

Evaluation of the Effect of Caring Program Based on Roy Adaptation Model in Physiology and Self-Concept Dimensions on Fatigue of Elderly Cancer Patients Undergoing Chemotherapy

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Abstract

Introduction: Fatigue is one of the complications of chemotherapy. Due to physiological conditions of elderly people, it is followed by several complications. Nursing intervention based on Roy adaptation model is required to reduce these complications.

Objective: Evaluation of the effect of caring program based on Roy adaptation model in physiology and self-concept dimensions on fatigue of elderly cancer patients undergoing chemotherapy

Method: This was a clinical trial study conducted in two groups (65 subjects in each group) undergoing chemotherapy in oncology ward of hospitals affiliated to Shahid Beheshti University of Tehran in 2018. Sampling was performed in 2 stages. First, eligible people were selected by convenient sampling method. Then, they were randomly assigned to intervention and control groups. The research tools included standard multidimensional fatigue inventory and “Roy” adaptation form. In the intervention group, 4 sessions of training were provided to elderly people in accordance with nursing diagnosis. Then, fatigue was followed-up in the two groups and the data were analyzed using SPSS, version 20.

Finding: In this study, no significant difference was observed in the number of chemotherapy courses in the groups before intervention according to chi-square test ($P = 0.667$). Mean score of fatigue according to the paired T-Test was 60.63 ± 5.92 and 58.84 ± 6.28 , respectively, in intervention and control groups before the intervention and it was 50.43 ± 7.42 and 58.46 ± 5.68 , respectively, in intervention and control groups after the intervention (p -value < 0.001).

Conclusion: The caring program based on “Roy” adaptation model was effective in reducing the fatigue of elderly cancer people undergoing chemotherapy.

Keywords: Roy adaptation model, Fatigue, Chemotherapy.

Introduction

Aging is a natural and irreversible process. Nowadays, the number of ageing population in the world will estimate 22% by the year 2050. The reasons for this increase, can be increase in fertility and decrease in mortality ⁽¹⁾. The structural changes in the body of elderly people causes chronic diseases in this group

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of community chronic diseases of the aging include cardiovascular, musculoskeletal diseases, neurological disorders, respiratory problems, cancer, eye disorders, and skin illnesses⁽²⁾. Its even affects on bodys physical and activity and sometimes fatigue⁽³⁾.

Cancer treatment includes surgery, chemotherapy, radio therapy and hormone therapy, or a combination of these method ⁽⁴⁾. The prevalence of cancer-induced fatigue is between 60 to 90% ⁽⁵⁾ fatigue caused following anemia, loss of appetite and weight loss due to this type of treatment⁽⁶⁾.

Nurse for nursing care can use from different model. One of this nursing model is “Roy” adaptation model. For this model, there are three stimulation that include focal, contextual, and residual⁽⁷⁾. The goal of “Roy” adaptation model is interention in physiological, self-cocept, roleplaying and independence dimensions ⁽⁸⁾. In the field of nursing care, different studies have been conducted based on Roy model and its effect on the different dimensions of adaptation has been investigated. In a study conducted on MS patients, it was found that the implementation of the care program based on the Roy adaptation model is effective on effects and severity of fatigue in the MS patient ⁽⁹⁾. In another study, it was found that the implementation of this intervention is effective in reducing fatigue in patients undergoing hemodialysis ⁽¹⁰⁾. The studies conducted in this regard has indicated that implementation of caring program based on “Roy” adaptation model is effective in reducing this complication and this model has not been used so far to control the fatigue of the elderly people undergoing chemotherapy. Hence, the present study was conducted to evaluate the effect of the caring program based on the Roy adaptation model on elderly patients with cancer undergoing chemotherapy in physiological and self-perception dimensions.

Method

This study conducted based on pretest-posttest design in intervention and control groups since June to March 2018. The research population included all elderly patients with cancer undergoing chemotherapy and referred to Oncology Wards in hospitals affiliated to Shahid Beheshti University of Medical Sciences (Emam Hossein, Shohaday-e Tajrish and Ayatollah Taleghani Hospitals). In this study, considering the power of 90% and the first type error of 0/05 in each group, sample size was obtained 60 people, and considering 10% of

the probability of drop out in subjects, 65 people were selected as samples in each group.

$$n = \frac{(\sigma_1^2 + \sigma_2^2) \times \left(z_{1-\frac{\alpha}{2}} + z_{1-\beta} \right)^2}{(\mu_1 - \mu_2)^2} = 65.5,$$

The patients in each of two were not in contact with each group and they did not know in what groups they were. The samples were selected based on inclusion criteria. The inclusion criteria included having an age of 60 years and older, having speaking ability, the possibility of making phone calls and meeting with elderly people, and treatment of them by chemotherapy method.

