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SYMPTOM ASSESSMENT AMONG CANCER PATIENTS RECEIVING CHEMOTHERAPY IN A CANCER HOSPITAL

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ABSTRACT

People with cancer usually experience various distressing symptoms while receiving chemotherapy. Early identification of distressing symptoms of patients receiving treatment is a crucial step toward providing quality nursing care for patients. This study aimed to assess the frequency, severity and distressing symptoms and its predictors among cancer patients who are receiving chemotherapy.An Analytical cross-sectional study was done among 233 people receiving cancer chemotherapy in a Cancer Hospital. Convenience sampling method was adopted to select sample and data was collected by in-person interview. Out of 233 respondents, less than half (42.6%) belonged to the 40-59 years age group and male (53.6%). The common physical symptoms were pain (70%), lack of energy (67.8%), nausea (58.8%) and psychological symptoms were feeling sad (43.8%), worrying (43.8%) and difficulty sleeping (18.5%). The most severe symptoms experienced by respondents were pain, dry mouth, lack of energy and shortness of breath. Patient's age (β=0.321, p <0.001), education (β= 0.094, p <0.001). Eastern Cooperative Oncology Group (EOCG) (β= 0.340, p <0.001), number of chemotherapy cycle (β=0.147, p 0.004) were found to be predictors for the physical symptoms. Likewise, for the global distress index, these variables explained 88.9% of this variance (p<0.001, r^2 =0.889). Education (β=0.078, p <0.001), duration of illness (β=0.081, p =0.032) , age (β=0.0.211, p <0.001), ECOG (β=0.0264, p <0.001) were found to be predictors for the global distress index.

Keywords: cancer - global distress index - physical symptoms - psychological symptoms - MSAS + symptoms assessment

INTRODUCTION

Cancer is a chronic public health problem and a prominent cause of mortality and morbidity worldwide. Globally, 10 million deaths arose due to cancer and 70% of total cancer deaths occurring in developing countries and by 2040, it will rise to 29.5 million new case (*GLOBOCAN* 2020). In nepalese context, cancer contributes to 10% of total deaths and 5.6% of total Disability Adjusted Life Years (Shrestha *et al.* 2021). The top most common cancers are breast, lung, cervical, stomach and oral cavity (Shrestha *et al.* 2020). Surgery, chemotherapy, and radiotherapy are the mainstay of cancer treatment (Abbas & Rehman 2017). Chemotherapy plays a major role in the treatment of cancer and acts mostly on rapidly dividing abnormal and normal cells such as tissue of bone marrow, digestive tract and hair follicles that results the side effect of chemotherapy. Cancer patients receiving chemotherapy experience various distressing symptoms in high prevalence (Adenipekun, Elumelu-Kupoluyi, Omoyeni & Soyannwo 2012). The most common physical symptoms experienced by cancer patients were numbness/tingling in the hands/feet (54%), followed by lack of energy (46%), likewise, most frequently occurring psychological symptoms were feeling nervous (52%) and difficulty in sleeping (41%) (Lavdaniti 2015). The side effects of chemotherapy have a great impact on health related quality of life of patients, decreasing the physical activity which may cause inadequate treatment and increased morbidity (Periasamy *et al.* 2017). During the period of treatment, patients often experience great physical and mental distress and low performance status as a result of the adverse effect of treatments(Tian et al. 2015). Moreover, these side effects can negatively impact on the overall quality of life (Nho Reul Kim & Nam 2017).

Knowledge on symptomatology reported by cancer patients during and after cancer treatment would be advantageous for the health care provider to plan and modify the treatment strategies (Hong, Blonquist, Halpney & Berry 2016). Therefore, nurses should consider these findings while planning and executing interventions in order to alleviate these distressing symptoms thereby maintaining the quality of life of cancer patient (Lavdaniti 2015). Regular and comprehensive assessment and early

interventions enable nurses for effective management of the distressing symptoms that ultimately improves the physical and psychological wellbeing as well as quality of life of cancer patient. Hence, this study was conducted to assess the frequency, severity and distressing symptoms including predictors of these symptoms among people with cancer who are receiving chemotherapy.

