and 85 mothers [75.9%]) completed the questionnaire. Detailed descriptive statistics of participant parents and their children are reported in the Tables 1 and 2.

### Prevalence of psychological distress among the study sample

Using the GHQ-12 (scores 0–12), 91.2% of the parents scored positively ( $\geq 3$ ) and were consequently suspected

**Table 2.** Bivariate analyses of GHQ-12 (score 0 to 36), a screening tool for psychiatric distress, with other parents’ covariates

Variables	No (%)	GHQ-12 Mean (SD)	Total (n = 114) p-value
<i>Demographic variables</i>			
Gender			0.52 <sup>b</sup>
Male	29 (25.4%)	20.7 (3.9)	
Female	85 (74.6%)	21.4 (5.1)	
Age/years			0.19 <sup>a</sup> (F: 1.71)
Mean (range)	38.3 (22–55)		
Marital status			0.52 <sup>b</sup>
Married	109 (95.6%)	21.3 (4.7)	
Divorced/widow	5 (04.4%)	19.8 (7.2)	
<i>Socio-economic variables</i>			
Number of children			0.26 <sup>a</sup> (F: 1.27)
Mean (range)	3.0 (1.0–7.0)		
Education			0.18 <sup>a</sup> (F: 1.78)
Elementary or less	28 (24.6%)	21.5 (4.5)	
Intermediate or mid-school	20 (17.5%)	22.5 (6.0)	
High school, technical	31 (27.2%)	21.3 (3.2)	
University	35 (30.7%)	20.3 (5.5)	
Occupation			0.74 <sup>a</sup> (F: 1.27)
Housewife	64 (56.1%)	21.9 (5.0)	
Regular job	33 (29.0%)	20.1 (4.7)	
Irregular job	17 (14.9%)	21.2 (4.2)	
Family financial problems			0.02 <sup>a</sup> (F: 3.33)
No	27 (23.7%)	19.2 (4.9)	
Moderate	76 (66.6%)	21.5 (4.7)	
Problematic	11 (09.6%)	24.2 (3.9)	
Type of transportation			0.00 <sup>a</sup> (F: 4.92)
Own/partner’s car	64 (57.1)	20.6 (5.1)	
Public cars	21 (18.8)	20.3 (4.3)	
Public buses	27 (24.1)	23.8 (4.0)	
<i>Mental health status</i>			
Perceived mental status			0.00 <sup>a</sup> (F: 13.7)
Very good	16 (14.0%)	17.5 (4.1)	
Good	57 (50.0%)	20.2 (4.2)	
Fair	26 (22.8%)	22.9 (4.0)	
Poor	15 (13.2%)	26.3 (4.4)	

N.B. The mean of the total GHQ-12 Likert scoring (0–36) for the studied population: 21.2.

<sup>a</sup>ANOVA test was used.

<sup>b</sup> $t$ -test was used.

to suffer from PD. Around 56.0% of parents scored above the mean GHQ-12 for the whole participants (mean: 6.9, SD: 2.3) and most likely suffer from significant PD. Stratified by gender, suspected PD (GHQ-12 score  $\geq 3$ ) tended to be higher among fathers (100%) than among mothers (88.2%) (chi-square test,  $p > 0.05$ ). Nevertheless, the mean score tended also to be higher among mothers (7.0) than fathers (6.6) ( $t$ -test,  $p > 0.05$ ).

### Bivariate analyses of the relationship between the GHQ-12 (scores 0–36) and different variables

The bivariate analyses (Tables 1 and 2) showed a significant positive relationship between the GHQ-12 and the perceived mental status score (1–4) (ANOVA,  $p < 0.001$ ,  $F$ : 13.7, df: 113). The GHQ-12 was positively associated with poor economic variables and a diagnosis of leukemia versus non-leukemic malignancies. The GHQ-12 was negatively associated with healthy nutrition, physical activity, and the child's disease duration and awareness of his/her disease. The bivariate analyses between GHQ-12 and the family/social support (tangible/physical, emotional/moral, and financial) items revealed a negative association with the spouse's involvement in children care and financial family support.

