RESEARCH PAPER

Effectiveness of Structured Teaching Programme on Knowledge Regarding Sodium Bicarbonate Mouth Wash on Oral Mucositis Among Oral Cancer Patients

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ABSTRACT

Introduction: Radiation therapy is commonly applied to the cancerous tumor because of its ability to control cell growth. Aggressive treatment of malignant disease may produce unavoidable toxicities to normal cells. The mucosal lining of the gastrointestinal tract, including the oral mucosa, is a prime target for treatment-related toxicity by virtue of its rapid rate of cell turn over. The oral cavity is highly susceptible to direct and indirect toxic effects of cancer chemotherapy and ionizing radiation. Oral mucositis is the most common, debilitating complication of cancer treatments, particularly chemotherapy and radiation. Mucositis is a common and feared complication of anticancer therapy that can affect up to 90% of certain populations of patients with cancer. To reduce mucositis, sodium bicarbonate mouthwash solution is thought to aid in the formation of granulation tissue and to promote healing. Aim: To assess the effectiveness of a structured teaching programme on knowledge regarding sodium bicarbonate mouthwash in among oral cancer patients. ***Methodology***: The study adopted an evaluation research approach with a pre-experimental one-group pretest–posttest design among 60 oral cancer patients receiving radiation therapy. Non-probability purposive sampling was used. Data were collected using socio-demographic and structured knowledge questionnaires to assess the effectiveness of a structured teaching programme regarding sodium bicarbonate mouthwash and oral mucositis. ***Results***: Among 60 oral cancer patients receiving radiation therapy, the majority were aged 31–40 years, male, illiterate, workers, and belonged to the middle-income group. In the pre-test, 53.33% had inadequate knowledge regarding sodium bicarbonate mouthwash, whereas in the post-test, 60% achieved adequate knowledge. The mean post-test knowledge score (20.95) was higher than the pre-test score (11.33). The paired "t" value was 13.0914 with $p<0.05$, indicating that the structured teaching programme significantly improved knowledge. No significant association was found between pre-test knowledge scores and demographic variables such as age, gender, education, occupation, and income. ***Conclusion***: The study concluded that the structured teaching programme effectively improved knowledge regarding sodium bicarbonate mouthwash in reducing oral mucositis among oral cancer patients receiving radiation therapy. Post-test scores significantly increased, while demographic variables showed no significant association. Structured educational interventions are important for improving awareness, oral care practices, and preventing radiation-induced complications.

Keywords: Structured teaching programme, sodium bicarbonate mouth wash, oral mucositis, and oral cancer patients.

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INTRODUCTION

Cancer is the second most common cause of death worldwide and accounted for an estimated 9.6 million deaths in 2020. Globally, nearly one out of every six deaths is caused by cancer. Around 70% of cancer-related deaths occur in low- and middle-income countries. Approximately 30% of these deaths can be prevented through early detection and timely medical intervention. The global number of cancer deaths is expected to increase further, reaching more than 11 million by the year 2030. Cancer incidence is highest in men than women.

Oral mucositis is a painful condition characterized by inflammation and ulceration of the mucous membranes lining the digestive tract. It is one of the most common and distressing complications of anticancer therapy, affecting up to 90% of certain groups of cancer patients. Even mild forms of mucositis can cause significant discomfort and negatively affect the patient's quality of life. Severe mucositis may lead to complications such as intense pain, secondary infections, bleeding, dehydration, and interruption or reduction of cancer treatment, which can ultimately affect treatment outcomes.

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Sodium bicarbonate mouthwash is believed to support the formation of granulation tissue and promote healing of the oral mucosa. Mouth rinses prepared with normal saline or sodium bicarbonate are considered safe, affordable, and effective in relieving mild to moderate pain associated with mucositis. In addition, "magic mouthwashes," which commonly contain topical anesthetics, antihistamines, or steroids, are also widely used. Among cancer patients, sodium bicarbonate mouthwash has been commonly utilized because it helps cleanse oral wounds, reduce swelling, and relieve pain.