METHODS AND MATERIALS

An analytical cross-sectional study was done to collect data from 233 cancer patients. Sample size was calculated by using Raosoft online sample size calculator (http://www.raosoft.com/ samplesize.html), at 95% confidence level, 5% margin of error, and a response distribution of 50%. Participants who were above 20 years, conscious, and had received more than two cycle of chemotherapy, willing to participate were included in the study. Information related to demographic variables and disease related variables were collected from patients recorded file. In-person interview was conducted to find out physical and psychological symptoms in admitted patients in chemotherapy ward and day care center of the hospital during the period of 4 months. Code was given on nursing record sheet to avoid repetition in the sample.

The questionnaire consisted of two parts. First part consisted of the questions on demographic information and disease related information such as stages of disease, number of chemotherapy cycle and Eastern Cooperative Oncology Group (ECOG) performance status**.** While in second part, **s**tandardized instrument i.e. Memorial Symptom Assessment Scale (MSAS) a multidimensional symptom assessment instrument proved to be valid and reliable (Chang, Hwang, Feuerman, Kasimis & Thaler 2000) was used to identify the frequency, severity and distressing symptoms experienced by participants in previous seven days. It consists of 32 symptoms and three subscales: Physical (MSAS- PHYS, includes twelve symptoms) psychological (MSAS-PSY, includes six symptoms) and Global Distress Index (MSAS-GDI, includes six physical and four psychological symptoms). For 8 symptoms (mouth sore, change in the way food tastes, weight loss, hair loss, constipation, swelling of arms and legs, I don't

look like myself and change in the skin) only severity and distress were measured. "A zero (0)" score was given if did not experience the particular symptom in the past week (Chang *et al.* 2000) and suitable for use in both initial and day to day assessment in clinical area and in research (Browall, Sarenmalm, Nasic, Wengström & Gaston-Johansson 2013).

Throughout the study, ethical consideration was taken to protect the rights of the respondents of the study. Data was collected after obtaining the ethical approval by Institutional Review Committee (IRC), Tribhuvan University, Institute of Medicine and authorities of Bhaktapur Cancer Hospital (BCH). Written informed consent was obtained from each respondents. All respondents were requested for voluntary participation and informed that they can withdraw from the study at any time if they wish. There was no any financial burden and incentive for participating in the study. The participants' confidentiality was guarded by not disclosing the data to anybody except the researcher. Data was collected for four months (2076/08/01-2076/11/30) by using interview schedule. Collected data were coded, entered and analyzed using IBM SPSS version 21, Symptoms were analyzed in percentage, mean and standard deviation. Similarly, predictors for symptoms were identified by linear regression calculation.

RESULTS AND DISCUSSION

Socio-demographic characteristics

Out of 233 respondents, Table 1 shows that majority (41.6%) were between the age of 40-60 years with mean age and standard deviation (52.52 ± 14.87). More than half (53.6%) of the respondents were female, 192 (82.4%%), married, 175 (75.1%), Hindu, 112 (48.1%), belongs to Janajati and 89 (38.2%), can read and write. Regarding employment, one third of the respondents (33.9%) were farmers.

Disease related characteristics

Table 2 shows the disease-related variables, 86 (36.9%) had gastrointestinal tumors followed by lung 49 (21%) and gynecological cancer 38 (16.4%). Half (49.8%) of the respondents had the history of 7-12 months diagnosis whereas half of them 124 (53.2%) were diagnosed in the late stage. A majority 141 (60.5%) of them were receiving fourth to sixth cycle of chemotherapy. More than one third 94 (40.3%) had metastasis of cancer, however metastasis status was missing in the treatment card

of 15 (6.5%) respondents. While assessing performance status of patients according to Eastern Cooperative Oncology Group (ECOG), two third 158 (67.8%) were on grade two.

