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Full Length Research Paper

Correlation between anxiety, depression, family functioning and quality of life, in palliative care cancer patients

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The objective of this work is to determine the correlation between anxiety, depression, family functioning and their association with quality of life in palliative care cancer patients. A cross-sectional comparative study design was used. The study was conducted at the inpatient department of Faculty of Medicine, Department of Palliative Care, University Malaya Medical Center (UMMC), Kuala Lumpur, Malaysia, between August 2009 and August 2010 on the palliative care cancer patients. The sample consisted of 288 palliative care cancer patients selected through non-probability convenient sampling technique. Consecutive patients with advanced cancer under the care of palliative care services were screened. Anxiety, depression, family functioning and quality of life were assessed with hospital anxiety and depression scale (HADS), family adaptability, partnership, growth, affection, and resolve (APGAR) scale and European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC-QLQ-C30) respectively. Data was collected and was analyzed using SPSS VERSION 13. A highly significant negative correlation was found between depression, anxiety and quality of life whereas family functioning and quality of life were positively correlated. In the present study, we detected that anxiety and depression were strongly associated with poor quality of life in palliative care cancer patients. The patients with severe anxiety and depression had dysfunctional family functioning and poor quality of life when compared to those palliative care cancer patients who had low or no anxiety and depression.

Key words: Anxiety, depression, family functioning, quality of life, palliative care, cancer patients.

INTRODUCTION

Palliative care is an approach that perks up the quality of life of patients and their families facing the difficulty linked with life-threatening illness, from beginning to end the prevention and relief of suffering by means of early identification and perfect assessment and treatment of pain and other problems, physical, psychosocial and spiritual (WHO, 1990).

Depression is an upsetting cluster of indications that hampers with behaviors of every day living. It is frequent in patients with serious illnesses. Studies have shown that up to 75% of patients with terminal illnesses are depressed. Depression can reduce the quantity of enjoyment and sense in life. It can get away hope and peace at the end of life. Depression can also be a reason of anguish, and can add to physical pain. It also makes treatment of other illnesses difficult. Moreover, depression is linked with an increased risk of suicide (Axtell, 2008).

For dying patients, it is mainly significant to get better quality of life and alleviate agony. Quality of life is a multi dimensional property that comprises the patient's health category, mental and emotional well-being, social and

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Table 1. The demographic characteristics of the 288 patients' palliative care cancer patients.

Age (mean ± SD; min–max)	54 ±15.7 (20–85)
Gender	
Male	177 (61.4%)
Female	111 (38.5%)
Marital status	
Married	253 (88%)
Single (widow, divorced, not married)	35 (12%)
Education	
Primary education	107 (37 %)
High school	158 (55 %)
University	23 (8 %)
Monthly income	
RM	500- 1500 84 (29.1%)
RM	1500–2500 154 (53.5%)
RM	2500 and above 50 (17.4%)
Ethnicity	
Malay	120(41.6%)
Chinese	100(34.7%)
Indians	64(22.2%)
Others	4(1.4%)
Disease stage	
Local disease	0 (0%)
Local advanced disease	8 (2.7%)
Advanced stage disease	280 (97.2%)
Treatment	
Chemotherapy	216 (75%)
Chemotherapy and radiotherapy	72 (25%)

cognitive functioning, the impact of illness, and treatment on the patient's experience of life (Kim et al., 2005; Wilson et al., 2000).

Palliative care course stands on the standard that is concern to be directed to the family as an entity. Scrutiny of data from a sequence of research studies unfolding the experience of families caring for a terminally ill member discovered that family functioning influenced their experience (Zigmond and Snaith, 1983).

The aim of the current study was to examine level of anxiety, depression, family functioning and quality of life among palliative care cancer patients.