### Multivariate analyses of the relationship between the GHQ-12 (scores 0–36) and different variables

The backward multivariate analyses showed a positive relationship between the GHQ-12 and the degree of financial problems, and a negative relationship with child's

disease duration (Table 3). The scores of the total CHIP scale or patterns (Likert scoring) were not added to the model, so as not to underestimate other significant variables.

The results of the backward multivariate analyses stratified by gender are available in Table 3.

### CHIP scale, patterns, and items

#### Positive helpful coping items:

The top 10 most helpful coping mechanisms reported by the majority of the surveyed parents were 'believing in God' (99.1%), 'having my child with the medical condition seen at the clinic/hospital on a regular basis' (99.1%), 'believing that my child is getting the best medical care possible' (96.4%), 'believing that the medical center/hospital has my family's best interest in mind' (96.3%), 'talking with the medical staff when we visit the medical center' (95.5%), 'believing that my child will get better' (95.0%), 'investing myself in my children' (94.1%), 'talking with the doctor about my concerns about my child(ren) with the medical condition' (93.7%), 'telling myself that I have many things I should be thankful for' (91.8%), and finally, 'doing things with my children' (91.0%).

### Correlations between the GHQ-12 (scores 0–36) and different CHIP scale and patterns:

There was a statistically significant relationship between the GHQ-12 and the CHIP scale, coping patterns I and II, yet not with III (Table 4).

### Bivariate and multivariate analyses of the relationship between GHQ-12 (score 0 to 36) and different CHIP scale items

Significant correlations between the GHQ-12 and each item of the coping CHIP scale, as well as items from each coping pattern that remained significantly correlated to the GHQ-12 in the last model of the diverse backward multivariate analyses, are displayed in the Table 4.

### Correlations between different coping patterns/items and child's disease duration

There was a significant correlation between the child's disease duration and the coping pattern III (0–24) only (Spearman's rho,  $p < 0.01$ , correlation coefficient:  $-0.25$ ).

## Discussion

PD is highly prevalent among parents of children with cancer [1,2,7,11–16,23], and our results show that Lebanon is no exception. A significant proportion

**Table 3.** Backward multivariate linear regressions of GHQ-12 (scores 0–36), a screening tool for psychiatric distress, and other covariates

	Dependent variables	$b^a$	95% CI <sup>b</sup> for $b$	$p$ -value
Last model	(Constant)	23.43	19.3, 27.57	0.00
$R^2 = 0.20$	Family financial problems	2.00	0.48, 3.50	0.01
$p = 0.00$	Partner children care	-2.24	-4.62, 0.12	0.06
	Child's disease age/ months	-0.05	-0.09, -0.05	0.02
	Child aware of his illness	-1.48	-3.12, 0.29	0.08
Last model in male participants	(constant)	27.00	21.85, 32.15	0.00
$R^2 = 0.20$	Partner children care	-7.00	-12.12, -1.44	0.01
$p = 0.00$				
Last model in female participants	(constant)	21.61	18.46, 24.75	0.00
$R^2 = 0.23$	Family financial problems	1.48	0.32, 2.64	0.01
$p = 0.00$	Family financial support	-2.68	-4.78, -0.58	0.01
	Regular healthy nutrition	-2.63	-4.69, -0.57	0.01
	Child's disease age/months	-0.05	-0.10, -0.01	0.04

<sup>a</sup>Unstandardized  $b$ .

<sup>b</sup>Confidence interval.

**Table 4.** Bivariate and multivariate analyses of GHQ-12 (scores 0–36), a screening tool for psychiatric distress, with total coping (CHIP) scale, patterns, and items

