Effectiveness of Acupressure in Chemotherapy Induced Nausea and Vomiting Among Women with Reproductive Organ Cancer

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Abstract

Background of the study: *Nausea and vomiting are among the most common and distressing symptoms that patients with cancer endure, both as a result of anti – neoplastic treatment and from the disease itself, and significantly affect patients selfcare, coping abilities, and quality of life. Effective management of these individual symptom's response must be there throughout the cancer treatment. Since the acupressure is an easily applicable method regardless of time and place, cost effective, self-controlled and noninvasive method, it can be used to treat chemotherapy induced nausea and vomiting among clients with cancer receiving chemotherapy. The purpose of this study is to assess the effectiveness of non-pharmacological method, acupressure as a treatment modality to relieve nausea and vomiting among patients receiving chemotherapy.* ***Methodology:*** *A quasi-experimental pretest posttest design was adopted. The study sample comprised of 80 women admitted with ovarian cancer and cancer cervix receiving second and third cycle of chemotherapy. Non probability purposive sampling technique was adopted. Self-administered modified Rhode's index scale was administered to the women with reproductive organ cancer receiving second and third cycle of chemotherapy. The level of CINV was assessed by asking the women to indicate the level of chemotherapy induced nausea and vomiting being experienced by them.* ***Results:*** *Findings of this study revealed that acupressure has an effect on the women with ovarian and cervix cancer who were receiving chemotherapy by decreasing the level of CINV.* ***Conclusion:*** *Acupressure will be an effective adjunctive in controlling chemotherapy induced nausea and vomiting (CINV) and it can be tried in any oncological setting of clinical practice.*

Keywords: Acupressure, Chemotherapy, Nausea and Vomiting, Reproductive organ cancer

Introduction

Nausea and vomiting are among the most common and distressing symptoms that patients with cancer endure, both as a result of anti – neoplastic treatment and from the disease itself, and significantly affect patients selfcare, coping abilities, and quality of life.[1] Although people may experience seemingly identical symptoms, the causes of symptoms and the response of each person to the symptoms may vary. Regardless of the frequency, duration or severity of symptoms, the distress resulting from it may escalate over time. Effective management of these individual symptom's response must be there throughout the cancer treatment. Even mild nausea, vomiting and retching may have later sequalae, e.g., anticipatory symptoms in patients.

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Unless the nausea and vomiting have been prophylactically managed during the initial therapy i.e., first cycle of first course the actual or perceived threat of the disease, its treatment and discomfort relating to the treatment can arouse a variety of emotional and physiological response.[2], [3], [4]

Few drugs are available to reduce the symptoms of nausea, but many people receiving chemotherapy do not wish to add drugs on top of the chemotherapy. As many as 60% of cancer patients report being nauseous after undergoing chemotherapy, and many cancer patients identify nausea as a main reason for being reluctant to begin chemotherapy or for discontinuing the treatment.[5] Non pharmacological interventions can be used alone, in combination or as adjuvant therapy with pharmaceutical agents. These interventions can be effective in controlling nausea and vomiting by relaxing

the patient and when used in conjunction with anti – emetics, can reduce the dose and frequency of drug requirements also.[6]

Dundee and colleagues suggested that finger acupressure (Shiatsu) maneuver for five minutes on P6 (nei –guan) point at least three times a day before chemotherapy and meal times or based on their needs, appears to be an effective adjuvant maneuver in the course of nausea and emesis control.[7] The art of shiatsu is called acupressure. In Japanese, the word 'Shi' means finger and 'atsu' means pressure. It is an Eastern technique of healing and relaxation that has been successfully used for centuries. Shiatsu is a safe, effective means of easing pain, and also creates a feeling of wellbeing, vitality and relaxation. It requires no special equipment and can be done anywhere and anytime. [8]The nei – guan point (P6) was first recognized by Kenyon (1988) as an effective acupressure point for the treatment of nausea and vomiting. In particular, nei – guan point was shown to be statistically, significantly effective for relieving nausea and vomiting by enhancing the blood circulation, inhibiting gastric movements and brain cortex stimulation through neural stimulation.[9]

Since the acupressure is an easily applicable method regardless of time and place, cost effective, self-controlled and noninvasive method, it can be used to treat chemotherapy induced nausea and vomiting among clients with cancer receiving chemotherapy.[10] The purpose of this study was to assess the effectiveness of non-pharmacological method, acupressure as a treatment modality to relieve nausea and vomiting among patients receiving chemotherapy.

