Original Article

POVIDONE-IODINE (PI) V/S CHLORHEXIDINE (CH) ORAL CARE ON ORAL MUCOSITIS AMONG HEAD AND NECK CANCER PATIENTS: AN EXPERIMENTAL STUDY

Sonal Netram[1] and Shatrughan Pareek*[2]

[1]Assistant Professor, St. Francie College of Nursing, Indore (MP).
[2]Nursing Superintendent, Indian Railway Health Services, Bikaner, Rajasthan.

*Corresponding Author: Shatrughan Pareek

Nursing Superintendent, Indian Railway Health Services, Bikaner, Rajasthan.

ABSTRACT

Introduction: Oral mucositis (OM) is a common and often dose-limiting side effect of cancer therapy. Many of the cancer patients receiving cancer treatment do have variety of health problems like OM. Nurses play an important role in reducing the OM problems and improve the health status. **Objective**: To determine the comparative effectiveness of Povidone-iodine (PI) Vs Chlorhexidine CH oral care on OM. **Material and Methods**: The present study was conducted with quantitative approach with pre-test post-test design with two groups approached. The data were collected from 30 head and neck patients who were selected by simple random sampling technique with A and B group. The investigator collected data with help of demographic profile and WHO OM scale. The data was analysed with descriptive and inferential statistics wherever required. **Results**: It was found that before intervention the head and neck cancer patients (A group) had mean score (2.53) indicates 'grade II' OM whereas in B group patients had mean score (2.13) indicates 'grade II' OM. It was noted that after the intervention the level of OM was significantly reduced the mean score was (1.20). It shows that the use of PI for oral care helps in minimizing the OM i.e., from grade II to grade I. Both Povidone-iodine (PI) and Chlorhexidine (CH) were effective in reducing the level of OM but PI was more effective in decline the OM score compare to CH (p<0.00001). **Conclusion**: The study outcome revealed that PI was found to be more effective in reducing OM among head and neck cancer patients than the CH. It should be emphasized that nurse intervention should be practiced and used routinely for the head and neck cancer patients to have better outcome.

KEYWORDS: Povidone-Iodine, Chlorhexidine Oral care, OM, Head and neck cancer, Patients.

INTRODUCTION

Cancer is a major public health problem in India'. Cancer is 2nd leading cause death. Treatment modalities for cancer such as Chemotherapy and Radiation therapy are very costly and have various side effects. The mouth is a frequent site of complications arising from drug or radiation cancer therapy, with Radiotherapy induced skin reactions, mucositis, xerostomia, the osteoradionecrosis, and local infections being the most common.[1-2] Head-neck cancers (HNC) have a rapid and devastating growth. HNC is one of the most common cancers and a major health problem. The annual incidence of HNC worldwide is approximately 550,000 cases with around 300,000 deaths each year. Usually 90% of all HNC are squamous cell carcinomas. They are mainly loco-regional, and cause serious morphological and functional alterations which, in advanced stages, cause a significant social impact.[3-4] Patients treated with radiation therapy for head and neck cancer typically receive an approximately 200 cGy daily dose of radiation, five days per week, for 5–7 continuous weeks. Almost all such patients will develop some degree of oral mucositis.[5] Oral mucositis (OM) is defined as an injury of the oral mucosa in cancer patients, either induced by irradiation of patients who have head and neck cancer, or due to chemotherapy. Oral mucositis can be very painful and can significantly affect nutritional intake, mouth care, and quality of life.[6] The present study was conducted with aim to evaluate the Effectiveness of Povidone-iodine (PI) v/s Chlorhexidine (CH) Oral care on OM among Head and Neck cancer patients admitted in Oncology ward at Government Cancer Hospital.

MATERIALS AND METHODS

In current study, quantitative approach and pre-test post-test control group design were found suitable to achieve the objectives of the study. The study was conducted among Head and neck cancer patients with OM in oncology ward at Government Cancer Hospital, Indore, MP, India. The simple random sampling technique was used to select 30 samples and then they were randomized in A and B group [Povidone-iodine (PI) v/s Chlorhexidine (CH)]. The data collection was done with help of demographic Performa, Clinical characteristics data sheet and WHO OM assessments scale.

Inclusion Criteria

The study was limited to patients, who were.

- Head and neck cancer patients having OM and receiving chemotherapy, radiation therapy and combined therapy.
- Present during the period of the sample collection.
- Age should be above 21 years.

Exclusion Criteria

Patients who were

- Having other type of cancers
- Acutely ill and unable to respond
- Suffering with neurological and psychological disease.

Data collection procedure

The present study was done with Pre-test on the day of admission before implementation of oral care by using WHO OM assessment scale. After the pre-test, the PI oral care mouthwash was given to A group and CH mouthwash was given to B group. Educated both the groups about how to use PIand CH mouthwash, its benefits and side effects and told them use PI and CH mouth care solution twice in a day for 2 weeks. Post-test was carrying out on the day of completionfrom both groups (after 2nd week). It was carrying out the WHO oral mucocitis assessment scale.

