

Fatigue Experience and Coping Strategies among Cancer Patients Receiving Chemotherapy

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ABSTRACT

Background: Cancer is considered one of the foremost common causes of death. Fatigue is among the distressing symptoms for cancer patients receiving chemotherapy. Adequate coping is essential for individual to deal with the effects of cancer related treatment. The objective of the study was to find out the fatigue experience and coping strategies among cancer patients receiving chemotherapy.

Methods: A descriptive, cross-sectional research design was used for the study. The samples was taken from day care and medical oncology ward of BP Koirala Memorial Cancer Hospital, Bharatpur. A total of 120 cancer patients receiving chemotherapy of 18 years and above were selected by using non probability consecutive sampling technique. Data was collected by using standard tool, Fatigue Symptom Inventory and Brief Cope. Data analysis was done by descriptive and inferential statistics.

Results: The study revealed that 82.5% of respondents had experienced fatigue and 50.8% respondents had used adequate coping strategies where "self distraction"(2.76±1.02) was the most used coping strategy by the respondents. Fatigue experience and coping strategies had negative correlation ($r=-0.490$, $p<0.001$).

Conclusions: Majority of the respondents had experienced fatigue, and half of the respondents used adequate coping strategies. The different methods of coping strategies for fatigue and chemotherapy related effects should be expanded as per the best available evidence to lower fatigue and other adverse effects.

Keywords: Cancer; chemotherapy; coping strategies; fatigue.

INTRODUCTION

The global cancer burden is rising significantly; in 2030 alone, about 21.7 million new cancer cases and 13.0 million cancer deaths are expected to occur.¹ In Nepal, the incidence of cancer is approximated 100-120 per 100000 and assumption is that there are 55000-60000 cancer patients at any point of time in the country.²

Treatments of cancer like chemotherapy can produce variety of side effects including physical as well as psychological symptoms.^{3,4} Cancer related fatigue is the subjective sense that is persistent involving physical, emotional or cognitive tiredness related to cancer or its treatment which is not based on recent activity and interferes with usual functioning.⁵ Fatigue can be addressed by encouraging cancer patients to choose coping strategies that reduce fatigue level and improve quality of life.⁶ Regardless of the greater prevalence of fatigue and its adverse effect on patients' activities, research on chemotherapy related fatigue is still underdeveloped.^{7,8}

The objective of the study was to find the fatigue

experience and coping strategies among cancer patients receiving chemotherapy.

METHODS

Descriptive cross-sectional research study design was used to identify the fatigue experience and coping strategies among cancer patients receiving chemotherapy. The study was carried out at BP Koirala Memorial Cancer Hospital (BPKMCH), Bharatpur. The populations of this study were all the cancer patients of 18 years and more and who are in second or more cycles of chemotherapy in day care and medical oncology ward of BPKMCH.

Required sample for this study was calculated by using the formula for infinite population. To reduce non response error additional 10% was taken so sample size was 120, calculated based on prevalence (p) value as 0.92 and maximum permissible error of 5%.⁹ Due to the absence of sampling frame, the participants who were eligible based on inclusion criteria on the day of data collection were recruited until the desired sample size was achieved.

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The non probability consecutive sampling technique was used for selection of any type cancer patients who are in two or more cycles of chemotherapy. Researcher identified the sample from day care unit and medical oncology ward by verbally asking the patients their age and number of chemotherapy cycles.

Semi-structured interview schedule was developed after reviewing of related literature for collection of data on different independent variables of the participants. And standardized tool, Fatigue Symptom Inventory tool and Brief Cope tool was used to find out the fatigue experience and coping strategies among cancer patients receiving chemotherapy respectively.

Tool 1: Related to socio-demographic characteristics of the patient

Tool 2: Fatigue Symptom Inventory.¹⁰

Tool 3: Brief Cope scale for coping strategies.¹¹

The Fatigue Symptom Inventory (FSI) includes 14-items that comprised four subscales; severity, frequency, diurnal variation of fatigue and interference with quality of life. Respondents rate severity on 11-point scales (0, not at all fatigued; 10, as fatigued as I could be) based on past week. Seven items assesses the level to which fatigue interferes with general activity, ability to bathe and dress, relations with others, enjoyment of life, ability to concentrate, and mood which is measured on a scales of 0, no interference and 10, extreme interference) Two items were used to measure the frequency of fatigue that respondents felt (Range 0-7) and part of each day on average they felt fatigued (0, none of the day; 10: the entire day). Diurnal variation is measured using a single item about daily patterns of fatigue by using 4 points rating scale. The average of the 14 items was obtained, where the average score 3 or more indicated clinically meaningful fatigue.¹⁰