Table 1: Socio -demographic characteristics of respondents

n=233

Characteristics	No	Percent
Age in years		
20-39	50	21.5
40-59	97	41.6
60 and above	86	36.9
Mean ± SD 52.52 ± 14.87		
Sex		
Male	125	53.6
Female	108	46.4
Marital Status		
Married	192	82.4
Widow	26	11.2
Single	15	6.4
Religion		
Hindu	175	75.1
Buddhist	41	17.6
Others	17	7.3
Ethnicity		
Janajati	112	48.1
Brahamin/ Chhetri	86	36.9
Dalit	26	11.2
Others	9	3.9
Education		
Can read and write	89	38.2
Primary level	51	21.9
Secondary and higher secondary	71	30.5
Bachelor and above	22	9.4
Employment Sector		
Farming	79	33.9
House maker	54	23.1
Service	36	15.5
Business	33	14.2
Unemployed	16	6.9
Retired	11	7.4
Foreign employment	4	1.7

Source- Field Survey

Table 2: Disease related characteristics of respondents

n=233

Characteristics	No	Percentage (%)
TType of Tumor		
Gastro intestinal	86	36.9
Lungs	49	21.0
Gynecological including cervix	38	16.4
Head and Neck	21	9.0
Breast	13	5.5
Genital-urinary	12	5.2
Hematological	7	3.0
Others	7	3.0
Illness Duration (in Months)		
Up to Six	65	27.9
7 to 12	116	49.8
13 to 24	46	19.7
More than 24	6	2.6
Chemotherapy Cycle		
Up to 3	86	36.9
4 to 6	141	60.5
>6	6	2.6
Metastasis		
No	135	57.9
Yes	98	42.1
Stage of Cancer		
Early stage(1 and 2)	94	40.3
Late Stage(3 and 4)	124	53.2
Staging not mentioned	15	6.5
ECOG Performance Status		
0	1	0.4
1	16	6.9
2	158	67.8
3	56	24.0
4	2	0.9

Source- Field Survey

Experienced symptoms, its frequency, severity and distress

Major symptoms reported by respondents are depicted in the Table 3, which shows the mean of the three dimensions of each symptom (frequency, severity and distress). A total of 32 symptoms were assessed, and described as symptoms subscale; Physical (MSAS- PHYS), psychological(MSAS-PSY) and Global Distress Index (MSAS-GDI). Among overall symptoms,

pain (163, 70%) was the most prevalent physical symptoms followed by lack of energy (158, 67.8%), nausea (137, 58.8%) dry mouth (122, 52.5%) cough (119, 51.1%), numbness and tingling sensation in hands and feet (117, 50.2%), vomiting (109, 46.8%), and shortness of breath (83, 35.2%). The least prevalent symptoms were sweating (6, 2.6%) and problem with urination (19, 8.2%). Among 6 psychological symptoms, feeling sad (81, 34.8%), worrying (81, 34.8%) were the most prevalent followed by feeling drowsy (50, 20.9%) difficulty sleeping (43, 18.5%) and difficulty concentration (42, 18.0%).

As shown in Table 3, the most severe physical symptoms reported by respondents were pain with the highest severity mean (2.85±0.53) followed by dry mouth (2.83±0.56),lack of energy (2.76±0.61) and shortness of breath (2.68±0.56). As for distress, the most distressing symptoms was pain with highest distress mean of 2.66 (SD=0.83) and followed by lack of energy and shortness of breath (2.66±0.83 and 2.59±0.73 respectively). Although, the problem of urination was less prevalent among 19 (8.2%) but had a high mean score of 2.57 (SD=0.50). Difficulty in concentration and feeling nervous were the least distressing symptom with a mean score of 1.79 (SD=0.36) and 1.90 (SD=0.67) respectively.

Predictors of experienced symptoms

Table 4 shows the predictors for distressing symptoms, Linear regression was used to determine the predictors of symptoms experienced by cancer patients. Socio-demographic and disease-related variables were put as independent variables and three subscales of MSAS; PHYS-MSAS, PSY-MSAS, and GDI as dependent variables in linear regression to identify the predictors. For the physical symptoms, these variables explained 94.2% of this variance ($p<0.001$, $r^2 =0.942$). Age ($\beta=0.321$, $p <0.001$), education ($\beta= 0.094$, $p <0.001$) , EOCG ($\beta= 0.340$, $p <0.001$), number of chemotherapy cycle ($\beta=0.147$, p 0.004) were found to be predictors for the physical symptoms. Likewise, for the global distress index, these variables explained 88.9% of this variance ($p<0.001$, $r^2 =0.889$). Education ($\beta=0.078$, $p <0.001$), duration of illness ($\beta=0.081$, $p=0.032$) , age ($\beta=0.0.211$, $p <0.001$), ECOG($\beta=0.0264$, $p<0.001$) were found to be predictors for the global distress index. For the psychological symptoms, education status

(β=0.063, p <0.001) was identified as a predictor and explained as 47.2% (p<0.001, r^2 =0.472).

