THE SOCIO-DEMOGRAPHIC AND CLINICAL FACTORS ASSOCIATED WITH QUALITY OF LIFE AMONG PATIENTS WITH BRAIN PATHOLOGY IN A TERTIARY REFERRAL HOSPITAL IN MALAYSIA

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Abstract

Background: This paper investigates the quality of life of brain pathology patients in relation to their socio-demographic profiles and clinical factors.

Methods: This is a cross-sectional study done at a tertiary referral hospital in Kuala Lumpur. A total of 100 patients were recruited in the study after excluding 22 patients who did not met the exclusion criteria. The European Organisation for Research and Treatment of Cancer Quality of Life (EORTC QLQ-C30) self-administered questionnaire was utilized in the study. The Global health status/QoL, Physical functioning, Role functioning, Emotional functioning, Cognitive functioning, Social functioning, Fatigue, Nausea and vomiting, Pain, Dyspnoea, Insomnia, Appetite loss, Constipation, Diarrhoea, and Financial difficulties were assessed in this study.

Results: The most severe impairment in functioning was with lowest score of cognitive functioning (mean score=61) and the most severe symptom was fatigue (mean score=45). There were significant differences in quality of life scores in different socio-demographic groupsand types of brain pathology patients. Patients aged below 40 years ~~old~~ or less had better physical functioning, less symptoms of fatigue and insomnia compared to patients who were more than 40 years old. Male patients faced more financial difficulties compared with female patients. Patients who were married had increased insomnia compared to the single patients. Employed patients had better physical functioning and less financial difficulties compared with patients who were unemployed. Patients who earned >RM 2500.00 monthly had better physical functioning, less symptoms of

pain and less financial difficulties than patients who earned ≤RM 2500.00. Patients with qualifications lower than SPM tended to face more financial difficulties compared to patients with qualifications of SPM or higher. Meningioma patients had better social functioning compared with others, whereas Carvenoma patients had better physical functioning. Meningioma patients had more symptoms of insomnia compared with other patients. All the findings were with p value less than 0.05.

Conclusion: The quality of life of patients with brain pathology is affected by socio-demographic factors and clinical diagnoses. Efforts should be made to improve the overall quality of life of these patients.

Keywords: Brain pathology, quality of life, socioeconomic factors

Introduction

Brain pathology especially primary tumour cases account for only 2% compared with other types of cancers and worldwide, it affects 7 per 100,000 population annually[1-2]. The newly diagnosed cancer incidence during the year of 2007-2011 was 103,507 in Malaysia [3]. In America, it was reported that the annual incidence rate of primary brain tumours or central nervous system tumours during the year of 2008-2012 was 6 cases per 100 000 people. Brain pathologies are rare diseases compared to other types of cancers such as lung or breast cancer which have 10-fold higher incidence rates.

A study reported that the (EORTC) QLQ-C30 is the most frequently used questionnaire to measure the quality of life of the patients. This instrument is a useful tool to alert the physician or clinician to monitor the functioning of the patients during the disease progression [4]. A total of 14 domains such as Global health status/QoL, Physical functioning, Role functioning, Emotional functioning, Cognitive functioning, Social functioning, Fatigue, Nausea and vomiting, Pain, Dyspnoea, Insomnia, Appetite loss, Constipation, Diarrhoea, and Financial difficulties were assessed in this study.

Previously published articles[5-6] provide some insight in descriptions of the quality of life among cancer patients; however, these studies were more focused on western countries. The quality of life may vary according to the type of the brain tumour diagnosis[6], thus, there is a need to examine the quality of life of Malaysian intracranial suffering from brain pathology with respect to their clinical cancer diagnoses and socio-demographic factors. To the best of our knowledge, there are no studies on this topic,specifically in Malaysian brain pathology patients. Therefore, the main aim of the current study is to describe the quality of life scores and compare them by different socio-demographic factors and diagnoses.

