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Effectiveness of Ginger Tea in Reducing Chemotherapy Induced Nausea and Vomiting Among Women with Reproductive System Cancer in Institutes of Oncology

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ABSTRACT

In India, it is estimated that there are approximately 2-2.5 million cases of cancer at any given point of time and around 7-9 lakhs new cases are detected each year nearly half of these cases die each year. Study objectives are to assess the effectiveness of ginger tea in reducing chemotherapy induced nausea and vomiting and to find out the association between pre interventional level of chemotherapy induced nausea and vomiting with selected demographic variables. An evaluative approach with quasi experimental control group pre test- post test design was used and the study was conducted at Preethi cancer center for oncology and Cheluvamba hospital, Mysore from 01- 09- 2013 to 30- 09- 2013. Sixty women with reproductive system cancer having chemotherapy induced nausea and vomiting were selected by using nonprobability convenient sampling technique. Data collection was done by using demographic proforma and modified nausea and vomiting assessment scale. Results shown Based on pre and post interventional level of chemotherapy induced nausea, there was marked reduction in level of nausea from severe 15(50%) and moderate 15(50%) to mild 28(93.33%) and moderate 2(6.67%) among experimental group when compared with control group. The findings revealed that calculated Mann Whitney test, 'Z' value of nausea score -6.38 was greater than the table value of -1.96. The findings of the study show that, oral administration of ginger tea would help to reduce the chemotherapy induced nausea and vomiting among women with reproductive system cancer.

Keywords: Ginger tea, chemotherapy induced nausea and vomiting, reproductive system cancer.

INTRODUCTION

Cancer is an iceberg disease which affects all communities worldwide. Approximately 10 million people were diagnosed with cancer and more than 6 million die of the disease every year. In India, it was estimated that there were approximately 22.5 million cases of cancer at any given point of time and around 7-9 lakhs new cases were detected each year, nearly half of these cases die each year.

The Chemotherapy is the effective treatment in all the stages of the women's reproductive system cancer. This treatment has many types of side effects. The side effects of chemo therapy are hair loss, fatigue, changes in appetite, stomatitis, risk of infections, and changes in blood cell

counts. And it's noticed that nausea and vomiting are most common side effects of the chemotherapy especially in women's reproductive system cancer.

Chemotherapeutic medicines usually target the cells that quickly divide. Since the normal cells in the blood, hair and the lining of the gastrointestinal tract also divide very quickly, chemotherapy can also damage or kill these healthy cells leading to side effects such as nausea and vomiting (64%), transient elevation of serum transaminases (68%), proteinuria (36%), fever (37%), hematuria (31%), dermatologic rash (25%), edema (20%), Flu-like syndrome (19%), alopecia (14%), diarrhoea (12%), constipation(8%) and thrombocytopenia (5%)

A prospective observational study was conducted to determine the incidence of acute and delayed chemotherapy induced nausea and vomiting among patients receiving Highly Emetogenic Chemotherapy (HEC) or Moderately Emetogenic Chemotherapy for the first time. The findings revealed that greater than 35% of patients experienced acute nausea and 13% of patients experienced acute emesis. Delayed nausea was observed in 60% and delayed vomiting in 50% of HEC patients, and 52% patients with delayed nausea and 28% patients with delayed vomiting in MEC patients, respectively.

Ginger is one of the most highly consumed dietary substances in the world. An article regarding Ayurvedic medicine and anesthesia showed that, in Ayurveda ginger is commonly prescribed for nausea, vomiting, motion sickness, sore throat, respiratory congestion, hypoglycemia and vertigo. One gram of ginger per day in four divided doses offered great symptomatic relief ginger reduces the chemotherapy induced nausea and vomiting significantly.

In traditional medicine systems like Ayurveda and Traditional Chinese Medicine (TCM), ginger is considered a valuable herb with warming properties that can help balance the body's energy and promote overall well-being. Many research studies has proved that ginger tea have positive effects on the reducing the nausea and vomiting in women who are under chemotherapy. Ginger tea is a popular beverage made from the root of the ginger plant, known scientifically as Zingiber officinale. It has been consumed for its medicinal properties and unique flavour for centuries, particularly in Asian cultures. Ginger tea has a spicy, aromatic flavour with a slightly sweet undertone. The taste can vary depending on factors such as the variety of ginger used and any additional ingredients added to the tea.

Ginger tea is often consumed for its potential health benefits. It is believed to aid digestion, alleviate nausea including morning sickness and motion sickness, reduce inflammation, and boost the immune system. Some studies have also suggested that ginger may have anti-inflammatory and antioxidant properties. it is naturally caffeine-free, making it a popular choice for those looking to reduce their caffeine intake or enjoy a soothing beverage before bedtime.