Total CHIP scale	Correlation		p-value
	coefficient		
Total CHIP scale (0–135)	–0.34 <sup>a</sup>		0.00
Coping patterns	Correlation Coefficient		p-value
Coping pattern I (0–57)	–0.19 <sup>a</sup>		0.04
Coping pattern II (0–54)	–0.37 <sup>b</sup>		0.00
Coping pattern III (0–24)	–0.16 <sup>c</sup>		0.11
Coping items significantly correlated with the GHQ-12	b <sup>c</sup>	95% CI <sup>d</sup> for b	p-value
Coping pattern I			
Doing things with my children	–1.10	–2.18, –0.02	0.05
Doing things with family relatives	–0.92	–1.67, –0.17	0.02
Trying to maintain family stability <sup>e</sup>	–1.48	–2.48, –0.47	0.00
Coping pattern II			
Involvement in social activities (parties, etc.) with friends	–0.95	–1.65, –0.25	0.01
Eating <sup>f</sup>	–0.98	–1.70, –0.26	0.01
Sleeping	–0.73	–1.45, –0.02	0.04
Concentrating on hobbies (art, music, jogging, etc.) <sup>f</sup>	–1.24	–1.97, –0.50	0.00
Working, outside employment	–1.16	–2.10, –0.23	0.02
Building close relationships with people	–1.12	–1.85, –0.39	0.00
Developing myself as a person	–1.06	–1.73, –0.38	0.00
Coping pattern III			
Reading more about the medical problem which concerns me <sup>g</sup>	–1.18	–1.86, –0.50	0.00

<sup>a</sup>Spearman's Rho correlation.<sup>b</sup>Pearson's correlation.<sup>c</sup>Unstandardized b.<sup>d</sup>Confidence interval.<sup>e</sup>Item that remained in the last model of the backward multivariate analysis of the GHQ-12 and coping pattern I.<sup>f</sup>Item that remained in the last model of the backward multivariate analysis of the GHQ-12 and coping pattern II.<sup>g</sup>Item that remained in the last model of the backward multivariate analysis of the GHQ-12 and coping pattern III.

(91.2%) of the parents surveyed had a positive score on the GHQ-12 screen ( $\geq 3$ ), with 56.0% scoring above the mean ( $\geq 7$ ). The mean GHQ-12 values (mothers: 7.0, fathers: 6.6) were slightly higher than those reported by Wijnberg-Williams *et al.* within 14 days from the time of diagnosis (mothers: 6.8, fathers: 6.2) and much higher than the mean values reported 6 and 12 months later [24].

In accordance with the existing literature, this study showed that the time since diagnosis and the family financial status were the only variables that remained significantly associated with parental PD. The association with time since diagnosis is similar to the relationship reported by Wijnberg-Williams *et al.* in their longitudinal 5-year period prospective study [24].

Financial concerns have been identified as major stressors for families of children with cancer, regardless of the structure of the health care system, benefits, or the economic status [1–3,7–9,23,25]. It is worth noting that financial problems remained significantly

positively associated with the level of parental PD in our participants, even though the child's in-hospital treatment and care were almost fully funded. However, when the multivariate analyses were computed for each gender, the perceived unsatisfactory financial status remained exclusively significantly associated with PD among mothers. Moreover, the family financial support remained to be a significant protective factor only among mothers. As for fathers, the only variable that remained significantly negatively associated with their PD is their partner's caretaking of the children. This is expected considering that 72% of the mothers were housewives, i.e., not income-generating, and thus capable of accommodating the fathers' work disruptions and related financial concerns by taking care of the family, including the sick child, without having any job-related distractions.

Also of interest is the bivariate analyses finding that parents of acute lymphoblastic leukemia patients had a significantly lower GHQ-12 score than parents of children with other malignancies. This was also reported in the literature and is explained by the need for more invasive treatment and poorer prognoses of the non-acute lymphoblastic leukemias [26].

The results of this study were in concordance with the literature with regards to finding coping pattern I to be an important protective coping mechanism [1,7–9,18,27], in particular the items 'trying to maintain family integration/stability' and 'believing that my child will get better'. Likewise, maintaining family integration/strength and optimistic outlook for the situation was perceived as being the most helpful coping strategies in Korean and Greek parents [18]. Also, a literature review by Rabineau *et al.* concluded that negative beliefs about the child's illness and/or treatment are important parental stressors [2].

