Effect of Foot Massage on Selected Side-Effects of Cancer Chemotherapy in Hospitalized Adult Patients

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Abstract

In the recent years, there has been an increased acceptance of the use of Complementary Alternative Medicine (CAM) in the health care system. Massage is one of the CAM which is thought to work by improving circulation which reduces pain caused by the accumulation of irritants such as lactic acid and inflammatory substances, it also relaxes the person thus raising the pain threshold. Interest in the therapeutic use of touch through massage has grown with several writers advocating the use of massage in daily nursing practice to promote comfort and demonstrate caring. The objectives of the study were i) assess the pre-intervention data of selected side-effects associated with cancer chemotherapy in both experimental and control groups ii) determine the selected side-effects associated with cancer chemotherapy after intervention by comparing the scores of experimental and control groups.

Hypothesis of the study: There is a significant difference in the mean nausea and pain scores after foot massage between experimental and control groups. *Methodology:* The study adopted a quasi experimental design. Foot massage was chosen as intervention. Data was collected from cancer patients receiving chemotherapy medications and suffering from pain and nausea. *Results:* The results of the study revealed pre-intervention data of the mean pain scores of the control group was 5 and experimental group was 6.35 and nausea scores of the control group was 4.7 and experimental group was 7.1. The after-intervention data of the mean of pain in control group was 3.4 and experimental group was 1.35 and nausea scores in control group were 3.7 and experimental group was 1.65. Comparison of the mean difference of pain and nausea between the two groups shows that experimental group was significantly higher than the control group.

Keywords: Foot massage; Pain, Nausea, Heart rate.

Introduction

It is a known fact that nausea and vomiting is one of the most common side effects of chemotherapy treatment. Pain results from the cancer disease itself and chemotherapy treatment is also one of the common situations encountered by the health team. Effective control remains one of the most important issues in the field of nursing. Nursing is an art of applying scientific principles in a humanitarian way to the care of people experiencing potentially maladaptive stress. Nurses assist people to satisfy the basic human needs whether they are sick or well. According to Virginia Henderson, each person has a basic need to be free from pain and discomfort.

Nurses can use non pharmacological measures such as foot massage which provides relaxation, diminishes isolation through physical contact, improves circulation of blood and lymph, decreases anxiety and relieves pain. The researcher during her pre pilot observation for exploration of researcher problem in the oncology department found that the nursing staffs were aware that patients were having nausea, vomiting and pain because of chemotherapy treatment. They neither assessed the intensity of the patient's pain and nausea nor carried out any nursing interventions than the routine activities. As a part of massage therapy, a foot massage can be employed in reducing cancer chemotherapy side effects. Hence, the researcher felt a need to find the effect of foot massage on selected side effects of cancer chemotherapy in a selected hospital.

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Objectives of the study

1. Assess the pre intervention data of selected side-effects associated with cancer chemotherapy in both experimental and control groups.

2. Determine the selected side-effects associated with cancer chemotherapy after intervention in both experimental and control groups.

3. Compare the difference of selected side-effects associated with cancer chemotherapy in both experimental and control groups.

Materials and methods

Research approach

The study used quantitative research approach.

Research Design

Quasi experimental which belongs to experimental study.

Setting of the study

The study was conducted in Deenanath Mangeshkar Hospital (DMH), Pune which is a multispeciality hospital having 450 bedded.

Variables under study

The major variables included were: dependent variables (pain, nausea and relaxation) and independent variables (foot massage).

Population

The population comprised adult male and female cancer patients receiving chemotherapy medications admitted in DMH during the period of study.

Sample

Sample consisted of forty cancer patients receiving chemotherapy drugs.

Sampling criteria

Inclusion criteria

a. Cancer patient admitted in a selected hospital.

b. Patient receiving chemotherapy medications.

c. Patient suffering from pain and nausea because of chemotherapy.

d. Age group between 30 -70 years.

e. Patient who understand Marathi, Hindi or English.

f. Patient who are willing to participate in study.

Exclusion criteria

Contraindications of foot massage

a. Coagulation disorders, complicated by bruising and internal hemorrhage.

b. Low platelet count.

c. Medications: coumadin, acetylsalicyclic acid, heparin.

d. Metastasis to bone, complicated by fracture.

e. Open wound / radiation dermatitis, complicated by pain and infection.

Sampling technique

The sampling technique used in this study was non probability purposive method of sampling.