Aim: To assess the effectiveness of a structured teaching programme on knowledge regarding sodium bicarbonate mouthwash in among oral cancer patients. Objectives: To assess the existing level of knowledge regarding sodium bicarbonate mouth wash among oral cancer patients. To find the association between pre-test knowledge score regarding sodium bicarbonate mouth wash among oral cancer patients with their selected socio demographic variables.

Hypotheses: - H01: There is no significant difference between the mean pre-test and post-test knowledge scores sodium bicarbonate mouth wash among oral cancer patients. H02: There is a significant association between pre-test levels of knowledge regarding sodium bicarbonate mouth wash among oral cancer patients with their selected socio- demographic variables.

RESEARCH METHODOLOGY:

Research approach: Evaluation research. Research design: Pre-experimental one group pretest and post-test design. Sample: Oral cancer patients receiving radiation therapy. Sample size- 60 oral cancer patients receiving radiation therapy. Sampling technique- Non- probability purposive sampling technique. Inclusion criteria – Oral cancer patients receiving radiation therapy, and who are in stage II to IV and who are having oral mucositis. Exclusion criteria – Oral cancer patients receiving radiation therapy, and who are in stage I, and other oral related health problems. Research variables: Independent variable: Structured teaching programme on knowledge regarding sodium bicarbonate mouth wash Dependent variable: Knowledge level regarding sodium bicarbonate mouth wash. Description of the Tool: Socio-demographic data collected by Socio-demographic tool. Knowledge assessed by structured knowledge questionnaire.

RESULTS:

Table 1: Description of the Socio-Demographic Variables:

N=60

Age in Years	**Frequency**	**Percentage**
Below 20	8	13
21-30	15	25
31-40	18	30
41-50	10	17
More than 50	9	15
Gender		
Male	37	62
Female	23	38
Educational qualification		
Illiterate	17	28
Primary education	16	27
Secondary Education	9	15
Higher secondary education	11	18
Graduate and above	7	12
Occupation		
Professional Job	12	20.33
Housewife	11	18.33
Worker	15	25.33
Farmer	14	23
Self employed	8	13
Family income in Rs.		
Rs. 15,197 and above	10	17
Rs.7,595- 15,196	14	23
Rs.5,694-7,594	8	13
Rs.3,793- 5,693	12	20
Rs. 2,273-3,792	9	15
Rs. 761- 2,272	7	12

In table 1 shows that, In age in years, maximum subjects had 31-40 years of age 18(30%), in gender maximum were male 37 (62%), in educational qualification maximum were completed primary education 17(28%), in occupation major sample were workers 15(25.33%), in family income per month in rupees is majority were Rs.7,595- 15,196, 14(23%).

Table 2: Level of knowledge: **N=60**

Level	Pretest	Post test
	Freq (%)	Freq (%)
Inadequate	32 (53.33%)	8 (13%)
Moderately adequate	18 (30%)	14 (23%)
Adequate	10 (17%)	38 (60%)

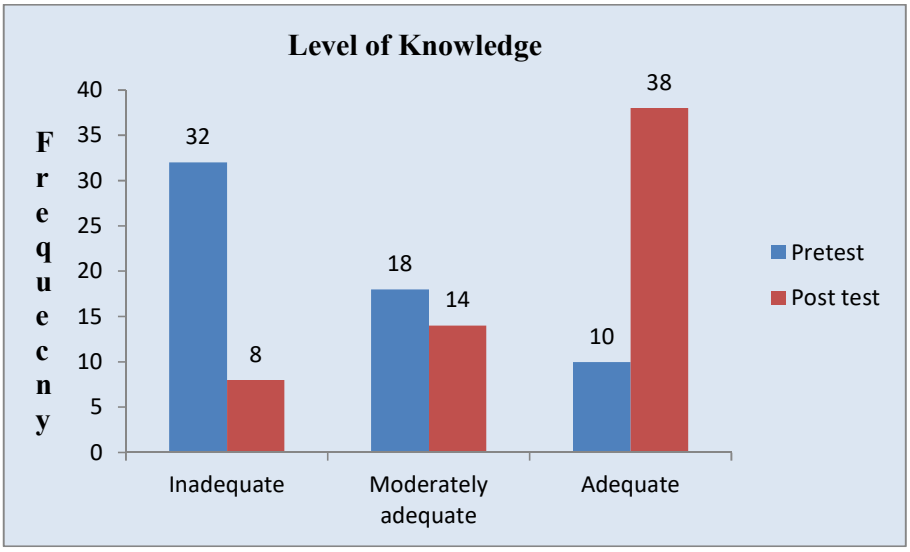

Table 2 shows that in pretest maximum sample had inadequate knowledge 32 (53.3%), whereas in post test similarly maximum sample had adequate knowledge after the structured teaching progarmme.

