

Topical Application of Orasep Verses Honey on Radiation Induced Mucositis

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Abstract: *The purpose of this study was to compare topical application of orasep verses honey on radiation induced mucositis. Objectives- To assess the existing level of mucositis. To determine the effect of Orasep and honey on radiation induced mucositis. To find out the association between selected demographic variables & mucositis score. Methods- An experimental pre-test, post-test experimental design were used. The 40 patients were selected by purposive sampling technique. Results- The onset of mucositis and the severity of mucositis were graded during the course of the radiotherapy and 5th and 10th day after radiotherapy,. The mean score of 0.7, Std. Deviation .571 in reducing level of mucositis in Orasep group and mean score honey group of 0.55, Std. Deviation 0.510. Null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention. No significant reduction in mucositis in honey-received patients compared with orasep applied patient succeeded. There were no differences between the groups. There all variables do not show significant association between a radiations induced mucositis and demographic variables. Conclusion: natural honey is an effective agent in managing radiation induced oral mucositis. Honey could be a simple, potent and inexpensive agent, which is easily available, and it can be a better therapeutic agent in managing radiation mucositis in developing countries like India for the management of this morbidity. Also in orasep help to relief of pain and dry, scratchy mouth for the relief of pain associated with canker sores, irritation of the mouth and gums.*

Keywords: Orasep, Natural honey, Oral malignancy, Radiation mucositis

1. Introduction

The concept of perfect positive health cannot become a reality because man will never be so perfectly adapted to his environment that his life will not involve struggles; failures and sufferings. Positive health will therefore, always remain mirages, because everything in our life is subject to change. Health in this context has been described as a potentiality - the ability of an individual to modify him or itself continually in the face of changing conditions of life [1][7]. Cancer is one of the major threats to public health in the developed world and increasingly in the developing countries. In developed countries cancer is the second most common cause of death.

Topically applied pharmacological methods, variety of mouthwashes with mixed actions have been evaluated in treatment of oral mucositis induced by radiotherapy as use of the oral gel became more routine; nurses gave the product to patients on their first day of treatment, believing that this would assist in preventing oral lesions and maintaining patients' nutritional requirements. The use of honey for its medicinal properties is widespread and has been well documented in literature. The mucositis has become one of the main areas of focus in mucositis symptom research and for the development of management guidelines [2].

2. Justification of the Study

As an oncology nurses plays a critical role improving patient outcome related to oral mucositis knowledge and research regarding oral mucositis forms a crucial part of their activities. Mucositis may be a painful, debilitating,

dose-limiting side-effect of both chemotherapy and radiotherapy. The basis of management is pain relief, prevention of dehydration and adequate nutrition. The systematic use of evidence-based, goal driven oral care regimens can help reduce the incidence and severity of oral sequelae. Oral and pharyngeal cancer is the sixth most common malignancy reported worldwide and one with high mortality ratios among all malignancies. The global number of new cases was estimated at 405,318 about two-thirds of them arising in developing countries. Highest rates are reported in South Asian countries such as India and Sri Lanka [3].

Severe oral toxicities can also compromise the delivery of optimal cancer therapy protocols. For example, dose reduction or treatment schedule modifications may be necessary to allow for resolution of oral lesions. In cases of severe oral morbidity, the patient may no longer be able to continue cancer therapy; treatment is then usually discontinued. These disruptions in dosing due to oral complications can directly affect patient survivorship.

Incidence of oral mucositis among cancer patients (Trotti et al, 2003) Incidence (%) Radiotherapy for head and neck cancer Grade 3/4 (%) 85-100 (male) 25-45 (female)[4]. Age adjusted incidence rate in India is 44.8 and 23.7 in males and females respectively compared to 11.2 per 100000 in USA. Cancers of oral cavity are high in Kerala (Southern India) and pharyngeal cancer in Mumbai (Western India). Age adjusted incidence rate of mouth cancer in Mumbai is 5.7, that of tongue is 5.7 per 10000 the incidence of mucositis is dependent on the cancer treatment regimen. The current head and neck radiotherapy protocols have a

mucositis incidence of 85-100%. For altered fractionated radiation, the incidence is 100%, for chemo radiation 89%, and for conventional radiation 97%. The incidence of mucositis can approach 90-100% in patients receiving aggressive myelo-ablative chemotherapy. The severity of mucositis depends on different factors—e.g., anti-cancer treatment protocol, age and diagnosis of the patient, level of oral hygiene during therapy, and genetic factors [21].