The availability of supportive care for parents can strongly influence their positive coping strategies [28]. This includes informational support (medical information about their child's cancer), emotional and psychosocial support, practical support (including financial and daily tasks), and spiritual and physical health support [28]. Similarly, coping pattern II (maintaining social activities and relationships, self-esteem, and psychological stability) was found to have a significant protective role in parental adaptation to childhood cancer [1,7–9,18]. Believing in God, an item in coping pattern II, was another helpful coping mechanism commonly reported by participants. The protective role of religion/spirituality in the psychosocial adjustment to cancer in patients and their parents/caregivers has been described in many studies [2,29,30], yet not in Korea [18], and therefore, it seems to be culture-dependent.

Information provision about a child's diagnosis was reported as a protective coping mechanism for parents in several studies and found to be associated with feelings of empowerment [2,18,27,31]. However, coping pattern III (information seeking) was found to have neither a positive nor a negative relation with GHQ-12 in this study, and it was negatively correlated with child's disease duration. Only the item 'reading more about the medical problem which concerns me' from coping pattern III was found to be a protective factor against PD. When the items of coping pattern III were individually analyzed, 'talking with the medical staff and doctors about concerns' was among the top 10 helpful coping mechanisms reported by the parents. Interestingly, it was also found that the parents have less PD when their child was aware of his/her disease, maybe because children become more cooperative. These findings not only entail how knowledgeable medical staff should be; they also highlight the importance of providing comprehensive understandable medical information to parents and children upon their request.

Adults with high PD have an increased risk of physical comorbidities and poorer health outcomes of chronic diseases [32,33], work disruptions with poor productivity and increased absenteeism [34], and premature mortality from ischemic heart and respiratory diseases [35]. In addition, PD among parents may negatively affect the psychosocial profile of the sick child [2,4–6] and siblings [3]. Alleviating parental PD may lead to more optimal patient and family health outcomes. Therefore, screening for parental PD will allow for the early detection of parents at risk for anxiety disorders and/or depression, as well as the provision of support towards positive coping [23,36]. Self-administered screening instruments for non-specific PD like Kessler 6 or 10 items [37,38] or GHQ 12-item [21], and for depression [39] have been validated and are available to facilitate physicians' clinical tasks. Nevertheless, there must be an effective intervention for positive screening results [40].

## References

- Vrijmoet-Wiersma CM, van Klink JM, Kolk AM, Koopman HM, Ball LM, Maarten Egeler R. Assessment of parental psychological stress in pediatric cancer: a review. *J Pediatr Psychol*. 2008 Aug; **33**(7):694–706.
- Rabineau KM, Mabe PA, Vega RA. Parenting stress in pediatric oncology populations. *J Pediatr Hematol Oncol*. 2008 May; **30**(5):358–365.
- Patterson JM, Holm KE, Gurney JG. The impact of childhood cancer on the family: a qualitative analysis of strains, resources, and coping behaviors. *Psychooncology*. 2004; **13**(6):390–407.
- Klassen AF, Klaassen R, Dix D, Pritchard S, Yanofsky R, O'Donnell M, Scott A, Sung L. Impact of caring for child with cancer on parents health related quality of life. *J Clin Oncol*. 2008 Dec 20; **26**(36):5884–5889.
- Fuemmeler BF, Brown RT, Williams L, Barredo J. Adjustment of children with cancer and their caregivers: moderating influences of family functioning. *Fam Syst Health*. 2003; **21**(3):263–276.
- Robinson KE, Gerhardt CA, Vannatta K, Noll RB. Parent and family factors associated with child adjustment to pediatric cancer. *J Pediatr Psychol*. 2007 May; **32**(4):400–410.
- Klassen A, Raina P, Reineking S, Dix D, Pritchard S, O'Donnell M. Developing a literature base to understand the caregiving experience of parents of children with cancer: a systematic review of factors related to parental health and well-being. *Support Care Cancer*. 2007 Jul; **15**(7):807–818.
- Dussel V, Bona K, Heath JA, Hilden JM, Weeks JC, Wolfe J. Unmeasured costs of a child's death: perceived financial burden, work disruptions, and economic coping strategies used by American and Australian families who lost children to cancer. *J Clin Oncol*. 2011; **29**(8):1007–1013.
- Wakefield CE, McLoone JK, Butow P, Lenthen K, Cohn RJ. Parental adjustment to the completion of their child's cancer treatment. *Pediatr Blood Cancer*. 2011; **56**(4):524–531.
- Sloper P. Predictors of distress in parents of children with cancer: a prospective study. *J Pediatr Psychol*. 2000 Mar; **25**(2):79–91.
- Norberg AL, Boman KK. Parent distress in childhood cancer: a comparative evaluation of posttraumatic stress symptoms, depression and anxiety. *Acta Oncol*. 2008; **47**(2):267–274.
- Pöder U, Ljungman G, von Essen L. Posttraumatic stress disorder among parents of children

