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Quality of life and resilience related to chemotherapy-induced peripheral neuropathy (CIPN) in patients post treatment with platinum and taxanes

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Abstract

The aim of this study was to ascertain patients' quality of life and resilience related to chemotherapy-induced peripheral neuropathy (CIPN) after treatment with platinum and taxane based chemotherapy drugs. A self-administered questionnaire combining the EORTC QLQ-C30 (version 3), the EORTC QLQ –CIPN20, and the resilience scale – RS -14TM was posted to a purposive sample of 100 patients who had recently completed treatment with a platinum or taxane based drug. 86 completed questionnaires were returned (86% response rate). Participants rated their overall quality of life and overall health over the previous week. The combined global health status score was 70, indicating that participants had a relatively high health status. Similar to the scores on the EORTC QLQ-30, scores for the EORTC QLQ –CIPN20 showed that the majority of participants indicated experiencing very little impact (not at all, a little) on sensory, motor, and autonomic scales. However, motor scale items were generally rated lower than items concerning sensory functioning. The study results are an encouraging indication of minimal impact on QOL when treatment with taxanes and platinums ended. The results also indicated that resilience scores among the participants were moderately high.

Key words: cancer, chemotherapy, peripheral neuropathy, quality of life, resilience.

Introduction

In recent years, the challenges facing cancer survivors have become a major focus for oncology health professionals (e.g. Levy et al., 2008). Chemotherapy-induced peripheral neuropathy (CIPN) has a significant impact on the QOL of cancer patients and predicting its long-term effects is difficult (Argyriou et al., 2014). CIPN is associated with a range of agents, including platinum drugs, vinca alkaloids, taxanes, epotilones, proteasome inhibitors, and immunomodulatory drugs. CIPN is related to the total cumulative dose and the relative dose-intensity (Mollman et al., 1988; van der Hoop et al., 1990), and those who develop CIPN have received more treatment cycles (Griffith et al., 2014). The severity of taxane-induced PN often justifies modifications in dosage (Windebank and Grisold, 2008). However, patients may be reluctant to report CIPN in the fear that if their dose is reduced, their treatment is compromised (Smith et al., 2008).

CIPN can involve both small and large peripheral nerve fibres, which may explain why patients experience a variety of symptoms (Schloss et al., 2013). Different agents damage one type of nerve fibre more than others with paclitaxel targeting small nerve fibres (Armstrong et al., 2005). Furthermore, pre-existing conditions, such as alcohol intake and diabetes, also influence the incidence of CIPN.

CIPN can often be chronic in nature (Postma et al., 2005), and result in much pain and discomfort for patients (Visovsky et al., 2007). It most commonly presents with sensory disturbances, including both the negative symptom of numbness and the positive symptoms of pain and parasthesia (Kaley and Deangelis, 2009). It may last months or years following treatment and can often impact on functional performance and quality of life (Postma et al., 2005; Bakitas, 2007; Mols et al., 2014).

Depending on dosage and the agents used, symptoms resolve completely or not at all. Neurotoxic effects can appear immediately during or shortly after administration of the drug, but sometimes after cessation of the chemotherapy treatment the neuropathy may only manifest itself then. For instance, the neurotoxicity seen with oxaliplatin can present as either an acute, transient syndrome during or shortly after the infusion or as a dose-limiting, cumulative sensory neuropathy.

More knowledge on patterns of CIPN is now emerging. For instance, Shimozuma et al. (2012) reported that regardless of the taxane regimen used, CIPN is mostly reversible within one year of adjuvant treatment for breast cancer. The picture is similar for platinum-induced neurotoxicity, with improvement or complete reverse of symptoms within one year after the discontinuation of treatment (Argyriou et al., 2014). In addition, evidence associating the severity of paclitaxel-associated acute pain syndrome to the development of peripheral neuropathy is emerging (Reeves et al., 2012).

There is increasing interest among researchers on the importance of resilience among cancer patients (Strauss et al., 2007; Tian and Hong, 2013; Hou and Lam, 2014), and evidence suggests that older persons with cancer report higher resilience (Hopwood et al., 2010; Cohen et al., 2014). There is however, a lack of consensus on a definition for resilience in both theoretical and empirical literature (Damásio et al 2011). Nevertheless, a resilient person is commonly viewed of as someone who has the ability to recover after stressful life experiences or someone who can cope with ongoing difficult experiences (Kralik et al., 2006). Moreover, resilience is commonly viewed on as a personality trait that promotes adaptation and overcomes the negative effects of stress (Ahern et al., 2006). However, little is known about resilience associated with quality of life in relation to CIPN; this study therefore aimed to investigate this.