Table 3: Effectiveness of structured teaching programme on knowledge:

	Mean	SD	Mean%	Paired "t" Test
Pretest	11.33	6.87	36.78	t=13.09
Post test	20.95	6.27	63.78	df= 59 p<0.00001 Significant

Table 3 shows that in pretest mean score 11.33 after the structured teaching programme it was increased to 20.95, with this paired t test score was 13.09, at df 59, is significant.

Table 4: Association of pre-test level of knowledge scores with oral cancer patients socio-demographic variables

	Knowledge score			Chi square
Age in Years	**Inadequate**	**Moderate**	**Adequate**	
Below 20	6	1	1	4.03 Nothing Significant
21-30	7	4	4	
31-40	10	6	2	
41-50	4	4	2	
More than 50	5	3	1	
Gender				
Male	20	12	5	0.77 Nothing Significant
Female	12	6	5	
Educational qualification				
Illiterate	10	4	3	4.03 Nothing Significant
Primary education	9	4	3	
Secondary Education	6	2	1	
Higher secondary education	5	4	2	
Graduate and above	2	4	1	
Occupation				
Professional Job	7	3	2	6.47 Nothing Significant
Housewife	4	4	3	
Worker	10	4	1	

Farmer	5	6	3	
Self employed	6	1	1	
Family income in Rs.				
Rs. 15,197 and above	8	1	1	4.04 Nothing Significant
Rs.7,595- 15,196	5	6	3	
Rs.5,694-7,594	4	2	2	
Rs.3,793- 5,693	8	3	1	
Rs. 2,273-3,792	4	4	1	
Rs. 761- 2,272	3	2	2	

Table 4: Shows that there is no any significant association between pre-test level of knowledge score oral cancer patients socio demographic variables such as age, gender, educational qualification, occupation, and per capita monthly income.

DISCUSSION:

The present study was conducted to evaluate the effectiveness of a structured teaching programme on knowledge regarding the importance of sodium bicarbonate mouthwash in reducing oral mucositis among oral cancer patients receiving radiation therapy. The findings revealed that the structured teaching programme significantly improved the knowledge level of the participants.

Regarding demographic characteristics, the majority of participants were aged between 31–40 years, most were male, and many were illiterate and employed as workers. Most participants belonged to the middle-income group. These findings indicate that oral cancer affects individuals from varied socioeconomic backgrounds and highlights the importance of providing adequate health education irrespective of literacy status.

The pre-test findings showed that more than half of the participants had inadequate knowledge regarding the importance of sodium bicarbonate mouthwash in reducing oral mucositis. However, after the implementation of the structured teaching programme, a considerable improvement was observed, with the majority achieving adequate knowledge in the post-test. The increase in mean knowledge score from 36.78% in the pre-test to 63.78% in the post-test demonstrates the effectiveness of the educational intervention. The paired "t" test value was statistically significant at 0.05 level, confirming that the structured teaching programme effectively enhanced patients' knowledge.

The findings of the present study are supported by previous studies which emphasized the effectiveness of sodium bicarbonate mouthwash in managing oral mucositis and reducing treatment-related complications among cancer patients. Studies have also reported that regular oral rinsing with bland mouthwashes such as sodium bicarbonate or saline solutions helps maintain oral hygiene and reduce microbial flora.

Furthermore, no statistically significant association was found between pre-test knowledge scores and selected demographic variables such as age, gender, education, occupation, and income. This suggests that the educational programme was beneficial for all participants regardless of their demographic characteristics. Overall, the study highlights the importance of structured teaching programmes in improving awareness and preventive practices among oral cancer patients undergoing radiation therapy.