Methods

This cross-sectional study took place at a tertiary referral centre for brain pathology patients at Kuala Lumpur Hospital, Malaysia. The sampling population consisted of brain pathology patients visiting the neurological unit in Hospital Kuala Lumpur. The patients were recruited between April 2016 to December 2016. Patients with confirmed brain pathology diagnosis, well versed in English, Malay, Mandarin or Tamil, were at least 18 years old, and were fit to be interviewed and able to complete the questionnaire, were included in the study. Prior to questionnaire distribution, consent was obtained from each patient recruited for the study. The patient's data were retrieved from their medical record for their clinical and socio- demographic profiles.

This study utilized the European Organization for Research and Treatment of Cancer Quality Of Life (EORTC QLQ-C30) questionnaire, version 3.0. The questions come with Likert scale format with answers as follows: "Not at all", "A little", "Quite a bit" and "Very much". All the scales range from 1 to 4 except for the global health status scale, which has 7 points ranging from 1 ("very poor") to 7 ("excellent") [7]. The scoring procedure was performed according to the scoring manual of EORTC QLQ-C30. The raw score for each scale were computed and a linear transformation was done with score ranging from 0-100 for each domain in the scale. The functioning scale (physical, role, cognitive, emotional, and social) with a higher score indicates better functioning and better global health status. On the other hand, for the symptom scale (fatigue, pain, and nausea or vomiting; dyspnoea, insomnia, appetite loss, constipation, diarrhoea, and financial difficulties) a higher score indicates more symptoms [8]. The SPSS version 22.0 was used in the study for the data analyses. Mann–Whitney U test was applied to compare 2 variables and to determine the level of significance ($P < 0.05$). The sample sizes for some groups were small (<30); therefore, the non-parametric tests were used in the study.

Ethics approvals were obtained from Human Research Ethics Committee, UniversitiSains Malaysia (FWA Reg No: 00007718; IRB Reg. No: 00004494) (USM/JEPeM/16050178) and Medical Research & Ethics Committee (MREC) at the Ministry of Health (MOH) (NMRR-16-1134-29874 (IIR).

Results

A total of 122 patients were approached in the study. However 22 patients were excluded from the study: patients with other diagnoses (n=3) and patients who withdrew or incompleted the study (n=19).The study had a response rate of 93.5% (n=100). The mean age of the neurological disorder participants was 45.3 years (95% CI=42.6, 47.9). The mean age of men (43.6 years, 95% CI = 39.4, 47.8) was not significantly different from mean age of women (46.1 years, 95% CI = 42.7, 49.5) who participated

in this study (Z = -0.993, p=0.321).The socio- demographic profiles and clinical characteristics of the respondents are shown in Table 1 and Table 2.

Table 1: Socio-demographic characteristics of neurological disorder respondents in HKL (n=100)

Characteristics	n	Percentage (%)
Age (year)		
18-20	2	2.0
21-30	15	15.0
31-40	21	21.0
41-50	25	25.0
51-60	21	21.0
61-70	15	15.0
71	1	1.0
Gender		
Female	66	66.0
Male	34	34.0
Ethnicity		
Malay	78	78.0
Chinese	12	12.0
Indian	9	9.0
Others	1	1.0
Religion		
Muslim	78	78.0
Buddhist	11	11.0
Hindu	7	7.0
Christian	3	3.0
Others	1	1.0
Marital status		
Single	24	24.0
Married	74	74.0
Widowed	1	1.0
Divorced	1	1.0
Children		
Yes	68	68.0
No	32	32.0
Highest level of formal education		
Primary	13	13.0
Secondary	48	48.0
College/University	38	38.0
No education	1	1.0
Highest certificate		
Primary School Evaluation Test (UPSR/PSET)	12	12.0

