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AN EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF ORAL COOLING ON ORAL MUCOSITIS RELATED PROBLEMS AND FATIGUE LEVEL AMONG PATIENTS RECEIVING CANCER CHEMOTHERAPY IN SELECTED HOSPITAL OF NEW DELHI.

Nursing

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ABSTRACT

The research design selected was pre test post test control group design. The study was conducted at VMMC & Safdarjung Hospital, New Delhi from 11th Dec 2011-1st January 2012. Sixty samples were selected and randomly assigned to experimental and control group by odd even method. Oral cooling was given to the experimental group after collecting pre-test data. The Size of ice cube was 2.5 inches with smooth edges and intervention given just prior and immediately after the chemotherapy. The ice is replenished as it completely melted and continued for 10 minutes. The intervention is repeated at 3hrs, 6hrs and 9hrs and post-test data was collected at 3hrs, 6hrs, 9hrs and 24hrs. The mean post test scores on pain, dysphagia and fatigue was significantly higher in the experimental group as compared to the control group as per "t" test.

Thus the findings of the study revealed that the oral cooling had been significantly effective in reducing the oral mucositis and related problems such as; pain, dysphagia and fatigue level, whereas it was not significantly effective in reducing the infection level of patients.

KEYWORDS

Oral Cooling, Cancer Chemotherapy, Oral Mucositis, Fatigue

INTRODUCTION

Cancer has become one of the most devastating diseases worldwide with more than 10 million new cases every year. Among all cáncer treatment,chemptherapy is highly generalized therapy for cáncer and Mucositis is a common, always unpleasant, sometimes unbearable toxic side-effect of chemotherapy occurring in about 40% of patients with standard dose chemotherapy and 99% in patients undergoing high dose myeloablative chemotherapy. Oral Mucositis may interfere with daily activities, can lead to systemic infections and limit the patient's ability to tolerate further chemotherapy.

Currently many interventions are used for the treatment of oral mucositis. Among them Cryotherapy or oral cooling of the oral cavity by using ice during chemotherapy causes local vasoconstriction and hence reduces blood flow to the oral mucosa. Thus it reduces the amount of drug reaching the oral mucous membranes, and reduces mucositis. Many Studies support oral cooling is a cheap, home based and effective method of minimising mucositis.

OBJECTIVES

- To assess and compare oral mucositis and related problems (pain, infection, and dysphagia) among chemotherapy patients in experimental and control group.
- To assess and compare fatigue level among chemotherapy induced oral mucositis patients in both group
- To determine the relationship between dysphagia and fatigue level among chemotherapy induced oral mucositis patients in both group.
- To seek the association of pain, infection, dysphagia and fatigue level with selected demographic variables.

METHODOLOGY

A true experimental research approach with Pre-test Post-test Control Group Design was used for the study. Total 60 samples were collected by random sampling and assigned to each group by odd even method. The variables under study were; independent variable i.e. oral cooling and dependent variable i.e. oral mucositis, pain, oral infection, dysphagia and fatigue level. The study was conducted at VMMC & Safdarjung Hospital, New Delhi from 11th Dec 2011-1st January 2012.

Oral cooling was given to the experimental group after collecting pre-test data. The Size of ice cube was 2.5 inches with smooth edges and intervention given just prior and immediately after the chemotherapy. The ice is replenished as it completely melted and continued for 10 minutes. The intervention is repeated at 3hrs, 6hrs and 9hrs and post-test data was collected at 3hrs, 6hrs, 9hrs and 24hrs. The tools used for the data collection were structured Performa (consist two parts), WHO Oral Toxicity Scale, Observation Checklist, Numeric Pain Rating Scale, Dysphagia Symptom Inventory and Fatigue Symptom Inventory. The data were analyzed by using descriptive and inferential statistics in terms of frequency, percentages, mean, mean difference,'t' value, 'r' value and chi- square.

RESULTS

- The majority of the subjects (41.7%) were in the age group of 51-60 yrs and 56.7% were male.
- Most of the patients had gastro intestinal and colorectal cancer i.e. 41.7% and 28.3% respectively. While only 13.3% had breast cancer and 8.33% of patients had lung cancer and gyenec cancer respectively.
- 40% of the patients had duration of illness 7-12 months and 30% had 1yr – 2yrs.
- Most of the patients (60%) undergone surgery, 18.3% undergone radiation therapy and only 20% were undergone palliative therapy.
- 55% had received adjunct chemotherapy, whereas only 20% had palliative chemotherapy and 16.7% had neo-adjuent chemotherapy.
- 63.3% were in 3-4 cycle of chemotherapy whereas only 20% were in 1-2 cycle and 18.3% were in 5-6 cycle.
- 68.3% received anti-metabolites as chemotherapy agent,while 13.3% received anti-tumor antibiotics, 10% had alkalyting agent and 8.3 % had plant alkaloid
- Before starting the intervention majority of the patients [48.3%] were in grade-2 mucositis i.e. 53.3% in experimental and 43.3% in control group and no one in grade-0 and grade-4.only 35% of the patients were in grade-1, whereas 16.7% were in grade- 3 oral mucositis. At 24 hours, 33.3% in experimental group were in grade-1&2 whereas in control group 36.7% were in grade-2&3and 6.7% in grade-4.

TABLE: 1 Comparison of the Mean, Mean Difference, Standard Deviation Difference, Standard Error of Mean Difference and "t" Value At 0hr, 3hr, 6hr And 24hrs For Pain Scores Of Patient In Experimental And Control Group.

