

# The Comparison of Sucking Ice Bits With Plain Water and Ice Bits Containing of Mint Extract on Nausea and Vomiting During Chemotherapy in Patients Suffering from Breast Cancer

Sarpooshi HR<sup>1</sup>,  
Haddadi M<sup>1\*</sup>,  
Mazandarani MS<sup>2</sup> and  
Borghabani R<sup>3</sup>

- 1 School of Nursing and Midwifery, Sabzevar University of Medical Sciences, Sabzevar, Iran
- 2 School of Midwifery, Sabzevar University of Medical Sciences, Sabzevar, Iran
- 3 Health Center City Jovin, Sabzevar University of Medical Sciences, Sabzevar, Iran

\*Corresponding author:  
Mohammad Haddadi

✉ m.haddadi96@gmail.com

School of Nursing and Midwifery, Sabzevar University of Medical Sciences, Sabzevar, Iran.

Tel: +989155208392

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## Abstract

**Background and purpose:** Breast cancer is known as the most widely recognized and lethal disease among women. Various strategies including surgery, radiotherapy, and chemotherapy are applied to cure cancer. Chemotherapy, as a typical helpful strategy, brings about various physical and mental symptoms. Nausea and vomiting are amongst the most common widely recognized symptoms of chemotherapy. Regardless of advancement in anti-nausea and anti-vomiting medicines, nausea and vomiting are yet the most widely recognized reactions of chemotherapy. In one hand, alternative and complementary medicines are among basic and safety measurements. This study has been accomplished to compare the effect of sucking ice bits with plain water and ice bits containing of mint concentrate on nausea and vomiting during chemotherapy.

**Materials and methodology:** In this clinical study, 90 patients suffering from breast cancer with chemotherapy were placed into three groups of "control", "ice bits with plain water", and "ice containing of mint extract" randomly. Thirty ice bits in 1cc, 30 ice bits with mint extract in 1cc, and 30 cc of water were given to "ice bits with plain water", "ice bits containing mint extract", and "control" groups; respectively. Nausea was assessed by numerical scale of VAS, and vomiting was evaluated based on frequency. SPSS16 software was applied to analyze data.

**Findings:** The findings showed that intervention group of "ice bits with plain water", "ice bits containing of mint extract", and "control" groups have got averages of 1.6, 1.96, and 2.9; respectively indicating to significance (P-value: 0.010), while in "ice bits with plain water" and in intervention group of "ice containing of mint extract" group there are 0.2, 0.233 vomiting cases, so that an average of 0.266 vomiting was observed in the control group indicating to a lack of significance (P-value: 0.835).

**Conclusion:** According to the study results, sucking ice bits with plain water and ice bits containing of mint extract can take effect on nausea while they make no effect on vomiting resulted from chemotherapy.

**Keywords:** Nausea; Vomiting; Chemotherapy; Breast cancer

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## Introduction

Cancer is a major health problem in the United States and also

worldwide [1]. According to the latest World Health Organization (WHO) report released in 2011, cancer is the second leading cause of death worldwide after cardiovascular disease [2,3].

Cancer is a major health problem in the United States and also around the world [1]. According to the latest World Health Organization (WHO) report released in 2011, cancer is the second driving reason for death worldwide after cardiovascular infection [2,3].

Cancer is a noteworthy medical issue right now, and breast cancer is regarded as a major health problem for women around the world [4]. It is a major health concern for women since it is the most widely recognized sort of cancer and second driving reason for tumor passing among women after lung disease [5]. Breast malignancy in Iran represents 25.06% of the aggregate malignancies and is the most well-known cancer among women [5]. Studies suggest that the age of the disease in Iran is about a decade less than that of other countries [6]. Patients with bosom tumor experience the ill effects of an extensive variety of physical, mental and social indications amid the procedure of determination and treatment [5].

Various strategies have been used to treat cancer, including surgery, radiotherapy and chemotherapy. One of the most important, oldest and most common cancer treatments methods is Chemotherapy [2]. Patients undergoing chemotherapy experience a wide range of treatment side effects that affect their quality of life. Physical complications include diarrhea, low blood pressure, drowsiness, fatigue, pain, mucositis, constipation, nausea and vomiting, etc. [2,7]. Among these, nausea and vomiting is the most common [8-10], the most repulsive and the most irksome [9,11] side effects [2,12]. Because of the constrained impact and risky reactions of antiemetics, one of the essential and moderately safe measures in this regard is using CAM. Ice therapy is one of these methods. Ice therapy is based on the theory that cold, through vascular contraction, causes mucus to be less exposed to toxic agents [13-15].