## Limitations

The study is cross sectional and therefore precludes causal inferences. Mothers were more represented than fathers because, as homemakers, they are usually more likely to be available with their sick child. Furthermore, GHQ12-item is only a screening tool; using standardized interviews would facilitate an accurate diagnosis in parents with a positive screening score and evaluate the sensitivity and specificity of GHQ 12-item in this population. Finally, the findings of this study can differ in parents who did not participate or those whose children are treated as outpatients.

## Conclusions

PD is often associated with considerable family, social, and vocational impairments. Screening for PD in parents of children with cancer is feasible and would identify those who are at risk. However, prior to initiating any screening initiative, adequate staffing and facilities for testing, diagnosis, treatment, and follow-up should be available. Helping parents to overcome their stressors would facilitate optimal care for the child with cancer. Longitudinal studies are necessary to better formulate and evaluate interventional programs that enhance the identified coping strategies.

## Disclosure statement

The authors report no financial or other conflict of interest. The authors alone are responsible for the content and writing of the paper.

The manuscript has neither been published elsewhere nor is considered for publication in another journal.

- on cancer treatment: a longitudinal study. *Psycho-Oncology*. 2008 May;17(5):430–437.
13. Fotiadou M, Barlow JH, Powell LA, Langton H. Optimism and psychological well-being among parents of children with cancer: an exploratory study. *Psycho-Oncology*. 2008 Apr;17(4):401–409.
  14. Yalug I, Corapcioglu F, Fayda M, Aksu G, Basar E, Yalug K, Aker T. Posttraumatic stress disorder and risk factors in parents of children with a cancer diagnosis. *Pediatr Hematol Oncol*. 2008 Jan-Feb;25(1):27–38.
  15. Greening L, Stoppelbein L. Brief report: pediatric cancer, parental coping style, and risk for depressive, posttraumatic stress, and anxiety symptoms. *J Pediatr Psychol*. 2007 Nov-Dec;32(10):1272–1277.
  16. Pai AL, Greenley RN, Lewandowski A, Drotar D, Youngstrom E, Peterson CC. A meta-analytic review of the influence of pediatric cancer on parent and family functioning. *J Fam Psychol*. 2007 Sep;21(3):407–415.
  17. McCubbin HI, McCubbin MA, Patterson JM, Cauble AE, Wilson LR, Warwick W. CHIP-Coping Health Inventory for Parents: an assessment of parental coping patterns in the care of the chronically ill child. *Journal of Marriage and Family* 1983 May: 359–370.
  18. Han HR, Cho EJ, Kim D, Kim J. The report of coping strategies and psychosocial adjustment in Korean mothers of children with cancer. *Psycho-Oncology*. 2009 Sep;18(9):956–964.
  19. Adib SM, Daniel J, Issa G. Cancer in Lebanon 2004 with an update of Cancer 2003. National Cancer Registry. Available at: <http://www.moph.gov.lb/Prevention/Surveillance/Pages/Cancer.aspx> (Last Accessed on July 18, 2014).
  20. US Census Bureau, Center for Disease Control and Prevention. Depression Statistics. Research Date: 7.9.2014. <http://www.statisticbrain.com/depression-statistics/> <http://www.moph.gov.lb/Prevention/Surveillance/Pages/Cancer.aspx> (Last Accessed on November 18, 2014).
  21. Goldberg DP, Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, Rutter C. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol Med* 1997;27:191–197.