Tools and technique

The data for the present study were collected by the following tools:

1. Demographic profile: Consists of 11 items which include the information of personal nature, diseases related, medicines related (prescribed chemotherapy, antiemetics, analgesics) and complications related to the contraindications of foot massage.

2. Structured Interview Questionnaire: Structured Interview Questionnaire consists of items related with pain and nausea before and after foot massage.

3. Visual Analogue Scale: Visual Analogue Scale (0 to 10) was used for the assessment of pain and nausea scores before and after foot massage.

4. Heart Rate Monitoring: Heart Rate Monitoring was used for the assessment of relaxation before and after foot massage.

Testing of the tool

The tool prepared for data collection was tested for its content validity, feasibility and reliability.

Data collection method

Before the actual data collection, the researcher has completed the following formalities:

Requisition letter for conducting research study and brief details of study were sent to a selected Hospital.

The researcher explained the nature of the study to the Physician and the Staff Nurses working in the Oncology Department. The data gathering process took place in April 2010. The participants were selected using the non probability purposive sampling technique. The researcher explained the brief details of the study to the participants and written informed consent was taken and confidentiality was assured to all the participants to get their co-operation throughout the process of data collection. The study was conducted among forty cancer patient receiving chemotherapy medications. Out of which twenty of each were in experimental and control group. The researcher interviewed with the participants for assessing pain and nausea with the questionnaires and visual analogue scale. Their heart rate was also checked for the assessment of relaxation. Foot massage for 10 minutes was given to the experimental group by the researcher twice a day morning and evening for two consecutive days. After massage, the researcher assessed pain and nausea with the questionnaires and visual analogue scale. Their heart rate was also checked for the assessment of relaxation. The researcher did not face any difficulty in collecting the data from the participants. The data thus collected were compiled for analysis.

Results

The above Table 1 shows the distribution of participants according to their age, depicts that 12.5 % were in the age group of 30-39, 25 % were in the age group of 40-49, 30 % were in the age group of 50-59 year and 25% were in the age group of 60-69 and only 7.5% were in the age group of 70 years of age. Hence, it is interpreted that most of the participants under study were in the age group of 50-59.

Distribution of participants according to their sex shows that 52.50 % were females and 47.50 % were males.

Table 1. Descriptions of participants according to their demographic variables   N = 40

Sr. No.	Demographic characteristics	f	%
1.	**Age (in years)**		
	30-39	5	12.50
	40-49	10	25.00
	50-59	12	30.00
	60-69	10	25.00
	Up to 70	3	7.50
2.	**Sex**		
	Female	21	52.50
	Male	19	47.50
3.	**Educational status**		
	Illiterate	9	22.50
	Primary education	9	22.50
	Secondary education	11	27.50
	Graduation	9	22.50
	Post Graduation and above	2	5.00
4.	**Occupation**		
	Housewife	17	42.50
	Laborer	1	2.50
	Service	13	32.50
	Farmer	8	20.00
	Any other	1	2.50
5.	**Marital status**		
	Married	39	97.50
	Unmarried	1	2.50
6.	**Religion**		
	Muslim	1	2.50
	Hindu	38	95.00
	Christian	1	2.50

Distribution of participants according to their educational status shows that 22.50 % are illiterates, 22.50 % have primary education , 27.50 % have secondary education , 22.50 % are graduates and only 5.00% are post graduates and above. Hence, it is interpreted that most of the participants under study were secondary education and a few of them were post graduate and above.

Distribution of participants according to their occupation shows that 42.50 % were housewives, 2.50 % were laborers, 32.50 % were doing services, 20.00 % were farmers and 2.50% were drivers and retired. Hence, it is interpreted that most of the participants under study were housewife and very few were laborers and other services.

Distribution of participants according to their marital status shows that 97.50 % were married and 2.50 % were unmarried. Hence, it is interpreted that almost all the participants under study were married.

Distribution of participants according to their religion shows that 2.50 % were Muslim, 95.00% were Hindu, and 2.50 % were Christian. Hence, it is interpreted that almost all the participants under study were Hindu.

Distribution of participants according to their diagnosis shows that majority of them 15 % were diagnosed as breast cancer, 12.50 % were lung cancer, and others were diagnosed as lymphoma, stomach cancer, colon cancer, rectum cancer, ovary

cancer, pancreas cancer, leukemia, tongue cancer, caecum cancer, larynx cancer, etc.

Distribution of participants according to the prescribed chemotherapy medications shows that majority of them 42.5 % received cisplatin, 20% received adriamycin and 5- flurouracil , few received palzen, endoxan, docetaxel, etoposide, trinotel,vincristine, holoxan, empov, bleomycin, cytosine, vinblastine, ifosphomide, effcorlin, mabthera, etc.