Therefore, cold from the ice causes vascular contraction in the peripheral parts of the gastrointestinal tract (esophagus and stomach) and reduces the amount of chemotherapy agent entering these areas. This reduces digestive system stimulation, which decreases the stimulation of nausea and vomiting center in medulla oblongata and therefore the severity of nausea and vomiting. Peppermint is commonly used as a flavor in food, tea, toothpaste, washing solutions and medications. Menthol is peppermint is a stomach relaxant that reduces nausea and vomiting through stomach muscle relaxation and gastric wall anesthesia. Peppermint also has a sedative effect. The aroma of peppermint has a psychological effect and reduces nausea and vomiting [16]. This study aims to accomplished to compare the effect of sucking ice bits with plain water and ice bits containing of mint extract on nausea and vomiting during chemotherapy.

## Materials and Methods

This was a quasi-experimental clinical trial. The participants included 90 patients with breast cancer (who were taking adriamycin and cyclophosphamide) admitted to the Oncology Department of Omid Medical Center, Mashhad, from August to October 2015. The participants were selected using convenience sampling and were randomly divided into the intervention and control groups. Data were collected using a personal information

form (age, educational qualifications, place of residence, disease grade and marital status) and a visual analogue scale (VAS) to measure the severity of dry mouth. The inclusion criteria included informed written consent for participation in the study, breast cancer patients and who take adriamycin and cyclophosphamide, normal gag reflex (pharyngeal reflex) and swallowing and being able to read, write and see. After receiving a written permission for conducting field study from Sabzevar University of Medical Sciences and presenting it to the Oncology Department of Omid Hospital, affiliated to Mashhad University of Medical Sciences, the study was conducted on patients with breast cancer admitted to the Chemotherapy Department. In all the three groups (the control group, the tap water ice group and the mint ice group), nausea and vomiting were measured using VAS scale and the number of incidences, respectively. In the control group, in addition to the routine medications (granisetron and dexamethasone), 30 cc water was given to the patients, from 5 minutes before the chemotherapy to the end of the chemotherapy. At the end of the chemotherapy, the incidences of nausea and vomiting were evaluated and compared with the initial incidences. In the tap water ice group, in addition to the routine medications (granisetron and dexamethasone), 30 small pieces of tap water ice (1 cm × 1 cm, totally 30 cc of water) were given to the patients, from 5 minutes before the chemotherapy to the end of the chemotherapy. At the end of the chemotherapy, the incidences of nausea and vomiting were evaluated and compared with the initial incidences. In the mint ice group, in addition to the routine medications (granisetron and dexamethasone), 30 small pieces of ice, containing 30 drops of supermint (mint extract) (1 cm × 1 cm) were given to the patients, from 5 minutes before the chemotherapy to the end of the chemotherapy. At the end of the chemotherapy, the incidences of nausea and vomiting were evaluated and compared with the initial incidences. At the end, all the three groups were compared in terms of incidences of dry mouth, nausea and vomiting.

## Findings

The participants included 90 patients with breast cancer who met all the inclusion criteria. Personal information and clinical characteristics of all the patients in the three groups are described below.

The mean and standard deviation of patients' age in the control group, the tap water ice group and the mint ice group were "38.7 and 7.74", "41 and 8.25" and "43 and 8.45", respectively. All the three groups are homogeneous in terms of age (P-value=0.27). All the research units were homogeneous in terms of marital status, educational qualifications and the degree of severity of the disease.

### The clinical characteristics of all the patients in the three groups includes

**Nausea before the intervention:** The mean and standard deviation of nausea in the three groups include (**Table 1**), One-way ANOVA test showed that there was no significant difference between the three groups in terms of incidence of nausea (P-value=0.929).

**Vomiting before the intervention:** The mean and standard deviation of vomiting in the three groups include (Table 2), One-way ANOVA test showed that there was no significant difference between the three groups in terms of incidence of vomiting (P-value=0.698).

### The clinical status of patients after chemotherapy in different intervention groups

**Nausea after the intervention:** The mean and standard deviation of nausea in the three groups include (Table 3), ANOVA test with 95% confidence interval showed that there were significant differences between the three groups in terms of incidence of nausea (P-value=0.010).

Comparing the incidences of nausea in the three groups (Table 4), Tukey's post hoc test showed that the differences between means were due to the differences between the mean of the control group and the other two groups.