Topical application of honey for the management of oral mucositis currently is development and ultimately, effective management strategies study that focuses on prevention of mucositis. Antiseptic mouth gels help relieve a variety of oral ailments. Typically, the gels contain medication to help heal sores, cankers, gum disease and denture irritation. Some gels target specific problems such as dry mouth. Benzochonine hydrochloride is a drug which has anti-inflammatory, anesthetic, analgesic, antipyretic and antimicrobial activities, and has been used as to prevent and treat oral mucositis. There is good evidence that Benzamine hydrochloride is effective in improving the symptoms of radiation-induced mucositis in patients with head and neck cancer [6].

After reviewing related literatures the investigator came to know the honey has good effect in reducing oral mucositis among head and neck cancer patients undergoing radiation therapy. So the researcher want to know the routine hospital practice of Orasep application or honey application was more effective for that planned to conduct a study by using Orasep versus honey in reducing the oral mucositis among head and neck cancer patients undergoing radiation therapy.

3. Literature Review

Review of literature is a broad, comprehensive in depth, systematic and critical review of scholarly publications, unpublished scholarly print materials, audiovisual materials and personal communications. [9]

3.1 Literature Related To Radiation Induces Oral Mucositis

Radiation-induced oral mucositis affects the quality of life of the patients and the family concerned. The present day management of oral mucositis is mostly palliative and supportive care. The newer guidelines are suggesting Palifermin, which is the first active mucositis drug as well as Amifostine, for radiation protection and cryotherapy. The current management should focus more on palliative measures, such as pain management, nutritional support, and maintenance, of good oral hygiene

Retrospective study was conducted by Bellem L A showed that these patients experience a profound disruption in daily life due to eating problems and associated problems caused by the cancer and its treatment before, during, and after treatment. Before and during pauses in radiotherapy and after completion of treatment, the informants were, to a large extent, left alone with their problems, questions, and worries about the future. To meet these patients' needs, the care must provide greater consistency and continuity throughout the whole trajectory of care [22].

An observational study was conducted by Goyal M concluded the grades of mucositis were marginally higher in the evening irradiated group than in the morning irradiated group 38% versus 26% ($P = 0.08$). In conclusion the observed incidence of grade III / IV mucositis in morning vs. evening irradiated patients may be because of the existence of circadian rhythm in the cell cycle of normal mucosa [8].

A nonintervention study was conducted by Murphy B A found that (76%) patients reported severe mouth and throat soreness pain and functional impairment because of mouth and throat soreness increased during the course of therapy despite the use of opioid analgesics in 64 (85%) of the patients. As a conclusion this study demonstrates that mucositis related pain and functional impairment is associated with increased use of costly health resources. An effective treatment to reduce the pain and functional impairment of oral mucositis is needed in this patient population [23].

A descriptive study was conducted by Shanthi Appavu concluded that out of 118 patients 9 had developed complications. The overall prevalence rate was found to be higher in oncology ward (13.6%) as compared to medical ward (4.2%). In this study mouth was found to be the common complicated area during the treatment. The findings revealed that the majority of staff (67.5%) reported they give more important to oral mucositis. More than one third of the nurses had also reported that they inspect for local infection (37.5%), Xerostomia (37.55), functional disabilities (15.0%), taste alteration (20.0%) and abnormal dental development (10.0%). As a conclusion there is a great need to educate not only nurses but relatives and the patients to adopt certain preventive strategies to reduce the prevalence of oral complications related to cancer treatment [10].

A multicenter study was conducted by Rose- ped, Alison M conclusion trends toward more aggressive management of head and neck cancers under the need for new and effective therapies for oropharyngeal mucositis occurring in patients receiving radiotherapy [11].