N=60

Group	Mean	Mean D	SDD	SEMD	"t" Value
At 0hr(pre-test) Experimental Control	26.01 23.12	2.89	0.41	3.63	0.80NS

At 3hrs Experimental Control	26.46 23.92	2.54	0.35	3.59	0.71NS
At 6hrs Experimental Control	23.77 24.8	1.03	0.19	3.59	0.29NS
At 9hrs Experimental Control	16.42 27.24	10.82	0.16	3.74	2.89*
At 24hrs Experimental Control	13.54 31.28	17.74	1.47	3.73	4.76*
df (58), **2.00** (P) at 0.05 level of significance, Ns- Non Significan * Significant					

This shows that initially the pain experienced by both the groups were almost similar and later the pain was decreased in experimental group as evident from mean of 26.46,23.77,16.42 and 13.54 at 3,6,9 and 24 hours respectively. Hence Patients who were exposed to oral cooling had experienced less pain as compared to patients who were not exposed to oral cooling.

TABLE:2 Mean, Mean Difference, Standard Deviation, Standard Error of Mean Difference and "t" Value Of Pre-Test Dysphagia Scores And Post-Test Dysphagia Scores Of Patients In Experimental And Control Group

N=60

Group	Mean	Mean D	SD_D	SE_{MD}	"t" Value
PRE-TEST ***Experimental Group*** (n=30)	47.62	3.98	1.41	5.02	0.79_{NS}
Control Group (n=30)	43.64				
POST-TEST ***Experimental Group*** (n=30)	35.65	17.71	0.7	4.55	3.89*
Control Group (n=30)	53.36				
df (58), **2.00** (P) at 0.05 level of significance, NS- non significant * Significant					

It also shows that the mean post-test dysphagia scores of experimental group was 35.65 and it is less than the mean post-test dysphagia scores of control group (53.36) with a mean difference 17.71, standard deviation difference 0.7 and "t" value of 3.89. Which was found to be statistically significant for df (58) at 0.05 level of significance.

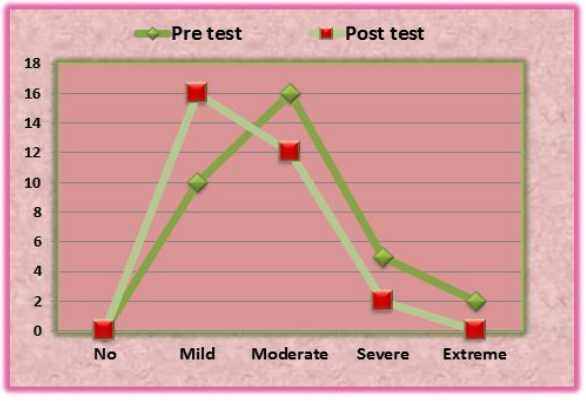

FIGURE:1 Line Diagram representing the range of pre test and post test scores of fatigue in experimental group

More patients experienced fatigue at 0hr, i.e. before intervention and fatigue level decreased at different time interval, and less number of patients experienced fatigue at 24hrs. This shows oral cooling was effective to reduce the fatigue level by increasing the oral intake in patients with chemotherapy induced oral mucositis.

In order to determine the significant relationship between the mean post-test dysphagia scores and fatigue scores of experimental group: mean, standard deviation difference and "r" value were computed. There is significant positive correlation between dysphagia and fatigue scores of experimental group as evident from "r" value of 0.73.This indicates that the dysphagia in experimental group had an influence on fatigue.

DISCUSSION

These findings are consistent with the findings of studies conducted by Cascinu S, Fedeli A, et al. [1994] and Mahood DJ, Dose AM et al. [2005]. They stated that, Mucositis is a significant dose-limiting toxicity associated with fluorouracil (5FU), particularly when it is combined with leucovorin. They hypothesized that oral cryotherapy would cause local vasoconstriction and would temporarily decrease blood flow to the oral mucous membranes. If cryotherapy were used during the time f chemotherpy, then the oral mucous membranes would have less exposure to 5FU and thus develop less mucositis.

Further the present study also revealed that, majority of the patients with chemotherapy induced oral mucositis, who are exposed to oral cooling experienced more comfort in terms of relief of pain and difficulty in swallowing as compared to patients who are not exposed to oral cooling. This is consistent with the findings of the study conducted by Anncarin Svanberg, and Gunnar Birgegard (2010) which states, patients treated with intensive myeloablative treatment with chemotherapy agent mephlan are all at risk to develop mucositis. Oral mucositis causes severe pain and oral infection and dysfunction, which also decreases the oral food intake. By using oral cryotherapy there were significantly fewer patients in the experimental group with mucositis grade 3–4 than in the control group and significantly lower number of patient with pain. The oral intake level was significantly better preserved. No significant difference could be found with regard to infection rate.

CONCLUSION

Patient undergoing chemotherapy experience oral mucositis. Mucositis may be so severe as to delay treatment and limit the effectiveness of cancer therapy. Oral cooling is a simple and low cost measure which can be integrated as a routine procedure by nurses and can apply to chemotherapy induced oral mucositis patient, before and after the administration of chemotherapy to improve their comfort by reducing pain, infection, dysphagia and fatigue. The nursing profession today is not merely associated with care and cure with pharmacological measures, the nurse need to require knowledge about the non pharmacological measures which can cater the needs of the patients and maintain their health either practiced alone or in conjunction with the conventional treatment.

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