Title:

Unmet supportive care needs and symptom burden in Taiwanese cancer survivors who have completed primary treatment

Authors:

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Highlights:

- Body changes, loss of strength, weight change, memory and concentration and fatigue were the top five symptom concerns reported by Taiwanese cancer survivors.
- On average, survivors reported 7.68 unmet care needs. Nearly half of the Taiwanese survivors reported needs for up-to-date information, understandable information, and an ongoing case manager were not met.
- Male gender, being under 50 years of age, and having a solid tumor were associated with higher levels of unmet needs.

Abstract

Purpose: The number of cancer survivors is increasing due to scientific advances. Previous research on unmet care needs of Taiwanese cancer survivors focused on patients with newly or recently diagnosed cancer. Little is known about the needs and symptom experiences of cancer survivors who have completed treatment.

Methods: This is a cross sectional survey study. Patients who were over 20 years old; had completed their first-line treatment for their cancer were recruited into the study. The questionnaire included demographic characteristics, a global item of quality of life, the physical effects subscale of the Cancer Survivors' Survey of Needs (CSSN), and Cancer Survivors' Unmet Needs measure (CaSUN).

Results: One hundred and twenty cancer survivors participated in this study. Body changes, loss of strength, weight change, memory and concentration and fatigue were the top five symptom concerns. Nearly half of the Taiwanese survivors reported needs for up-to-date information, understandable information, and an ongoing case manager were not met. On average, survivors reported 7.68 unmet care needs. Male gender, being under 50 years of age, and having a solid tumor were associated with higher levels of unmet needs.

Conclusions: This study provides preliminary information about the type and levels of physical symptom concerns and supportive care needs in long-term cancer survivors in Taiwan. Specific groups of cancer survivors whose needs were unmet were identified. The current healthcare system is not sufficiently meeting the needs of cancer survivors and more efforts are required to advance survivorship care and research in Taiwan.

Keywords

Cancer survivor, haematological cancer, physiological and psychosocial effects, survivorship care, physical symptom concerns, solid tumour, unmet care needs

Background:

Due to advances in early detection and antineoplastic therapy, the survival rates for cancer have been increasing in all regions (Allemani et al., 2018). From 1990 to 2008, the overall five-year survival rate for people diagnosed with cancer in the United States rose by over 10%, and this trend is also occurring in other countries around the world such as Australia, China, Taiwan and the United Kingdom (Allemani et al., 2018; National Cancer Institute, 2016). In Taiwan, recent statistics indicated an increase of 1.7% per year in the incidence from 2002 to 2012 (Chiang et al., 2016). From 2004 to 2008, the 5-year relative survival rates were greater than 93% for early stage colorectal and female breast cancer, and ranged from 3% to 39% for patients with Stage IV cancer in Taiwan (Chiang et al., 2016). . Although the *quantity* of life has been extended, many cancer survivors experience impaired quality of life and unmet supportive care needs as a result of their cancer and treatment (Molassiotis et al., 2017).

Cancer survivors can experience a number of short- and long-term physical, psychosocial and financial issues (Ganz, 2009; Gordon et al., 2017; Hudson et al., 2009; Lee et al., 2014; Parry et al., 2011). Quality cancer survivorship care responds to these issues and focuses on the mental, physical, social and economic aspects of a person's health and wellbeing (Allemani et al., 2014; National Cancer Institute, 2016; Parry et al., 2011). It includes consideration of issues including accessibility to health care and follow-up, long-term side effects and secondary cancers (National Cancer Institute, 2014). According to the Institution of Medicine's (IOM) report, optimal and comprehensive cancer survivorship care needs to encompass four elements: detecting and preventing new or relapse cancers, monitoring the existing cancer's spread and relapse, managing cancer impacts, and bridging between patients and care providers (Institute of Medicine, 2006). While these standards provide an overview

of quality survivorship care provision, development of patient-centred supportive services requires an understanding of the supportive care needs from the patient's perspective.