An interventional study was conducted by Renata Lazari Sandoval on In result immediate pain relief was achieved in 66.6% of the patients after the first application. Based on the functional scale, mucositis grade III (not capable to eat solids) was reduced in 42.85% of the cases. According to the scale based on the clinical features, mucositis grade IV (ulcerative lesions) was reduced in 75% of the patients that presented this grade of mucositis at the beginning of laser therapy as a conclusion Low-energy laser was well-tolerated and showed beneficial effects on the management of oral mucositis, improving the quality of life during the oncologic treatment.³⁷

As a conclusion Mucositis, xerostomia, and dysphagia are common effects of radiation. With the use of more aggressive treatment regimens the incidence of these effects has increased. One optimistic solution to decrease the incidence of these effects is the development of less toxic agents that are molecularly targeted to the disease without an increase in the intensity of effects of radiation [12]. The

incidence of mucositis ranges from 40% among patients receiving standard dose chemotherapy to 100% of patients receiving radiation therapy for head and neck cancers. Approximately 80% of patients who receive a stem cell transplant develop mucositis. Oral mucosal injury has a chronic course from radiation that is administered in multiple small fractions over a period of weeks. A tropic changes in the epithelium occur at the total dose level of 1600 to 2200 cGy. Mucositis generally appears 1 to 2 weeks after therapy is started and persists for many weeks [13]

3.2 Studies Related to Application of Honey in Reducing Oral Mucositis in Cancer Patients Undergoing Radiation Therapy

As a conclusion this study shows that prophylactic use of pure honey was effective in reducing mucositis resulting from radiotherapy in patients with head and neck cancer [14].

Topical application of natural honey is a simple and cost-effective treatment in radiation mucositis, which warrants further multi-Centre randomized trials to validate our finding⁴⁶

In result the compliance of the honey treated group of patients was better than control. A total of 55% patients treated with topical honey showed no change or a positive gain in body weight compared with a positive gain in body weight compared with only 25% in the control arm ($p = 0.05$). As a conclusion honey has potential for the treatment of periodontal diseases, mouth ulcers and other problems of oral health and a trial has demonstrated a statistically significant difference between chewing gelled honey and chewing gum in decreasing the number of bleeding sites on gums with gingivitis[15].

A study was conducted by Honey News Result shows a significant reduction in mucositis among honey received patients compared with controls ($p = 0.000$) occurred. As a conclusion within the limits of this study the results showed the application of natural honey is effective in managing radiation induced mucositis. A study was conducted Most of the samples of honey used in the study showed broad spectrum antibacterial and promising antifungal activity[16].

A randomized single blind (examiner blind) clinical trial was conducted on 40 patients with head and neck cancer who received. Twenty patients assigned to the study group received honey, concluded a significant reduction in mucositis among honey received patients [16]. A single-blinded Randomized controlled trial found a natural resin from honey, which is a potent inhibitor of human colon adenocarcinoma cell growth, carcinogenic induction, and biochemical and Para-neoplastic lesion changes in rat colon [17].

A single blinded Randomized controlled trial by Khanal et al researcher in 2010 demonstrated that only 1 of 20 patients in the honey group developed intolerable oral mucositis compared with the lignocaine group, indicating that honey is strongly protective ($RR=0.067$) against the development of mucositis. The proportion of patients with intolerable oral mucositis was significantly low statistically in the honey

group [18]. An experimental study was conducted by Brady.Jetel (2012) conducted to investigate the effect of active manuka honey on radiation-induced mucositis. There was no significant difference between honey and golden syrup in their effects on mucositis. Active manuka honey did not improve mucositis, but both the honey and the syrup seemed to be associated with a reduction in bacterial infections. Compliance was a problem after the onset of mucositis [19].

3.3 Literature Related to Application of Orasep on Mouth Ulcer

An audit of radiation-induced mucositis in a tropical cancer center conducted by Smyth W & Keeley T found All patients in this sample developed oral mucositis by the end of their radiation treatment: 21% had a low grade, 79% progressed to the higher Grade III. All patients who did not adhere with the full mouth care regimen experienced a Grade III oral mucositis; only half of the patients who adhered with the full mouth care regimen experienced the more severe Grade III mucositis. It is imperative that nurses actively support patients to follow the prescribed mouth care regimens to minimize oral complications associated with radiation therapy [20].

Honey has an obvious influence on the rate of healing process of the oral ulcers. Antiseptic mouth gels aim to relieve pain from mouth ailments, such as sores, and protect the mouth from infections.

