



Original Article

# Study of difficulty in emotion regulation as a predictor of incidence and severity of nausea and vomiting in breast cancer patients

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## Abstract

**Introduction:** Nausea and Vomiting due to chemotherapy are the most distressing side effects of this treatment in breast cancer patients. Apart from pharmacological factors, non-pharmacological factors including psychological factors such as emotions and emotion regulation have a significant impact on the incidence and severity of these side effects. Because emotion regulation is one of the main factors leading to different behaviors in different individuals in response to various situations, the aim of this research is the study of difficulties in emotion regulation as a predictor of incidence and severity of nausea and vomiting in breast cancer patients.

**Materials and Methods:** In this is descriptive correlation study (Oct 2012-Feb 2013), 300 breast cancer patients referred to Reza clinic and Omid and Qaem hospitals in Mashhad were selected through available sampling. They completed Difficulties in Emotion Regulation Scale (DERS) and nausea and vomiting scale (MANE). To data analysis SPSS software, factor analysis and regression analysis were used.

**Results:** The results of regression analysis showed that difficulties in emotion regulation can predict the incidence and severity of nausea and vomiting in breast cancer patients ( $P < 0.01$ ).

**Conclusion:** Considering the findings, difficulties in emotion regulation can predict the incidence and severity of nausea and vomiting in breast cancer patients.

**Keywords:** Breast cancer, Chemotherapy, Emotion, Nausea, Regulation, Vomiting

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## Introduction

Cancer is one of the most major health problems and breast cancer is a major public health problem among women in worldwide (1). The recent estimates show that more than 1.1 million new cases of breast cancer are diagnosed in the world that this figure is equivalent to ten percent of all new cancer cases and twenty-three percent of all women's cancers (2). The breast cancer comprises 21.4% of reported cancer cases in Iran (3) and researches indicate that Iranian breast cancer patients mean age is lower ten years than same patients in western countries. This result shows the importance of diagnosis and control of this disease in Iran.

Although surgery, chemotherapy, radiotherapy and hormone therapy are used as most common methods for breast cancer treatment increased the survival rates but they cause short and long-term adverse effects in these patients so the breast cancer patients suffer from a wide range of physical, psychological and social signs and symptoms during the diagnosis and treatment process (4). Chemotherapy as a common treatment method, cause different adverse effects include change in bowel enzymes, hair loss, anorexia, mouth mucosal edema, nausea and vomiting, decrease of libido or transient or permanent impotency, negative affects such as anxiety and depression (5). Despite of progression in medications which treated nausea and vomiting, these effects are most common complications of chemotherapy (6) and most severe adverse effects and cancer patients' major worries the prevalence of these effects

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reported about 54-96% among cancer patients under treat with chemotherapy (7). The studies indicate that the nausea and vomiting with highest prevalence (44.2%) are most annoying side effects of chemotherapy and they have considerable effects on patients' quality of life and physical, cognitive, social and emotional activities and patients' functions that if they have not properly controlled about 20% of patients refuse to continuation of treatment (3).

Also, the results of other studies indicate that the role of patient's expectations about nausea were affective in occurrence of nausea among women with cancer who received first session of chemotherapy (8). The adjustment with chronic disease is an upset condition that usually accompanies a complex of negative emotions such as fear, anger and blue that it may influence the patients' health. Several retrospective experimental studies indicated that negative emotions have harmful effects on mental health, physiologic processes, neurologic function, symptomatic perception and symptomatic behaviors and etc. (9). Although in recent decades, screening, mammography and chemotherapy as a major or adjunctive therapy increase the rates of cure and patients' surveillance (2) but the patients' awareness about his/her diagnosis has a deep impact on aspects of his/her life (10). Women with breast cancer diagnosis experience the severe emotional disturbance as a psychological variable (11). Although the recent researches supply evidences that indicate the emotions are functional (12) but emotion is a basic phenomenon of human function that it usually has an adaptive value and promotes the peoples' efficacy in goals (13). In overall, the emotion regulation can be concerned as a process by which a person influences on the form of present his/her emotion. This process determines that how the person experiences and expresses his/her emotions (14). The emotion regulation is a continuous process that includes heterogeneous set of internal and external processes or strategies that regulates according to individual's goals (9). In the other viewpoint, the emotion regulation refers to changes that accompany with activated emotions. These changes occur in emotion or other psychological processes (for example memory, attention or social interactions) (15). Indeed, the emotion regulation contains four components include awareness and understanding of emotions, accept of emotions, ability of control of impulsive behaviors and behave in accordance with the desired objectives during negative emotional experience and finally, the

ability to flexible use of emotion regulation corresponding to situation for desired regulation of emotional responds in order to achieve individual goals and respect to environmental demands (16). For years, researchers and physicians believe that poor emotion regulation or absence of emotional expression, predicts early death from cancer. The results of several studies suggest that emotional suppression trends predict breast cancer (17). Nausea and vomiting state before chemotherapy is not a learned response but it can occur without prior exposure to chemotherapy that it depends on the patient's distress and expectations (18). In overall, every disease associates with great emotional revolution so the effective psychological interventions should be progressed that they decrease distress and helps to identity challenges. In total, according to importance of cancer as a stressful event in life duration and chemotherapy and its effect on treatment duration or even lifelong, the present study aimed to assess the difficulty in emotion regulation in nausea and vomiting state and its severity among breast cancer patients.