Distribution of participants according to the prescribed antiemetics medications shows that majority of them 35 % received perinorm and domstal.

Distribution of participants according to the prescribed analgesic medications shows that majority of them 20 % received tramadol.

Distribution of participants according to the complications which is contraindicated to give foot massage showed that all the participants (100%) did

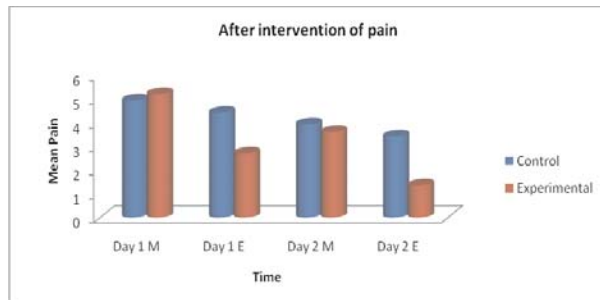**Fig 1. Bar diagram showing mean scores of pain after intervention of both groups**

Fig 2. Bar diagram showing mean scores of nausea after intervention of both groups
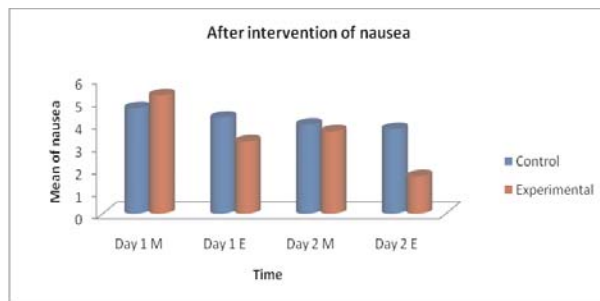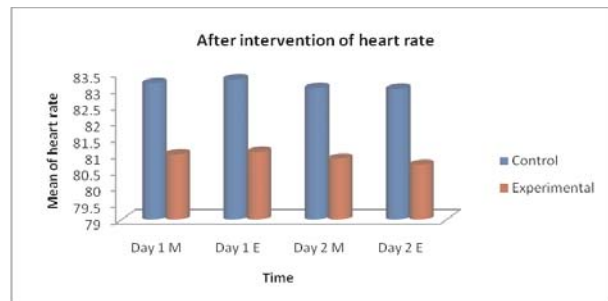

Fig 3. Bar diagram showing mean scores of heart rate after intervention of both

not have any complications like coagulation disorders, low platelet count, metastasis to bone, radiation dermatitis, complications by fracture, open wounded complicated by pain and infection.

The table 2 presents the t_values and p value between the experimental and control groups with regard to pain. As p value is less than 0.01, H_0 is rejected at 5 % l.o.s. Therefore, H_1 is accepted. The t value computed between experimental and control groups t (38) = - 9.0072, p < 0.000 *** indicates that there is a highly significant difference between the experimental and control groups with regard to

Table 2. t test analysis of comparing the difference of pain after intervention in both experimental and control groups   N=40

Variable	H1	t test	df	table value	p-value	Inference
Pain	μ1<μ2	-9.0072	38	1.686	0.000***	Reject H0 (at 5 %l.o.s)

t (38) = 1.686 p < 0.05

Table 3. t test analysis of comparing the difference of nausea after intervention in both experimental and control groups

N=40

Variable	H1	t test	df	table value	p-value	Inference
Nausea	$\mu1<\mu2$	-9.055	38	1.686	0.000***	Reject H0 (at 5 %l.o.s)

$t\ (38) = 2.024\ \ p > 0.05$

pain. The mean scores of pain are represented in fig 1.

Table 3 presents the t_values between the experimental and the control groups with regard to nausea. As p value is less than 0.01, H_0 is rejected at 5 % l.o.s. Therefore, H_1 is accepted. The t_value computed between the experimental and control groups , t (38) = - 9.055, p < 0.000 *** indicates that there is a highly significant difference between the experimental and control groups with regard to nausea. The mean scores of nausea are shown in fig 2.

Table 4 presents the t values between the experimental and the control groups with regard to heart rate. As p value of 0.093 is greater than reasonable choice of alpha = 0.05, Ho is fail to reject at 5 % l.o.s. Therefore, Ho is accepted. The t_value computed between experimental and control groups t_(38) = - 1.723, p > 0.093 n s indicates that there is no significant difference between the experimental and the control groups with regard to heart rate. The mean scores of heart rate displayed in fig 3.