Characteristics	n	Percentage (%)
Lower Certificate of Education (PMR/SRP/LCE)	14	14.0
Malaysian Certificate of Education (SPM/SPMV/MCE)	29	29.0
Malaysian Higher School Certificate (STPM/HSC)	3	3.0
Certificate/Diploma	20	20.0
Degree	18	18.0
Masters	3	3.0
No education	1	1.0
Occupation status		
Working	55	55.0
Not working	45	45.0
Working sector		
Government	21	21.0
Non government	31	31.0
Self employment	1	1.0
Not working	45	45.0
Semi government	2	2.0
Total monthly income household (RM)		
0-3000	53	53.0
3001-6000	13	13.0
6001-9000	8	8.0
>9001	4	4.0
others	22	22.0

Table2: Clinical characteristics of neurological disorder respondents in HKL

Characteristics	n	Percentage (%)
Year of diagnosis		
2015-2016	34	34.0
2013-2014	17	17.0
2011-2012	11	11.0
2009-2010	6	6.0
2007-2008	7	7.0
2005-2006	3	3.0
<2005	14	14.0
others	8	8.0
Neurological disorders		
Astrocytic glioma	13	13.0
Meningioma	19	19.0
Pituitary adenoma	15	15.0
Carvenoma	7	7.0
Schwanoma	5	5.0
Craniopharyngioma	3	3.0
Ethmoid	1	1.0
Frontal lobe tumour	1	1.0

Characteristics	n	Percentage (%)
Fibrosarcoma	1	1.0
Cerebellar edema	4	4.0
Germinoma	1	1.0
Haemorragic brain	3	3.0
Metastatic carcinoma	1	1.0
Brain lesion	2	2.0
Mucopyocele	1	1.0
Aneurysm	1	1.0
Hydrocephalus	3	3.0
Unclassified neurological disorders	19	19.0
Treatment		
Medication	18	18.0
Chemotherapy	4	4.0
Radiotherapy	3	3.0
Chemotherapy and radiotherapy	1	1.0
Medication and radiotherapy	2	2.0
Medication and waiting for surgery	1	1.0
Endoscopic operation radiotherapy	1	1.0
Surgery	30	30.0
Surgery and medication	5	5.0
Surgery medication radiotherapy	1	1.0
Waiting for surgery	1	1.0
Waiting for chemotherapy	1	1.0
Waiting for laser treatment	1	1.0
Others	31	31.0

Quality of life score

The most severe impairment in functioning was with lowest score of cognitive functioning (mean score=61) found in the study. In the symptom counterparts, the most severe symptom was fatigue with highest mean score=45.

Clinical characteristics of neurological disorder respondents

Table 2 shows the clinical characteristics of the respondents. The majority of the respondents underwent surgery, chemotherapy and radiotherapy. The remaining respondents were waiting for their treatment or were under medication.

Between-group differences in quality of life median(IQR) score as a function of socio-demographic profiles

In age counterparts, 40-year-old patients, or younger, had better physical functioning (p=0.005), less symptoms of fatigue (p=0.023) and insomnia (p=0.010) compared to patients who were more than 40 years old. (Table 3).In addition, male patients faced more financial difficulties compared with female patients (p=0.022). (Table 4). Patients who were married had increased insomnia (p=0.005) compared to the single patients (Table5). Employed patients had better physical functioning (p=0.006) and less financial difficulties (p=0.011) compared with patients who were unemployed (Table 6). Patients who earned >RM 2500.00 monthly had better physical functioning (p=0.019), less symptoms of pain (p=0.034) and less financial difficulties (p=0.002) than patients who earned ≤RM 2500.00 (Table 7). Patients with lower qualifications than SPM tendedto face more financial difficulties compared to patients with SPM or higher qualification (p<0.001, Table 8).