Brief Cope Scale was used to find the coping strategies of cancer patients. The scale comprised of 14 subscales (self-distraction, use of instrumental support, behavioral disengagement, active coping, denial, substance use, use of emotional support, positive reframing, planning, humor, acceptance, religion and self-blame) with 28 items (two items for every dimension) and rated by the four-point Likert scale". Responses are then added to obtain total score. The higher score specified the higher used of the coping strategies (Carver, 1997).

FSI and Brief Cope are valid and reliable tool. FSI Reliability, Cronbach's alpha: 0.92-0.94.¹² Brief Cope Reliability, Cronbach's alpha: 0.789.¹³

The research instrument content validity was set by research advisor, subject expert and linguistic professionals.

Two stage back translation of the research instrument was done. The research instrument was pre tested done among 12 cancer patients who met the inclusion criteria at the cancer units of BPKMCH, Chitwan which was excluded in the data collection. The internal consistency of instrument was established by Cronbach' Alpha test where the test results were, FSI Reliability, Cronbach's alpha: 0.79 and Brief Cope Reliability, Cronbach's alpha: 0.75

Data was collected after getting ethical clearance from Institutional Review Board and approval letter from Chitwan Medical College, Chitwan. Informed consent was obtained from respondents before interviewing them.

The data was collected from 2073/06/16 - 2073/07/26 in day shift and 7-8 respondents were interviewed per day taking 30 minutes for one respondents.

The data was analyzed using the IBM SPSS version 20 for analysis. Chi square test was checked between dependent and independent variables to establish associations. Spearman's correlation coefficient test was used to find out the is relationship between the dependent variables

RESULTS

The respondents mean age was 47.95(±13.46) years. Regarding the gender of the respondents, 52.5% were female and 47.5% were male. Concerning the economic condition, 42.5% of the respondents had enough for a year, while 35% of the respondents said that they don't have enough for a year, even before the illness. Majority of respondents (71.7%) didn't have family history of cancer. Concerning the family support, 95.0% of the respondents had family support and 5.0 % didn't have support from the family. Regarding dietary habits, 67.5% were non vegetarian and 32.5% respondents were vegetarian. In regards to exercise, 22.5% respondents exercised regularly. Respondents with carcinoma (ca) breast were 24.2% followed by ca lungs (14.2%) and gynecological cancer. Similarly, in regards to the time since diagnosis, 37.5% of respondents were receiving treatment since last six months and 27.5% respondents were receiving treatment for more than a year. Out of the total 120 study sample, 88 respondents had mentioned stage of cancer, among the 88 respondents, 40.0% of them had cancer in stage III proceeded by stage IV. With regards to chemotherapy cycles, 52.5% of respondents had come for 3-5 chemotherapy cycles. In regards to purpose of chemotherapy, 37.5% of respondents purpose of chemotherapy were neo adjuvant. Concerning regimen of chemotherapy, 52.5% had two combinations as regimen of chemotherapy and 5.8% of respondents

had single agent as regimen of chemotherapy. With regards to physical symptoms and health status of respondents, 59.2% respondents experienced pain, 24.2% complained of vomiting, 74.2% and 69.2 % of respondents complained of nausea and alopecia respectively. Similarly, 75.8% respondents complained of sleep disturbances. Concerning Eastern Co-operative Oncology Group (ECOG) performance status, 37.5% had score of 1 (not able to do physically strenuous activity but able to carry work of a light nature) followed by score 0 (indicating active as a normal person). Regarding body mass index 52.5% of respondents were underweight. In regards to hemoglobin level of respondents, 66.7% of the respondents were anemic

Table 1. Fatigue experiences by the respondents.

Fatigue Experience	Frequency	Percentage
Clinically meaningful fatigue(≥3)	99	82.5
No fatigue (<3)	21	17.5
Total	120	100.0

Table 1 shows the fatigue experience of the respondents. 82.5% had clinically meaningful fatigue while only 17.5 % had no fatigue.

