

Article

Study on the quality of life among cancer survivors attending a tertiary care cancer center in Malaysia

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Abstract

Background: Cancer is a major public health problem across the globe. According to the Malaysian National Cancer Registry Report (MNCR), between 2007 and 2011, there has been a greater increase in the number of reported cancer cases among females (99.3 per 100,000 people) than males (86.9 cases per 100,000 people). Nearly 15 million new cancer cases were projected by 2020. We conducted this study to assess the quality of life (QoL) among cancer patients.

Design and Methods: This was a cross-sectional study conducted in the oncology department of Malaysian hospitals from October to November 2019. The study population comprised Malaysians in the age range of 18 to 100 years diagnosed with cancer, irrespective of their treatment status, cancer type and prognosis. A pre-tested structured questionnaire was used in seventy cancer patients' using a convenient sampling method. Data were collected using a questionnaire survey after obtaining permission from the hospital administrators. Data were entered in MS Excel and analysis was done using the SPSS-version 23. Participants' socio-demographic characteristics were described using descriptive statistics. Results are presented using graphs, tables, mean, percentages, standard deviation, frequency, and significance. Analysis of variance (ANOVA) test was performed to find out the association between socio-demographic variables and overall QoL scores of the patients.

Results: Of the seventy cancer patients, 29 (41.43%) were males and 41 (58.57%) were females. The most affected socio-demographic factors were marital status and occupation (employment). It was found that there were 55 (78.57%) married patients and 49 (70%) employed patients. QoL of most of the patients was influenced by the education level and treatment. It was found that 35 (50%) of them had low QoL scores. It was observed that QoL among the study participants was significantly ($p < 0.05$) associated with their level of education and the level of treatment.

Conclusions: There is a need to develop measures for community education, involvement of family physicians for the treatment of cancer and to increase awareness to improve the QoL among cancer patients. The focus should be on the development of strategies empowering patients to seek treatment and gain control over their illness with the collaboration with primary care physicians.

Introduction

According to the latest Ministry of Health Malaysia report, Malaysian Study on Cancer Survival (MyScan), cancer is the fourth leading cause of death in Malaysia. Cancer accounts for 12.6% of all deaths in government hospitals, and more than double in private hospitals at 26.7%¹. Around 37,000 new cases are diagnosed each year, and by 2030, yearly diagnosed cases are pro-

Significance for public health

Cancer is a major public health problem across the globe including Malaysia. The Quality of Life (QoL) often jeopardised due to disease as well as micro level and macro level factors associated with the cancer patients. Therefore, this study is very crucial for the country like Malaysia, which conveys the betterment in planning the preventive and control measures together with physical, social, and mental support to people who are affected by cancer. There is a need to develop measures for community education, involvement of family physicians for the treatment of cancer and to increase awareness to improve the QoL among cancer patients. The focus should be on the development of strategies empowering patients to seek treatment and gain control over their illness with the collaboration with primary care physicians

jected to exceed 55,000. According to the Malaysian National Cancer Registry Report (MNCR), between 2007 and 2011, cancer incidences were 86.9 cases per 100,000 among males and 99.3 cases per 100,000 among females.¹

Quality of Life (QoL) is a multi-aspect measurement of individual and societal satisfaction with life. World Health Organization (WHO) defines “QoL as an individual perception of life, standards, objectives, values, and interests in the framework of culture. QoL can be influenced by multiple factors such as physical and mental status, personal beliefs, level of education, and diverse socio-demographic elements.” Thus, various symptoms and emotional distress experienced by cancer patients from different backgrounds may have wide-ranging implications on their perceived QoL and their cancer treatment outcomes.²

Our study is a major undertaking in measuring QoL among cancer patients in Malaysia and will provide valuable data for both medical students and researchers alike, to better understand cancer patients’ QoL regarding their physical, cognitive, psychological, and general well-being. The study also focuses on familial relationships; economic well-being of the cancer patients; confidence and belief; individual ability; patient–physician relationships; body image issues; and informational support required by individual patients.