Aim

The aim of this study was to ascertain patients' quality of life and resilience related to CIPN after treatment with platinum and taxane-based chemotherapy drugs. These chemotherapeutic agents are used in the treatment of more common cancers such as breast, bowel and ovarian cancer. Resilience was also measured, to explore the relationship between adaptation strategies and patient perceptions of the impact of CIPN on quality of life. A better understanding of the impact of CIPN on patients' quality of life, including the significance of patient resilience, may help to focus symptom management interventions.

Methods

Study questionnaire development

The study questionnaire was divided into sections. The first section comprised demographic questions around age, gender, educational level, site of cancer and social support. Section two presented the European Organisation for Research and Treatment of Cancer (EORTC) QLQ-C30 (version 3) and the EORTC QLQ –CIPN20; the latter was developed to supplement the former (Postma et al., 2005).

The EORTC QLQ-C30 is composed of a global health status/QoL-score. It is a reliable and valid measure of the quality of life of cancer patients across a variety of cultural settings (Aaronson et al 1993) and is the most commonly used HRQOL instrument in cancer trials.

The EORTC QLQ CIPN 20 is a 20-item self-report questionnaire (Postma et al., 2005), used specifically with cancer patients who are being treated with potentially neurotoxic chemotherapy. Its specific function is to gather information on the impact of symptoms due to chemotherapy-induced peripheral neuropathy. All three scales within the QLQ CIPN 20 have reported internal consistency reliability (Cronbach's Alpha); 0.82 for the sensory scale (9 items), 0.73 for the motor scale (8 items) and 0.76 for for the autonomic scale (3 items) (Postma et al 2005). The QLQ CIPN 20 is also reported to be a more sensitive measure when compared to the generic health-related quality-of-life measures such as the FACT-G and the EORTC QLQ 30 (Sansane et al., 2010).

Section three was based on a 14 item resilience scale – RS -14TM (Wagnild, 2009), first validated in 1993 (Wagnild and Young, 1993). Participants rate the items in the RS-14 using a scale from 1 (strongly disagree) to 7 (strongly agree). The scale was originally developed with 25 items but has since been shortened to 14 items to reduce respondent burden, The RS -14 has been used in a number of applied settings (Rotolone and Martin, 2012) and utilised extensively across adult age ranges in a number of countries, for instance among adolescents by Lei et al., (2012) in China, and older people in Europe (Stewart-Knox et al., 2012). It has demonstrated high internal consistency (alpha ranging from 0.84-0.94) as well as content and construct validity (Wagnild, 2009). It has been reported a reliable

measure among a Brazilian general population (Damásio et al., 2011). Good reliability and validity on the Chinese version of the RS-14 has also been reported (Tian and Hong 2013) Ahern et al (2006) considered it the best scale to study resilience among adolescents because of its psychometric properties and utilisation across a variety of age groups. The scale has recently been used in a number of studies with cancer patients (Tiang and Hong, 2013;Cohen et al., 2014) Permission to use the RS-14 was given by the Resilience Centre.

Consideration was given to the length of the questionnaire and the time required for completion, to take account of the relationship between completion time and response rates (Edwards et al., 2002). A pre-test was carried out to assess the questionnaire for readability, ambiguity and wording and comprehensibility. Letters of invitation were sent to ten randomly selected patients from the total sample population. The study aims and objectives were outlined and to the pre- test participants were invited to evaluate the questionnaire by providing feedback. They were informed that they would not be part of the main study. The pre-test participants completed an evaluation form following completion of the questionnaire, based on the key quality issues identified by Norwood (2000). They were asked their opinion of the questionnaire length, ease of understanding instructions, items that were found difficult to complete or understand, and the overall organisation of the questionnaire. A total of seven completed questionnaires and evaluation sheets were returned and no difficulties were identified in the questionnaire format. Following the pre-test, 100 patients who had completed their treatment with a platinum or taxane based drug in the previous month were selected to receive the questionnaire. All of these patients were posted the questionnaire between five and nine weeks after their treatment had finished.