Table 3: Quality of life (EORTC QLQ-C30) median (IqR) scores between - Age ≤40 and Age >40 in neurological disorder patients (n=100)

	Median (IqR)		Z stata	p-value
	Age ≤40 n=38	Age >40 n=62		
Global health status/QoL	64.25(33.33)	50.00(25.00)	-1.534	0.125
Physical functioning	**86.67(33.33)**	**73.33(40.00)**	**-2.825**	**0.005**
Role functioning	83.33(33.33)	83.33(50.00)	-1.056	0.291
Emotional functioning	75.00(43.75)	66.67(35.42)	-1.034	0.301
Cognitive functioning	66.67(50.00)	66.67(50.00)	-0.537	0.591
Social functioning	100.00(20.83)	100.00(37.50)	-0.414	0.679
Fatigue	**33.33(44.44)**	**44.44(55.56)**	**-2.268**	**0.023**
Nausea and vomiting	0.00(16.67)	0.00(16.67)	-0.343	0.732
Pain	16.67(33.33)	33.33(66.67)	-1.557	0.119
Dyspnoea	0.00(0.00)	0.00(0.00)	-0.433	0.665
Insomnia	**0.00(33.33)**	**33.33(66.67)**	**-2.591**	**0.010**
Appetite loss	0.00(0.00)	0.00(33.33)	-0.996	0.319
Constipation	0.00(0.00)	0.00(33.33)	-1.150	0.250
Diarrhoea	0.00(0.00)	0.00(0.00)	-1.626	0.104
Financial difficulties	0.00(41.67)	33.33(75.00)	-0.871	0.384

[a]Mann-Whitney Test

Table 4: Quality of life (EORTC QLQ-C30) median (IqR) scores between Males and Females in neurological disorder patients (n=100)

	Median (IqR)		Z stat[a]	p-value
	Male	**Female**		
Global health status/QoL	50.00(25.00)	62.50(33.33)	-1.843	0.065
Physical functioning	76.67(33.33)	80.00(33.33)	-1.070	0.285
Role functioning	66.67(50.00)	83.33(33.33)	-1.320	0.187
Emotional functioning	66.67(35.42)	75.00(35.42)	-1.558	0.119
Cognitive functioning	66.67(41.67)	66.67(50.00)	-0.369	0.712
Social functioning	100.00(50.00)	100.00(33.33)	-0.206	0.837
Fatigue	44.44(55.56)	33.33(44.44)	-0.059	0.953
Nausea and vomiting	0.00(16.67)	0.00(16.67)	-0.401	0.689
Pain	16.67(50.00)	16.67(50.00)	-0.120	0.904
Dyspnoea	0.00(0.00)	0.00(0.00)	-0.303	0.762
Insomnia	**0.00(66.67)**	**16.67(66.67)**	**-1.277**	**0.202**
Appetite loss	0.00(8.33)	0.00(33.33)	-0.685	0.493
Constipation	0.00(0.00)	0.00(33.33)	-1.003	0.316
Diarrhoea	0.00(0.00)	0.00(0.00)	0.000	1.000
Financial difficulties	33.33(100.00)	0.00(33.33)	-2.295	0.022

[a]Mann-Whitney Test

Table 6. Quality of life (EORTC QLQ-C30) median (IqR) scores between Working and Not working in neurological disorder patients (n=100)

	Median (IqR)		Z stat[a]	p-value
	Working	**Not working**		
Global health status/QoL	66.67(33.33)	50.00(25.00)	-1.574	0.115
Physical functioning	**86.67(33.33)**	**73.33(40.00)**	**-2.739**	**0.006**
Role functioning	83.33(33.33)	66.67(50.00)	-1.487	0.137
Emotional functioning	66.67(41.67)	75.00(45.83)	-0.325	0.745
Cognitive functioning	66.67(50.00)	66.67(50.00)	-0.935	0.350
Social functioning	100.00(33.33)	100.00(33.33)	-0.353	0.724
Fatigue	33.33(55.56)	44.44(55.56)	-0.789	0.430
Nausea and vomiting	0.00(16.67)	0.00(16.67)	-0.103	0.918
Pain	16.67(50.00)	33.33(58.33)	-2.082	0.037
Dyspnoea	0.00(33.33)	0.00(0.00)	-1.476	0.140
Insomnia	0.00(66.67)	0.00(66.67)	-1.347	0.178
Appetite loss	0.00(0.00)	0.00(50.00)	-1.750	0.080
Constipation	0.00(33.33)	0.00(0.00)	-0.927	0.354
Diarrhoea	0.00(0.00)	0.00(0.00)	-0.277	0.782
Financial difficulties	0.0(33.33)	33.33(100.00)	-2.554	0.011