Understanding the relationship between QoL and socio-demographic variables will also help facilitate future healthcare planning and raise awareness in vulnerable populations. In addition, our research also offers recommendations on how to evaluate patients’ effort and resolve in their fight against cancer, serving to promote future improvements to the quality of care of cancer patients. Against this background, our study objective was to assess the level of QoL among cancer patients, as well as its correlation to socio-demographic characteristics.

Design and Methods

Study setting and study design

This cross-sectional study was conducted at the Oncology Departmental Unit of Malaysian Hospital to examine the QoL among cancer patients. The study was conducted from October 2019 to November 2019, and the study population comprised Malaysian people in the age group of 18 to 100 years diagnosed with cancer, irrespective of their treatment status. We excluded those patients’ dependent on others for their routine activities and those taking medicines for mental illness.

Sampling

A convenience sampling was used to draw a purposive sample of a minimum of seventy participants. Each participant was given a designed questionnaire to capture the details pertaining to socio-demographic and medical history.

Study tool

The questionnaire took 5-10 minutes to complete. Moreover, a validated QoL measurement instrument designed by European Organization for Research and Treatment of Cancer (EORTC)² was used to ascertain the QoL among the participants. The instrument contains 41 questions divided into 11 different domains: general wellbeing, physical wellbeing, psychological wellbeing, inter-familial relationship, individual ability, cognitive function, economic wellbeing, belief and optimism, body image issues, infor-

mational support, and patient–physician relationship.

Each question had an equal value, and the QoL was quantified as the sum of the scores for all domains. The scores were classified into four categories using the Likert scale, namely: not at all, a little, moderate, very much. The highest scores on this scale represented a better QoL.³

Content validation was performed by experts in internal medicine, obstetrics and gynaecology, surgery, community medicine, and paediatrics (clinical lecturers at Asia Metropolitan University). Content validity index (CVI) was 1. Face validity was measured by Easy to answer (100%), Layout (100%), and Clarity of Words (100%). Internal consistency reliability was estimated by calculation of Cronbach’s alpha with $r = 0.709 (>0.70)$.

Data collection and analysis

Data were collected using a questionnaire survey after obtaining permission from the hospital administrators. Data were entered in MS Excel and analysis was done using the SPSS-version 23. Participants’ socio-demographic characteristics were described using descriptive statistics. Results are presented using graphs, tables, mean, percentages, standard deviation, frequency, and significance. Analysis of Variance (ANOVA) test was performed to find out the association between socio-demographic variables and overall QoL scores of the patients. The investigator checked the data quality using following measures-accuracy, relevance, completeness, timeliness, consistency.

Ethical clearance

Medical Research Ethics Committee (MREC) of Asia Metropolitan University, Selangor, Malaysia approved the study. Informed written consent was obtained from the participants. All the data from the study is stored based on the principle of confidentiality and non-dissemination.

Results

The detailed description of the QoL among seventy cancer patients is presented using frequency and percentage for easy understanding. The description of the QoL using the validated instrument by (EORTC) and its 11 domains, as mentioned earlier in method section, are presented in Table 1, 2, 3 and 4. The total scores categories obtained from the QoL of patients is given in

Table 1. Socio-demographic profile of the patients (n=70).

	Frequency (n)	Percentage (%)
Gender		
Male	29	41.4
Female	41	58.6
Race		
Malay	39	55.7
Chinese	16	22.7
Indian	15	21.4
Marital status		
Married	55	78.6
Unmarried	7	10
Widowed	7	10
Divorced	1	1.4
Occupation		
Employed	49	70
Unemployed	21	30

Table 2. Description of the QoL using the validated instrument by (EORTC) and its 11 domains among the patients (n=70).