METHODOLOGY

The palliative care cancer patients were presented to University Malaya Medical Center (UMMC), Kuala Lumpur, Malaysia, Faculty of Medicine, Department of Palliative Care between August 2009 and August 2010 were enrolled in this study. Patients were consecutively employed to participate in this prospective, questionnaire-based study. Psychologist gave an information letter about the research and a consent form to all eligible patients. Eligibility criteria included diagnosis of any form of cancer, inpatient at palliative care unit, age between 18 and 75 years, and no physical or psychological disabilities that would prevent participating in the interventions.

Data were collected using a tests battery completed during face-to-face interviews by trained psychologist to determine the psychological status, family functioning and quality of life of the patients. After obtaining written informed consent, psychologists carried out the interviews. The first form consisted of the questions regarding the demographic characteristics of the patient (Table 1). Secondly either the English, Malay or Chinese versions of the Hospital Anxiety and Depression Scale

(HADS) was administered (Leung et al., 1993; Wang et al., 2009; Davies et al., 1994). Hospital anxiety and depression scale (HADS) is a self-screening questionnaire for depression and anxiety. It consists of 14 items and consists of two subscales: anxiety and depression. Each item is rated on a four point rating scale, giving maximum score of 21 for anxiety and depression. Thirdly family APGAR scale was also given to the patients. The measure consists of five parameters of family functioning: adaptability, partnership, growth, affection and resolve (APGAR). (The acronym [APGAR] comprised of the first letter of each parameter). Patients who consented to participate were included. According to the family APGAR scale scoring, the families which attained the score of 0 to 5 are considered as severely dysfunctional family, 6 to 8 as moderately dysfunctional family and 9 to 10 as functional family. Cronbach's alpha values reported across studies using Family APGAR have ranged from 0.80 to 0.85, and item-to-total correlations ranged from 0.50 to 0.65. The author's preliminary estimation of validity was to establish correlations with the previously validated instrument, the Pless-Satterwhite Index that yielded a correlation of 0.80 and clinician reports demonstrated 0.64 correlations (Smilkstein et al., 1982). Finally the fourth form was the version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC-QLQ-C30). It has been developed for patients' self assessment. It is a "30-item cancer specific questionnaire" designed for patient self-completion. It is organized into functional scales (physical function, role function, cognitive function, emotional function, social function), symptom scales (fatigue, pain, dyspnea, loss of appetite, insomnia, diarrhea, constipation, nausea–vomiting, and financial difficulties), and global health status. It also includes a single item assessing the overall quality of life. The scale scores are transformed into a 0 to 100 scale. Therefore, a high score on the functional scale represents a high level of functioning; a high score for a symptom scale represents a high severity level of symptoms (Fayers et al., 2001; Yusoff et al., 2010; Cheung et al., 2004).

All data were analyzed by using SPSS for Windows version 14.0. Descriptive statistics were summarized as frequencies and percentages for categorical and mean and standard deviation for continuous variables. Independent samples *t* tests were used to compare categorical variables, hospital anxiety and depression scale (HADS), family APGAR scale, and EORTC-QLQ-C-30 score between groups. A value of $p<0.05$ was considered as significant.

RESULTS

The EORTC-QLQ-C30 function scales and global quality of life scores of the depressive patients (HADS depression subscale >11) were significantly lower than that of the non depressive patients (HADS<8) whereas the EORTC-QLQ-C30 symptom scale scores of the depressive patients were significantly higher than that of the non depressive patients (Table 3). The patients with low HADS anxiety subscale scores (HADS<8) had significantly higher EORTC-QLQ-C30 function scales and global quality of life scores than the patients with high HADS anxiety subscale scores (HADS>11) while EORTC-QLQC30 symptom scale scores of the patients with high HADS anxiety subscale scores were significantly higher than that of the patients with low HADS anxiety subscale scores. The patients with low score (<6) on family functioning scale scored low on the EORTC-QLQ-C30 function and global quality of life scales where the patients with high score (>6) on family APGAR scale scored high on the EORTC-QLQ-C30 function and global quality of life scales. In the current study, we identified that anxiety; depression and dysfunctional family functioning were strongly associated with poor quality of life in palliative care cancer patients.