[a]Mann-Whitney Test

Table 5: Quality of life (EORTC QLQ-C30) median (IqR) scores between single and married in neurological disorder patients (n=100)

	Median (IqR)		Z stat[a]	p-value
	Single n=24	**Maried n=74**		
Global health status/QoL	66.67(25.00)	50.00(25.00)	-0.483	0.629
Physical functioning	80.00(45.00)	80.00(28.33)	-1.032	0.302
Role functioning	83.33(33.33)	83.33(50.00)	-0.579	0.562
Emotional functioning	75.00(54.17)	66.67(33.33)	-0.999	0.318
Cognitive functioning	66.67(50.00)	66.67(33.33)	-0.327	0.744
Social functioning	83.33(33.33)	100.00(33.33)	-0.814	0.416
Fatigue	33.33(44.44)	44.44(47.22)	-1.182	0.237
Nausea and vomiting	0.00(16.67)	0.00(16.67)	-0.533	0.594
Pain	16.67(33.33)	33.33(54.17)	-1.470	0.142
Dyspnoea	0.00(0.00)	0.00(8.33)	-1.775	0.076
Insomnia	0.00(0.00)	33.33(66.67)	-2.789	**0.005**
Appetite loss	0.00(0.00)	0.00(33.33)	-1.401	0.161
Constipation	0.00(0.00)	0.00(33.33)	-0.637	0.524
Diarrhoea	0.00(0.00)	0.00(0.00)	-0.683	0.494
Financial difficulties	**33.33(91.67)**	**16.67(66.67)**	**-0.789**	**0.430**

[a]Mann-Whitney Test

Table 7: Quality of life (EORTC QLQ-C30) median (IqR) scores>RM 2500and ≤RM 2500in neurological disorder patients (n=100)

	Median (IqR)		Z stat[a]	p-value
	>RM 2500	**≤RM 2500**		
Global health status/QoL	66.67(33.33)	50.00(25.00)	-1.523	0.128
Physical functioning	**86.67(33.33)**	**73.33(46.67)**	**-2.355**	**0.019**
Role functioning	83.33(33.33)	83.33(50.00)	-0.516	0.606
Emotional functioning	75.00(33.33)	75.00(41.67)	-0.223	0.824
Cognitive functioning	66.67(33.33)	66.67(50.00)	-0.224	0.822
Social functioning	100.00(16.17)	100.00(50.00)	-1.190	0.234
Fatigue	16.67(55.56)	33.33(66.67)	-1.444	0.149
Nausea and vomiting	0.00(16.67)	0.00(16.67)	-1.369	0.171
Pain	**16.67(50.00)**	**33.33(66.67)**	**-2.118**	**0.034**
Dyspnoea	0.00(0.00)	0.00(0.00)	-0.035	0.972
Insomnia	0.00(33.33)	33.33(66.67)	-1.277	0.202
Appetite loss	0.00(0.00)	0.00(33.33)	--0.683	0.495
Constipation	0.00(0.00)	0.00(33.33)	-0.643	0.520
Diarrhoea	0.00(0.00)	0.00(0.00)	0.000	1.000
Financial difficulties	0.0(33.33)	33.33(66.67)	-3.110	0.002

[a]Mann-Whitney Test

Table 8: Quality of life (EORTC QLQ-C30) median (IqR) scores $\leq$ SPM and $>$SPM in neurological disorder patients (n=100)