**Vomiting after the intervention:** The mean and standard deviation of vomiting in the three groups include (Table 5),

**Table 1** The mean and standard deviation of nausea before the intervention.

S.D.	Mean	Groups
1.382	1.533	Control group
1.404	1.6	Tap water ice group
1.241	1.666	Mint ice group

**Table 2** The mean and standard deviation of vomiting before the intervention.

S.D.	Mean	Groups
0.305	0.1	Control group
0.345	0.133	Tap water ice group
0.253	0.066	Mint ice group

**Table 3** The mean and standard deviation of nausea after the intervention.

S.D.	Mean	Groups
1.787	2.9	Control group
1.454	1.6	Tap water ice group
1.245	1.96	Mint ice group

**Table 4** Comparing the incidences of nausea in the three groups.

P-value	Groups	
0.015	Tap water ice	Control
0.038	Mint ice	
0.015	Control	Tap water ice
0.932	Mint ice	
0.038	Control	Mint ice
0.932	Tap water ice	

**Table 5** The mean and standard deviation of vomiting after the intervention.

S.D.	Mean	Groups
0.449	0.266	Control group
0.406	0.2	Tap water ice group
0.43	0.233	Mint ice group

ANOVA test with 95% confidence interval showed that there was no significant difference between the three groups in terms of incidence of vomiting (P-value = 0.835).

## Discussion

This study compared the impact of sucking tap water ice and mint ice on incidence of nausea and vomiting during chemotherapy in patients with breast cancer. According to the results, there was a significant difference between the tap water ice and the mint ice groups with the control group in terms of the mean of incidence of nausea during chemotherapy. This indicates the effects of tap water ice and mint ice on incidence of nausea. However, there was no statistically significant difference between the tap water ice group and the mint ice group. In addition, there was no significant difference between the tap water ice and the mint ice groups with the control group in terms of the mean of incidence of vomiting during chemotherapy. The researchers searched various databases and found no identical research. Therefore, the results will be compared with other studies.

Tate investigated the effect of peppermint oil on postoperative nausea and found that peppermint can effectively reduce the incidence of postoperative nausea and vomiting [17]. The results of Tate's study are consistent with the present study.

Najafi investigated the effect of inhaling peppermint oil on nausea and vomiting after abdominal surgery and concluded that inhalation of peppermint had no effect on the incidence of nausea and vomiting after abdominal surgery [18]. The results of their study are not consistent with the present study. Different groups of patients with different diseases and materials were used in the present study.

Pasha investigated the effect of mint extract on nausea and vomiting during pregnancy and found that mint extract had no effect on the incidence of pregnancy nausea and vomiting [19]. Their results are not consistent with the present study. Different groups of participants and materials were used in the present study. In addition, in their study, the intervention was carried out by the participants at home and they completed the scale on their own, this may have increased the risk of error in their research.

In the present study, both tap water ice and mint ice effectively reduced the incidence of nausea during chemotherapy and both increased patient satisfaction. It is recommended to investigate the effect of these materials on conditional nausea (before chemotherapy), delayed nausea and on other cancer groups, too. The results showed that the mean of incidence of vomiting in both water ice and mint ice groups were lower than that of the control group; however, the differences were not significant. This indicates that the two interventions had no effect on incidence of vomiting. Thus, it is recommended to investigate factors affecting vomiting (diet, anxiety, etc.) and to increase the concentration of mint. Therefore, further studies are recommended in this area.

## Conclusion

This study compared the effect of sucking tap water ice and mint ice on incidence of nausea and vomiting during chemotherapy in

patients admitted to Omid Hospital, Mashhad in 2015. The results showed that both tap water ice and mint ice effectively reduced the incidence of nausea compared with the control group. Therefore, it is recommended to use these non-invasive, simple, inexpensive and harmless methods along with medications to reduce the incidence of nausea in cancer patients. However, there was no statistically significant difference between the tap water ice and the mint ice groups with the control group in terms of incidence of vomiting and these methods did not effectively reduce vomiting. In this regard, further studies are recommended with larger sample sizes and with increased concentrations of mint.

## Research Limitations

Due to the special conditions of breast cancer patients and their disease, patients were extremely attached to their medical environment and the medical staff and it was very difficult to communicate with the patients to conduct the research. The

key personnel of the chemotherapy department helped the researcher in this regard.

## Practical Suggestions

Based on the results, tap water ice and mint extract ice can be used by nurses as a part of the treatment to reduce nausea during chemotherapy.

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## Conflict of Interest

We here by declare that authors have no conflict of interest.

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