The t values on HADS depression subscale was t (286) 55.486, $p < 0.000$, HADS anxiety subscale was t (286) 47.055, $p < 0.0001$. Collectively on HADS depression and anxiety t (286) 41.7327 $p < 0.000$. 46.8% of the patients scored >11 on HADS depression subscale and 48.6% scored >11 on HADS anxiety subscale were determined as depressive and anxious correspondingly. The mean score on family functioning scale was (M=7.0 ± 3.8) t (286) 15.72, $p < 0.0001$ (Table 4).

There was significant difference between the mean scores of patients who scored <8 or >11 on HADS depression subscale, HADS anxiety subscale and < 16 or > 19 on HADS depression and anxiety scores and < 6 AND > 6 on family APGAR scale (Table 2). When referred to Liaison Psychiatry team 86 (29.86%) fulfilled the diagnostic criteria for depression and anxiety and were put on both pharmacotherapy and psychotherapy.

Significant inverse correlation ($r= -0.52$, $p=<0.0001$) was found between HADS depression and anxiety scores and the EORTC-QLQ-C30 function and global quality of life scales.

Positive correlation was found between HADS depression and anxiety scores and EORTC-QLQ-C30 symptom scale scores ($r = 0.48$, $p = <0.0001$) (Table 5).

Significant inverse correlation ($r = -0.43$, $p = <0.0001$) was found between HADS depression and anxiety scores and family APGAR scale.

Noteworthy positive correlation was found between ($r = 0.38$, $p = <0.0001$) family APGAR scale and EORTC-QLQ-C30 function and global quality of life scales.

DISCUSSION

This study has endeavored to examine the occurrence and of depression and anxiety, dysfunctional family

Table 2. The mean scores on Hospital Anxiety and Depression Scale (HADS), Family APGAR Scale, and EORTCQLQ- C30.

Hospital anxiety and depression scale	**Mean ± SD**
HADS Depression subscale	12.5 ± 3.1 (range 0–21)
HADS Anxiety subscale	11.98 ±1.6 (range 0–21)
HADS Depression & Anxiety	21.72 ± 2.3 (range 0–21)
Family APGAR scale	7.0 ± 3.8 (range 0–10)
EORTC-QLQ-C30 subscales	
Physical functioning	59.6 ± 12.4
Role functioning	77.8 ± 13.2
Cognitive functioning	73.5 ± 12.6
Emotional functioning	68.5 ± 11.5
Social functioning	70.7 ± 10.4
Global quality of life	57.2 ± 13.3
Fatigue	37.8 ± 12.2
Pain	25.4 ± 16.9
Nausea and vomiting	26.4 ± 14.6
Dyspnea	16.8 ± 23.5
Insomnia	30.0 ± 17.7
Appetite loss	32.3 ± 18.5
Constipation	28.5 ± 18.2
Diarrhea	26.6 ± 17.5
Financial problems	35.2 ± 19.4

functioning and quality of life in palliative care cancer patients at the Faculty of Medicine, Department of Palliative Care, University Malaya Medical Center (UMMC), Kuala Lumpur, Malaysia. These findings emphasize the call for routine screening for anxiety and depression in palliative care settings, including inquiry about family functioning and quality of life to necessitate a choice of interventions and sustained services. We classified the hospital anxiety and depression scale (HADS) at a cut-off score of >8 on each subscale (depression and anxiety) for potential cases and a cut-off score of >18 was used for anticipated combined depression and anxiety. According to this assessment, it was determined that 46.8% of our patients had depressive while 48.6% had anxiety symptoms. 46.8% had both anxiety and depressive signs. When referred to Liaison Psychiatry team 29.86% fulfilled the diagnostic criteria for depression and anxiety.

