International Journal of Engineering & Technology, 7 (4.28) (2018) 537 -542

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Anxiety Disorders and Quality of Life Among Patients with Intracranial Tumour and Other Brain Disorders in a Malaysian Hospital

Priscilla Das[1,2*], Nyi Nyi Naing[3], Nadiah Wan-Arfah[3], KON Noorjan[4], Yee Cheng Kueh[5], Kantha Rasalingam[6]

[1]Unit of Biostatistics & Research Methodology, School of Medical Sciences Universiti Sains Malaysia 16150 Kubang Kerian Kelantan, Malaysia

[2]Faculty of Health Sciences, Asia Metropolitan University, G-8, Jalan Kemacahaya 11, Taman Kemacahaya, Batu 9, 43200 Cheras, Selangor Darul Ehsan, Malaysia

[3]Institute for Community (Health) Development (i-CODE), Universiti Sultan Zainal Abidin, Block E, Level 1, Gong Badak Campus, 21300 Kuala Nerus, Terengganu, Malaysia

[4]Department of Psychiatry, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia 43400 UPM Serdang, Selangor

[5] Unit of Biostatistics & Research Methodology, Department of Psychiatry, School of Medical Sciences Universiti Sains Malaysia 16150 Kubang Kerian Kelantan, Malaysia

[6]Department of Neuroscience, Hospital Kuala Lumpur 50586 Jalan Pahang Kuala Lumpur

**Corresponding Author's E-mail: daspriscilla@yahoo.com*

Abstract

The main objective of this study is to access the prevalence of anxiety disorders and its relationship with quality of life factors among intracranial tumour and other brain disorders in a Malaysian hospital. Methods: a cross-sectional research design was utilized in the study. The research was conducted at the Kuala Lumpur Hospital, a tertiary referral center for brain cancer cases. Mini International Neuropsychiatric Interview (MINI) was used to access anxiety disorders and European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQC30) questionnaire for quality of life among the patients. Results: A total of 100 intracranial tumour and other brain disorders patients were included in the study. The prevalence of anxiety disorders in our study sample ranged from 3% to 31%. Overall, compared to patients without anxiety disorders, neurological disorders with anxiety disorders reported impaired quality of life in terms of physical functioning, emotional functioning, role functioning, social functioning fatigue, pain, insomnia, appetite loss, diarrhea, nausea and vomiting and global health status. The conclusions of this study support the fact that, like other cancer patients, intracranial tumour and other brain disorders patients are vulnerable in progressing anxiety disorders that could affect their overall quality of life.

Keywords: *Anxiety, Quality of life, Brain tumour & Brain disorder.*

1. Introduction

Cancer diagnosis can have a huge impact on the lives of many patients, and the burden can be overwhelming for patients with anxiety disorders. The tumour malignancy often linked with the survival rate and the life span of tumor patients are usually very low [1]. Despite treatment options were available but the patient survival remains 12 to 18 months only and less than 2 years from their lesion diagnosis [2, 3, 4]. The patients with anxiety disorder affect their survival rate by 10% to 20% [5]. Therefore increased mortality among the patients often caused by the psychiatric disorder [6].

There are various types of anxiety disorders that include in the study such as : panic disorder without agoraphobia, panic disorder with agoraphobia, agoraphobia without history of panic disorder, specific phobia, social anxiety disorder (SAD), obsessive compulsive disorder (OCD), post traumatic stress disorder (PTSD), acute stress disorder and generalized anxiety disorder (GAD) [7]. The anxiety disorders have a significant relationship with quality of life among the patients, therefore it is important to know the prevalence of anxiety disorders (and the quality of life) of Malaysian with intracranial tumour and other brain disorders. To the best of our knowledge, there are no published article on Malaysian tumour patients, thus the study was conducted to fill this gap using a sample of intracranial tumour and other brain disorder patients. The data that was obtained in the study were used to determine the pecentange of various anxiety disorders and its effect on quality of life among these patients.