A recent study of 1,873 cancer survivors in 10 countries across the Asia-Pacific region (not including Taiwan) provided useful data on symptom burden and supportive care needs of long-term cancer survivors (Molassiotis et al., 2017). This study also demonstrated that unmet supportive care needs differ largely between countries (Molassiotis et al., 2017). The difference might be due to the different health systems and priorities outlined in respective cancer policies. This finding suggests that understanding supportive care needs at the country-level is critical for informing service planning and health care policy.

Cancer survivorship has become an emerging area of research in Taiwan. There has been an increasing number of studies investigating supportive care needs of patients with cancer in Taiwan over recent years (Chen et al., 2009; Fang et al., 2018; Li et al., 2013; Liao et al., 2012; Liao et al., 2011). However, most of these studies focused on patients with recently or newly diagnosed cancer (Chen et al., 2009; Liao et al., 2012; Liao et al., 2011), validation of research instruments (Fang et al., 2018; Li et al., 2013) and did not examine unmet supportive care needs in patients who have completed treatment. Long-term cancer survivors do not receive as high intensity care and are likely to have different needs compared to those who are undergoing treatment due to their new or recent diagnosis (Institute of Medicine, 2006). This study is exploratory in nature, examining the supportive care needs and symptom concerns in long-term cancer survivors who have at least completed their first-line treatment.

Method

Aims

The purpose of this study was to identify supportive care needs and symptom burden from the perspective of cancer survivors who had completed first line treatment for cancer in Taiwan.

Study design

A cross-sectional survey design was used in this study. This study was conducted at the National Taiwan University Hospital (NTUH) in Taiwan, a tertiary teaching hospital during December 2016 to February 2017. Patients were eligible if they were over 20 years old (legal age as adult in Taiwan); with a definitive cancer diagnosis and had completed first line treatment for their cancer (as determined by their treating clinician). Patients with cognitive impairment or those at their end of life or who did not understand Chinese were excluded. This study was conducted as part of a Master's degree and the three-month data collection period was selected based on feasibility and the scope of the Master's degree. We estimated that approximately 125 patients would meet the inclusion criteria over that data collection period. Low and negligible risk research ethics approvals were obtained from QUT University Human Research Ethics Committee (UHREC) (1600001130) and NTUH Research Ethics Committee (REC) (201609006RIND). Participants did not receive any incentives for participating in this study.

Procedure

Medical and nursing staff at the participating sites including 12 medical wards, and haematology and oncology outpatient clinics were informed and educated about the purpose and the details of the study. During the data collection period, the primary treating health

professionals identified and informed eligible patients of the study details. If the patient was interested in participating, they were contacted by the research student for informed consent. Consented patients were then invited to complete the survey. Patients were informed that the completion of survey was not compulsory, and they could withdraw from the study at any time without any consequences. They were also assured that their responses would not affect their treatment. The survey could be completed on the hospital ward or in clinic rooms.

Measurement

A self-report questionnaire consisting of 68 questions in three sections was used. These sections included demographic and clinical characteristics, the Cancer Survivors' Unmet Needs measure (CaSUN) (Hodgkinson et al., 2007b), the physical effects subscale of the Cancer Survivors Survey of Needs (CSSN) developed by the Mayo Clinic Cancer Center, and a single item of global quality of life measure (0= worst quality of life; 10 = best quality of life). The CaSUN was utilised to evaluate cancer survivors' unmet needs and the strength of unmet needs directly (Hodgkinson et al., 2007b; Pearce et al., 2008). It includes 35 unmet need items and 6 positive change items (Hodgkinson et al., 2007b). The physical effect scale of CSSN (Schlairet et al., 2010) was used to evaluate cancer survivors' 19 physical symptoms using a numeric analogue scale on the day of finishing the questionnaire (0= No Concerns, 5= Extreme Concerns).

For this study, the researcher further adapted the traditional Chinese (Hong Kong) version of the questionnaire previously used and tested as part of the STEP study (Molassiotis et al., 2017) to suit the context of Taiwanese patients. There are differences in the expression of the Chinese language between Taiwan and Hong Kong. For example, the terms for quality of life and cancer survivors are different between Taiwan and Hong Kong. The researcher modified

the questionnaire to take these differences into account and the questionnaire was then examined and edited by another experienced bilingual expert.