Data analysis

Researchers' analysis the data by using descriptive and inferential statistics based on the objectives and hypotheses of the study. Compute the data sheet was prepared by the investigator and analysis was done with help of SPSS-21.

RESULTS

The findings revealed that majority of subjects were male. As per table-1, in PI group, 46.67% were have moderate level of OM followed by 40% were having severe OM in pre-test. But after the intervention, majority of patients (60%) having mild OM and 40% have no OM. Whereas in CH group, 40% were have moderate level of OM in pre-test but 46.67% were have moderate level of OM followed by 40% were having severe OM in post-test. In PI group, the mean OM scores in pre-test was 2.53 and post-test was 0.60. While in CH group, the mean OM scores in pre-test and post-test were 2.13 and 1.67 respectively (Table-2). The mean Post-test OM scores among cancer patients in PI & CH oral wash groups were 0.60 ± 0.507 and 1.67 ± 0.724 respectively. The findings highlighted in table-3 that a significant mean difference between post test Om scores ($p < 0.0001$). Additionally, table-4 explored that variables like gender ($p=0.017$), age ($p=0.0002$), education ($p<0.0001$), type of cancer($p=0.006$), treatment of cancer ($p=0.004$) and personal habits ($p=0.002$) have significant association with OM scores. Moreover, other variables like income, occupation and family history of cancer have no significant association ($p>0.05$) with OM scores.

Table 1: Frequency and Percentage distribution of levels of OM before and after administration of PI & CH oral wash among cancer patients N=30.

S. No.	Levels of oral mucositis	PI oral wash (n=15)		CH oral wash (n=15)	
		Pre-test	Post-test	Pre-test	Post-test
1.	None (0)	00	6 (40%)	1 (6.67%)	00
2.	Mild (1)	2 (13.33%)	9 (60%)	3 (20%)	7 (46.67%)
3.	Moderate (2)	7 (46.67%)	00	6 (40%)	6 (40%)
4.	Severe (3)	6 (40%)	00	3 (20%)	2 (13.33%)
5.	Severe life Threatening (4)	00	00	2 (13.33%)	00

Table 2: Difference of Mean OM scores before and after administration of PI& CH oral wash among cancer patients N=30.

S. No.	Groups	Mean OM scores		
		Pre-test	Post-test	Score difference
1	PI oral wash	2.53	0.60	1.93
2	CH oral wash	2.13	1.67	0.46

Table 3: Difference of Mean Post-test OM scores among cancer patients in PI & CH oral wash groups N=30.

S. No.	Groups	Mean OM scores		t-test value	p-value
		post test scores	Mean difference		
1	PI oral wash	0.60±0.507		6.751	<0.0001
2	CH oral wash	1.67±0.724	1.07		

Table-4: Association between selected demographic variables and OM scores of the cancer patients in PI and CH group N=30.

Variables	Chi-square value	Degree of Freedom	p-value
Gender	5.670	df-01	0.017[S]
Age (Years)	19.245	df-03	0.0002[S]
Educational status	22.169	df-03	<0.0001[S]
Monthly income	5.342	df-02	0.069[NS]
Occupation	6.323	df-03	0.096[NS]
Family history of cancer	2.039	df-01	0.15[NS]
Stages of cancer	9.650	df-03	0.022[S]
Type of cancer	12.346	df-03	0.006[S]
Treatment of cancer	11.047	df-02	0.004[S]
Personal habits	14.816	df-03	0.002[S]

DISCUSSION

The present study was conducted with aim to evaluate the Effectiveness of Povidone-iodine (PI) v/s Chlorhexidine (CH) Oral care on OM among Head and Neck cancer patients. The findings revealed that majority of subjects were male. In PI group, the mean OM scores in pre-test was 2.53 and post-test was 0.60. While in CH group, the mean OM scores in pre-test and post-test were 2.13 and 1.67 respectively. The mean Post-test OM scores among cancer patients in PI & CH oral wash groups were 0.60±0.507 and 1.67±0.724 respectively. The findings highlighted in table-3 that a significant mean difference between post test Om scores (p <0.0001). Similarly, in a trial by Madan *et al.*, 80 patients with head and neck cancer undergoing curative radiotherapy were treated with either 0.12% chlorhexidine, 1% PVP-I or salt/soda mouthwashes. It was found that patients receiving PVP-I had significantly lower OM scores compared to both the chlorhexidine and salt/soda groups after 5 weeks of treatment. It was therefore concluded that PVP-I could reduce the severity and delay the onset of cancer therapy-related OM[7].