Table 3: Prevalence, frequency, severity and distress of experienced symptoms of respondents

n=233

Symptoms Subscale	Prevalence Number (Percentage)	Symptoms Frequency M±SD	Symptoms Severity M±SD	Symptoms Distress M±SD
Physical (MSAS-PHY)				
Pain	163(70)	2.82±0.54	2.85±0.53	2.66±0.83
Lack of Energy	158(67.8)	2.70±0.62	2.76±0.61	2.66±0.76
Nausea	137(58.8)	2.59±0.54	2.45±0.59	2.32±0.63
Dry Mouth	122(52.5)	2.36±0.54	2.83±0.56	2.19±0.66
Vomiting	109(46.8)	2.42±0.49	2.42±0.59	2.16±0.58
Dizziness	93(39.9)	2.39±0.55	2.29±0.60	2.13±0.53
Feeling Bloated	67(28.8)	2.13±0.38	2.16±0.51	1.87±0.64
Lack of Appetite	62(26.6)	2.17±0.49	2.25±0.47	2.11±0.95
Feeling Drowsy	50(12.9)	2.34±0.51	2.42±0.49	2.20±0.63
Change In The Way Food Tastes	130(55.8)		2.39±0.56	2.40±0.59
Weight Loss	122(52.4)		2.13±0.44	2.16±0.56
Constipation	83(35.8)		2.25±0.46	2.21±0.46
Psychological (MSAS-PSY)				
Feeling Sad	81(34.8)	2.27±0.47	2.22±0.59	2.07±0.75
Worrying	81(34.8)	2.20±0.43	2.11±0.50	2.02±0.77
Feeling Irritable	43(18.5)	2.04±0.53	2.09±0.42	1.97±0.46
Difficulty Sleeping	43(18.5)	2.23±0.61	2.35±0.53	2.14±0.75
Difficulty Concentrating	42(18)	2.46±0.59	2.04±0.53	1.79±0.36
Feeling Nervous	30(12.9)	2.20±0.61	2.10±0.60	1.90±0.67
Global Distress Index (MSAS-GDI)				
Feeling Sad	81(34.8)	2.27±0.47	2.22±0.59	2.07±0.75
Worrying	81(34.8)	2.20±0.43	2.11±0.50	2.02±0.77
Feeling Irritable	43(18.5)	2.04±0.53	2.09±0.42	1.97±0.46
Feeling Nervous	30(12.9)	2.20±0.61	2.10±0.60	1.90±0.67
Pain	163(70)	2.82±0.54	2.85±0.53	2.66±0.83
Lack of Energy	158(67.8)	2.70±0.62	2.76±0.61	2.66±0.76
Dry Mouth	122(52.5)	2.36±0.54	2.83±0.56	2.19±0.66
Lack of Appetite	62(26.6)	2.17±0.49	2.25±0.47	2.11±0.95
Feeling Drowsy	50(12.9)	2.34±0.51	2.42±0.49	2.20±0.63
Constipation	83(35.8)		2.25±0.46	2.21±0.46

Source- Field Survey 2020

Table 4: Predictors of symptoms experienced by respondents

n=233

Variable	MSAS-PHY			MSAS-PSY			MSAS-GDI		
	Beta	**t-score**	**P value**	**Beta**	**t-score**	**P value**	**Beta**	**t-score**	**P value**
Age	0.321	6.608	<0.001	0.040	0.692	0.092	0.211	4.123	<0.001
Education	0.094	6.574	<0.001	0.063	3.697	<0.001	0.180	2.151	<0.001
Duration of illness	0.068	1.899	0.059	0.062	1.455	0.147	0.018	2.155	0.032
Number of Chemo cycle	0.147	2.942	0.004	-0.052	0.870	0.385	0.070	1.339	0.182
Status of Metastasis	0.053	0.921	0.358	-0.042	0.615	0.539	0.04	0.657	0.512
ECOG Performance status	0.340	5.736	<0.001	0.132	1.882	0.061	0.264	4.227	<0.001
Model Fitness (ANOVA)	P <0.001			P <0.001			P <0.001		
r^2	0.942			0.472			0.889		