	Median (IqR)		Z stat[a]	p-value
	≤ SPM	>SPM		
Global health status/QoL	50.00(22.92)	66.67(33.33)	-1.649	0.099
Physical functioning	80.00(25.46)	80.00(26.67)	-1.238	0.216
Role functioning	83.33(50.00)	83.33(33.33)	-1.245	0.213
Emotional functioning	66.67(25.00)	75.00(56.25)	-1.165	0.244
Cognitive functioning	66.67(45.83)	50.00(45.83)	-1.325	0.185
Social functioning	100.00(33.33)	91.67(33.33)	-1.211	0.226
Fatigue	44.44(44.44)	38.89(55.56)	-0.749	0.454
Nausea and vomiting	0.00(16.67)	0.00(16.67)	-0.073	0.942
Pain	33.33(50.00)	8.33(50.00)	-1.781	0.075
Dyspnoea	0.00(0.00)	0.00(0.00)	-0.020	0.984
Insomnia	0.00(66.67)	00.00(33.33)	-1.470	0.142
Appetite loss	0.00(25.00)	0.00(33.33)	--0.063	0.950
Constipation	0.00(33.33)	0.00(0.00)	-1.841	0.066
Diarrhoea	0.00(0.00)	0.00(0.00)	0.407	0.684
Financial difficulties	**33.33(100.00)**	**0.00(33.33)**	**-3.976**	**<0.001**

[a]Mann-Whitney Test

Between-group differences in quality of life median(IQR) score as a function of neurological disorder diagnosis

Table 9 and Table 10 represent between-group differences in the quality of life median (IQR) score as a function of neurological disorder diagnosis. Meningioma patients had better social functioning (p=0.003) compared with others, whereas Carvenoma patients had better physical functioning (p=0.036).Meningioma patients had more symptoms of insomnia (p=0.022) compared with other patients.

Table 9: Quality of life (EORTC QLQ-C30) median (IqR) scores between Meningioma and No-Meningioma in neurological disorder patients (n=100)

	Median (IqR)		Z stat[a]	p-value
	Meningioma	No-Meningioma		
Global health status/QoL	66.67(25.00)	50.00(25.00)	-0.827	0.408
Physical functioning	80.00(33.33)	80.00(33.33)	-0.146	0.884
Role functioning	83.33(33.33)	83.33(50.00)	-1.292	0.196
Emotional functioning	75.00(33.33)	66.67(37.50)	-1.315	0.189
Cognitive functioning	83.33(50.00)	66.67(50.00)	-1.802	0.072
Social functioning	**100.00(0.00)**	**100.00(41.67)**	**-2.955**	**0.003**
Fatigue	33.33(33.33)	44.44(44.44)	-0.770	0.441
Nausea and vomiting	0.00(16.67)	0.00(16.67)	-0.571	0.568
Pain	33.33(50.00)	16.67(50.00)	-0.600	0.549
Dyspnoea	0.00(00.00)	0.00(0.00)	-0.019	0.985
Insomnia	**66.67(100.00)**	**0.00(33.33)**	**-2.296**	**0.022**
Appetite loss	0.00(0.00)	0.00(33.33)	-1.860	0.063
Constipation	0.00(0.00)	0.00(16.67)	-0.094	0.925
Diarrhoea	0.00(0.00)	0.00(0.00)	-0.538	0.590
Financial difficulties	0.0(33.33)	33.33(66.67)	-1.083	0.279

[a]Mann-Whitney Test

Table 10: Quality of life median (IQR) scores (EORTC QLQ-C30) between Carvenoma and No-Carvenoma in neurological disorder patients (n=100)

	Median (IqR)		Z stat[a]	p-value
	Carvenoma	No-Carvenoma		
Global health status/QoL	75.00(33.33)	50.00(25.00)	-1.002	0.316
Physical functioning	**93.33(13.33)**	**80.00(33.33)**	**-2.102**	**0.036**
Role functioning	83.33(33.33)	83.33(50.00)	-0.791	0.429
Emotional functioning	100.00(33.33)	66.67(41.67)	-1.838	0.066
Cognitive functioning	66.67(50.00)	66.67(41.67)	-0.219	0.826
Social functioning	83.33(33.33)	100.00(33.33)	-0.650	0.516
Fatigue	22.22(55.56)	44.44(44.44)	-0.531	0.595
Nausea and vomiting	0.00(33.33)	0.00(16.67)	-0.175	0.861
Pain	16.67(33.33)	16.67(50.00)	-0.622	0.534
Dyspnoea	0.00(0.00)	0.00(0.00)	-0.475	0.635
Insomnia	33.33(33.33)	0.00(66.67)	-0.068	0.946
Appetite loss	0.00(66.67)	**0.00(33.33)**	-0.316	0.752
Constipation	0.00(33.33)	0.00(0.00)	-0.109	0.914
Diarrhoea	0.00(0.00)	0.00(0.00)	-0.180	0.857
Financial difficulties	0.0(33.33)	33.33(66.67)	-1.360	0.174