According to the results of the study that was presented in the year 2009 annual meeting of the American Society of Clinical Oncology, use of ginger supplements in combination with conventional anti-nausea drugs reduces chemotherapy induced nausea and vomiting to a greater extent than anti-nausea drugs alone. In an effort to further control chemotherapy induced nausea and vomiting researcher continue to explore new approaches to treatment including complementary and alternative treatments such as dietary supplementation

The researcher had observed patients suffering from chemotherapy induced nausea and vomiting during clinical practice. Hence the researcher felt that, the current study may explore the effectiveness of ginger tea to reduce chemotherapy induced nausea and vomiting among women with reproductive system cancer, which would enable them to have a good compliance towards the treatment regimen, nutritional status and quality of life.

METHODALOGY:

Research approach: Quantitative Evaluative approach.

Research Design: quasi experimental non-equivalent control group pre-test post-test design.

Research Setting: Preethi Center for Oncology and Cheluvamba hospital Mysore.

Sample Technique: non probability convenient sampling technique was adopted.

Sample Size: 60 women with reproductive system cancer having chemotherapy induced nausea and vomiting were selected as 30 each in both the experimental and control group.

Description of the tool:

Section A: -Demographic proforma

This section included the basic information about the samples such as age, educational status, occupation, route of administration of chemotherapy, duration of Chemotherapy and previous source of information.

Section B: -Modified nausea and vomiting assessment scale

It is the modified scale of national Cancer Institute's Terminology Criteria for Adverse Events (CTCAE).

This scale was used to assess the level of chemotherapy induced nausea and vomiting among women with reproductive system cancer.

Based on this scale, level of nausea was scored from 0-3 and categorised into normal, mild, moderate and severe. Score 0 for no nausea that is normal, score 1 for experienced nausea 1-2 times in a day that is mild , score 2 for experienced nausea 3-5 times in a day that is moderate and score 3 for experienced nausea more than 5 times in a day that is severe. Based on this scale, level of vomiting was scored from 0-3 and categorised into normal, mild, moderate and severe. Score 0 for no vomiting that is normal, score 1 for 1 episode in 24 hour that is mild ,score 2 for 2 -5 episodes in 24 hour that is moderate and score 3 for more than 6 episodes in 24 hours that is severe.

Data collection method: The 60 samples were selected as per sampling technique, 30 samples each in experimental and control group. An average of 15 samples was included in the study per week. Pretest was done for both experimental and control group on the 1st day, oral administration of ginger tea was given to the experimental group during chemotherapy treatment. Oral administration of ginger tea was not given to the control group and post-test was done for both groups on 6th day of the cycle.

Plan for data analysis: Descriptive and inferential statistics were used to analyse the data.

STATISTICAL METHODS: Based on pre and post interventional level of chemotherapy induced nausea, there was marked reduction in level of nausea from severe 15(50%) and moderate 15(50%) to mild 28(93.33%) and moderate 2(6.67%) among experimental group when compared with control group. The findings revealed that calculated Mann Whitney test,

'Z' value of nausea score - 6.38 was greater than the table value of -1.96. Regarding pre and post interventional level of chemotherapy induced vomiting, there was marked reduction in level of vomiting from severe 15(50%) and moderate 15(50%) to mild 27(90%) and moderate 3(10%) among experimental group when compared with control group. The findings revealed that calculated Mann Whitney test, 'Z' value of hot flash score - 4.34 was greater than the table value of -1.96. There was a significant difference between post-interventional level of nausea and vomiting among experimental and control group

RESULTS

Table 1: Comparison between the pre and post interventional level of chemotherapy induced nausea among experimental and control group. N=60

Groups	Frequency and percentage of pre and post interventional level of chemotherapy induced nausea					
	Mild f (%)		Moderate f (%)		Severe f(%)	
	Pre	Post	Pre	Post	Pre	Post
Experimental group	0 (0%)	28 (93.33%)	15(50%)	2 (6.67%)	15(50%)	0(0%)
Control group	0(0%)	9(30%)	17(56.6%)	12(40%)	13(43.33%)	9(30%)

Table 1 shows that Based on the pre and post interventional level of chemotherapy induced nausea the data presented in table 3 shows that, there was marked reduction in level of chemotherapy induced nausea from severe 15 (50%) and moderate15 (50%) to mild 28 (93.33%) and moderate 2 (6.67%) among experimental group when compared with control group.

Table 2: Comparison between the pre and post interventional level of chemotherapy induced vomiting among experimental and control group N=60

Groups	Frequency and percentage of pre and post interventional level of chemotherapy induced vomiting					
	Mild f (%)		Moderate f (%)		Severe f(%)	
	Pre	Post	Pre	Post	Pre	Post
Experimental group	0 (0%)	27 (90%)	15(50%)	3 (10%)	15(50%)	0(0%)
Control group	0(0%)	9(30%)	24(80%)	12(40%)	6(20%)	9(30%)

Based on pre and post interventional level of chemotherapy induced vomiting the data presented in table 4 shows that there was marked reduction in level of chemotherapy induced vomiting from severe 15 (50%) and moderate 15 (50%) to mild 27 (90%) and moderate 3(10%) among experimental group when compared with control group.