Table 2. Coping strategies by the respondents.

Coping strategies	Frequency	Percent
Adequate coping (≥2.33)	61	50.8
Inadequate coping (<2.33)	59	49.2
Total	120	100.0

Mean ±SD, 2.33±0.73

Table 2 represents the use of coping strategies by the respondents which showed 50.8% used adequate coping strategies while 49.2% used inadequate coping strategies.

The Chi-square test showed that age of respondents, exercise, episodes of chemotherapy, pain, sleep disturbance, BMI, hemoglobin were statistically significant with the fatigue experience (Table 3).

Similarly, the chi-square test showed that the pain, consumption of alcohol and sleep disturbance were statistically significant with the coping strategies (Table 4).

Table 3. Association between fatigue experience and socio-demographic factors.

Variables	Fatigue Experience		X ²	p value
	Clinically Meaningful Fatigue	No Fatigue		
	n (%)	n (%)		

Age				
<40 years	22(64.7)	12 (35.3)		
41-50 years	25 (86.2)	4 (13.8)		
51-60 years	32 (91.4)	3 (8.6)	9.99	0.019**
>61 years	20(90.9)	2(9.1)		
Sex				
Male	47(82.5)	10 (17.5)		
Female	52(82.5)	11(17.5)	0.000	0.99
Education				
Literate	42(77.4)	12(22.2)		
Illiterate	57(86.4)	9(13.6)	1.516	0.218
Marital status				
Married	89(85.6)	15(14.4)		
Single	10(62.5)	6(37.5)	4.310	0.056*
Alcohol				
Yes	11(84.6)	2(15.4)	0.047	0.832**
No	88(82.2)	19(17.8)		
Exercise				
Yes	18(66.7)	9(33.3)	5.398	0.030*
No	81(87.1)	12(12.9)		
Episodes of chemotherapy				
2 cycles	17(63.0)	10(37.0)		
3-5 cycles	56(88.9)	7(11.1)	8.187	0.017
>6 cycles	26(86.7)	4(13.3)		
Pain				
Yes	63(88.7)	8(11.3)	4.678	0.031
No	36(73.5)	13(26.5)		
Yes	69(83.1)	14(16.9)	0.075	0.785
No	30(81.1)	7(18.9)		
Sleep disturbance				
Yes	79(86.8)	12(14.2)	4.852	0.028
No	20(69.0)	9(31.0)		
BMI				
Underweight	55(87.3)	8(12.7)	8.560	0.014*
Normal range	33(71.7)	13(28.3)		
Overweight	11(100)	-		
Hemoglobin				
Normal	28(70.0)	12(30.0)	6.494	0.011
Abnormal	71(88.8)	9(11.2)		

Significance level at 0.05, Likelihoodratio**, Continuity correction*

Table 4. Association between coping strategies and socio demographic factors.

Variables	Coping Strategies		X ²	p value
	Adequate Coping n (%)	Inadequate Coping n. (%)		
Alcohol				
Yes	10(76.9)	3(23.1)	3.971	0.046
No	51(47.7)	56(52.3)		
Pain				
Yes	28(39.4)	43(60.6)	9.036	0.003
No	33(67.3)	16(32.7)		
Vomiting				
Yes	13(44.8)	16(55.2)	0.552	0.458
No	48(52.7)	43(47.3)		
Nausea				
Yes	46(51.7)	43(48.3)	0.100	0.752
No	15(48.4)	16(51.6)		
Diarrhea				
Yes	8(61.5)	5(38.5)	0.669	0.414
No	53(49.5)	54(50.5)		
Alopecia				
Yes	41(49.4)	42(50.6)	0.222	0.638
No	20(54.1)	17(45.9)		
Sleep disturbance				
Yes	39(42.9)	52(57.1)	9.585	0.002
No	22(75.9)	7(24.1)		
Hemoglobin				
Normal	22(55.0)	18(45.0)	0.417	0.519
Abnormal	39(48.8)	41(51.2)		

Significance level at 0.05

Table 5. Relationship between fatigue experience and coping strategies of respondents.

Variables	Correlation value (r)	p value
Fatigue experience and Coping Strategies	-0.490	<0.001

Significance level at 0.05

Table 3 depicts spearman's rank correlation coefficient which is calculated to find out bivariate relationship among fatigue experience and coping strategies, the findings showed the significant relationship between coping strategies and fatigue experience of respondents (r= -0.490, p=<0.001). The strength of the relationships was moderate. This specified that respondents who had

adequate coping strategies tended to have low fatigue experience and vice versa.