Materials and Methods

A quasi-experimental pretest posttest design was adopted. The study sample comprised of 80 women admitted with ovarian cancer and cancer cervix receiving second and third cycle of chemotherapy. Non probability purposive sampling technique was adopted. Self-administered modified Rhode's index scale was administered to the level of CHNV. The assessment scale was divided in to two categories 1. Nausea and 2. Vomiting. These two categories were measured in terms of frequency, severity and interference with the activities. Score was interpreted as 7 – Normal, 8 –14 Mild nausea and vomiting, 15 – 21 Moderate nausea and vomiting, 22 – 28 Severe nausea and vomiting, 29 – 35 Very severe nausea and vomiting. Pretest was done in both experimental and control group after the first day of chemotherapy. The level of CINV was assessed by asking the women to indicate the level of chemotherapy induced nausea and vomiting being experienced by her, and preceded by a brief explanation about self-administered modified Rhodes index of nausea and vomiting scale and its purpose.

Women in the experimental group and the control group were given anti emetics. In the experimental group investigator identified the P6 acupressure point. The acupressure was applied consistently in each forearm over the P6 acupressure point for three minutes, three times a day before meals for three days. One of the third, the fourth and the fifth day, the post test was done for the clients in both the groups. Three to four samples were collected per day. Both descriptive and inferential statistics were used to analyze the data.

Results

Pre-test level of chemo therapy induced nausea and vomiting (CINV) in the experimental and control group.

In the experimental group majority of the women with ovarian cancer receiving second and third cycle of chemotherapy experienced very severe level of CINV 8 (80%) and 7 (70%) respectively and cancer cervix women second and third cycle of chemotherapy experienced very severe level of CINV ie, 60 (60 %) and 8 (80%).

In control group, a majority of the women with ovarian cancer receiving second and third cycle of chemotherapy experienced very severe level of CINV 6(60%) and 9 (90%). In cancer cervix, women receiving second and third cycle of chemotherapy experienced very severe level of CINV 7 (70%) AND 8 (80%) respectively.

Post-test level of chemotherapy induced nausea and vomiting (CINV) in the experimental and the control group.

In the experimental group, a majority of the women with ovarian cancer receiving second and third cycle of chemotherapy came to normal level 5 (50%), and 8(80%) respectively and the cancer cervix women recovered from CINV to normal level 8(80%) and 5 (50%) respectively.

In the control group, a majority of women with ovarian cancer receiving second, and third cycle of chemotherapy experienced very severe level CINV 8 (80%) and 10 (100%) respectively. In cancer cervix women experienced very severe level of CINV 8(80%) and 8 (80%) respectively.

Discussion

Pre - test level of chemo therapy induced nausea and vomiting in the experimental and control group

Overall, the comparison of mean values between both the group shows that, in the experimental group the mean value found to have 31.02, with the standard deviation 2.519. In the control group, the mean value was 31.1 and the standard deviation was 2.638, with the 't' value of 1.08 (p>0.001).

Table – 1 Pre - test level of chemo therapy induced nausea and vomiting in the experimental and control group

N=80

Pre-Test	Experimental Group				Control Group			
	Ovary		Cervix		Ovary		Cervix	
	Second	Third	Second	Third	Second	Third	Second	Third
Mean	30.8	30.9	30.9	31	30.3	32.6	30.1	31.4
Standard Deviation	3.62	2.624	3.75	1.897	2.56	1.90	2.85	2.049
Overall Mean	31.02				31.1			
Overall S.D	2.519				2.638			
't' Value	1.08 (p >0.001)							

*P<0.01, **P<0.05, ***P<0.001, S= Significant, N.S = Non – Significant, S.D = Standard Deviation

Post-test level of chemo therapy induced nausea and vomiting in the experimental and control group

Overall, the experimental group had the mean value of 7.2, with standard deviation 2.548 and in the control group the mean was 29.3 and the standard deviation was 0.78. The repeated measures 0f ANOVA shows F = 162.545 *** (p<0.001). The result was highly significant.