[a]Mann-Whitney Test

Discussion

The present study examined the association of socio-demographic and clinical factors on quality of life of brain pathology patients. The most severe impairment in functioning was with lowest score of cognitive functioning and in the symptom counter-parts, the most severe symptom was fatigue with highest score. Previous studies have reported similar results related to reduced cognitive functioning with the shorter education and more symptoms of fatigue among the cancer patients [6].

Male patients faced more financial difficulties compared with female patients and employed patients had better physical functioning compared with unemployed patients. In addition, patients with better physical functioning, less symptoms of pain and less financial difficulties earned more than RM 2500.00 per month. It is interesting to note that previous findings reported that male cancer patients scored higher in working ability in the 6th month, but not at 12 or 18 months, after returning to work. Moreover, cancer patients had reduced working ability that impedes overtime and the reduced working ability was due, in part, to chemotherapy treatments [9].

Patients aged40 years or more had reduced physical functioning (p=0.007), more symptoms of fatigue (p=0.020) and insomnia (p=0.002) compared with other patients. Difficulties faced by the patients in carrying a bag, walking, eating, bathing, and dressing,are known as patients' physical functioning [7].These findings are in line with a study which reported that older cancer patients had impaired quality of life with poor physical and role functioning and more symptoms of constipation [6].

A previous study also found that the older age group of patients had poor physical functioning but they accepted the illness by their prepared cognitive and emotional functioning [10-11]. The study reported that as much as 6.9 sources were identified to cause the distress among cancer patients. The sociodemographic profile, such as gender and the severity of the tumour were not correlated with the psychological distress. It was found that the distress score was 5.51 (SD 5 2.86) with 48.4% of the sample being categorised as significantly distressed among the early diagnosis of brain tumour patients. The majority of the respondents were reported with physical, emotional, practical, familial, and spiritual problems and the most frequently reported problems were fatigue, fear, and worry. The depression, anxiety and social support were found to be correlated with the physical, family, emotional, spiritual and physical problems. During this early diagnosis period, the distress seemed to be even higher than in later stages of the diagnosis. Interestingly, the emotional factor is the main contributing factor for the distress [12].

The current study also found that Meningioma patients had better social functioning compared with others, whereas Carvenoma patients had better physical functioning. Meningioma patients had more symptoms of insomnia compared with other patients. In the largest previous study, the quality of life for patients with meningioma was poor levels of physical, emotional, and mental health compared with a healthy population [13]. The psychiatrist or mental health professionals should carry out an individual-based support program with psychotherapy and pharmacotherapy as efficient strategies to overcome patients' psychological problems [14].Early detection of emotional problems of neurological disorder patients might enhance quality of life, prevent patients' difficulties in treatment and reduce the patients' suffering [15].

A study has been done among the glioma population and a multidisciplinary rehabilitation program was implemented to them. It was proven that this program was able to improve the self-care, mobility, continence, and activity in three-months' time and improved psychosocial interactions, communication, cognitive abilities (problem solving, memory)were seen in 6 months' time[16]. Therefore, early intervention is important to help the neurological disorder patients improve their quality of life by considering the socio-demographic and clinical characteristics of the patients.

Conclusion

This study suggests that the quality of life of brain pathology patients was affected by socio-demographic factors and clinical diagnoses. Efforts should be taken to improve the overall quality of life of these patients based on their socio-demographic factors and clinical diagnoses to implement cost- effective treatment.

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