Domains of QoL	Frequency (%)			
General well-being	Median:5 (1-5=Low and 6-10=High)			
How do you rate your overall quality of life during the past week?	IQR: 6-40			
How would you rate your overall physical conditioning during the past week?	Median:5 (1-5=Low and 6-10=High)			
	IQR: 6-3.25			
	Very much n/%	Moderate n/%	A little n/%	Not at all n/%
Do you feel you are physically performing less than desired?	18 (25.71)	18 (25.71)	24 (34.29)	10 (14.29)
How confident do you feel about managing your financial needs in any situation?	16 (22.86)	21 (30.00)	26 (37.14)	7(10)
Do you get the kind of support you need from your friends and relatives?	59(84.29)	6 (8.57)	2 (2.86)	3 (4.29)
Physical well-being				
Do you experience any pain at present?	15 (21.43)	26 (37.14)	16 (22.86)	13 (18.57)
Does your pain interfere in your day-to-day activity?	16 (22.86)	18 (25.71)	17 (24.29)	19 (27.14)
Is your appetite normal?	16 (22.26)	15 (21.43)	24 (34.29)	15 (21.43)
Do you have any sleep problems?	11 (15.71)	17 (24.29)	19 (27.14)	23 (32.86)
Do you feel you need more rest?	27 (38.57)	24 (34.29)	12 (17.14)	7 (10.00)
Do you feel fatigued?	25 (35.71)	26 (37.14)	11 (15.71)	8 (11.43)
Are you able to move around (physical) as usual?	18 (25.71)	29 (41.43)	9 (12.86)	14 (20.00)
Do you have problems in passing urine?	5 (7.14)	10 (14.29)	12 (17.14)	43 (61.43)
Do you have problems in passing motion?	2 (2.86)	8 (11.43)	16 (22.86)	44 (62.86)
Are you satisfied with your working capacity?	10 (14.29)	20 (28.57)	23 (32.86)	17 (24.29)
Psychological well-being				
Do you feel depressed?	12(17.14)	24(34.29)	23(32.86)	11(15.71)
Does your feeling of sadness or depression interfere with your everyday functioning?	11(15.71)	18(25.71)	18(25.71)	23(32.86)
Are you comfortable attending social functions as usual?	17(24.29)	22(31.43)	16(22.86)	15(21.43)
Do you feel that you have too much time without anything important to do?	8(11.43)	9(12.86)	30(42.86)	23(32.86)
Do you have a fear of recurrence?	41(58.57)	10(14.29)	11(15.71)	8(11.43)
Do you have a fear of functional disability?	33(47.14)	10(14.29)	15(21.43)	12(17.14)
Do you have a fear of rejection and losing social status?	11(15.71)	12(17.14)	17(24.29)	30(42.86)
Do you feel very lonely or remote from other people?	6(8.57)	8(11.43)	15(21.43)	41(58.57)
Familial relationship				
How satisfied are you about your relationship with your family?	52(74.29)	12(17.14)	1(1.43)	5(7.14)
Do you feel free to share your problems with your family members?	41(58.7)	17(24.29)	6(8.57)	6(8.57)
Do you get the support you need from your spouse and family members?	59(84.29)	9(12.86)	0(0)	2(2.86)
Are you confident that you are able to fulfil your family needs?	15(21.43)	26(37.14)	20(28.57)	9(12.86)
Personal ability				
Do you need any assistance to do your day-to-day activities?	11(15.71)	11(15.71)	17(24.29)	31(44.29)
Cognitive well-being				
Do you have difficulty in remembering?	2(2.86)	9(12.86)	17(24.29)	42(60.00)
How dependent are you on medication?	27(38.57)	18(25.71)	13(18.57)	12(17.14)
Economic well-being				
Do you feel that your physical condition has resulted in reduced economic status?	2(2.86)	18(25.71)	25(35.71)	25(35.71)
How important do you feel about yourself at present?	30(42.86)	28(40.00)	10(14.29)	2(2.86)
Are you satisfied with the responsibilities you have already fulfilled?	17(24.29)	35(50.00)	13(18.57)	5(7.14)
Optimism and belief				
To what extent do your personal beliefs/religious faith give you the strength to face the difficulties?	54(77.14)	10(14.29)	5(7.14)	1(1.43)
Do you always expect good things to happen?	53(75.71)	12(17.14)	4(5.71)	1(1.43)
Informational support				
Are you able to get the required information from your doctors?	47(67.14)	18(25.71)	5(7.14)	0(0)
How much of information do you want about your disease/treatment?	55(78.57)	10(14.29)	4(5.71)	1(1.43)
Are you happy with the services provided in hospital/cancer centre?	42(60.00)	26(37.14)	2(2.86)	0(0)
Patient-physician relationship				
Do you feel your doctor is cooperative?	45(64.29)	20(28.57)	5(7.14)	0(0)
Are you satisfied with your physician?	46(65.71)	20(28.57)	4(5.71)	0(0)
Body image				
Are you satisfied with the way your body looks?	15(21.43)	21(30.00)	28(40.00)	6 (8.57)

Table 2. Description of the QoL using the validated instrument by (EORTC) and its 11 domains among the patients (n=70).