2. Methodology

This hospital-based study was conducted at the Kuala Lumpur Hospital, Malaysia, a tertiary referral center for neurological disorder in Malaysia. The MINI questionnaire was used. The questionnaire was developed based on DSM-IV and International Classification of Diseases (ICD-10) criteria with 96% sensitivity and 88% specificity [8]. Senior psychiatrists who certified in using

Copyright © 2018 Authors. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

the MINI has trained interviewer to use the questionnaire. The Malay version have good reliability with (0.67 to 0.85) inter-rater reliability and kappa values of > 0.88 in diagnosing the anxiety disorder [9]. Data were obtained from the period of 9 months, from April to December 2016; a cross-sectional study design was used. Sample size estimation calculated using the single proportion formula, n= Z2 P (1-P) / d2 [10]. The Z value is determined as 1.96 with α= 0.05 level of significance. A previous study done by Spencer et al., found the prevalence of anxiety was ranged from 6% and 34% in advanced cancer patients [11]. Hence, P equals to 0.065 was determined to be used in the formula. Symbol d in the formula is denoted for precision [10] and the d value was set at 5% or d=0.05 in the study. Hence from the formula a total of 93 patients were required in the study; 1.962 x 0.065 (1-0.065) / (0.05)2 =93 patients. Additional 7 patients has been added making a total sample of 100 neurological disorder patients.

The Ethics Committees of the Ministry of Health(NMRR-16-1134-29874 (IIR) and Human Research Ethics Committee, Universiti Sains Malaysia(USM/JEPeM/16050178), approved the study. The study population was consisted of all neurological disorder patients who visits neurosurgery clinic during the sampling period of the study and fulfilled the inclusion criteria. The study inclusion criteria for participation were: (1) brain disorder patient; (2) well-versed in English, Malay, Mandarin or Tamil; (3) age ≥ 18 years; and (4) conscious. This study also utilized pre-tested and validated European Organization for Research and Treatment of Cancer Quality of Life (EORTC QLQ-C30) questionnaire, version 3.0 [12, 13]. This disease-specific questionnaire is used to evaluate the quality of life of cancer patients such as physical, role, cognitive, emotional and social functioning, three symptoms scales (fatigue, pain and nausea/vomiting), a global health status scale and six single item scales (dyspnoea, insomnia, appetite loss, constipation, diarrhoea and financial difficulties). The EORTC QLQ-C30 has 30 questions in total. The questionnaire was rated using a 4-point scale (1= "Not at all", 2= "A little", 3= "Quite a bit" to 4= "Very much" , except for 2 questions were rated using a 7-point scale, ranging from "very poor" (1) to "excellent" (7) [12]. The score ranged from 0 to 100. The functional and the global health status scales with higher scores define a high or healthy level of functioning and high global health status. However symptoms and single item scales with higher scores shows a high level of symptoms or problems [12, 13, 14]. The Statistical Package for Social Sciences (SPSS) program, version 22.0, was used for data analyses. The non-parametric, Mann-Whitney test was applied in the study to compare the differences between two independent groups.

3. Results

Prevalence of anxiety disorders

Table 1 shows the prevalence of anxiety disorders (current episode) among brain disorder patients.

Table 1. Prevalence of anxiety disorders (n=100)

Anxiety Disorders	**NO**		**YES**	
Panic disorder lifetime	**n**	**%**	**n**	**%**
Panic disorder limited symptom attacks lifetime	88	88.0	12	12.0
Panic disorder current	69	69.0	31	31.0
Panic disorder with Agoraphobia	88	88.0	12	12.0
	87	87.0	13	13.0
Panic disorder without Agoraphobia	98	98.0	2	2.0
Agoraphobia without history of panic disorder	82	82.0	18	18.0
Social Phobia (Social Anxiety Disorder)	97	97.0	3	3.0
Obsessive Compulsive Disorder	97	97.0	3	3.0
Post Traumatic Stress Disorder	96	96.0	4	4.0
Generalized Anxiety Disorder	88	88.0	12	12.0

Between-group differences in the quality of life median(IqR) scores as a function of anxiety disorders in brain disorder patients

Table 2 presents between-group differences in the quality of life median(IQR) score as a function of anxiety disorders. Patients with Panic Disorder Lifetime had a significantly lower emotional functioning score (p<0.001), a significantly higher fatique score (p=0.009), pain (p=0.005), insomnia (p=0.005), appetite loss (p=0.010) and diarrhoea (p=0.013).