Table 3: Effectiveness of ginger tea in reducing chemotherapy induced nausea N=60

Groups	Sample size	No. of positive difference	Zcal	Ztab	Remarks
Experimental group	30	30	5.477	+1.96	S
Control group	30	11	-1.460	-1.96	NS

The data presented in table 5 shows that the calculated 'Z' value of nausea score 5.47723 was greater than the table value +1.96. There was a significant difference between the level of chemotherapy induced nausea before and after oral intake of ginger tea. The result represents that ginger tea was effective in reducing chemotherapy induced nausea

Table 4: effectiveness of ginger tea in reducing chemotherapy induced vomiting N=60

Groups	Sample size	No. of positive difference	Z_{cal}	Z_{tab}	Remarks
Experimental group	30	30	5.477	+1.96	S
Control group	30	12	-1.095	-1.96	NS

The data presented in table 6 shows that the calculated 'Z' value of vomiting score 5.47723 was greater than the table value +1.96. There was a significant difference between the level of chemotherapy induced vomiting before and after oral intake of ginger tea. The result represents that ginger tea was effective in reducing chemotherapy induced vomiting

Table 5: Comparison of post interventional level of chemotherapy induced nausea among experimental and control group N=60

Groups	Sample size	Sum of ranking	Z_{cal}	Z_{tab}
Experimental group	30	1347	6.38	-1.96
Control group	30	483	688	

In order to find the difference between post interventional level of chemotherapy induced nausea and vomiting among experimental and control group, Mann Whitney U test was computed by taking the post interventional scores of both experimental and control group.

Ranking was done on ascending order for both experimental and control group, then the total sum of scorings was taken and the data presented in table 5 and 6

Table 6: Comparison of post interventional level of chemotherapy induced vomiting among experimental and control group. N=60

Groups	Sample size	Sum of ranking	Z_{cal}	Z_{tab}
Experimental group	30	1209	4.3466	-1.96
Control group	30	621		

Association between pre-interventional levels of chemotherapy-induced nausea and vomiting and selected demographic variables among the experimental and control groups. The data shows that there was no association between the pre-interventional level of chemotherapy-induced nausea and vomiting and selected demographic variables.

DISCUSSION

Based on the above objective of the study, the data analyzed by the researcher regarding pre interventional level of nausea revealed that 15 (50%) of samples had moderate and 15 (50%) of samples had severe level of nausea in experimental group. In control group 17 (56.67%) of samples had moderate and 13 (43.33%) of samples had severe level of nausea. Regarding vomiting the data analyzed by the researcher revealed that 15 (50%) of samples had moderate and 15 (50%) of the samples had severe level of vomiting in experimental group. In control group 24 (80%) of samples had moderate and 6 (20%) of samples had severe level of vomiting. The study was correlated with the similar study conducted to assess the level of chemotherapy induced nausea and vomiting among women with reproductive cancer whereby the result of the study showed that patients. Experienced nearly 31% nausea and 45.1% vomiting during chemotherapy cycles respectively. The findings of the post interventional level of chemotherapy induced nausea in experimental group 28 (93.33%) of the samples had mild and 2 (6.67%) had moderate level of nausea. In control group 9 (30%) of the samples had mild, 12 (40%) of the samples had moderate and 9 (30%) of the samples had severe level of nausea. The findings of the post interventional level of chemotherapy induced vomiting in experimental group 27 (90%) of the samples had mild and 3 (10%) had moderate level of nausea. In control group 9 (30%) of the samples had mild, 12 (40%) of the samples had moderate and 9 (30%) of the samples had severe level of vomiting. The findings of pre and post interventional level of chemotherapy induced nausea shows that there was a marked reduction in experimental group from severe [15]50% and moderate [15] 50% to mild [28] 93.33% and moderate [2] 6.67%. In control group from moderate [17] 56.67% and severe [13] 43.33% to mild [9] 30%, moderate [12] 40% and severe [9] 40%. Thus it revealed that oral administration of ginger tea was effective among women with reproductive system cancer in experimental group to reduce chemo-therapy induced nausea. The findings of pre and post interventional level of chemotherapy induced nausea shows that there was a marked reduction in the level of chemotherapy induced vomiting in experimental group from severe [15] 50% and moderate [15] 50% to mild [27] 90% and moderate [3] 10%. In control group from moderate [24] 80% and severe [6] 20% to mild [9] 30%, moderate [12] 40% and severe [9] 40%. Thus it revealed that

oral administration of ginger tea was effective among women with reproductive system cancer in experimental group to reduce chemotherapy induced vomiting.

CONCLUSION

The finding of this study reveals that Oral administration of ginger tea was effective in reducing chemotherapy induced nausea and vomiting. The significant difference between the level of chemotherapy induced nausea and vomiting before and after oral administration of ginger tea was computed by using two sample sign test. Calculated 'Z'value of nausea score of 5.47 and vomiting score of 5.47 were greater than the table value of +1.96. Thus it shows that oral administration of ginger tea was effective in reducing chemotherapy induced nausea and vomiting.

Declaration by Authors:

Ethical Approval: Ethical approval was taken from the concerned authorities of the Institution, hospital and informed consent was obtained from the samples.

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