Exclusion criteria also included: change the treatment from chemotherapy to surgery or radiotherapy, change in the consciousness level during chemotherapy and patient’s withdrawal from cooperation according to his or her self-expression.

The data collection tool included one questionnaire and one patient evaluation form based on “Roy” adaptation model and an informed consent form. The used questionnaire included a Multidimensional Fatigue Inventory (MFI-20). This questionnaire includes 20 items scored on a 5-point Likert scale ranging from 1 (yes, it is quite correct) to 5 (no, it is quite false). The total score of fatigue was between 20 and 100, so that the higher score was the sign of more fatigue.

Based on the Roy form, the subjects were also examined in 2 dimensions (physiologic and self-conception). Based on this form, maladaptation and different types of stimuli were identified.

Sampling was performed in two stages. Initial sampling was performed using convenient sampling method and 130 participants were selected. After introducing the researcher to the staffs of the ward, the patients and their caregivers and having explained the working process, the informed consent form was completed by the elderly people. Then, pre-test was performed to identify the patients who had fatigue based on the MFI in the intervention and control groups. Then, the elderly people whose score was 20 or more than 20 in MFI, were considered as elderly people with fatigue. Then, they were randomly (through flip a coin) divided into two groups (each included 65 subjects) of intervention and control.

In the intervention group, the researcher used the “Roy” adaptation model in the physiology and self-concept dimensions. Based on this form, maladaptive behaviors were examined in these dimensions. Patients’ responses in physiological dimension of the 9 subcategories were as follows: resting and doing activity, nutrition, excretion, oxygen supply, fluids and electrolytes, endocrine glands function, skin consistency, sensation, and neurologic. In the self-concept dimension, the self-objective and the self-subjective were examined. In the self-objective section, questions were asked about the appearance of the dress, changes in the appearance of the patient, client feelings, changes in the appearance, and weight of the patient were asked. In the self-subjective section, questions were asked on on-verbal communication, hairstyles, and nails, attending religious ceremonies and beliefs in general. The questions were open-ended. The data were collected using interviews and observations.

The focal, underlying, and residual stimuli of this maladaptation were identified. Then, nursing diagnosis was written based on maladaptation for the elderly with cancer and the necessary trainings were given for elderly

people during 4 sessions. The training was provided through face to face method, preparation of educational pamphlets, and providing CD for solving the problems caused by chemotherapy and cancer.

Follow-up in both groups was performed by telephone in the first, second, third and fourth weeks after 4 sessions of training. One month after the completion of intervention, post-test was re-taken from patients in control and intervention groups and the data were collected.

Data were analyzed by quantitative data analysis method and using descriptive statistics such as mean, standard deviation, and frequency and inferential statistics of chi-square, paired t-test, Mann-Whitney test, Wilcoxon test, analysis of variance and Kruskal-Wallis test in SPSS software.

Finding: The results showed that there was no significant difference between the intervention and control groups regarding marital status, gender, education level, insurance status, duration of disease, and job (Table 1).

Table 1. Individual characteristics and disease status of the elderly cancer (T: Independent t-test, X²: Chi-square test).

		N (%) Intervention Group	N (%) Control Group	
Marital Status	Married	61(93/8)	61(93/8)	p=0/0264 X ² =2/667
	Spouse deceased and single	4(6/2)	4(6/2)	
Gender	Male	32 (49/2)	33(50/8)	p=0/725
	Female	33 (50/8)	32 (49/2)	
Age (Year)	60-70	44(76/6)	50(76/9)	p=0/315 X ² =2/309 t=0/796
	71-80	17(26/2)	10(15/4)	
	Over 80	4(6/2)	5(7/7)	
Job	Unemployed	13(20)	4(6/2)	P=0/151 X ² =8/105
	Self-employed	11(16/9)	12(18/5)	
	Housewife	40(26)	29(44/6)	
	Employee/worker	1(1/5)	4(6/2)	
	Retired	14(21/5)	16(24/6)	
Level of education	Illiterate	25(38/5)	20(30/8)	P=0/174 X ² =6/356
	Elementary	28(43/1)	21(32/3)	
	Guidance	7(10/8)	13(20)	
	High school	3(4/6)	9(13/8)	
	Academic	2(3/1)	2(3/1)	
number of chemotherapy	once	3(4/6)	4(6/2)	p=0/667 X ² =0/811 T=0/636
	2-4 times	29(44/6)	33(50/8)	
	Over 5 times	33(50/8)	28(43)	

		N (%) Intervention Group	N (%) Control Group	
Duration of disease (month)	Under 1 month	14(21/5)	14(21/5)	P=0/093 X ² =4/744 t=3/37
	1-6 month	47(72/3)	39(60)	
	Over 6 months	4(6/2)	12(18/5)	

Based on the study objectives, the fatigue level of patients undergoing chemotherapy was evaluated using MFI. Based on the results, the pre-intervention fatigue was 60.63 ± 5.92 in the intervention group and 58.84 ± 6.28 in the control group, which were not statistically significant (P-value= 0.53). After implementing the

intervention, fatigue was 50.43 ± 7.42 in the intervention group and 58.46 ± 5.68 in the control group. Given the normality of the data distribution and the independent t-test, the mean fatigue of two groups was significantly different after intervention (p-value ≥ 0.001) (Table 2).