Thus, the analysis indicates that null hypotheses H_O could be rejected with respect to pain and nausea. Hence, it is concluded that there is a highly significant difference in the mean pain and nausea scores after intervention between experimental and control groups.

Questionnaires to the experiences of selected side effects before and after intervention

Experiences of pain before intervention in both groups depicts that 17.5 % have pain during the chemotherapy treatment, 45% have pain soon after the chemotherapy treatment and 37.5% have pain throughout the day. Hence, it is interpreted that most of the participants under study have pain soon after the chemotherapy treatment and a few of them have pain during chemotherapy treatment.

Among the study participants 55 % of them have aching pain, 15% aching and pricking pain, 2.5% burning pain, 5% burning and aching pain, 17.5% pricking pain, 2.5% sharp pain and 2.5% aching, pricking and burning type of pain. Hence, it is interpreted that most of the participants under study have aching type of pain and a few of them have burning, pricking and sharp type of pain.

In the experimental group, 80 % of the participants have reduce pain after foot massage, 20 % of the participants have relief pain after foot massage and nobody have increase pain after foot massage. 75% of the participants said that this intervention is effective about 50-75 % and 25 % of the participants said that this intervention is effective about 76 % and above.

Experiences of nausea before intervention in both groups depicts that 12.5% have nausea during the chemotherapy treatment, 80 % have nausea soon after the chemotherapy treatment and 7.5% have nausea at any time of the day. Hence, it is interpreted that most of the participants under study have nausea soon after the chemotherapy treatment, a few of them have nausea during chemotherapy treatment and very few of them have nausea at any time of the day.

In the experimental group, 80 % of the participants have reduced nausea after foot massage, 20 % of the participants have relief nausea after foot massage and nobody has increased nausea after foot massage. 70% of the participants said that this intervention is

Table 4. t test analysis of comparing the difference of heart rate after intervention in both experimental and control groups

N=40

Variable	H1	t test	df	table value	p-value	Inference
Heart rate	$\mu1\#\mu2$	-1.723	38	2.024	0.093ns	Accept H0 (at 5 %l.o.s)

$t\ (38) = 2.024\ \ p > 0.05$

effective about 50-75 % and 30 % of the participants said that this intervention is effective about 76 % and above.

Therefore from the present research study, the comparison of the mean pain and nausea scores of the experimental group with control group shows a highly significant difference statistically at 100 % level of confidence. It can be interpreted from the above findings that the intervention brought out the highly significant mean differences in the experimental group. In other words, foot massage helps to reduce pain and nausea. With the above findings, the null hypotheses H_O, stating that there is no significant difference in the mean nausea and pain scores after foot massage between experimental and control groups, is rejected. The alternative hypotheses H_1, proposing that there is a significant difference in the mean nausea and pain scores after foot massage between experimental and control groups, is accepted.

Discussion

The findings of the present study are consistent with that of Grealish L, Lomasney A, Whiteman B, who reported the findings of an empirical study on the use of foot massage as a nursing intervention in patients hospitalized with cancer. In a sample of 87 subjects, a 10 minute foot massage (5 minutes per foot) was administered. The pretest mean pain score for control session was 21.3 ± 20.2 mm. The control session post test mean pain score was 20.4 ± 19.8 mm representing a mean difference of 0.874 mm (t = 0.867). The pretest mean pain score for massage session one was 25.1 ± 21.7 mm which was decreased to 15.3 ± 19.0 mm , (t = 5.97) immediately after massage, resulting in a mean difference of 9.8. Similarly, the mean score for massage session two decreased from 27.9 ± 25.5 mm to 18.5 ± 19.1 mm , (t = 5.75). Thus the pain levels reported by the subjects decreased significantly during massage treatment and it had a significant immediate on the perception of pain. The use of foot massage as a complementary method is recommended as a relatively simple nursing intervention for patients experiencing nausea or pain related to the cancer experience.

The research studies of Annika Bilhult and others reported that massage lowered nausea in women with breast cancer undergoing chemotherapy. Massage therapy significantly reduced nausea compared with control treatment (p = 0.025).

The above findings support the findings of the present study, which indicates that the foot massage is effective in reducing the side effects of cancer chemotherapy medications i.e., pain and nausea.

Since, there was highly significant difference at the 0.05 level, the null hypotheses H_O, were rejected and the alternative hypotheses H_1 that was significant reduction in pain reported by experimental groups were accepted.

Acknowledgement

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