DISCUSSION

Regarding fatigue experience, 82.5 % respondents experienced fatigue which was near to similar to study finding by a study¹⁴ that showed 86% of the respondents experienced fatigue. According to this study finding, fatigue experience of respondents was compared between different selected variables of the respondents. Among all variables, age, exercise, sleep disturbances, pain, BMI, hemoglobin level and number of chemotherapy cycles was found to be significant for effecting the fatigue experience of respondents.

Sleep disturbance and fatigue was highly significant in this study which is consistent to the study finding results by Mota et al¹⁵ and Tian et al.¹⁶ Sleep in cancer patients receiving chemotherapy shows strong relations between fatigue and various sleep parameters, like poor sleep quality, interruption in initiation and maintenance of sleep, insufficient sleep, and being awake at nighttime.¹⁷

Exercise had also statistical significant relations with fatigue. Exercise is one of the non pharmacological interventions recommended by NCCN (2012) practice guidelines for CRF, exercise has the strongest evidence for treating fatigue.

In the present study, there were significant relations between pain and fatigue. The finding is nearly similar with another study carried by Safee et al.¹⁸ The cancer patients experience enduring pain which could lead to different complicated symptoms including physical as well as psychological that results the patients to feel fatigue.¹⁹

Anemia is one of the adverse effects of cancer or the cancer treatment. In this study; the patients having low hemoglobin level experienced a higher level of fatigue than the patient with high hemoglobin level. This result is similar with the results of previous studies by Obead et al.⁸

Regarding coping strategies, 50.8% had used adequate coping strategies while 49.2 had used inadequate coping strategies. The most common used coping strategies were "Self distraction" followed by "Use of instrumental support", "Acceptance "Planning" and "Use of emotional support". The less common strategies used was "Substance use". The finding was similar with the study finding of Yahaya et al¹³ that showed the most common used coping strategies were "Religion", followed by "Acceptance", "Use of emotional support" and "Use of instrumental support" and least common strategies used were "Behavioral disengagement",

“Denial”, “Self-blame” and “Substance use”.

In the current study, the coping strategies that respondents used were compared between different selected variables of the respondents. Among all variables, sleep, pain and consumption of alcohol was found to be significant for influencing the coping strategies used by the respondents. Sleep disturbances was highly significant with the coping strategies of respondents. Chan²⁰ carried a prospective study which showed that 34.2% of patients received chemotherapy where the coping behaviors adopted by participants as being most effective were: taking small duration sleeps, involving in activities that divert them from their fatigue, and performing various activities to improve sleep at night. This showed that respondents cope with the treatment related effects by improving their sleep therefore sleep disturbance can highly affect their use of coping strategies.

In the current study, there was significant relationship between coping strategies and fatigue experience of respondents but the strength of the relationships was moderate. This specified that respondents who had adequate coping strategies tended to have low fatigue experience and vice versa.

Fatigue affects the individual activities of daily living and it is highly prevalent in cancer especially receiving various treatment therapies. This can be addressed by encouraging cancer patients to select those coping strategies that can help to reduce fatigue and improve quality of life.⁶ Findings of the study by Chan²⁰ indicated that strengthening coping strategies and improving depressive symptoms are important for improving fatigue management by self outcomes for the cancer patients. Likewise, study finding of Lou²¹ showed that the coping scores were found to be positive estimator for the relief level from fatigue.

The limitation of this study is the difference of the study sample in regards to tumor types and the various modes of treatment. The next limitation is that the study sample was taken from a single setting. The period of data collection was only for 4 weeks.

CONCLUSIONS

The study findings revealed that majority of the respondents experienced clinically meaningful fatigue and concerning the coping strategies, half of the respondents had adequate coping strategies. The results indicate that age, exercise, episodes of chemotherapy, pain, sleep disturbance, BMI and hemoglobin were predictor for the respondents to experience clinically significant fatigue. Similarly, alcohol consumption, pain and sleep disturbance were the predictor to utilization

of adequate coping strategies. The relationship between fatigue and coping was identified which concluded the negative relationship among coping strategies and fatigue experience of respondents.

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