Statistical Analysis

All analyses were conducted using SPSS version 23. Descriptive statistics were calculated including means, standard deviations (or median and range if not normally distributed), and frequency distributions. Independent T-tests were conducted to examine relationships between survivors' characteristics and met, unmet and total needs. One-way analysis of variance (ANOVA) tests were performed to evaluate differences between groups of participants. To calculate the scale scores, missing data were replaced by the group mean (Batista and Monard, 2003; Little et al., 2012; Little and Rubin, 2002; Mallinckrodt, 2013).

Results

In total, a 96% response rate was achieved, with 120 Chinese-Taiwanese participants completing the survey. Demographic characteristics are presented in table 1. The mean age of participants was 56 years. Over one-third of participants were between 51 to 60 years old and the proportion of males and females was nearly equal. For diagnosis, over one third of cancer survivors were diagnosed with haematological cancer, while the remaining had a range of solid tumours. All patients were diagnosed over at least 12 months ago. Participants had received one or more treatments for their cancer including surgery, radiation, chemotherapy, hormonal therapy, and others. The Cronbach's alpha coefficients were high 0.84 and 0.93 for the physical concerns subscale and the CaSUN respectively (Nunnally and Bernstein, 1994).

Physical symptom concerns

The participants' physical symptom concerns are presented in Table 2. The most frequently reported symptom concerns for patients were body changes (81.7%), loss of strength (77.5%), weight change (72.5%), memory and concentration (72.5%), and fatigue (70.9%). Compared to other symptom concerns, sexual issues and fertility issues have a higher percentage of missing data, 0.8% and 10% respectively. Close to all of participants (96.7%) reported at least one symptom concern and close to half of participants reported over 10 symptom concerns during the last week. They also reported on average 9.53 physical symptoms (range 0 to 19).

Supportive care needs

Table 3 outlines the met and unmet supportive care needs for the cancer survivors. For all the needs identified by participants, the majority reported that their needs were met. Over 90% of participants expressed that their needs relating to *fertility issues, legal services, and confrontation when facing other people who did not acknowledge the impact on the survivors*, were met. The participants reported a mean of 7.68 unmet needs (SD: 7.59). The highest unmet need (i.e. the requirement of up-to-date information) was experienced by close to half of the participants (47.3%). Nearly half of survivors reported the needs for *up-to-date information, understandable information, and an ongoing case manager* were not met.

The association between cancer survivors' characteristics and CaSUN unmet needs

The relationships between patient characteristics and supportive care unmet needs are presented in Table 4. There was a statistically significant relationship between gender and unmet informational needs ($t_{110}=2.04$, $p=0.044$), with male patients reporting 0.5 (95% CI 0.01 to 0.98) points higher than female patients. There were no significant gender differences for other domains. In addition, there was no significant differences in number of unmet needs

on the supportive care needs subscale by years from diagnosis. However, a statistically significant difference in the mean unmet informational needs score was identified by diagnosis, with haematological cancer patients scoring on average 0.69 points lower than patients with solid tumours (95%CI -1.18 to -0.2).

In terms of age groups, significant differences were detected in the existential domain by age groups ($F_{2, 109}=4.93$, $P=0.009$). The *post-hoc* tests revealed that participants who were over 60 years old had a mean score of 1.84 points (95%CI 0.03 to 3.65) lower than participants in the 51-60 years old group ($p=0.045$). Moreover, patients over 60 years of age also reported on average a mean score of 2.34 points (95%CI -4.24 to 0.44) lower than patients below 50 years old ($p=0.012$). There was no difference in the mean unmet needs score for patients less than 50 and patients in their 50s ($p=0.807$).

The associations between demographic characteristics and strength of unmet needs are presented in Table 5. In the information domain, there was a statistically significant difference in the mean strength of unmet need scores between male and female survivors ($t_{110}=2.26$, $p=0.026$). On average, males scored 1.45 points higher than females (95% CI 0.18 to 2.72), indicating that male patients had stronger unmet needs than female patients in the information domain. In addition, for the information domain, a significant difference was identified between patients with a haematological malignancy and patients with solid tumours ($t_{110}=-2.45$, $p=0.016$). On average, patients with a haematological malignancy had a mean of 1.61 points and 0.92 points lower than patients with solid tumours in the information domain and in the quality of life (QoL) domain respectively ($t_{110}=-2.17$, $p=0.033$). These findings indicated that patients with a haematological malignancy had weaker unmet needs than patients with solid tumours in both the information and QoL domains. There was a significant