Setting and Sampling

The study was undertaken at a nurse-led Oncology day unit (six bedded) in a hospital in the West of Ireland with a largely rural catchment area. This is a satellite unit to a supra regional cancer centre situated fifty kilometers away.

A non-probability sampling strategy was used. All patients who met the study's inclusion criteria (n = 100) were invited to participate in the study (i.e. a diagnosis of bowel, ovarian or breast cancer and treated with a platinum or taxane based drug for at least three cycles between October 2010 and December 2011). Each patient who met the inclusion criteria (i.e. patients who had completed their treatment with a platinum or taxane based drug in the previous month) was posted an information leaflet and the study questionnaire.

Because the unit is small, only 15 patients per month met the inclusion criteria; therefore data collection continued over twelve months. Diabetes was taken as an exclusion criterion for participation.

Ethical approval for the study was granted by the ethics committee of the National University of Ireland, Galway, the University affiliated to the hospital.

Analysis

Statistical analysis was conducted using IBM SPSS (Version 20) software. Scores on the questionnaire were expressed as mean (\pm Standard deviation). Scores were compared using non-parametric methods (Chi squared) and a value of $p < 0.05$ was considered statistically significant. A reliability analysis (internal consistency) was performed on the EORTC QLQ-C30 for the five functional scales, three symptom scales and Global quality of life. A one-way ANOVA was also carried out to ascertain if there was a difference in the quality of life between patients living with different family members or living on their own.

Results

Eighty six completed questionnaires were returned, a response rate of 86%. All respondents had completed all cycles of their treatment. The range of time since they had completed their treatment was 4 weeks to 1 year. The study population consisted of 57 (70.4%) women and 24 (29.6%) men. The majority of participants were in the higher age groups (48-57 and above); however women had a younger age profile with 21.5% (n = 12) of women in the 38-47 and younger age groups, whereas only 4.2% of men (n = 1) were in the younger age groups. The majority of

participants (76.5%; n=65) lived over eleven miles from the hospital. Nearly half the participants had a diagnosis of breast cancer (47.1%, n=40), 32.9% bowel cancer (n = 28) and 14.1% (n=12) had experienced ovarian cancer. Full demographic details of the participants are provided in Table 1.

Impact on quality of life

Analysis of both EORTC tools includes calculating the mean of the item ratings to obtain the raw score and then using a linear transformation to standardise the raw score, so that the scores range from 0-100 using the recommended EORTC procedures (Fayers et al., 2001). A higher mean score for functional scales and global health status/QOL reflects a better level of functioning, but a higher mean score for symptoms reflects a higher level of symptomatology. The reliability analysis on the EORTC QLQ-C30 for the five functional scales, three symptom scales and Global quality of life resulted in a Cronbach's alpha above 0.74 for all scales except cognitive functioning (0.55) and nausea and vomiting (0.57) (See Table 3).

Analysis of items in the EORTC QLQ-C30 scale showed that the majority of participants indicated very little impact (not at all, a little) on their physical functioning in relation to items such as eating, dressing, washing, or using the toilet (97.7%, n=83, Median (M)=1.11), taking a short walk (94%, n=80, M= 1.29), or difficulty concentrating (87.4%, n=82, M= 1.4). However, some participants reported difficulty (quite a bit/very much) with doing strenuous activities (36.1%, n=30, M= 2.17) and taking a long walk (33.8%, n=27, M=2.18). Educational level and difficulty remembering were significantly positively correlated r (correlational coefficient) =.54, p (significance) <.05, in that the higher the educational level the greater the likelihood that difficulty remembering was reported. Participants indicated their level of functioning/symptoms on a 1-4 Likert scale where 1= not at all and 4= very much. Therefore a low mean score meant that participants had no difficulty with the item in question and items with mean scores of 1.5 or lower were then discounted. Table 2 details 12 items from the EORTC QLQ-C30 scale with a mean score of 1.6 or greater. For ease of reporting, once analysis was complete adjacent categories 'not

at all' and 'a little' were collapsed to a single column 'not at all/a little' and similarly 'quite a bit' and 'very much' were collapsed to a single column 'quite a bit/very much'.

Gender differences were evident in relation to some items with females reporting greater difficulty doing strenuous exercises ($\chi^2(3) = 9.16, p>0.02$). A higher proportion of women (17.5%, $n= 10$ vs 0%) reported quite a bit of difficulty remembering ($\chi^2 (2) = 12.97, p>0.02$) and women reported higher incidence of feeling tense ($\chi^2 (3) = 7.79, p>0.05$).