  22. el-Rufaie OF, Daradkeh TK. Validation of the Arabic versions of the thirty- and twelve-item General Health Questionnaires in primary care patients. *Br J Psychiatry*. 1996 Nov;169(5):662–664.
  23. Rosenberg AR, Dussel V, Kang T, Geyer JR, Gerhardt CA, Feudtner C, Wolfe J. Psychological distress in parents of children with advanced cancer. *JAMA Pediatr*. 2013 Jun;167(6):537–543.
  24. Wijnberg-Williams BJ, Kamps WA, Klip EC, Hoekstra-Weebers JE. Psychological distress and the impact of social support on fathers and mothers of pediatric cancer patients: long-term prospective results. *J Pediatr Psychol*. 2006 Sep;31(8):785–792.
  25. Lou VW. Factors related to the psychological well-being of parents of children with leukemia in China. *J Psychosoc Oncol*. 2006; 24(3):75–88.
  26. Hovén E, Anclair M, Samuelsson U, Kogner P, Boman KK. The influence of pediatric cancer diagnosis and illness complication factors on parental distress. *J Pediatr Hematol Oncol*. 2008 Nov;30(11):807–814.
  27. Norberg AL, Lindblad F, Boman KK. Support-seeking, perceived support, and anxiety in mothers and fathers after children's cancer treatment. *Psycho-Oncology* 2006;15:335–343.
  28. Kerr LM, Harrison MB, Medves J, Tranmer J. Supportive care needs of parents of children with cancer: transition from diagnosis to treatment. *Oncol Nurs Forum*. 2004 Nov 16; 31(6):E116–E126.
  29. Weaver AJ, Flannelly KJ. The role of religion/spirituality for cancer patients and their caregivers. *South Med J*. 2004 Dec; 97(12):1210–1214. Review.
  30. Brody AC, Simmons LA. Family resiliency during childhood cancer: the father's perspective. *J Pediatr Oncol Nurs* 2007;24:152–165.
  31. McGrath P, Paton MA, Huff N. Beginning treatment for paediatric acute myeloid leukaemia: diagnosis and the early hospital experience. *Scand J Caring Sci* 2004;18:358–367.
  32. James K, Keegan-Wells D, Hinds PS, Kelly KP, Bond D, Hall B, Mahan R, Moore IM, Roll L, Speckhart B. The care of my child with cancer: parents' perceptions of caregiving demands. *J Pediatr Oncol Nurs* 2002;19:218–228.
  33. Fortin M, Bravo G, Hudon C, Lapointe L, Dubois MF, Almirall J. Psychological distress and multimorbidity in primary care. *Ann Fam Med*. 2006;4(5):417–422.
  34. Stansfeld S, Feeney A, Head J, Canner R, North F, Marmot M. Sickness absence for psychiatric illness: the Whitehall II Study. *Soc Sci Med*. 1995;40(2):189–197.
  35. Robinson KL, McBeth J, Macfarlane GJ. Psychological distress and premature mortality in the general population: a prospective study. *Ann Epidemiol*. 2004; 14(7):467–472.
  36. Carlson LE, Waller A, Mitchell AJ. Screening for distress and unmet needs in patients with cancer: review and recommendations. *J Clin Oncol*. 2012;30(11): 1160–1177.
  37. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, Walters EE, Zaslavsky AM. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med*. 2002 Aug;32(6):959–976.
  38. Kessler RC, Barker PR, Colpe LJ, Epstein JF, Gfroerer JC, Hiripi E, Howes MJ, Normand SL, Manderscheid RW, Walters EE, Zaslavsky AM. Screening for serious mental illness in the general population. *Arch Gen Psychiatry*. 2003 Feb;60(2):184–189.
  39. Lakkis NA, Mahmassani DM. Screening instruments for depression in primary care: a concise review for clinicians. *Postgrad Med* 2014 Dec 16;1–8. [Epub ahead of print]
  40. O'Connor EA, Whitlock EP, Beil TL, Gaynes BN. Screening for depression in adult patients in primary care settings: a systematic evidence review. *Ann Intern Med*. 2009 Dec 1;151(11):793–803.