Table – 2 Post-test level of chemo therapy induced nausea and vomiting in the experimental and control group

N =80

Post-Test	Experimental Group				Control Group			
	Ovary		Cervix		Ovary		Cervix	
	Second	Third	Second	Third	Second	Third	Second	Third
Mean	7.6	7.2	7.2	7.7	29	31.5	28.7	28.0
Standard Deviation	0.699	0.421	0.421	0.823	2.86	1.84	2.710	2.108
Overall Mean	7.2				29.3			
Overall S.D	2.548				0.78			
F Value	162.545 *** (p<0.001) S							

*P<0.01, **P<0.05, ***P<0.001, S= Significant, N.S = Non – Significant, S.D = Standard Deviation

Table – 3 Comparison of mean scores between pre and post-test level of chemotherapy induced nausea and vomiting among women receiving second cycle of chemotherapy in the experimental group

N =20

Experimental Group	Cancer Cervix				Ovarian Cancer			
	No	**Mean**	**S.D**	**F value**	**No**	**S.D**	**S.D**	**F value**
Pre - test	10	30.9	3.75	F= 201.56*** P=2.92 P<0.001 **S**	10	30.8	3.62	F = 177.97 *** P = 2.92 P <0.001 **S**
Post – test O1	10	12.1	2.514		10	11.9	2.46	
Post – test O2	10	8.2	1.475		10	9.2	2.20	
Post – test O3	10	7.2	0.421		10	7.6	0.69	

*P<0.01, **P<0.05, ***P<0.001, S= Significant, N.S = Non – Significant, S.D = Standard Deviation

In women with cancer cervix, pre - test mean value was 30.9 with the standard deviation 3.75. The post – test mean values were 12.1, 8.2, and 7.2 respectively with the standard deviation 2.514, 1.475 and 0.421 respectively and the F value was 201.56*** at p < 0.001 which was highly significant. In women with ovarian cancer, the pre- test mean value was 30.8 with the standard deviation 3.62. The post – test mean values were 11.9, 9.2 and 7.6 respectively with the standard deviation of 2.46, 2.20 and 0.69 respectively. The F value was 177.97*** at p< 0.001 which was highly significant.

Table – 4 Comparison of mean scores between pre and post - test level of chemotherapy induced nausea and vomiting among women receiving third cycle of chemotherapy in the experimental group

N =20

Experimental Group	Cancer Cervix				Ovarian Cancer			
	No	Mean	S.D	F value	No	S.D	S.D	F value
Pre - test	10	31	1.89	F= 191.37*** P=2.92 P<0.001 **S**	10	30.9	2.62	F = 390.91 *** P = 2.92 P <0.001 **S**
Post – test O1	10	12.1	2.46		10	11.4	1.50	
Post – test O2	10	8.9	1.44		10	8.4	1.57	
Post – test O3	10	7.7	0.82		10	7.2	0.42	

*P<0.01, **P<0.05, ***P<0.001, S= Significant, N.S = Non – Significant, S.D = Standard Deviation

In women with cancer cervix, pre - test mean value was 31 with the standard deviation of 1.897. The post - test mean values were 12.1, 8.9 and 7.7 respectively with the standard deviation of 2.46, 1.44 and 0.82 respectively and the F value was 191.377*** P<0.001 which was highly significant.

In women with ovarian cancer, the pre-test mean value was 30.9 with the standard deviation of 2.62. The post – test mean values were 11.4, 8.4, and 7.2 respectively with the standard deviation of 1.50, 1.57, and 0.42 respectively and the F value was 390.91*** P<0.001 which was highly significant.

Table – 5 Comparison of mean scores between pre and post – test levels of chemotherapy induced nausea and vomiting among women with reproductive organ cancer receiving second cycle of chemotherapy in the control group

N =20

	Cancer Cervix				Ovarian Cancer			
Control Group	No	Mean	S.D	F value	No	S.D	S.D	F value
Pre - test	10	30.1	28.1	F= 1.45	10	30.3	29	F = 1.16
Post – test O1	10	29.6	2.91	P=2.92	10	31.1	2.88	P = 2.92
Post – test O2	10	30.5	2.121	P>0.001	10	31	2.78	P >0.001
Post – test O3	10	28.7	2.71	**N.S**	10	29	2.86	**N.S**

*P<0.01, **P<0.05, ***P<0.001, S= Significant, N.S = Non – Significant, S.D = Standard Deviation

In control group, women with cancer cervix receiving second cycle of chemotherapy the pre – test mean value was 30.1 with the standard deviation of 28.1. The post – test mean values were 29.6, 30.5, and 28.7 with the standard deviation of 2.91, 2.121 and 2.71 and the F value was 1.45 at P>0.01 which was non- significant.