Domains of QoL	Frequency (%)			
	Very much n/%	Moderate n/%	A little n/%	Not at all n/%
Personal ability				
Do you need any assistance in your day-to-day activities?	11(15.71)	11(15.71)	17(24.29)	31(44.29)
Cognitive well-being				
Do you have difficulty in remembering?	2(2.86)	9(12.86)	17(24.29)	42(60.00)
How dependent are you on medication?	27(38.57)	18(25.71)	13(18.57)	12(17.14)
Economic well-being				
Do you feel that your physical condition has resulted in reduced economic status?	2(2.86)	18(25.71)	25(35.71)	25(35.71)
How important do you feel you are at present?	30(42.86)	28(40.00)	10(14.29)	2(2.86)
Are you satisfied with the responsibilities you have already fulfilled?	17(24.29)	35(50.00)	13(18.57)	5(7.14)
Optimism and belief				
To what extent do your personal beliefs/religious faith give you the strength to face difficulties?	54(77.14)	10(14.29)	5(7.14)	1(1.43)
Do you always expect good things to happen?	53(75.71)	12(17.14)	4(5.71)	1(1.43)
Informational support				
Are you able to get the required information from your doctors?	47(67.14)	18(25.71)	5(7.14)	0(0)
How much of information do you want about your disease/treatment?	55(78.57)	10(14.29)	4(5.71)	1(1.43)
Are you happy with the services provided in hospital/cancer centre?	42(60.00)	26(37.14)	2(2.86)	0(0)
Patient-physician relationship				
Do you feel your doctor is cooperative?	45(64.29)	20(28.57)	5(7.14)	0(0)
Are you satisfied with your physician?	46(65.71)	20(28.57)	4(5.71)	0(0)
Body image				
Are you satisfied with the way your body looks?	15(21.43)	21(30.00)	28(40.00)	6(8.57)

Table 3. QoL domain wise score distribution (n=70).

Domains	Very Low	Low	Average	High	Above High
General well-being	35 (52.9)	16(22.9)	17(24.3)	0(0)	0(0)
Physical well-being	26(37.1)	27(38.6)	16(22.9)	1(1.4)	0(0)
Psychological well-being	28(40.0)	19(27.1)	18(25.1)	5(7.1)	0(0)
Familial relationship	3(4.3)	2(2.9)	23(32.9)	31(44.3)	11(15.7)
Personal ability	48(68.6)	0(0)	11(15.7)	0(0)	11(15.7)
Cognitive well-being	32(45.7)	23(32.9)	11(15.7)	2(2.9)	2(2.9)
Economic well-being	15(21.4)	5(7.1)	36(51.4)	14(20.0)	0(0)
Optimism and belief	4(5.7)	1(1.4)	7(10.0)	12(17.1)	46(65.7)
Informational support	1(1.4)	2(2.9)	5(7.1)	31(44.3)	31(44.33)
Patient-physician relationship	3(4.3)	3(4.3)	15(21.4)	7(10.0)	42(60.0)
Body image	34(48.6)	0(0)	21(30.0)	0(0)	15(21.4)

Table 4. Categories and Mean QoL Score among the patients (n=70).

Categories	Score	Frequency (%)	Mean/SD
Very Low	Below 99	1(1.43)	Mean 117.87/10.223
Low	99-117	34(48.6)	Mean 117.87/10.223
Average	118-146	35(50.0)	Mean 117.87/10.223
High	147-165	0(0)	Mean 117.87/10.223
Very High	Above 165	0(0)	Mean 117.87/10.223

Table 5 and detailed assessment of the most affected domain is presented as frequency and percentage in Table 6 and 7.