The study revealed that cancer patients receiving chemotherapy experience various physical and psychological symptoms. Among 233 chemotherapy receiving patients, pain was the most prevalent physical symptoms followed by lack of energy, nausea and dry mouth. This findings were consistent with the study done by Harding *et al.* (2011) among cancer patients in two African countries and by Stark Tofthagen, Visovsky & McMillan (2012) in USA. Both studies showed that pain and lack of energy were the most prevalent physical symptoms. Furthermore, in a study conducted by Dahal & Meheta in BP Koirala Memorial Cancer Hospital, Bharatpur among 120 cancer patients found that 82.5% experienced fatigue, followed by sleep disturbances (75.8%), nausea (74.2%) , alopecia (69.2 %) and pain (59.2%). The present study findings slightly differ from the findings of a study conducted by Yahaya Subramanian, Bustam & Taib, (2015) in Malaysia wherein lack of energy and dry mouth was the most predominant physical symptoms. In the present study, feeling sad and worrying were the most prevalent psychological symptoms, experienced by more than one-third of the respondents, whereas in the study done by Lavdaniti (2015) in Northern Greece showed feeling nervous and

difficulty sleeping were the two most common psychological symptoms. In the present study, the most prevalent symptom belonged to the physical sub-scale which corresponds with the findings of study done by Yahaya *et al.* (2015) in Malasiya and Lavdaniti (2015) in Northern Greece. In contrast to this, a study conducted by Nayak *et al.* (2015) in India showned that the feeling sad and disturbed sleep were the most prevalent symptoms, which are related to the psychological sub-scale.

Problem with sexual interest and activity is the least reported (12.9%) symptom in this study, which is alike the findings of Lavdaniti (2015) whereas this was the most prevalent symptom (90.0%) in a study conducted by Yildirim, Tokem, Bozkurt, Fadiloglu & Uslu (2011) in Turkey. It is notable that the rank of the symptoms experienced did not exactly matched with the aforementioned study but the common symptoms experienced by patients were alike to some extent. In the present study, changes in the way food tastes is the most prevailing symptom and reported as most severe and distressing too. These findings are corresponding to evidence from other studies (Lavdaniti 2015, Bolukbas & Kutluturkan 2014).

In the study, pain and lack of energy were the most prevalent, severe and distressing symptoms as reported by respondents. However, the symptoms of numbness/ tingling in hands/feet had a higher mean in symptom frequency, severity and distress reported in the study done by Lavdaniti (2015) in Northern Greece. Difficulty concentration and feeling nervous were the least distressing symptoms with a mean score of 1.79 (SD=0.36) and 1.90 (SD=0.67) respectively, in this study.

In the present study, the result of regression analysis revealed that age, educational status, number of chemotherapy cycle, ECOG performance status are the predictors of physical symptoms. Likewise, educational status, duration of illness, age, ECOG performance status were found to be predictors for the global distress index. The findings of the study were similar to those reported by a study done in Northern Greece (Lavdaniti 2015) in which age and educational status were found to be independent predictors of the total symptoms. The present study is a single center study, therefore it may lack generalization in all settings. Symptoms

were recorded as the verbal responses of participants in previous 7 days, which might have caused the recall bias.

CONCLUSIONS

This study concludes that the cancer patients receiving chemotherapy were experiencing numerous symptoms such as pain, lack of energy, nausea, feeling sad, worrying and difficulty in sleeping. Similarly, pain, lack of energy and shortness of breath were the most distressing symptoms for the cancer patients. Independent variables such as age, educational status, duration of diagnosis of cancer, number of chemotherapy cycle, ECOG performance status were the predictors for global distress index. Based on the findings, it can be recommended that the nursing care provider must execute comprehensive assessment strategies for early identification of those distressing symptoms, while providing care to the cancer patients who are receiving chemotherapy.

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