difference in the mean strength of unmet needs scores in the existential survivorship domain by age groups ($F_{2, 109} = 4.03$, $p=0.02$). The *post-hoc* test indicated that those patients who were over 60 years of age scored on average 4.45 points (95% CI -8.86 to -0.04) lower than patients less than 50 years old (Tukey test, $p=0.047$), and they also scored on average 4.38 points (95% CI -8.58 to -0.19) lower than survivors between 51-60 years old (Tukey test, $p=0.038$). There were no significant differences in scores between patients below 50 years old and patient aged between 51-60 years old ($p=0.99$).

Discussion

This study has provided the first exploration of supportive care needs of long-term Taiwanese cancer survivors. Results from this study suggest that Taiwanese cancer survivors experience a range of physical symptoms, indicating the need for effective, targeted responses at the system level. The most frequently reported symptom concerns were body changes, loss of strength, weight change, memory and concentration, and fatigue. These top symptom concerns were also frequently experienced by cancer survivors in the Asia-Pacific region, reported by majority of participants in our previous study (Molassiotis et al., 2017)

In this study, physical symptom concerns relating to fertility issues had a relatively higher incidence of missing data (0.8% in other physical symptom burden and 10% in the fertility and sexual function). Such missing responses might have resulted in the level of concerns in these areas being underestimated. There are two potential explanations. Firstly, fertility issues might not be as important as 70% of our sample were over 50 years old and have passed childbearing age (for women at least). Secondly, people from Asian cultures are generally less willing to discuss personal issues such as fertility and sexual issues (Hwang et al., 2003; Shen and D'Ambrosio, 2014; Tsai, 2005; Wang et al., 2008).

Our study demonstrated high levels of supportive care needs in Taiwanese cancer survivors. Nearly 90% of the participants endorsed at least one unmet needs, and on average, survivors reported a median of five unmet needs. The 10 most frequently reported unmet needs were related to the existential survivorship, information, and QoL domains. Other studies using the same measures have reported similar findings, with the most significant unmet need being the existential survivorship domain (Brennan et al., 2016; Hodgkinson et al., 2007a; Hodgkinson et al., 2007b; Hodgkinson et al., 2007c; Smith et al., 2013; Urbaniec et al., 2011; Willems et al., 2016). Interestingly, in our study, all the need items in relation to the information domain were in the top five unmet needs. This finding is consistent with three other Taiwanese studies involving patients with newly or recently diagnosed lung, breast and oral cancer (Chen et al., 2009; Liao et al., 2012; Liao et al., 2011), suggesting that informational needs continue to be present in Taiwanese cancer survivors after treatment completion. These findings indicate a service gap requiring further attention from the policy makers and healthcare leaders.

Several studies have reported that the comprehensive cancer care domain is often reported by survivors as being an area of high unmet need (Hodgkinson et al., 2007a; Hodgkinson et al., 2007b; Smith et al., 2013; Urbaniec et al., 2011; Willems et al., 2016). However, in this study, items of the comprehensive domain (such as the need of best medical care, local health care services, addressing complaints, and accessible hospital parking) were not the top ranked unmet needs items. This finding might be specific to the study site as participants in this study were recruited in the NTUH, a major tertiary teaching medical centre in Taiwan with the highest quality services in the country. Patients in this study might have been satisfied

with the services provided to them. In addition, NTUH is in Taipei city, where public transportation is convenient.