CONCLUSION:

The present study concluded that the structured teaching programme was highly effective in improving knowledge regarding the importance of sodium bicarbonate mouthwash in reducing oral mucositis among oral cancer patients receiving radiation therapy. The post-test findings demonstrated a significant increase in knowledge scores compared to the pre-test scores. The study also revealed that demographic variables had no significant influence on knowledge levels, indicating that the teaching programme was beneficial for all participants. Therefore, structured educational interventions can play an important role in enhancing patient awareness, promoting oral care practices, and preventing complications associated with radiation-induced oral mucositis.

BIBLIOGRAPHY:

1. World Health Organization. Cancer. Geneva: World Health Organization; 2022. Available from: https://www.who.int/news-room/fact-sheets/detail/cancer.
2. National Cancer Institute. Radiation Therapy for Cancer [Internet]. Bethesda: National Cancer Institute; 2018. Available from: https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy.
3. Shankar A, Roy S, Bhandari M, Rath GK, Biswas AS, Kanodia R, et al. Management of cancer therapy-associated oral mucositis: ESMO Clinical Practice Guidelines. Ann Oncol. 2020;31(8):1030–43.
4. Al-Maweri SA, Kalakonda B, Al-Soneidar WA, Al-Shamiri HM, Alaizari NA. Effectiveness of sodium bicarbonate and zinc chloride mouthwashes on oral mucositis and quality of life in patients undergoing chemotherapy: a randomized controlled trial. Support Care Cancer. 2022;30(5):4371–8.
5. Kulkarni MR. Head and Neck Cancer Burden in India. Int J Head Neck Surg. 2013;4(1):29–35. Available from: https://www.ijhns.com/doi/10.5005/jp-journals-10001-1132.
6. Majdaeen M, Babaei M, Rahimi A. Sodium Bicarbonate Containing Mouthwash for Preventing Radiotherapy-Induced Oral Mucositis in Patients With Locally Advanced Head and Neck Cancer.Rep Radiother Oncol.

2022;9(1):e3721. Available from: https://brieflands.com/articles/rro-3721.
7. Elsehrawy MG, Ibrahim NM, Eltahry SI, Elgazzar SE. Impact of educational guidelines on oral mucositis severity and quality of life in oncology patients receiving chemotherapy. Asian Pac J Cancer Prev. 2024;25(7):2427–38.
8. Mohammadi F, Oshvandi K, Kamallan SR, Khazaei S, Ranjbar H, Ahmadi-Motamayel F, et al. Effectiveness of sodium bicarbonate and zinc chloride mouthwashes in the treatment of oral mucositis and quality of life in patients with cancer under chemotherapy. Nurs Open. 2022;9(3):1602–11.
9. Sonis ST. Oral mucositis in cancer therapy. J https://en.wikipedia.org/wiki/Mucositis?utm_source=chatgpt.com.
10. Elting LS, Cooksley CD, Chambers MS, Garden AS. Risk, outcomes, and costs of radiation-induced oral mucositis among patients with head-and-neck malignancies. Int J Radiat Oncol Biol Phys. 2007;68(4):1110-20. Available from: https://www.frontiersin.org/journals/oralhealth/articles/10.3389/froh.2022.917860/full?utm_source=chatgpt.com.
11. Ganesh R, John J, Saravanan S. Socio demographic profile of oral cancer patients residing in Tamil Nadu - a hospital based study. Indian J Cancer. 2013;50(1):9-13. Available from: https://pubmed.ncbi.nlm.nih.gov/23713038/.
12. 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;4(1):3-8. Available from: https://pubmed.ncbi.nlm.nih.gov/18417894/.
13. Judge LF, Farrugia MK, Singh AK. Narrative review of the management of oral mucositis during chemoradiation for head and neck cancer. Ann Transl Med. 2021 May;9(10):916.
14. Di Fede O, Canepa F, et al. Prevention/treatment of oral mucositis: SB vs other agents systematic review. BMC Oral Health. 2023;23(4).
15. Dodd MJ, Dibble SL, Miaskowski C, MacPhail L, Greenspan D, Paul SM, et al. Randomized clinical trial of the effectiveness of 3 commonly used mouthwashes to treat chemotherapy- induced mucositis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2000;90(1):39-47. Available from: https://pubmed.ncbi.nlm.nih.gov/10884634/