Patients with panic disorder current had significantly lower scores in emotional functioning (p<0.001), and reported a significantly higher level of fatigue (p=0.009), pain (p=0.005), insomnia (0.005), appetite loss (p=0.010) and diarrhoea (p=0.013).

Patients with agrophobia current had significant impairment in emotional functioning (p=0.004) compared to patients without the disorder. Patients with agrophobia current were also found to show more symptoms of appetite loss (p=0.034) compared to other patients.

Patients with panic disorder with agoraphobia were found to have significantly poorer emotional functioning (p<0.001) and more severe fatigue symptoms (p=0.015), pain (p=0.008), insomnia (p=0.002) and diarrhea (p=0.029) than respondents without the diagnosis.

Patients with GAD had significantly lower scores in emotional functioning (p=0.004), and had significantly higher scores in diarrhea (p=0.018).

Patients with panic disorder without agoraphobia significantly differ from patients without the disorder in their physical functioning scores (p=0.024) and role functioning (0.026). In terms of symptoms there is higher symptoms of nausea and vomiting in the patients with the disorder (p=0.021).

Patients with social phobia current had lower emotional functioning compared to patients without the disorder. (p=0.016).

Patients with O.C.D had impairment in their emotional functioning (p=0.016) and social functioning (p=0.023) and more symptoms of appetite loss (p=0.002).

Finally patients with PTSD had reduced score in their quality of life (p=0.009), emotional functioning (p=0.044), and more symptoms of fatique (p=0.017), pain (p=0.003), insomnia (p=0.007), appetite loss (p=0.014) and financial difficulties (p=0.015).

4. Discussion

Results from this current study provide several understanding on the patient's quality of life and how it was influenced by various anxiety disorders. The previous studies have shown that cancer patients are exposed to anxious feelings which lead to anxiety disorders. These anxiety disorders then eventually impact on a patient's quality of life [15, 16, 17, 18]. In a study done by Moradi, et al, showed that there was a significant increase in anxiety and depression after the brain tumour surgery among the patients [19]. This anxiety and depression associated with their increased cognitive impairment. However the quality of life among the patients did not changed after the surgery [20, 21].