In ovarian cancer, pre – test mean value was 30.3 with the standard deviation of 29. The post – test mean values were 31.1, 31, and 29 with the standard deviation of 2.88, 2.78 and 2.86 and the F value was 1.16 at P>0.001, which was non-significant.

Table – 6 Comparison of mean scores between pre and post - test level of chemotherapy induced nausea and vomiting among women receiving third cycle of chemotherapy in the control group

N =20

	Cancer Cervix				Ovarian Cancer			
Control Group	No	Mean	S.D	F value	No	S.D	S.D	F value
Pre - test	10	31.4	28	F= 2.35	10	32.6	1.907	F = 1.28
Post – test O1	10	31.9	2.469	P=2.92	10	33	1.76	P = 2.92
Post – test O2	10	29.3	1.766	P>0.001	10	31.9	1.911	P >0.001
Post – test O3	10	28	2.106	**N.S**	10	31.5	1.84	**N. S**

*P<0.01, **P<0.05, ***P<0.001, S= Significant, N.S = Non – Significant, S.D = Standard Deviation

In women with cancer cervix the pre – test mean value was 31.4 with the standard deviation of 28. In post – test, mean values were 31.9, 29.3 and 28 respectively with the standard deviation of 2.469, 1.766 and 2.106 respectively. The F value was 2.35 at P>0.001 which shows non – significant results.

In women with ovarian cancer the pre – test mean was 32.6 with the standard deviation of 1.907. The post test mean values are 33, 31.9 and 31.5 respectively with the standard deviation of 1.76, 1.911 and 1.84 and the F value was 1.28 at P>0.001, which shows non-significant results.

Multiple comparisons of mean difference between the experimental and the control group

Table- 7 represents multiple comparison of mean difference between the experimental and the control group. By using BON Ferroni test, the overall result shows, acupressure is an effective method in reducing the level of chemotherapy induced nausea and vomiting (CINV) among women with reproductive cancer in experimental group.

This study findings were consistent with the study of Anju Byju which showed that the subjects in the experimental group experienced mild (65%) to moderate (35%) nausea and vomiting, whereas the subjects in the control group experienced moderate (35%) to severe (65%) nausea and vomiting, t (38) = 2.693, 8.270, 8.401 respectively for days 1, 2 and 3; $p < 0.05$). The results point to the fact that acupressure is effective in reducing nausea and vomiting among patients receiving chemotherapy.[12]

Table – 7 Multiple comparisons of mean difference between the experimental and the control group

(N=80)

Groups	**Control Group (n=40)**			
Experimental Group (n=40)	**Ovarian Cancer – second cycle**	**Cancer cervix second cycle**	**Ovarian cancer third cycle**	**Cancer cervix – third cycle**
Ovarian Cancer – second cycle	M.D=20.80*** S. D=0.8216 at P<0.001	M.D=20.03*** S. D=0.8216 at P<0.001	M.D=22.56*** S. D=0.8216 at P<0.001	M.D=20.16*** S. D=0.8216 at P<0.001
Cancer cervix- second cycle	M.D=21.20*** S. D=0.8216 at P<0.001	M.D=20.43*** S. D=0.8216 at P<0.001	M.D=22.96*** S. D=0.8216 at P<0.001	M.D=20.56*** S. D=0.8216 at P<0.001
Ovarian cancer- third cycle	M.D=21.36*** S. D=0.8216 at P<0.001	M.D=20.60*** S. D=0.8216 at P<0.001	M.D=23.13*** S. D=0.8216 at P<0.001	M.D=20.73*** S. D=0.8216 at P<0.001
Cancer cervix – third cycle	M.D = 20.80*** S.D = 0.8216 at P<0.001	M.D=20.03*** S. D=0.8216 at P<0.001	M.D=25.56*** S. D=0.8216 at P<0.001	M.D=20.16*** S. D=0.8216 at P<0.001

*****P<0.001, S=Significant, N.S = Non-Significant, M.D = Mean Difference, S.D = Standard Deviation**

Conclusion:

Findings of this study revealed that acupressure has an effect on the women with ovarian and cervix cancer who were receiving chemotherapy by decreasing the level of CINV. Hence the investigator concluded that acupressure will be an effective adjunctive in controlling chemotherapy induced nausea and vomiting (CINV) and it can be tried in any oncological setting of clinical practice.

Recommendations

A similar study can be undertaken with larger samples in different oncological settings because better generalization would be possible if larger number of samples had been selected from each type of cancer and each type of chemotherapy.

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Conflicts of Interest

There is no conflict of interest

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