Over 29% of all participants (29.3%, $n=24$) reported being tired 'quite a bit/very much' and over 25% (25.9%, $n=22$) reported needing to take a rest over the past week 'quite a bit/very much'. Nearly a quarter of the participants (23.8%, $n=20$) reported having trouble sleeping 'quite a bit/very much', and over 10% of participants worried 'quite a bit/very much'. However, those that reported worrying reported doing so 'very much', therefore giving a mean of 1.71 although the percentage rating was less than for other items (Table 2).

Participants scored high on all the functional scales captured in the EORTC QLQ-C30 (Table 3). For example the mean score for physical functioning was 78.4 indicating a high or healthy level of physical functioning. Emotional, cognitive, and social functioning scales all received mean scores of over 82.0, indicating high levels of functioning in these domains.

Most scores on symptom scales showed low levels of symptomatology/problems, such as nausea and vomiting, pain, and diarrhoea. The item concerning fatigue received the highest rating in the symptom scale. Although scores on single item scales indicated relatively low levels of symptomatology, insomnia had the greatest impact, with a score of 28.7, followed by financial difficulties (mean = 19.0), and constipation (mean = 14.7) (Table 3). In addition, participants who had experienced bowel cancer were more likely to report symptoms of diarrhoea $r = .63, p<.05$ and lack of appetite, $r = .82, p<0.01$).

Overall quality of life

Participants rated their overall quality of life and overall health over the previous week on a scale from 1-7 with 1 being very poor and 7 excellent. The mean rating for

overall health was 5.1 (SD1.37) and the mean overall quality of life score was 5.26 (SD1.31). The mean combined global health status score among the participants was 70.0, indicating a relatively high health status (Table 3). There was a weak negative correlation between quality of life and age, ($r = -0.011$, $n=83$, $p < .04$) suggesting that patients in the higher age group rated their quality of life as poorer. A one-way ANOVA was carried out to ascertain if there was a difference in the quality of life between patients living with different family members or living on their own. There was no statistically significant difference between group means ($F(4,62) = 0.342, p < 0.743$).

Impact of peripheral neuropathy

Similar to the ratings made of EORTC QLQ-30 items, scores on the EORTC QLQ – CIPN20 showed the majority of participants reported experiencing very little impact ('not at all/ a little') on sensory, motor and autonomic scales. However, some participants reported difficulty ('quite a bit/very much') due to tingling in their fingers or hands (21.2%, $n=18$), and with fine motor control (e.g. writing, buttoning clothes, picking up small objects) (16.3%, $n=14$), with females reporting greater difficulty ($\chi^2(3) = 9.83$, $p > 0.02$). Items from the motor scale were generally rated lower than items from the sensory scale (Table 4). Eight items from the EORTC QLQ-CIPN20 had means of 1.6 or higher. Items which posed the greatest difficulty for participants was getting or maintaining an erection, with half of male participants to whom this applied ($N= 11$, 50%) reporting difficulty ('quite a bit/very much'). Over 23% of all participants reported having tingling in their toes or feet (quite a bit/very much = 23.5%, $n=20$) (Table 4). Gender differences were evident in some items with females reporting greater difficulty opening a bottle or jar than males ($\chi^2(3) = 9.23$, $p > 0.02$).

Scores for the sensory, motor and autonomic scales indicate low levels of symptomatology/problems for the study participants. However, the mean scores on the autonomic scale were higher than on other symptom domains (22.8), which suggests that particular issues were problematic, most notably autonomic function and in getting and maintaining an erection for male participants (Table 5).

Resilience scores

Mean scores and standard deviations for items in the resilience scale are detailed in Table 6. A higher total score indicates greater resilience. The highest rated items

related to being determined, life having meaning, getting through because of previous experience with difficulty, and feeling proud of accomplishments, all of which had a mean score across the participants of ≥ 6.14 . Other items scored lower (Table 6). The overall resilience score was 83. Scores that fall in the 82-90 range indicate moderately high resilience (Wagnild, 2009), indicating that a majority of study participants evidenced moderately high resilience. Cronbach's alpha for the resilience scale was 0.95. There was a significant effect for gender, $t(37) = 5.63$, $p < .001$, with men receiving higher scores than women. There was an association between resilience score and feeling tense in that participants having higher resilience scores were less likely to report feeling tense ($\chi^2(102)=129.84$, $p>0.03$) or irritable ($\chi^2(102)=151.16$, $p>0.001$) and were also less likely to have difficulty doing strenuous exercises ($\chi^2(102) =131.62$, $p>0.02$).