Lower WHO tumor grade classifications, lower education level, and a history of psychiatric illness also emerged as important predictors of symptoms consistent with anxiety and/or depression.
The frequency of patient's anxiety disorders ranged from 3 to 31%. The percentage breakdown by type of anxiety disorder in the study sample is: panic disorder lifetime (12%); panic disorder limited symptoms attacks lifetime (31%); panic disorder current (12%); panic disorder with agoraphobia (13%); panic disorder without agoraphobia (2%); and agoraphobia without history of panic disorder (18%); SAD (3%); OCD (3%); PTSD (4%) and GAD (12%).
A study among the Canadian on experience cancer patients found that as much as 77% of 913 patients diagnosed with anxiety within 2 years of treatment [22]. By employing standardized psychiatric interviews and research diagnostic criteria, anxiety was found ranged from 10% to 30%. This study was done in a large study of anxiety among the cancer patients [23]. Depression and anxiety are the two significant predictors of cancer-related health worries [24].
In the current study, it was found that the prevalence of panic disorders in patients with intracranial tumour or brain disorder patients ranged from 2% to 31%, depending on the panic disorder subtype. This includes panic disorder with agoraphobia (13%) and panic disorder without agoraphobia (2%). Shortness of breath, heart palpitations, discomfort feelings, sensations of choking and overwhelming of fear of losing control are the symptoms of panic disorder. [7] The prevalence rates found in our sample are comparable with a previous study which reported a prevalence rate of 1.4% among cancer patients and 20.75% in advance hospitalized cancer patients [17, 25].
Compared to brain disorder patients who do not have panic disorder with agoraphobia, brain disorder patients with panic disorder with agoraphobia had significantly lower scores on the EORTC-QLQ-30 emotional functioning scale significantly higher scores on the fatigue, pain, insomnia and diarrhea symptom scale. This indicates the patients with panic disorder with agoraphobia have impaired emotional functioning and more symptoms of fatigue, pain, insomnia and diarrhea. The studies have reported that the patients with anxiety having lower score in global quality of life, increased symptoms scores and weak emotional, social, cognitive functioning compared to normal patients without the disorder [15, 26].
Many studies have shown that cancer patients with anxiety disorders had a significant impact on their quality of life. They have poorer quality of life compared to non-anxious patients [15, 18, 26]. Agoraphobia is another type of anxiety disorder. The patients with this agoraphobia disorder tend to avoid situations or places where escape or help might be not available [7]. The prevalence in our study of agoraphobia without a history of panic disorder (18%) appears higher than other study which found a prevalence rate of only 2.7% with the odds ratio of 0.40 comparing younger patients and older patients developing the agoraphobia disorder [16]. Patients with agoraphobia current were also found to show more symptoms of insomnia and appetite loss and lower emotional functioning compared to other patients. This finding in proportion with previous study, which found the emotional functioning was effected in the cancer patients [15].
The patients who practices avoidance behaviors when exposed to social environment are diagnosed with social phobia, or social anxiety disorder (SAD) [7]. The study found with a higher prevalance rate of SAD (3%) in the current study than was reported in other study (1.8%) among the cancer patients [25]. This study also revealed that intracranial tumour or other brain disorder patients with SAD had significantly lower scores in emotional functioning. The OCD defined by obsessions that cause compulsions which serve to neutralize anxiety. In the present study, the prevalence rate of OCD was 3%. In the quality of life counterparts, the patients with OCD had significantly poor emotional functioning, social functioning and more symptoms of appetite loss than patients without OCD. On the other hand, PTSD is characterized by patients re-experiencing traumatic situations with increased arousal and avoidance. The prevalence of PTSD in the present study was 4%. However, this prevalence rate was far lower than the prevalence rate of 17% of PTSD found in a previous study of cancer patients [27]. The intracranial tumour or other brain disorder patients with PTSD had significantly higher of fatique, pain, insomnia, appetite loss and financial difficulties scale scores and lower global health status and emotional functioning scores compared to patients without the disorder. Previous study among malignant cancer patients found that the most significantly important predictors of quality of life were insomnia, role functioning, emotional functioning, and cognitive functioning and followed by dyspnoea, and appetite loss. Additionally, the functioning score correlates with patient's anxiety [28]. Previous study also reported that the finances are one of the main difficulties faced by cancer patients, especially those in treatment regimens [29].
The prevalence of GAD in this study (12%) was higher than the prevalence rate of previous study with 1.8% only among the cancer patients [25]. The patients with GAD have a persistent and excessive anxiety and worry that last for at least 6 months. Analyses showed brain disorder patients with GAD were more likely to have lower functional scale scores (emotional functioning) and higher symptoms scale scores (diarrhea) compared to patients without the disorder. The non-verbal behaviors by eye contacts, speech tone and others also give potential to the patients to have anxiety. Effective communication by using assessment, information and supportive skills between patients and physicians might reduce the anxiety among the patients. Interestingly the anxiety in the patients was found to be decreased after consultation with physicians compared to patients with lack of information before consultation. Therefore the communications between physicians and patients are very important. The physician may practice the various modules to decrease or prevent the anxiety disorders among the patients. This includes videotaped or written support from the patients, make use of questions by investigating all patients' concerns, practicing supportive skills by making educated guesses, expressing empathy and alerting to reality or confronting the patients [5].
The depression, cognitive impairment, sleep disturbances, and pain may be overlooked by physician focusing on major neurological impairment. There is an urgent need for psychological adjustment and psychiatric disorders to be defined and understood [30].