In this study, significant associations were identified between participant's characteristics and unmet supportive care needs. In the information domain, gender was significantly associated with the number and strength of unmet needs. In both number and strength of unmet needs in the information domain, male survivors' significantly higher scores than female survivors. In a recent study of 255 cancer survivors who had completed treatment within the last 12 months, females reported fewer unmet informational needs than males (Willems et al., 2016). This might be because females are more likely to seek medical-related information from health professionals, books and the Internet than males (Stalling et al., 2010), so they may require less support in terms of information needs. However, other studies reported opposite findings (Beckjord et al., 2008; Hall et al., 2013). One study of cancer survivors in Australia and Canada reported that female cancer survivors had a higher score (0.19, CI: 0.01-0.38) in the information domain than male cancer survivors (Hall et al., 2013). Similarly, another study of information needs of 1,040 cancer survivors that were diagnosed 2-5 years ago, females had a statistically significant higher score on information needs than males (Beckjord et al., 2008). As such, evidence relating to the relationship between gender and unmet needs is not consistent and further research is required to investigate these complex relationships. This further indicates the necessity of a tailored approach when a needs assessment is conducted for cancer survivors.

Cancer diagnosis (haematological cancer versus solid tumours) was another factor which had a potential influence on cancer survivors' unmet supportive care needs. In this study, cancer type was associated with the *number* of unmet needs in the information need domain and the

strength of unmet needs in both the information and QoL domains. Patients with a haematological malignancy reported less informational needs and less strength of unmet informational needs than patients with solid tumours. This finding is in line with Beckjord et al's. (2008) study of health-related information needs in 1,040 survivors, which reported that colorectal cancer survivors had a higher level of information needs than survivors with Non-Hodgkin's lymphoma (Beckjord et al., 2008). This may be explained by the differences in clinician practices as well as patient behaviours. A cross-sectional study of 202 patients with a haematological malignancy found that nearly two-thirds of participants used the Internet and over half of the participants read on-line health information (Rider et al., 2014). They also reported higher levels of confidence in consultations and higher trust in their doctors than patients with solid tumours (Rider et al., 2014). Therefore, access to information appears to be a positive influence for both survivors and health professionals for this group of patients.

Younger age was associated with higher levels of unmet needs. In the present study, survivors under 50 years old reported more unmet needs and greater strength of unmet needs than survivors over 60 years. This finding is consistent with previous research. A systematic review of 94 studies identified that survivors under 45 years old had more unmet needs (Harrison et al., 2009).

This study was exploratory in nature. The sample was heterogenous and relatively small ($n=120$). Despite the exploratory nature of the study, this study highlights certain service gaps that have also been previously identified in Taiwanese patients with newly or recently diagnosed patients. Cancer survivors who are aged under 50, male, and have solid tumours

may require tailored survivorship care support in Taiwan. Future research should focus on targeted interventions that address the top unmet needs in this population.

Conclusion

There is a need for providing high quality supportive care for Taiwanese cancer survivors who have completed first-line treatment. The findings from this study provided a baseline knowledge of symptom burden and supportive care needs in Taiwanese cancer survivors. Systematic approaches to manage the high and wide symptom burden in this population is urgently required. Effective strategies to reduce the unmet needs in cancer survivors are likely to require a tailored approach. Taiwanese cancer survivors who are aged under 50, male and had a solid tumour diagnosis are likely to experience higher and strong levels of unmet needs and therefore may require additional resources. Future research with larger samples will be required to validate the findings from this study.

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Table 1 Demographic and disease characteristics of cancer survivors (N=120)

Participant characteristics	N	%
Age		
< 50 yrs	36	30
51-60 yrs	41	34.2
> 60 yrs	43	35.8
Gender		
Male	58	48.3
Female	62	51.7
Diagnosis		
Haematological cancer	45	37.5
Hepatic cancer	29	24.2
Lung	15	12.5
Breast	11	9.2
Other	20	16.6
Year after diagnosis		
1 to 5 years	71	59.2
≥ 5 years	49	40.8
Type of treatment received ^a		
Surgery	47	39.2
Radiation	33	27.5
Chemotherapy	68	56.7
Hormonal	4	3.3
Other	20	16.7
Current treatment		
Yes	58	48.3
No	62	51.7

^a Participants received one or more treatment

Table 2 Symptom concerns in the past week (N=120)