Table 2. Comparison of mean fatigue before and after the intervention

Variable		Intervention	Control	Statistic	P
Group		Mean ± SD	Mean ± SD		
Level of fatigue based on questionnaire MFI	Before Intervention	5/92 ± 60/63	6/28 ± 58/84	0/79	0/53
	After Intervention	7/42 ± 50/43	5/68 ± 58/46	6/92	0/001
	Statistic	. 10/96	1/33		
	P	0/0010 ≥	0/187		

Based on the “Roy” adaptation form, maladaptation issues such as eating disorders, nausea, vomiting, constipation, weight loss, sleep disturbances, anorexia, pain, dysfunction in social interactions, reduced religious beliefs.

Stimuli such as drug complications, financial problems, anxiety on preparation drug, physical weakness and the fear of falling in bathroom, impatience, unwillingness to attend religious ceremonies due to depression and lack of performing religious practices in the hospital were obtained.

Conclusion

This study was conducted to investigate the effect of caring program based on Roy adaptation model in physiologic and self-concept dimensions on fatigue in elderly patients with cancer undergoing chemotherapy in oncology wards of Imam Hossein, Shohaday-e Tajrish and Ayatollah Taleghani hospitals. According to the results of the present study, the mean fatigue in the elderly patients with cancer undergoing chemotherapy in the intervention group decreased after the intervention

compared to before the intervention, but such significant difference was not seen in the control group. Hence, it can be stated that implementation of care program based on “Roy” adaptation model was effective in reducing fatigue in elderly cancer patients undergoing chemotherapy.

This study show that in older patients, due to the physiological status and underlying comorbidity disease, the rate of maladaptation and fatigue is higher.

Maleki et al. (2016) reported that “ Roy” adaptation model had positive and useful effects in reducing the level of patients’ fatigue with Multiple Sclerosis ⁽¹¹⁾.

Rosinczuk et al. (2015), applying “Roy” adaptation model improved the physiological status of patients with chronic diseases such as MS ⁽¹²⁾. studies and present study have shown that the use of adaptation model is effective on the physiological dimension of patients with chronic MS and Thalassemia major. s.

Ursava et al (2014) reported that applying the “Roy” adaptation model in cancer patients is useful and can help

these patients in different dimensions, including self-concept, role-playing, physiological and independence and dependence.⁽¹³⁾ In the present study, show that reduce in physiological and self-concept dimensions and indicate that training on fatigue is affect.

One aspect of the “Roy” adaptation model is self-concept. Mohammadpour et al (2015) came to this conclusion that the this model is a low-cost and effective intervention that made adaptation in the self-concept dimension in primiparous women⁽¹⁴⁾.

Hasani et al (2012) found that the this had no effect on self-concept and dependency⁽¹⁵⁾. Azarmi and Farsi (2015) stated that training based on “Roy” model improved the level of physiological adaptation and role-playing in the veterans with limb amputation⁽¹⁶⁾.

Akyil et al. (2013) showed that the “Roy” adaptation model did not affect the physiological dimensions of patients with chronic obstructive pulmonary disease⁽¹⁷⁾. Some limitations of this study included individual differences, financial problems, cultural factors, physical and mental problems caused by aging, elderly people impatience in the implementation of the trainings provided for them.

The findings of the results show the effective this model in reducing the fatigue in elderly cancer patients undergoing chemotherapy. It means that this care program as a nursing intervention and a non-pharmacological approach can reduce the fatigue caused by chemotherapy in elderly cancer patients. In addition, using nursing interventions, nurses can help these patients. Implementing a care program based on the Roy Adaptation Model helps nurses easily implement it and empower patients and their families to control this complication. The care program based on “Roy” adaptation model as a non-invasive intervention that its implementation is easy and cost-effective to be used in order to reduce the chemotherapy-induced fatigue in elderly people suffering from cancer.

Conflicts of Interest: The authors of this research announced no conflict of interest for this study.

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Ethical Clearance: This study was derived from a master thesis in elderly nursing. It was approved by Shahid Beheshti University of Medical Sciences,

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