Hotopf et al. (2002) examined 46 palliative care studies that tried to measure depression and established that the prevalence of depression in these studies varied from 5.6 to 32% and the most widely used assessment of depression was the hospital anxiety and depression scale (HADS) (Tiernan et al., 2002). In a study of 142 terminally ill cancer patients, the researches found that 17.6% of the patients were clinically depressed, using the most conservative cut-off point of the HADS, and the prevalence increased to 38% when borderline cases were included (Powazki and Walsh, 2002).

Present study also focused on family functioning of the patients and found that 50.3% labeled their families as moderately or highly dysfunctional. As it is well understood fact that in the advanced and complex stages of cancer, families deal with manifold care giving strain at the same time facing the poignant task of getting ready for the loss of their dear one. Palliative care environment are well appropriate to recognize families at peril for elevated distress, and provide support as long as they navigate this process. A pilot study was conducted on fifty consecutive patients admitted to a palliative medicine inpatient unit were reviewed for family distress. Despite the small sample, some significant family functioning issues were identified (Kissane et al., 2003). One research endeavored to study psychosocial morbidity associated with patterns of family functioning in palliative care using the family relationships index (FRI) for screening and the family assessment device (FAD) as an independent family outcome measure. The FAD established the simultaneous precision of the family relationships index FRI. Considerably bigger levels of psychosocial morbidity were there in families whose functioning as a group was poorer (Smith et al., 2003). In this research, the EORTC-QLQ-C30 function scale scores (physical function, role function, cognitive function, emotional function, social function) and global quality of life scores of the depressive and anxious patients were considerably lesser than that of palliative care cancer patients who scored low on HADS. The EORTC symptom

Table 3. The comparison of the HADS Depression subscale, HADS Anxiety subscale, Family APGAR scale and EORTC-QLQ-C30.

	HADS depression subscale <8 n=153 (53.1%)	HADS depression subscale >11 n=135 (46.8%)	*p*	HADS Anxiety subscale <8 n=148 (51.3%)	HADS Anxiety subscale >11 n=140 (48.6%)	*p*	Family functioning scale <6 n=143 (49.6%)	Family functioning scale >6 n=145 (50.3%)	*p*
Physical functioning	76.1 ± 10.2	40.8 ± 12.6	0.0001	78.7 ± 15.7	39.3 ± 12.8	0.0001	38.5 ± 8.9	81.4 ± 12.6	0.0001
Role functioning	95.0 ± 9.7	56.5 ± 10.5	0.0001	98.2 ± 13.2	51.6 ± 11.7	0.0001	53.3 ± 9.7	100.2 ± 13.9	0.0001
Cognitive functioning	87.4 ± 11.4	56.7 ± 13.7	0.0001	90.3 ± 12.5	54.7 ± 10.8	0.0001	53.5 ± 9.4	92.1 ± 13.2	0.0001
Emotional functioning	95.2 ± 12.3	38.2 ± 10.3	0.0001	98.4 ± 12.6	36.8 ± 12.9	0.0001	36.0 ± 9.5	100.4 ± 12.3	0.0001
Social functioning	105 ± 15.9	31.7 ± 12.4	0.0001	108.6 ± 13.5	30.6 ± 13.6	0.0001	30 ± 10.6	110.8 ± 10.6	0.0001
Global quality of life	76.2 ± 9.6	35.5 ± 10.9	0.0001	78.9 ± 12.5	34.3 ± 12.2	0.0001	33.6 ± 8.5	80.5 ± 14.7	0.0001
Fatigue	15.35 ± 10.2	63.2 ± 9.8	0.0001	15.8 ± 2.9	60.9 ± 9.5	0.0001	59.7 ± 7.3	16.2 ± 6.7	0.0001
Pain	12.2 ± 4.1	40.3 ± 10.1	0.0001	12.6 ±	38.9 ± 10.2	0.0001	38 ± 9.9	12.9 ± 9.1	0.0001
Nausea and vomiting	21.9 ± 3.9	31.4 ± 12.2	0.0001	22.6 ± 6.7	30.4 ± 12.7	0.0001	29.7 ± 6.9	23.1 ± 9.3	0.0001
Dyspnea	11.5 ± 4.7	22.8 ± 12.2	0.0001	11.9 ± 8.9	21.9 ± 7.6	0.0001	21.5 ± 5.9	12.1 ± 5.3	0.0001
Insomnia	13.8 ± 6.6	48.3 ± 13.7	0.0001	14.3 ± 10.2	46.6 ± 12.1	0.0001	45.6 ± 8.5	14.6 ± 5.9	0.0001
Appetite loss	19.6 ± 8.9	46.7 ± 9.7	0.0001	20.8 ± 9.5	45.0 ± 11.2	0.0001	44.0 ± 9.8	20.7 ± 2.5	0.0001
Constipation	19.7 ± 10.7	37.4 ± 9.9	0.0001	20.4 ± 7.6	36 ± 7.7	0.0001	35.3 ± 5.7	20.8 ± 9.9	0.0001
Diarrhea	23.4 ± 4.9	30.3 ± 8.7	0.0001	24.2 ± 8.9	29.2 ± 13.9	0.0001	28.6 ± 7.7	24.6 ± 2.8	0.0001
Financial problems	16.6 ± 7.6	56.2 ± 11.7	0.0001	17.2 ± 9.9	54.2 ± 12.2	0.0001	53.1 ± 8.8	17.5 ± 3.9	0.0001