Table 1 shows the frequency and percentage of sociodemographic variables of 70 cancer patients. It shows that, regarding gender, there were more female cancer patients, 41 (58.6%) than male cancer patients, 29 (41.4%). Regarding race, the majority were Malays, 39 (55.7%), followed by Chinese, 16 (22.7%), and then Indians, 15 (21.4%). Regarding marital status, the majority of cancer patients were married, 55 (78.6%), followed by unmarried and widowed, 7 (10%) each. Of the 70 patients, 49 (70%), were employed while 21 (30%) were unemployed.

The first two items of the general wellbeing domain of the QoL questionnaire were scored from 0 to 10 and were analysed using median and Interquartile Range (IQR). During the past week, the median score of general wellbeing was 5 and the IQR was 6–4, and the median score for physical condition domain was 5 and the IQR was 6–3.25, which we considered as low (Table 2). The largest group, 18 (25.71%) of patients felt that they performed physically much less well during the last week, 7 (10%) were not confident about managing their expenses, and 3 (4.29%) were lacking support from their family and friends. A total of 16 (22.86%) of the patients replied that their pain affected their physical well-being. Among all patients, sleep deprivation was experienced by 11 (15.71%), and fatigue by 25 (35.71%). However, the majority of the participants had no problems in micturition or defecation; 43 (61.43%) and 44 (62.86%), respectively (Table 2).

From Table 3, it is observed that for 11 (15.71%) of the patients were very depressed and most 15 (21.43%), were not able to attend social functions. Most participants, 41 (58.57%), were afraid of cancer recurrence, and 33 (47.14%) were fearful about their functional disability. The majority, 52 (74.29%) reported that they were very satisfied with their relationships, 41 (58.57%) reported that they could freely discuss issues with their family, and 59 (84.29%)

responded that they were receiving good social support.

From Table 4, it was observed that the majority (11, 15.71%) of the patients reported that they required assistance in day-to-day activities. In relation to cognitive well-being, 42 (60%) reported no difficulty in memorising, while 27 (38.57%) reported being over-dependent on medications. Most felt optimistic about their future. Only 2 (2.86%) of the patients were concerned about their reduced income status due to their cancer, and 17 (24.29%) were satisfied with their fulfilment of family duties. The majority 47 (67.14%) were satisfied with their disease related information, and most 46 (65.71%) had developed good relationship with their treating physician. Only 6 (8.57%) showed concerns about their body image and were not at all satisfied.

We have categorized the score (Table 5) into “very high”, “high”, “average”, “low”, and “very low” as per the original QoL tool. A total of 37 (52.9%) patients’ the general well-being score came very low; 26 (37.1%) patients scored “very low on physical well-being category”, 28 (40%) patients scored “very low on psychological well-being category”, and 23 (32.9%) reported an “average familial relationship.” However, the majority 36 (51.4%) of our patients reported average economic well-being.

Table 6 reflected that among 70 patients, 34 (48.6%) had low QoL score and another half of the patients had average QoL scores. We found none of them obtained the high QoL scores. Our overall mean QoL score was 117.87 ± 10.22 .

As the variables to be computed had more than three categories, one-way ANOVA was used to determine the overall mean score of the QoL and association among the demographic variables such as age, education, cancer type, and duration of illness. It was observed that QoL among the study participants was positively associated with their level of education and the level of treatment. The association was found to be statistically significant ($p < 0.05$).

Table 5. Association of QoL with demographic characteristics of the patients (n=70).

Variables	Category	Frequency	QoL Score (mean/SD)	p
Age (years)	Below 30	5	116.00/6.56	0.662
	30-39	8	120.50/7.13	
	40-49	11	117.70/14.89	
	50-59	15	113.44/9.67	
	Above 60	31	119.84/9.63	
Educational status	No formal education	37	114.49/9.99	0.000*
	SPM	17	124.88/8.87	
	Diploma	7	123.86/8.57	
	Degree	9	113.89/5.82	
	Master	0	0	
	PhD	0	0	
Duration of illness (years)	<1	23	117.38/12.60	0.961
	1-5	44	118.37/9.04	
	6-10	3	114.67/6.11	
Undergoing treatment	Yes	64	118.53/9.36	0.04*
	No	6	110.83/16.52	

Table 6. Frequency and percentage of QoL score categories (n=70).