5. Conclusion

This study result has provided us with some insight into the prevalence of various types of anxiety disorders (as well as the quality of life) among Malaysian neurological disorder patients. This study showed the anxiety disorders affected a patient's quality of life domains in differently. The study also noticed that patients diagnosed with PTSD reported poorer global health status compared to other types of anxiety disorders. The failure to identify elevated levels of anxiety might interfere the outcome of the treatments. Therefore the treatments should also concentrate on patient's mental health disorder together with their quality of life.

Acknowledgement

This project was funded by University Sains Malaysia (USM) under the short term grant, 304/PPSP/6315007 and Priscilla Das is a holder of MyBrain15-MyPhd scholarship. We also would like to thank the: the staff of the Department of Neuroscience and the patients who participated in the study.

Table 2: Between-group differences in the quality of life median(IQR) score as a function of anxiety disorders (n=100)

	QOL	PF	RF	EF	CF	SF	FA	NV	PA	DY	SL	AP	CO	DI	FI
No- Panic Disorder Lifetime	54.17 (25.00)	80.00 (33.33)	83.33 (33.33)	75.00 (33.33)	66.67 (45.83)	100.00 (29.17)	33.33 (44.44)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (33.33)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	33.33 (66.67)
Yes- Panic Disorder Lifetime	50.00 (33.33)	63.33 (23.33)	83.33 (45.83)	33.33 (39.58)	50.00 (33.33)	83.33 (50.00)	66.67 (55.56)	0.00 (66.67)	66.67 (45.83)	0.00 (33.33)	66.67 (91.67)	33.33 (66.67)	0.00 (33.33)	0.00 (33.33)	0.00 (91.67)
z	-1.460	-1.902	-0.973	-3.736	-1.685	-1.507	-2.613	-1.548	-2.792	-1.780	-2.813	-2.590	-0.937	-2.486	-0.297
***p*-value**	0.144	0.057	0.331	*****0.000**	0.092	0.132	****0.009**	0.122	***0.005**	0.075	****0.005**	***0.010**	0.349	***0.013**	0.767
No- Panic disorder current	54.17 (25.00)	80.00 (33.33)	83.33 (33.33)	75.00 (33.33)	66.67 (45.83)	100.00 (29.17)	33.33 (44.44)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (33.33)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	33.33 (66.67)
Yes- Panic disorder current	50.00 (33.33)	63.33 (23.33)	83.33 (45.83)	33.33 (39.58)	50.00 (33.33)	83.33 (50.00)	66.67 (55.56)	0.00 (66.67)	66.67 (45.83)	0.00 (33.33)	66.67 (91.67)	33.33 (66.67)	0.00 (33.33)	0.00 (33.33)	0.00 (91.67)
z	-1.460	-1.902	-0.973	-3.736	-1.685	-1.507	-2.613	-1.548	-2.792	-1.780	-2.813	-2.590	-0.937	-2.486	-0.297
p-value	0.144	0.057	0.331	*****0.000**	0.092	0.132	****0.009**	0.122	***0.005**	0.075	****0.005**	***0.010**	0.349	***0.013**	0.767
No Agorophobia current	50.00 (25.00)	80.00 (40.00)	83.33 (50.00)	75.00 (37.50)	66.67 (50.00)	100.00 (16.67)	33.33 (55.56)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (50.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	33.33 (66.67)
Yes Agorophobia current	50.00 (25.00)	80.00 (26.67)	83.33 (33.33)	66.67 (41.67)	50.00 (50.00)	100.00 (33.33)	44.44 (33.33)	0.00 (16.67)	33.33 (66.67)	0.00 (33.33)	33.33 (100.00)	0.00 (33.33)	0.00 (33.33)	0.00 (0.00)	0.00 (33.33)
z	-0.072	-0.552	-0.138	-2.884	-1.105	-0.806	-1.265	-0.060	-1.804	-0.780	-1.736	-2.115	-1.526	-1.469	-0.806
p-value	0.942	0.581	0.891	****0.004**	0.269	0.420	0.206	0.952	0.071	0.435	***0.083**	***0.034**	0.127	0.142	0.420
No Panic disorder with Agoraphobia current	58.33 (25.00)	80.00 (33.33)	83.33 (33.33)	75.00 (33.33)	66.67 (50.00)	100.00 (33.33)	33.33 (44.44)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (33.33)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	33.33 (66.67)
Yes Panic disorder with Agoraphobia current	50.00 (29.17)	66.67 (26.67)	83.33 (41.67)	33.33 (29.17)	50.00 (33.33)	83.33 (50.00)	66.67 (61.11)	0.00 (58.33)	66.67 (50.00)	0.00 (33.33)	66.67 (83.33)	0.00 (50.00)	0.00 (33.33)	0.00 (33.33)	0.00 (66.67)
z	-1.448	-1.425	-0.794	-3.703	-1.743	-1.224	-2.437	-0.507	-2.650	-1.433	-3.043	-1.657	-1.358	-2.184	-0.348
p-value	0.148	0.154	0.427	*****0.000**	0.081	0.221	***0.015**	0.612	****0.008**	0.152	****0.002**	0.097	0.174	***0.029**	0.728
No Generr	54.17 (25.00)	80.00 (33.33)	83.33 (50.00)	75.00 (33.33)	66.67 (33.33)	100.00 (29.17)	44.44 (52.78)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (66.67)	0.00 (25.00)	0.00 (0.00)	0.00 (0.00)	0.00 (66.67)
Yes Generalised Anxiety Disorder	41.67 (52.08)	76.67 (36.67)	83.33 (33.33)	37.50 (52.08)	58.33 (33.33)	83.33 (45.83)	38.89 (75.00)	0.00 (12.50)	25.00 (75.00)	0.00 (33.33)	16.67 (100.00)	0.00 (58.33)	0.00 (33.33)	0.00 (33.33)	66.67 (100.00)
z	-1.650	-0.331	-0.268	-2.870	-1.238	-1.783	-1.133	-0.197	-1.108	-1.301	-0.768	-0.737	-1.292	-2.373	-1.758
p-value	0.099	0.740	0.788	****0.004**	0.216	0.075	0.257	0.844	0.268	0.193	0.442	0.461	0.196	***0.018**	0.079
No Panic disorder without Agora-	50.00 (25.00)	80.00 (33.33)	83.33 (33.33)	75.00 (41.67)	66.67 (37.50)	100.00 (33.33)	44.44 (44.44)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (66.67)	0.00 (33.33)	0.00 (0.00)	0.00 (0.00)	16.67 (66.67)