In this context, A study by Ravindra BK et al highlighted that experimental group had mean score (2.66±0.74) indicates 'grade II' oral mucositis whereas in control group patients had mean score (1.96±0.92) indicates 'grade I' oral mucositis. It was noted that after the nursing intervention (Chlorhexidine) the level of oral mucositis was significantly reduced the mean score was (1.73±0.82). It shows that the use of chlorhexidine for oral care helps in minimizing the oral mucositis i.e. from grade II to grade I[8]. This finding was in support of our research. Kanagalingam J et al (2017) stated that Povidone iodine (PVP-I) formulations have been shown to decrease the incidence and severity of OM[9]. In contrast to our findings, A study by Roopashri *et al.* compared benzydamine (0.15%), chlorhexidine (0.2%) and PVP-I (5%), and found evidence of efficacy for all interventions, but concluded that benzydamine was the superior agent. In fact, the incidence of mucositis was not statistically different in the study and control groups. The observed differences in severity of mucositis and pain did not meet statistical significance.[10] Another study by Yotdanai Namuangchan et al (2023) revealed that the mean weekly OMAS, pain score, and impact on swallowing score were not statistically significant in patients who rinsed with in-house iodine solution (IS) mouthwash.[11] The present study highlighted that PI wash was better than CH wash on OM among the head and neck patients.

CONCLUSION

The present study was conducted with aim to evaluate the Effectiveness of Povidone-iodine (PI) v/s Chlorhexidine (CH) Oral care on OM among Head and Neck cancer patients admitted in Oncology ward at Government Cancer Hospital. The findings explored that in PI group, the mean OM scores in pre-test was 2.53 and post-test was 0.60. While in CH group, the mean OM scores in pre-test and post-test were 2.13 and 1.67 respectively. The mean Post-test OM scores among cancer patients in PI & CH oral wash groups were 0.60±0.507 and 1.67±0.724 respectively. The findings highlighted a significant mean difference between post test Om scores (p <0.0001). The present study highlighted that PI wash was better than CH wash on OM among the head and neck patients. The healthcare professionals may use the present findings to decline the OM scores among the cancer patients. The intervention can be effective in reducing disease burden and levels of OM among different types of cancer patients.

REFERENCES

1. Public health problems in India, cancer management, Available from URL://http://www.medicine.net.com-home [Accessed on 20th July 2023]

2. Pareek Shatrughan, Mehta Santosh, Goyal Harindarjeet. A structured teaching programme to assess the knowledge and practices of cancer patients regarding Radiotherapy induced skin reactions: A Quasi Experimental study. Int. J. Nur. Edu. and Research, 2017; 5(2): 198-202.

3. Lanzetti J, Finotti F, Savarino M, Gassino G, Dell'Acqua A, Erovigni FM. Management of Oral Hygiene in Head-Neck Cancer Patients Undergoing Oncological Surgery and Radiotherapy: A Systematic Review. Dent J (Basel), 2023 Mar 16; 11(3): 83.

4. Abed H., Reilly D., Burke M., Daly B. Patients with head and neck cancers' oral health knowledge, oral health-related quality of life, oral health status, and adherence to advice on discharge to primary dental care: A prospective observational study. *Spec. Care Dentist,* 2019; 39: 593–602.

5. Lalla RV, Sonis ST, Peterson DE. Management of oral mucositis in patients who have cancer. Dent Clin North Am, 2008 Jan; 52(1): 61-77,

6. Duncan GG, Epstein JB, Tu D, et al. Quality of life, mucositis, and xerostomia from radiotherapy for head and neck cancers: a report from the NCIC CTG HN2 randomized trial of an antimicrobial lozenge to prevent mucositis. *Head Neck,* 2005 May; 27(5): 421–428.

7. Ravindra B. Kate, Ms. Heera Jayasheela. Effectiveness of Chlorhexidine vs KMnO4 Oral care on Oral mucositis among Head and neck cancer patients admitted in Oncology ward at Pravara Rural Hospital, Loni Bk. Int. J. Nur. Edu Res., 2019; 7(1): 55-59.

8. Kanagalingam J, Chopra A, Hong MH, Ibrahim W, Villalon A, Lin JC. Povidone-iodine for the management of oral mucositis during cancer therapy. Oncol Rev., 2017; 11(2): 341.

9. Roopashri G, Jayanthi K, Guruprasad R. Efficacy of benzy- damine hydrochloride, chlorhexidine, and povidone iodine in the treatment of oral mucositis among patients undergoing radiotherapy in head and neck malignancies: a drug trail. *Contemporary Clin Dentistry,* 2011; 2: 1.

10. Madan PD, Sequeira PS, Shenoy K, Shetty J. The effect of three mouthwashes on radiation-induced oral mucositis in patients with head and neck malignancies: a randomized control trial. J Cancer Res Ther, 2008 Jan-Mar; 4(1): 3-8.

11. Yotdanai Namuangchan, Ornpapa Chailertwanich, Sirinun Susinsamphan, Narudom Supakalin, Chunsri Supaadirek, Srichai Krusun et al. Prophylaxis of Oral Mucositis with Iodine Solution during Concurrent Chemoradiation of Head and Neck Cancer: Preliminary Results of a Double-Blind, Randomized Controlled Trial. *Asian Pac J Cancer Prev, 2023;* 24(7): 2445-2454.