Discussion

The study results provide evidence that the participants experienced minimal impact on QOL when their treatment with taxanes and platinum was ended. Scores for the sensory, motor and autonomic scales indicated low levels of symptomatology/problems for the study participants. Elsewhere, it is reported that reduced feelings of touch and sensation associated with CIPN, reflected patients' worsening quality of life (Griffith et al., 2013).

The results also indicate that resilience scores among the participants were typically moderately high with an overall resilience score of 83. This higher score may be explained by two factors. Firstly, the patients in our study had completed treatment. The cut-off resilience score on the RS-14 among Chinese was reported by Tian and Hong (2013) to be 64; however, the patients in their study were newly diagnosed. Secondly, the sample reported here was mostly in the higher age group and older people may adapt to stressful events better than younger people by utilizing coping strategies such as acceptance (Folkman et al., 1987). Moreover, a number of studies using the RS report that the levels of resilience increased with age (Nishi et al., 2019; Portzky et al., 2010). Finally, gender differences found in the scoring may be because of gender differences in the activities questioned.

We found that the higher the educational level among participants, the greater the likelihood that difficulty remembering was reported. This may however be explained by our finding that fatigue received the highest rating in the symptom scale. It is reported that severe fatigue is associated with neuropsychological functioning among breast cancer patients (Servaes et al., 2002). In addition, this finding contradicts those reported by Heyadati et al. (2012) where it was found that breast cancer patients with less education may be more at risk for impaired memory, attention, and processing speed. This finding acts a reminder to oncology nurses to be cognizant of reassuring patients of memory changes that may occur as a result of the fatigue.

More specifically, the study participants' combined global health status score was 70; a score that indicates a relatively high health status. The EORTC (2008) report a mean value of 61.3 across data sets for all cancer patients at all stages for Global Health Status/QOL, therefore the study population in this study have a higher than average global health status. However, it is important to highlight that quality of life measured using the EORTC QLQ-30 has been found to vary by age and sex (Hjermstadt et al., 1998). This variance in quality of life scores measured by the EORTC QLA-30 is evident in a recent German study. Waldmann et al (2013) reported a global health status score of 65.5 for a German population of women aged 60-60 (n=412) and 65.9 for men aged 60-69 (n=360).

Methodological issues

A reliability analysis was performed for the five functional scales and global QOL on the EORTC QLQ-30, indicating satisfactory levels of Cronbach's alpha above 0.70 for all functions except cognitive function (0.55). However this reflects similar alphas reported by Michelson et al. (2000) in a large study of over 4000 participants using the tool in the general population. The alphas for the symptom scales reached 0.80 for fatigue and 0.83 for pain. The alpha for nausea and vomiting was 0.57 but would

appear reasonable given the presumed variability for nausea and vomiting and that participants were post treatment. It also reflects a similar alpha (0.58) obtained by Michelson et al. (2000).

Cronbach's alpha was also assessed for the three scales in the EORTC QLQ – CIPN20 tool (Table 5). Both the motor and sensory scales were greater than 0.80. However, alpha for the autonomic scale was 0.23 which would suggest an issue with the questions included. Alpha increased to 0.60 when the statement around difficulty maintaining an erection was removed. A recent evaluation of validity and reliability of the EORTC QLQ-CIPN20 (Smith et al., 2013) also highlights a lower alpha coefficient for the autonomic scale at 0.78, with sensory and motor scales coefficients at 0.88.

Limitations

The timing of patients' completion of the questionnaire may have influenced the findings reported here. Some patients were sent the questionnaire five weeks post treatment, while others were sent it nine weeks after their treatment ended. Patients' experience of peripheral neuropathy generally improves over time post treatment; although some patients continue to experience symptoms post treatment (Argyriou et al., 2012). Consequently, patients who completed the questionnaire five weeks following completion of their treatment would more likely have reported more symptoms and reduced quality of life than those who completed the questionnaire over two months following the end of their treatment. The questionnaire did not request patients to indicate exactly how long it was since their treatment ended; omission of this question is a limitation of the study.