Categories	Score	Frequency (%)	Mean±SD
Very low	Below 99	1(1.43)	117.87±10.223
Low	99-117	34(48.6)	
Average	118-146	35(50)	
High	147-165	0(0)	
Very High	Above 165	0(0)	

Discussion

We found that QoL among the cancer patients was very low. We observe that the QoL score and the QoL of the cancer patients was affected by their reported symptoms. In various categories, a very low-level QoL was observed in general well-being, physical well-being, and in psychological well-being domains. Half of them reported average economic well-being, which is expected because the expenses associated with the treatment of cancer. Physical well-being was moderately affected by pain in approximately one third of the patients, by sleep deprivation, in approximately one fifth, and due to fatigue, in approximately one third of the patients. We also observed, as expected, that the psychological well-being was affected by depression and social detachment in one fifth of the patients. More than half of the patients worried about future recurrence. However, very few worried about their present low-income status, perhaps because most have already fulfilled their family responsibilities. A few of them were dissatisfied with their body image.

Most of the participants had a very low general well-being, similar to the findings in Cao *et al.*⁴ and Chang *et al.*⁵

In the physical well-being status, the majority had low scores. Similar findings were observed in a study conducted by Fortner *et al.*⁶ and are quite common in other studies, as cancer affects every aspect of life. In contrast, another study Guyatt G *et al.*⁷ identified a significant positive correlation between physical activity level

and overall QoL (WHOQoL-Bref) in all domains ($p < 0.001$), and higher scores were found for physically active women than for their sedentary counterparts. Similar findings were observed in a study conducted by Holzner *et al.*,⁸ active women (having breast cancer) had better result in the physical environmental domain, showing a significant association between QoL and physical activity.

Most of our cancer patient falls into the low and very low categories of psychological well-being, *i.e.* most have compromised psychological well-being. This finding is supported by Cao A *et al.*⁴ in which it was concluded that patients face multiple psychological symptoms that affect their QoL.

Most of our patients reported that cancer pain hampers their psychological well-being, which indirectly affects their QoL. Managing cancer pain is an important issue in terms of QoL it is of utmost importance to deal with the pain management protocol professionally, as well as emotionally.

In the domains of optimism and belief, based on Table 5, of the 70 patients, 58 (82.3%) filled out the questionnaire. All these patients fall into the categories of high or above in terms of optimism and belief. This shows that these cancer patients are highly optimistic, and that belief in religion encourages them throughout their cancer treatment. This finding is similar to a study conducted by Jarvandi *et al.*,⁹ who also reports that optimism is associated with QoL. Beyond the correlations with QoL, it is remarkable that the patients' mean optimism score was, in fact, higher than that of

Table 7. Quality of life, demography, and cancer (n=70).

Variables	Category	Frequency	QoL score	p-value
Age(years)	<30	5	116±6.56	0.662
	30-39	8	120.50±7.13	
	40-49	11	117±14.89	
	50-59	15	113±9.67	
	>60	31	119±9.63	
Educational status	SPM	17	124.88±8.87	0.000*
	Diploma	7	123.86±8.57	
	Degree	9	113.89±5.82	
	Master	0	0	
	PhD	0	0	
	No formal education	37	114.49±9.99	
Type of cancer	Bladder	1	132±0	0.901
	Bone	2	118±2.83	
	Brain	2	120.5±4.95	
	Breast	24	115.62±10.87	
	Colon	10	108±10.36	
	Larynx	1	127±0	
	Leukaemia	1	123±0	
	Liver	2	116.64±15.56	
	Lung	14	116.33±8.87	
	Ovarian	3	127±5.51	
	Prostate	3	144±7.81	
	Renal	1	114±0	
	Sarcoma	1	125±0	
	Thyroid	1	115±0	
Tongue	1	110±0		
Uterine	2	111±16.97		
Duration of illness	<1 year	23	117±16.97	0.961
	1-5 years	44	118±9.04	
	6-10 years	64	114±6.11	
Presently on treatment	Yes	64	118±9.36	0.043*
	No	6	110±16.52	