### Materials and Methods

This is a descriptive co-relational study that approved by Mashhad University of Medical Sciences. The statistical community included admitted and outpatient breast cancer patients who undertreated chemotherapy and referred to Qaem and Omid hospitals and Imam Reza clinic (Supportive Association of Cancer Patients) in Mashhad (2011-2012).

The inclusion criteria included: 1- breast cancer as definitive diagnosis by surgeon, 2- chemotherapy treatment, 3- pass of at least one session of chemotherapy, 4- age range of 35 to 58 years, 5- the same treatment method for all patients and 6- education at least the ability of reading and writing. The exclusion criteria included: 1- Have an another severe physical illness, 2- psychiatric medications or psychological interventions during the research process, 3- recent stressful event such as divorce or grief, 4- very poor general medical conditions based on responsible physician during admission and 5- marked psychiatric disorder. According to these criteria 272 patients selected via available sampling method. The questionnaires fulfilled after the explanation of aim and informed consent.

### Research instruments

A) *Morrow Assessment of Nausea and Emesis (MANE)*: This is a 16-item scale which evaluates the prevalence, severity and duration of nausea and vomiting before and after chemotherapy. Patient

indicates the duration and selects the descriptive words for severity. MANE scale has medium test-retest ability (co-relation coefficient=0.78). The convergent validity assessed through comparison of its scores with chemotherapy side effects. This analysis indicated significant medium co-relation coefficient 0.26 to 0.33. These side effects included somnolence, abdominal pains and sweating that they were not accompany with nausea and vomiting (19). The MANE scale validated through content validation. According to the questions of research, the questions of scale assessed by researchers and psychologists for approve and revision. The questionnaires were distributed among 75 patients for pilot study then overlapped or unclear questions were excluded. The reliability of questionnaire for total score was  $\alpha=0.87$ .

B) *Difficulties in Emotion Regulation Scale (DERS)*: This scale has 33 items and 6 subscales. This standard scale used in the present study because its validity and reliability tested in previous studies (14, 16). The Cronbach's alpha for total questionnaire and the components included reject of emotional responses, difficulty in aimed behavior,

difficulty in control of impulse, absence of emotional awareness, limited availability to strategies of emotion regulation and absence of emotional clarity evaluated 0.82, 0.65, 0.68, 0.71, 0.72, 0.69 and 0.67 respectively.

For evaluation of factorial structure and psychometrics properties of scale, the samples included 263 students of Shiraz University (182 women and 181 men) selected through classified randomized sampling method. The results of explorative factorial analysis indicated 8 factors for this scale those 6 factors were coordinative with DERS subscales and 2 other factors were excluded because of loading of 1 item. The validity of subscales based on Cronbach's alpha was 0.86 to 0.88 and retest validity coefficient was 0.79 to 0.91 after 1 week (20). The data were analysed by simple, multi and logistic regressions and SPSS software.

**Results**

Based on the present study conducted on 272 women with breast cancer on chemotherapy, there is a relationship between the scores of DERS and severity of nausea and vomiting (Table 1).

**Table 1.** The correlation between total difficulty of emotion regulation scale and its subscales with the severity of nausea and vomiting among breast cancer patients

	1	2	3	4	5	6	7	8	9
1.Total difficulty in emotion regulation scale	1								
2.Rejectof emotional responses	0.81*	1							
3.Difficulty in aimed behavior	0.70*	0.40*	1						
4.Difficulty in control of impulse	0.86*	0.63*	0.46*	1					
5. Absence of emotional awareness	-0.15*	-0.25*	-0.13*	-0.23*	1				
6. Limited availability to strategies of emotion regulation	0.87*	0.63*	0.60*	0.75*	-0.41*	1			
7. Absence of emotional clarity	0.53*	0.37*	0.44*	0.38*	-0.54*	0.52*	1		
8. Severity of nausea	-0.31*	-0.17*	-0.26*	-0.25*	0.04	-0.27*	-0.22*	1	
9.Severity of nausea	-0.25*	-0.18*	-0.13	-0.12	-0.10	-0.19*	-0.19**	0.77*	1

\* $P<0.01$ , \*\* $P<0.05$

According to Table 1, there is a significant relationship between total difficulty in emotion scale and subscales include reject of emotional responses, difficulty in aimed behavior, and difficulty in control of impulse, absence of emotional awareness, limited availability to strategies of emotion regulation and absence of emotional clarity with severity of vomiting. Also, difficulty in emotion regulation, predicts the severity of induced nausea and vomiting among breast cancer patients (Table 2). Based on the results, the severity of nausea and vomiting may be predicted through difficulty of emotion regulation ( $F_{(1,219)}=27.63$ ,  $P<0.01$ ). Also the results indicate that square of multiple correlative coefficient is significant ( $R^2=0.33$ ) and the predictor variable can explain 11% of changes of nausea and vomiting variable. The results of multiple regression analysis showed in Table 3.