Longitudinal studies of patients two years and more post treatment with taxanes and platinum are required to ascertain if patients continue to experience CIPN and if it impacts on their quality of life. Only patients with diabetes were excluded from the study. However, those with alcoholism or a vitamin B12 deficiency may also be more susceptible to CIPN (Armstrong et al., 2005). Finally, the generalizability of the study findings is limited due to the non-probability sample, its small sample size and participants being from one centre.

Conclusion

In conclusion, the findings reported here contribute to available data on CIPN from other studies and suggests that patients' quality of life when experiencing symptoms of CIPN is relatively good post treatment. This finding is encouraging in the context of current knowledge of patients' experience of CIPN when on treatment and concurs with recent findings from a Japanese study (Shimozuma et al., 2012) which found that patients mostly recovered by one year from their CIPN, irrespective of the which of the four adjuvant regimens was used. More research on this topic is needed in order to gain a better understanding of post treatment CIPN. However, the findings reported here offer encouraging evidence for oncology nurses supporting patients during cancer treatments who seek advice and encouragement that symptoms will improve when their treatment ends.

Conflict of interest: None declared

Key points for policy, practice and/or research

The findings reported here suggest that patients' quality of life when experiencing symptoms of chemotherapy-induced peripheral neuropathy (CIPN) is relatively good post treatment.

Patients reported high resilience scores, providing more evidence of increased resilience with increasing age.

Oncology nurses supporting patients during cancer treatments can offer reassurance that symptoms of CIPN will improve upon completion of treatment.

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Table 1

Table 1: Profile of participants (n=86)

	No	%
Response Rate	n=86	86%
Gender		
Male	24	29.6
Female	57	70.4
Age		
28-37	3	3.5
38-47	10	11.8
48-57	27	31.8
58-67	23	27.1
68-77	17	20.0
78+	5	5.9
Highest educational qualification		
Completed primary school	14	16.5
Some secondary school	19	22.4
Completed secondary school	31	36.5
Completed third level	14	16.5
Other	7	8.2
Location of cancer		
Breast	40	47.1
Bowel	28	32.9
Ovary	12	14.1
Distance from Hospital		
Less than 10 miles	20	23.5
11-20 miles	31	36.5
21-40 miles	22	25.9
41+ miles	12	14.1

Table 2: EORTC QLQ-C30 Scales (means of 1.6 or above):

Scale Items	Not at all/A Little	Quite a bit/Very much	Mean	SD
PF-Do you have trouble doing strenuous activities like carrying a heavy shopping bag or a suitcase?	53 (63.8%)	30 (36.1%)	2.17	.91
PF-Do you have trouble taking a long walk?	53 (66.3%)	27 (33.8%)	2.18	1.0
FA-During the past week were you tired?	58 (68.4%)	24 (29.3%)	2.12	.78
FA-During the past week did you need to rest?	63 (74.1%)	22 (25.9%)	2.02	.77
Insomnia-During the past week have you had trouble sleeping?	64 (76.2%)	20 (23.8%)	1.86	1.0
EF-During the past week did you worry?	77 (89.6%)	9 (10.4%)	1.71	.72
RF-During the past week were you limited in doing either your work or other daily activities?	66 (78.6%)	18 (21.4%)	1.69	.87
RF-During the past week were you limited in pursuing your hobbies or other leisure activities?	69 (81.1%)	16 (36.4%)	1.67	.92
CF-During the past week did you have difficulty remembering things?	75 (87.2%)	11 (12.8%)	1.67	.69
PA-During the past week have you had pain?	71 (84.6%)	13 (15.5%)	1.61	.75
Financial-During the past week has your physical condition or medical treatment caused you financial difficulties?	69 (83.2%)	14 (16.8%)	1.6	.94
SF-During the past week has your physical condition or medical treatment interfered with your social activities?	73 (84.9%)	13 (15.2%)	1.6	.86

FA= fatigue, EF=Emotional Functioning, RF = role Functioning, CF= cognitive functioning, SF= social functioning, PA= pain, Pf= physical functioning

Table 3: EORTC QLQ-C30 Scales & scores:

EORTC QLQ-C30 Scales	Scores	Cronbach's Alpha
Functional Scales:		
Physical Functioning (PF)	78.4	0.71
Role Functioning	77.4	0.84
Emotional Functioning	82.3	0.87
Cognitive Functioning	82.2	0.55
Social Functioning	83.3	0.85
Symptom Scales:		
Fatigue	29.3	0.80
Nausea and Vomiting	5.3	0.57
Pain	17.8	0.83
Single Item Scales:		
Dyspnoea	11.6	
Insomnia	28.7	
Appetite Loss	10.3	
Constipation	14.7	
Diarrhoea	5.7	
Financial difficulties	19	
Global Health Scale :		
Global Health status/Quality of Life	70	0.90

Table 4: EORTC CIPN 20 Scale (Items with means of 1.6 or above):

Scale Items	Not at all/A Little	Quite a bit/Very much	Mean	SD
Autonomic Scale-During the past week did you have difficulty getting or maintaining an erection?	11 (50%)	11 (50%)	2.55	1.2
Sensory Scale-During the past week did you have tingling fingers or hands?	67 (78.8%)	18 (21.2%)	1.82	0.93
Sensory Scale-During the past week did you have tingling toes or feet?	65 (76.5%)	20 (23.5%)	1.79	1.0
Sensory Scale-During the past week did you have numbness in your toes or feet?	70 (82.3%)	15 (17.7%)	1.71	1.0
Sensory Scale-During the past week did you have numbness in your fingers or hands?	72 (85.8%)	12 (14.2%)	1.67	0.90
Motor Scale-During the past week did you have difficulty opening a jar or bottle because of weakness in your hands?	73 (84.9%)	13 (15.1%)	1.67	0.87
Motor Scale-During the past week did you have difficulty manipulating small objects with your fingers?	72 (83.7%)	14 (16.3%)	1.64	0.84
Motor Scale-During the past week did you have difficulty climbing stairs or getting up out of a chair because of weakness in your legs?	74 (86%)	12 (14%)	1.6	0.85

Table 5: EORTC QLQ CIPN 20:

EORTC QLQ CIPN 20 Scales	Scale Scores	Cronbachs alpha
Sensory Scale	15	0.87
Motor Scale	13	0.82
Autonomic Scale	22.8	0.23

Table 6: Resilience Scale showing item scores and Total Resilience score

Items rated from strongly disagree (1) to strongly agree (7)

Resilience Scale item	Mean	Median	SD	Range
I am determined	6.2	7.0	1.1	5
I can get through difficult times because I've experience difficulty before	6.2	7.0	1.1	5
My life has meaning	6.2	7.0	1.1	5
I feel proud that I have accomplished things in life	6.1	7.0	1.2	5
I can usually find something to laugh about	6.1	6.0	1.1	4
My belief in myself gets me through hard times	6.1	6.0	1.1	4
In an emergence, I'm someone people can generally rely on	6.1	6.0	1.1	4
I usually take things in my stride	6.0	6.0	1.2	4
I am friends with myself	6.0	6.0	1.2	5
I keep interested in things	6.0	6.0	1.1	5
When I'm in a difficult situation, I can usually find my way out of it	6.0	6.0	1.2	4
I usually manage one way or another	5.9	6.0	1.3	4
I have self-discipline	5.8	6.0	1.3	5
I feel that I can handle many things at a time	5.5	6.0	1.5	5
Total Score	82.9	84.5	13.4	46

Table 6: Resilience Scale showing item scores and Total Resilience score**Items rated from strongly disagree (1) to strongly agree (7)**

Resilience Scale item	Mean	Median	SD	Range
I am determined	6.2	7.0	1.1	5
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I feel proud that I have accomplished things in life	6.1	7.0	1.2	5
I can usually find something to laugh about	6.1	6.0	1.1	4
My belief in myself gets me through hard times	6.1	6.0	1.1	4
In an emergence, I'm someone people can generally rely on	6.1	6.0	1.1	4
I usually take things in my stride	6.0	6.0	1.2	4
I am friends with myself	6.0	6.0	1.2	5
I keep interested in things	6.0	6.0	1.1	5
When I'm in a difficult situation, I can usually find my way out of it	6.0	6.0	1.2	4
I usually manage one way or another	5.9	6.0	1.3	4
I have self-discipline	5.8	6.0	1.3	5
I feel that I can handle many things at a time	5.5	6.0	1.5	5
Total Score	82.9	84.5	13.4	46