phobia															)
Yes Panic disorder without Agora-phobia	45.83	20.00	25.00	25.00	41.67	50.00	88.89	58.33	58.33	33.33	33.33	33.33	50.00	50.00	50.00
z	-0.592	-2.257	-2.233	-1.948	-1.125	-0.767	-1.861	-2.300	-1.490	-1.236	-1.481	-0.783	-1.186	-1.902	-0.901
p-value	0.554	***0.024**	***0.026**	0.051	0.261	0.443	0.063	***0.021**	0.136	0.217	0.139	0.433	0.235	0.057	0.368
No Social Phobia Current	50.00 (25.00)	80.00 (33.33)	83.33 (41.67)	75.00 (37.50)	66.67 (41.67)	100.00 (33.33)	44.44 (44.44)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (66.67)	0.00 (16.67)	0.00 (0.00)	0.00 (0.00)	33.33 (66.67)
Yes Social Phobia Current	33.33	66.67	66.67	25.00	50.00	83.33	44.44	16.67	16.67	0.00	0.00	33.33	0.00	0.00	0.00
z	-1.530	-0.234	-0.501	-2.403	-0.841	-1.567	-0.438	-1.425	-0.564	-0.449	-0.034	-1.614	-0.243	-1.130	-0.250
p-value	0.126	0.815	0.617	***0.016**	0.400	0.117	0.662	0.154	0.573	0.653	0.973	0.107	0.808	0.258	0.803
No O.C.D	50.00 (25.00)	80.00 (33.33)	83.33 (33.33)	75.00 (37.50)	66.67 (33.33)	100.00 (33.33)	44.44 (44.44)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (66.67)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	33.33 (66.67)
Yes O.C.D	33.00	60.00	50.00	25.00	33.33	50.00	66.67	66.67	66.67	0.00	100.00	100.00	0.00	0.00	100.00
z	-1.448	-1.547	-0.948	-2.403	-1.723	-2.276	-1.486	-1.850	-1.661	-0.449	-1.385	-3.149	-0.243	-1.130	-1.164
p-value	0.148	0.122	0.343	***0.016**	0.085	***0.023**	0.137	0.064	0.097	0.653	0.166	****0.002**	0.808	0.258	0.245
No PTSD	54.17 (25.00)	80.00 (33.33)	83.33 (45.83)	75.00 (39.58)	66.67 (33.33)	100.00 (33.33)	38.89 (44.44)	0.00 (16.67)	16.67 (50.00)	0.00 (0.00)	0.00 (66.67)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (66.67)
Yes PTSD	29.17 (20.83)	60.00 (25.00)	66.67 (37.50)	20.83 (58.33)	41.67 (29.17)	75.00 (87.50)	88.89 (38.89)	25.00 (62.50)	75.00 (29.17)	0.00 (50.00)	100.00 (50.00)	66.67 (75.00)	0.00 (25.00)	0.00 (25.00)	100.00 (50.00)
z	-2.602	-1.763	-0.723	-2.012	-1.768	-0.856	-2.384	-1.219	-2.984	-0.378	-2.714	-2.456	-0.071	-0.796	-2.423
p-value	****0.009**	0.078	0.469	***0.044**	0.077	0.392	***0.017**	0.223	****0.003**	0.705	****0.007**	***0.014**	0.944	0.426	***0.015**