Symptom	Mean(SD)	Extreme concern (Score 3-5) N (%)	Some concern (Score 1-2) N (%)	Total concern
Pain	1.00(1.40)	20 (16.7)	32 (26.7)	52 (43.3)
Fatigue	1.83(1.55)	44 (36.7)	41 (34.2)	85 (70.8)
Sleep Disturbance	2.07(1.85)	50 (41.7)	33 (27.5)	83 (69.2)
Memory & Concentration	1.73(1.53)	36 (30)	51 (42.5)	87 (72.5)
Nausea/Vomiting	0.47(1.10)	9 (7.5)	16 (13.3)	25 (20.8)
Poor appetite	0.98(1.38)	23 (19.2)	27 (22.5)	50 (41.7)
Trouble swallowing	0.49(1.13)	14 (11.7)	8 (6.7)	22 (18.3)
Dental & Mouth problems	0.94(1.38)	16 (13.3)	36 (30)	52 (43.3)
Weight changes	1.87(1.66)	44 (36.7)	43 (35.8)	87 (72.5)
Balance/Walking/ Mobility	1.67(1.79)	42 (35)	28 (23.3)	70 (58.3)
Loss of strength	2.43(1.81)	59 (49.2)	34 (28.3)	93 (77.5)
Tingling or numbness in hands/feet (Neuropathy)	1.30(1.56)	31 (25.8)	30 (25)	61 (50.8)
Swelling in legs or arms (Lymphedema)	0.65(1.29)	14 (11.7)	19 (15.8)	33 (27.5)
Osteoporosis/ bone health	0.73(1.27)	15 (12.5)	26 (21.7)	41 (34.2)
Hair or Skin care issues	1.63(1.65)	34 (28.3)	43 (35.8)	77 (64.2)
Body changes	2.68(1.82)	66 (55)	32 (26.7)	98 (81.7)
Hot flushes	0.82(1.29)	17 (14.2)	28 (23.3)	45 (37.5)
Sexual issues	1.05(1.61)	20 (16.7)	30 (25)	50 (41.7)
Fertility issues	0.61(1.38)	13 (10.8)	19 (15.8)	32 (26.7)

Cronbach's Alpha $\alpha=0.84$

*96.7% of participants reported at least one symptom concern.

Table 3. Cancer survivors' needs met or unmet (n=112)*

CaSUN need item	Met Need		Unmet need	
	<i>N</i>	%	<i>N</i>	%
1. Up to date information	63	56.3	49	43.8
2. Information for others	70	62.5	42	37.5
3. Understandable information	59	52.7	53	47.3
4. Best medical care	94	83.9	18	16.1
5. Local health care services	97	86.6	15	13.4
6. Manage health with team	94	83.9	18	16.1
7. Doctors talk to each other	95	84.8	17	15.2
8. Complaints addressed	97	86.6	15	13.4
9. Alternative therapy	84	75	28	25
10. Reduce stress in my life	79	70.5	33	29.5
11. Manage side effects	72	64.3	40	35.7
12. Changes to quality of life	70	62.5	42	37.5
13. Fertility problems help	105	93.8	7	6.3
14. Maintain/Get employment	88	78.6	24	21.4
15. Financial support	78	69.6	34	30.4
16. Insurance	90	80.4	22	19.6
17. Legal service	103	92	9	8
18. Assessable hospital parking	89	79.5	23	20.5
19. Concerns about the cancer coming back	74	66.1	38	33.9
20. Emotional support for me	83	74.1	29	25.9
21. Support partner/family	85	75.9	27	24.1
22. Impact on my relationship	100	89.3	12	10.7
23. New relationship	99	88.4	13	11.6
24. Talk to others	83	74.1	29	25.9
25. Handle social/work situations	93	83	19	17
26. Change to my body	89	79.5	23	20.5
27. Problems with sex life	100	89.3	12	10.7
28. Case manager	62	55.4	50	44.6
29. Move on with my life	89	79.5	23	20.5
30. Changes to beliefs	85	75.9	27	24.1
31. Acknowledging the impact	105	93.8	7	6.3
32. Survivor expectations	96	85.7	16	14.3
33. Decisions about my life	96	85.7	16	14.3
34. Spiritual beliefs	99	88.4	13	11.6
35. Make my life count	95	84.8	17	15.2

*89.3% of participants have at least one unmet needs.

