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%. Around 37,000 new cases are diagnosed each year, and by 2030, yearly diagnosed cases are pro-
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 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, informational 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). |
|-------------|---------------|---------------|
| Gender      | Frequency (n) | Percentage (%)|
| 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 QoL using the validated instrument by (EORTC) and its 11 domains among the patients (n=70).

| Domains of QoL                                                                 | Frequency (%)                                                                 |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| General well-being                                                            |                                                                              |
| How do you rate your overall quality of life during the past week?            | Median: 5 (1-5=Low and 6-10=High)                                             |
| How would you rate your overall physical conditioning during the past week?   | IQR: 6-3.25                                                                   |
| Do you feel you are physically performing less than desired?                  | Very much n/%: 18 (25.71) Moderate n/%: 18 (25.71) A little n/%: 24 (34.29)  |
| How confident do you feel about managing your financial needs in any situation? | Not at all n/%: 10 (14.29)                                                    |
| Do you get the kind of support you need from your friends and relatives?      |                                                                              |
|                                                                              |                                                                              |
| Physical well-being                                                          |                                                                              |
| Do you experience any pain at present?                                       | 15 (21.43)                                                                   |
| Does your pain interfere in your day-to-day activity?                         | 26 (37.14)                                                                   |
| Is your appetite normal?                                                      | 16 (22.86)                                                                   |
| Do you have any sleep problems?                                               | 16 (22.86)                                                                   |
| Do you feel you need more rest?                                               | 27 (38.57)                                                                   |
| Do you feel fatigued?                                                         | 25 (35.71)                                                                   |
| Are you able to move around (physical) as usual?                              | 18 (25.71)                                                                   |
| Do you have problems in passing urine?                                       | 29 (41.33)                                                                   |
| Do you have problems in passing motion?                                      | 8 (11.43)                                                                    |
| Are you satisfied with your working capacity?                                | 10 (14.29)                                                                   |
|                                                                              |                                                                              |
| Psychological well-being                                                     |                                                                              |
| Do you feel depressed?                                                        | 12 (17.14)                                                                   |
| Does your feeling of sadness or depression interfere with your everyday functioning? | 24 (34.29)                                                                   |
| Are you comfortable attending social functions as usual?                     | 23 (32.86)                                                                   |
| Do you feel that you have too much time without anything important to do?     | 10 (14.29)                                                                   |
| Do you have a fear of recurrence?                                            | 16 (22.86)                                                                   |
| Do you have a fear of functional disability?                                 | 15 (21.43)                                                                   |
| Do you have a fear of rejection and losing social status?                    | 17 (24.29)                                                                   |
| Do you feel very lonely or remote from other people?                         | 30 (42.86)                                                                   |
|                                                                              |                                                                              |
| Familial relationship                                                         |                                                                              |
| How satisfied are you about your relationship with your family?              | 52 (74.29)                                                                   |
| Do you feel free to share your problems with your family members?            | 12 (17.14)                                                                   |
| Do you get the support you need from your spouse and family members?         | 1 (1.43)                                                                     |
| Are you confident that you are able to fulfill your family needs?            | 5 (7.14)                                                                     |
|                                                                              |                                                                              |
| Personal ability                                                              |                                                                              |
| Do you need any assistance to do your day-to-day activities?                 | 11 (15.71)                                                                   |
|                                                                              |                                                                              |
| Cognitive well-being                                                         |                                                                              |
| Do you have difficulty in remembering?                                       | 2 (2.86)                                                                     |
| How dependent are you on medication?                                         | 9 (12.86)                                                                    |
|                                                                              | 17 (24.29)                                                                   |
|                                                                              | 42 (60.00)                                                                   |
|                                                                              |                                                                              |
| Economic well-being                                                          |                                                                              |
| Do you feel that your physical condition has resulted in reduced economic status? | 2 (2.86)                                                                     |
| How important do you feel about yourself at present?                         | 18 (25.71)                                                                   |
| Are you satisfied with the responsibilities you have already fulfilled?      | 25 (35.71)                                                                   |
|                                                                              | 25 (35.71)                                                                   |
|                                                                              |                                                                              |
| Optimism and belief                                                           |                                                                              |
| To what extent do your personal beliefs/religious faith give you the strength to face the difficulties? | 54 (77.14)                                                                   |
| Do you always expect good things to happen?                                  | 10 (14.29)                                                                   |
|                                                                              | 5 (7.14)                                                                     |
|                                                                              | 1 (1.43)                                                                     |
|                                                                              |                                                                              |
| Informational support                                                         |                                                                              |
| Are you able to get the required information from your doctors?              | 47 (67.14)                                                                   |
| How much of information do you want about your disease/treatment?            | 18 (25.71)                                                                   |
| Are you happy with the services provided in hospital/cancer centre?          | 5 (7.14)                                                                     |
|                                                                              | 0 (0)                                                                        |
|                                                                              |                                                                              |
| Patient-physician relationship                                                |                                                                              |
| Do you feel your doctor is cooperative?                                      | 45 (64.29)                                                                   |
| Are you satisfied with your physician?                                       | 20 (28.57)                                                                   |
|                                                                              | 5 (7.14)                                                                     |
|                                                                              | 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                          | Personal ability                                                                 |
|----------------------------------------|----------------------------------------------------------------------------------|
|                                        | Frequency (%)                                                                    |
|                                        | Very much n/%                      Moderate n/%                        A little n/%                       Not at all n/%                      |
| Do you need any assistance in your day-to-day activities? | 11(15.7)                           11(15.7)                  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)                             |
| How much do you 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 (44.3)  |
| Patient-physician relationship   | 3 (4.3)      | 3 (4.3)   | 15 (21.4)| 7 (10.0)   | 42 (60.0)  |
| Body image                       | 24 (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 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.

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 psychological well-being category”, 28 (40%) patients scored “very low on psychological well-being category”, and 23 (32.9%) reported an “average familial relationship.”

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 | 114.40/9.99 | 0.000* |
|                            | SPM      | 17        | 124.88/8.87         |       |
|                            | Diploma  | 7         | 123.86/8.57         |       |
|                            | Degree   | 9         | 113.89/5.62         |       |
|                            | 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±10.22 |
| 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 wellbeing, 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         | 120.5±7.13|         |
|                           | 40-49               | 11        | 117±14.89 |         |
|                           | 50-59               | 15        | 113±9.67  |         |
|                           | >60                 | 31        | 119±9.93  |         |
| Educational status         | SPM                 | 17        | 124.8±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.\textsuperscript{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.\textsuperscript{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 formate 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.\textsuperscript{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.\textsuperscript{13} In contrast, another study showed that education level was not significantly associated with QoL, although the global health score increased with education level.\textsuperscript{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.\textsuperscript{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.,\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.\textsuperscript{19} In contrast, according to Vedat et al.,\textsuperscript{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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**Key words:** Cancer; quality of life; patients

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