the general population. However, Jemal *et al.*¹⁰ concluded that dispositional optimism is not a primary factor in QoL at initial diagnosis and treatment, as there may be an overlapping role of optimism and spirituality, for which further explorative studies are needed. A study conducted by Jassim *et al.*¹¹ reported that reduced pessimism, rather than greater optimism, predicted psychological health. They suggested that optimists, when confronted with a life-threatening stressor such as cancer, are challenged by failed expectations during the treatment period, and their typically active coping style is rendered ineffective due to their lack of control in the situation. Therefore, it is important to formulate effective interventional cancer management programs for the management of symptoms among the patients. This will in turn help improve the patients' self-control over the disease treatment and will certainly improve QoL. We observed that education status was significantly associated ($p=0.000$) with the QoL. This reflects that education status above SPM level results in improved QoL. Similar findings were observed by Maunsell *et al.*¹² This association between higher education and better QoL might be due to better cancer knowledge as the education level increases, which contributes to early detection and treatment.¹³ In contrast, another study showed that education level was not significantly associated with QoL, although the global health score increased with education level.¹⁴ In another study, educational status was found to be the most common barrier to symptom management and was found to have a bigger impact on QoL of both patients and family care givers.¹⁵ The studies showed that well-educated patients can better manage and understand their own disease symptoms compared to the patients with less education.

We found that the patients undergoing treatment were statistically associated with higher QoL ($p=0.043$), *i.e.*, those undergoing treatment have better QoL compared to those who are not. Thus, whether the patients are undergoing treatment or not affects the QoL of patients, regardless of demographic variables such as age, type of cancer, and duration of illness. This finding was supported by Sosnowski *et al.*,¹⁶ which concluded that surgery is linked with patients' improved QoL. This was demonstrated by mean difference in QoL among individuals undergoing surgery. Also, a study by Ng *et al.*¹⁷ indicates that treatment negatively affects QoL for patients with various forms of cancer, and that QoL improves significantly for these patients within the first 6 months after treatment. However, studies by Leeuwen *et al.*¹⁸ show that chemotherapy made patients unwell, and had numerous burdensome effects, but these also became indicators of its therapeutic efficacy. They observed similar ambivalence among patients toward invasive treatment such as surgery. Some patients experienced it as burdensome and dangerous, but others considered it as radical and thus, more effective. Others focused on the side effects, such as nausea and vomiting or asthenia, which strongly affected their day-to-day QoL, which hindered their daily tasks and leisure activities. Our findings were supported by another study, which reported better QoL for the patients who had undergone surgery, which reduced, further risk of cancer.¹⁸ In contrast, according to Vedat *et al.*,¹⁹ patients who had undergone surgery, radiotherapy, and chemotherapy had worse QoL than those who had not, demonstrating that therapy clearly affects cancer patients' physical, psychological, and general well-being. More frequent chemotherapy lowered the QoL. Cancer is a major public health problem across the globe including Malaysia. The Quality of Life (QoL) often jeopardised due to disease as well as micro level and macro level factors associated with the cancer patients. Therefore, this study is very crucial for the country like Malaysia, which conveys the betterment in planning the preventive and control measures together with physical, social, and mental support to people who are affected by cancer.

Conclusions

We conclude that a "very low-level" QoL was observed among our patients in all three (general well-being, physical well-being, and in psychological well-being) domains. The patients with higher education level and who had undergone treatment had better QoL.

Recommendations

Emotional distress in cancer patients can be lessened by strategies such as cancer support groups' intervention, educational support, active treatment, and psychological counselling, in regular intervals. There is a need to develop measures for community education, involvement of family physicians for the treatment of cancer and to increase awareness to improve the QoL among cancer patients. The focus should be on the development of strategies empowering patients to seek treatment and gain control over their illness with the collaboration with primary care physicians.

Additionally, early detection of cancer by population-based cancer screening can bring countries enormous benefits with minimal investment.

Study limitations

Our sample size was exceedingly small, so we cannot generalize our findings. This study was hospital-based, rather than community based, so it should be emphasised that there is a high probability of missed cases. In future, community-based studies with larger sample sizes may give better insight to this global problem.

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