*p < 0.05; **p < 0.01; ***p < 0.001

References

[1] Narayanan VK, Patel & Price S (2012), High grade gliomas: Pathogenesis, management and prognosis. *Neurosurgery* 12.

[2] Laperriere NL, Zuraw & Cairncross G (2002),(Radiotherapy for newly diagnosed malignant glioma in adults: a systematic review. *Radiother Oncol* 64(3), 259-73.

[3] Laws ER, et al (2003),Survival following surgery and prognostic factors for recently diagnosed malignant glioma: data from the Glioma Outcomes Project. *J Neurosurg* 99(3), 467-73.

[4] Parney IF, Waldron JS & Parsa AT (2009), Flow cytometry and in vitro analysis of human glioma-associated macrophages. Laboratory investigation. *J Neurosurg* 110(3), 572-82.

[5] Lienard A, MI, Libert Y, Delvaux N, Marchal S, Boniver J, Etienne AM, Klastersky J, Reynaert C, Scalliet P, Slachmuylder JL& Razavi D (2006), Factors that influence cancer patients' anxiety following a medical consultation: impact of a communication skills training programme for physicians. *Annals of Oncology* 7,1450–1458.

[6] Guo Y, et al (2006), The Diagnosis of Major Depression in Patients With Cancer: A Comparative Approach. *Psychosomatics* 47(5), 376-384.

[7] Washington Dc (2000), American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edditon, Text Revision, American Psychiatric Association.

[8] Sheehan DV, LY, Harnett-Sheehan K, Janavs J, Weiller E& Bonora LI , et al (1997), Reliability and validity of the Mini International Neuropsychiatric Interview (MINI): According to the SCID-P. *European Psychiatry* 12, 232-241.

[9] Mukhtar F, Abdul Kadir Abu Bakar, Mazni Mat Junus, Azizul Awaludin, Salina Abdul Aziz, Marhaini Midin, Muhammad Fadzillah Abdul Razak, Nurashikin Ibrahim, Ang Kim Teng, Jasvindar Kaur, Hairul Anuar Hashim, Maniam Tambu & Noor Ani Ahmad (2012), A preliminary study on the specificity and sensitivity values and inter-rater reliability of Mini International Neuropsychiatric Interview (MINI) in Malaysia. *ASEAN J Psychiatry* 13, 157-64.