**Table 2.** The results of simple regression for prediction of the severity of nausea and vomiting through difficulty of emotion regulation

Source of changes	Total of squares	Degree of freedom	Mean of squares	F	P
Predictor	417.98	1	417.98	27.63	0.000
Residual	3312.02	219	15.12		
Total	3730.01	220			

The severity of nausea and vomiting may be predicted through components of difficulty of emotion regulation ( $F_{(6,214)}=6.19$ ,  $P<0.01$ ). Also the results indicate that square of multiple correlative coefficient is significant ( $R^2=0.38$ ) and the predictor variables can explain 12% of changes of nausea and vomiting variable. So, the results of regression coefficients reported that which predictor variables of components of difficulty of emotion regulation can predict the severity of nausea and vomiting. Based on these results, among of 6 predictor

variables, only the component of absence of emotional clarity may be a good predictors for the severity of nausea and vomiting ( $t=-3.17$ ,  $P<0.01$ ).

**Table 3.** The results of multiple regressions for prediction of the severity of nausea and vomiting through components of difficulty of emotion regulation

Source of changes	Total of squares	Degree of freedom	Mean of squares	F	P
Predictor	551.78	6	91.96	6.19	0.000
Residual	3178.23	214	14.85		
Total	3730.01	220			

The logistic regression analysis used to indicate that emotion regulation can predict the nausea and vomiting. The results showed that emotion regulation can predict these conditions (respectively  $P=0.002$  and  $P=0.02$ ).

Also, the one way regression analysis used to assess the severity of nausea and vomiting based on the patients' education level but there is no significant relationship between the mean of the severity of nausea and vomiting and education level ( $F_{(2,216)}=0.33$ ,  $P>0.05$ ).

## Discussion

According to the results of present study, difficulty in emotion regulation is the predictor of the severity of nausea and vomiting and other variables do not play important role. Therefore the absence of emotional clarity may be concerned as the predictor of nausea and vomiting. One of the retrospective strategies of emotion regulation is attention establishment. This strategy refers to shift of attention to a specific aspect (21). It means that how individuals lead their attention to impact on their emotions in a specific condition (22).

Distraction and concentration are two main strategies of attention. Distraction means attention to different aspects of situation or away attention of situation. This strategy may include internal concentration as long as people; stimulate thoughts or memories that are different with unpleasant emotional state (23). Suppression of emotion is the attractive strategy (health especially chronic disease). Suppression is a response focused strategy and it is a kind of response correction. This refers to correction (means control) is a behavioral aspect of experience of emotion (9).

Some of studies indicated that suppression of emotion such as anger or hostility have a negative relationship to physical and psychological health in diseases such as coronary artery disease, chronic pain, rheumatoid arthritis and cancer (13). In addition, several strategies relate to patients' health: rumination and regret that they accompany with

lower levels of life quality among cancer patients (9). The researchers and physicians believe that poor emotion regulation or absence of emotional expression, predicts early death due to cancer (24).

The studies show that all children with cancer in the worldwide and children with lymphoblastic leukemia act better in specific emotional activity compared to health children (25). A research has assumed that emotion regulation mechanisms have a key role in adaptive function among children with cancer (26).

Children regulate their emotions through internal and external mechanisms so they have specific ability to control of emotions and avoid anger. A study indicated that children combat with nausea through wishful thinking, emotion regulation and distraction also they manage vomiting by using of emotion regulation.

The other studies suggested that emotional suppression predict potentially side effects of chemotherapy (such as fatigue and constipation) and especially anger suppression predict the symptoms related to function of immune system and cardiovascular stimulations (for example oral sores and palpitation) (17). The results indicate that interventions aimed to reduction of suppression negative emotions may help women to coping with symptomatic side effects of chemotherapy. Also, it has approved that difficulty of emotion regulation can predict the nausea before treatment. Anxiety, depression, hostility and coping styles in chemotherapy has been assessed among breast cancer patients. The women who received the diagnosis of breast cancer may exhibit severe emotional disturbance and various psychological problems include insomnia, anorexia, suicide thoughts, over drinking alcohol and fear of death (11).

It can be concluded that these psychological problems can determinate the nausea and vomiting even before injection of chemotherapy drugs. Also, in the present study approved that difficulty of emotion regulation can predict the nausea before treatment. Based on the results of a study, the education level, socioeconomic conditions and marital status are not important factors for progression of nausea and vomiting symptoms (23) that there was not seen any significant relation between educational level and nausea and vomiting in the present study.

Among the limitation of this study, it can be noted that this research conducted on breast cancer patients in Mashhad so caution may be concerned in the generalization of these results to other patients.

This study was co-relational research and it did not approve causal relations between variables. So it is recommended to verify the correctness of the present results, further studies conduct among cancer patients and in addition to co-relational studies the comparative studies conduct to assess this side effect of chemotherapy.

### Conclusion

Based on our findings, difficulty in emotion regulation can predict the presence of nausea and vomiting before the treatment, and also the severity

of nausea and vomiting due to chemotherapy. Therefore, it seems that absence of emotional clarity can be considered as a predictor of nausea and vomiting in breast cancer patients.

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