Table 4

Relationship between demographic characteristics and domains of unmet needs (N=112)

Demographics			Existential survivorship			Comprehensive cancer care			Information			Quality of Life			Relationship		
		N	M (SE)	t	df	M (SE)	t	Df	M (SE)	t	df	M (SE)	t	df	M (SE)	t	df
Gender	Male	53	2.66 (0.50)	-0.13	110	1.09 (0.24)	0.89	110	1.55 (0.18)	2.04*	110	0.70 (0.12)	-0.37	110	0.53 (0.12)	0.92	110
	Female	59	2.75 (0.45)			0.81 (0.21)			1.05 (0.16)			0.76 (0.12)			0.39 (0.10)		
Year after diagnosis	1-5 years	64	2.84 (0.39)	0.48	110	1.02 (0.20)	0.51	110	1.33 (0.17)	0.40	110	0.73 (0.12)	0.03	110	0.47 (0.09)	0.21	110
	≥ 5 years	48	2.52 (0.58)			0.85 (0.25)			1.23 (0.18)			0.73 (0.13)			0.44 (0.13)		
Diagnosis	Haemato logical cancer	42	2.29 (0.52)	-0.98	110	0.74 (0.20)	-1.03	110	0.86 (0.19)	-2.77*	110	0.55 (0.13)	-1.68	110	0.33 (0.09)	-1.27	110
	Solid tumours	70	2.96 (0.43)			1.07 (0.22)			1.54 (0.15)			0.84 (0.11)			0.53 (0.11)		
		N	M (SE)	F	df	M (SE)	F	Df	M (SE)	F	df	M (SE)	F	df	M (SE)	F	df
Age	≤50	33	3.69 (0.72)	4.93*	2	1.27 (0.33)	3.27*	2	1.15 (0.23)	1.29	2	0.66 (0.16)	0.33	2	0.45 (0.13)	2.50	2
	51-60	40	3.20 (0.61)			1.20 (0.31)			1.55 (0.21)			0.82 (0.14)			0.65 (0.16)		
	>60	39	1.36 (0.28)			0.41 (0.11)			1.13 (0.19)			0.69 (0.15)			0.26 (0.08)		

Note. *p<0.05

Table 5

Relationship between demographic characteristics and strength of unmet needs by domains (N=112)

Demographics		Existential survivorship				Comprehensive cancer care			Information			Quality of Life			Relationship		
		N	M (SE)	t	df	M (SE)	T	df	M (SE)	t	df	M (SE)	t	df	M (SE)	t	df
Gender	Male	53	5.08 (1.01)	-0.55	110	2.42 (0.57)	0.86	110	3.77 (0.50)	2.26*	110	1.60 (0.29)	-0.10	110	0.94 (0.21)	0.42	110
	Female	59	5.92 (1.13)			1.78 (0.48)			2.32 (0.41)			1.64 (0.30)			0.81 (0.22)		
Year after diagnosis	1-5 years	64	5.88 (0.95)	0.54	110	2.05 (0.44)	-0.11	110	2.95 (0.43)	-0.20	110	1.64 (0.29)	0.09	110	0.94 (0.19)	0.47	110
	≥ 5 years	48	5.04 (1.26)			2.13 (0.64)			3.08 (0.50)			1.60 (0.31)			0.79 (0.25)		
Diagnosis	Haematological cancer	42	4.86 (1.29)	-0.67	110	1.71 (0.51)	-0.77	110	2.00 (0.49)	-2.45*	110	1.05 (0.29)	-2.17*	110	0.62 (0.20)	-1.29	110
	Solid tumours	70	5.91(0.94)			2.3 (0.50)			3.61 (0.42)			1.97 (0.28)			1.03 (0.21)		
		N	M (SE)	F	df	M (SE)	F	df	M (SE)	F	df	M (SE)	F	df	M (SE)	F	df
Age	≤50	33	7.09 (1.66)	4.03*	2	2.42 (0.67)	2.74	2	2.52 (0.58)	0.80	2	1.42 (0.38)	0.35	2	0.91 (0.31)	1.53	2
	51-60	40	7.03 (1.42)			2.90 (0.80)			3.53 (0.57)			1.85 (0.36)			1.18 (0.29)		
	>60	39	2.64 (0.67)			0.95 (0.30)			2.90 (0.54)			1.56 (0.37)			0.54 (0.20)		

Note. *p<0.05