Family functioning scale.

Table 4. Mean scores and *t* value of HADS Depression subscale, HADS Anxiety subscale and Family functioning scale.

HADS depression subscale <8 n=153 (53.1%)	HADS depression subscale >11 n=135 (46.8%)	*t*	*p*	HADS Anxiety subscale <8 n=148 (51.3%)	HADS Anxiety subscale >11 n=140 (48.6%)	*t*	*p*	HADS Anxiety and depression Scale <16 n=148 (51.3%)	HADS Anxiety and depression Scale >19 n=140 (48.6%)	*p*	Family functioning scale <6 n=143 (49.6%)	Family functioning scale ≥6 n=145 (50.3%)	*t*	*p*
5.6 ± 1.6	20.3 ± 2.8	55.48	0.0001	6.2 ± 1.6	18.1 ± 2.6	47.05	0.0001	11.8 ± 1.5	38.4 ± 7.9		5.5 ± 2.1	8.6 ±1.1	15.72	0.0001

Table 5. Correlations between hospital Depression and Anxiety HADS, EORTC-QLQ-C30 function and global quality of life, EORTC-QLQ-C30 symptom & Family APGAR scale.

Variable	r	p
HADS&EORTC-QLQ-C30 function and global quality of life scale	-0.52	0.0001
HADS&EORTC-QLQ-C30 symptom scale	0.48	0.0001
HADS & Family APGAR scale.	-0.43	0.0001

Family APGAR& EORTC-QLQ-C30 function and global quality of life scales.	0.38	0.0001

scale was significantly higher in depressive and anxious patients than normal patients. A study carried out by Smith et al. (2003) had also established that pain, anxiety and depression were associated with blight quality of life. Anxiety and depression supplement independently towards an array of dimensions of quality of life. The course of the contributory association between pain and depression in patients receiving palliative care needs to be further scrutinized. Other explorations also accounted that anxiety and depression were robustly coupled with all variables of EORTC-QLQ-C30 scale scores in cancer patients in addition anxiety and depression were significantly inversely correlated with impaired quality of life and that a lower level of depressive symptoms was associated with better quality of life in cancer patients (Pinquart et al., 2006; Alacacioglu et al., 2010; Tsunoda et al., 2005).

A restraint to this study design was small number of palliative care cancer patients from a single institution.

Conclusions

This study has confirmed that anxiety, depression were associated with dysfunctional family functioning and impaired quality of life. Family functioning attributed to anxiety and depression and it in return contributed independently towards various dimensions of quality of life. Longitudinal studies are required to examine the direction of the causal association between pain and depression in patients receiving palliative care. While treating palliative care approach should be holistic.

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