[10] DanielW (1999), Biostatistics: A Foundation for Analysis in the Health Sciences . 7 ed. New York: John Wiley & Sons.

[11] SpencerR, et al (2010), Anxiety Disorders in Advanced Cancer Patients: *Correlates and Predictors of End of Life Outcomes. Cancer* 116(7), 1810-1819.

[12] Aaronson NK, Ahmedzai S, Bergman B, Bullinger M, Cull A & Duez NJ, et al (1993), The European Organisation for Research and Treatment of Cancer QLQ-C30: A quality-of-life instrument for use in international clinical trials in oncology. *Journal of the National Cancer Institute* 85, 365-376.

[13] Mustapa N & Yian LG (2007), Pilot-testing the Malay version of the EORTC questionnaire. *Singapore Nursing Journal* (2), 16-20.

[14] Fayers PM, AN, Bjordal K, Groenvold M, Curran D & Bottomley A, et al (2001), on behalf of the EORTC QLQ-C30 Scoring Manual (3rd Edition).

[15] Mystakidou K, et al (2005), Assessment of Anxiety and Depression in Advanced Cancer Patients and their Relationship with Quality of Life. *Quality of Life Research* 14(8), 1825-1833.

[16] Rasic DT, et al (2008), Cancer, mental disorders, suicidal ideation and attempts in a large community sample. *Psycho-Oncology* 17(7), 660-667.

[17] Slaughter JR, et al (2000), Panic disorder in hospitalized cancer patients. *Psycho-Oncology* 9(3): 253-258.

[18] van den Beuken-van Everdingen MHJ, et al (2009), Quality of Life and Non-Pain Symptoms in Patients with Cancer. *Journal of Pain and Symptom Management* 38(2), 216-233.

[19] Moradi A, et al (2011), Treatment of Anxiety Disorder with Neurofeedback: Case Study. *Procedia - Social and Behavioral Sciences* 30, 103-107.
[20] Zarghi A (2014), (Assessment of Cognitive Impairments, Depression, Anxiety and Quality of Life among Brain Tumor Patients and Healthy Adults. *International Clinical Neuroscience Journal* 1(2).
[21] Zarghi A, et al (2013), Cognitive and Mental Changes in Patients with Brain Tumor after Surgery. *Global Journal of Surgery* 1(3), 37-40.
[22] Asbury FD, Findlay H & ReynoldsB (1998), A Canadian survey of cancer patients' experiences: Are their needs being met? . *J Pain Symptom Manage* 16, 298-306.
[23] Stark D, Kiely M, Smith G, Velikova G, House A & Selby P (2002), Anxiety disorders in cancer patients: their nature, association and relation to quality of life. *Journal of Clinical Oncology* 20, 3137-3148.
[24] Deimling GT, et al (2006), Cancer-related health worries and psychological distress among older adult, long-term cancer survivors. *Psycho-Oncology* 15(4), 306-320.
[25] Prieto JM, et al (2002), Psychiatric morbidity and impact on hospital length of stay among hematologic cancer patients receiving stem-cell transplantation. *Journal of Clinical Oncology* 20(7), 1907-1917.
[26] Pamuk GE, et al (2008), EORTC QLQ-C30 assessment in Turkish patients with hematological malignancies: association with anxiety and depression. *Annals of Hematology* 87(4), 305-310.
[27] Black EK & White CA(2005), Fear of recurrence, sense of coherence and posttraumatic stress disorder in haematological cancer survivors. *Psycho-Oncology* 14(6), 510-515.
[28] Sampogna F, et al (2009), Quality of life and psychological distress in patients with cutaneous lymphoma. The British *Journal Of Dermatology* 160(4), 815-822.
[29] Gan G, et al (2008), Bone marrow and stem cell transplantation: Malaysian experience. *Bone Marrow Transplantation* 1, S103-S105.
[30] Sherry W, Fox, Debra Lyon&Farace E (2007), Symptom Clusters in Patients With High-Grade Glioma. *Journal of nursing scholarship* 39(1).