4. Statement of the Problem

“A comparative study to assess the effectiveness of topical application of orasep verses honey on radiation induced mucositis in patients undergoing radiotherapy at selected hospital”

4.1 Objectives of the Study

- To assess the existing level of mucositis.
- To determine the effect of Orasep and honey on radiation induced mucositis.
- To find out the association between selected demographic variables & mucositis score

4.2 Operational Definitions

a) Honey

- A sweet, sticky, yellowish-brown fluid made by bees and other insects from nectar collected from flowers.
- In this study honey refers to filtered processed honey which is sterilized, it will be applied 20 ml 15 min before starting radiotherapy, 20 ml after 15 min radiotherapy and after 6hrs.

b) Orasep

- Orasep gel 15ml (composition: tannic acid, cholinsaliclate, benzalchlorid menthol, cetylpyridinium chloride)
- In this study Orasep refers to mouth ulcer gel, it will be put two to three drops of Orasep gel on the tip of the index finger and rub gently on the affected irritated area may be repeated every 3-4 hours

c) Radiation induced mucositis

- Mucositis is an inflammatory-like process of the oral mucosa due to radiation in head-neck oncology patients
- In this study radiation induced mucositis is any alteration in the oral mucosa as a complication of radiotherapy, which will be measured on who oral mucositis assessment scale before applying topical application of Orasep or honey and at weekly interval during radiotherapy.

4.3 Hypothesis

H0: there will be no significant difference in the effect of topical application of orasep verses honey on radiation induced mucositis in patients undergoing radiotherapy.

H1: there will be a significant difference in the effect of topical application of orasep verses honey on radiation induced mucositis in patients undergoing radiotherapy.

4.4 Assumptions

External radiation for head and neck cancer result in development of mucositis. Orasep and honey has no adverse reaction on radiotherapy. Topical application of orasep and honey on radiation induced mucositis reduces in patients has undergoing radiotherapy.

4.5 Ethical Aspect

While conducting research ethical aspect has been taken into the consideration investigator had taken the prior permission from the respective authority to conduct the proposed research informed consent had been taken from the pretest confidentiality and anonymity had been maintained of the information given by participants

4.6 Research Methodology

The methodology of research indicates the general pattern of organizing the procedure for gathering valid and reliable data for the purpose of investigation [5].

4.6.1 Research approach

An experimental research approach was used.

4.6.2 Research Design

The research design selected for the study was design used is pre-test, post-test experimental design.

<i>Pretest post testquasi Experimental design</i>			
	<i>Baseline day</i>	<i>5th day</i>	<i>10th day</i>
Honey group	O ₁	O ₂	O ₃
Orasep group	O ₁	O ₂	O ₃

4.6.3 Independent variable

The Independent variables in this study orasep and honey.

4.6.4 Dependent variable

The dependent variable in the study is radiation induced mucositis in patients undergoing radiotherapy.

4.6.5 Sample

The sample of the study consisted of radiation induced mucositis in patients undergoing radiotherapy of selected hospitals at the time of data collection. The radiation induced mucositis in patients who fulfilled the criteria were selected as the subjects for the study.

4.6.6 Sample Size

The sample size consisted of 40 patients.

4.6.7 Sampling Technique

In the present study purposive sampling technique was used.

4.6.8 Setting of the study

The study was conducted at in patient setting in the selected hospitals. These institutes were chosen because these were convenient to the investigator. These institutes are private hospitals.

Inclusion Criteria

- Patient undergoing radiotherapy for head and neck cancer.
- Patient who are willing to participate in study.
- Patient who has developed grade two or three mucositis.

Exclusion Criteria

- Patient taking last cycle of radiotherapy.
- Irregular patient.
- Patient having diabetes mellitus or hereditary problem of diabetes mellitus

4.6.9 Data Collection Instrument

In this study, the tools consisted of modified WHO oral mucositis assessment scale, Observation check list to assess the grade of radiation induced mucositis in patients undergoing radiotherapy.

4.6.10 Description of the Tool

The instrument consists of two sections.

Section 1. Consisted of base line data of the patient 6 items pertaining to the demographic variables of the respondents like Age, Gender, Economic status, Education qualification, Type of radiotherapies.

Section 2. Consisted of one WHO mucositis assessment scales & one observation check list to assess the grade of radiation induced mucositis in patients

4.7 Modified Who Oral Mucositis Assessment Scale

Grade 0 -none s

Grade 1 (Painless ulcers, erythema or soreness)

Grade 2 (Painful erythema edema or ulcers, patient can still swallow solide food)

Grade 3 (Painful extensive erythema edema or ulcers and cannot swallow solide food)

Grade 4 (Mucositis to an extent that the patient needs parenteral or enteral nutritional support)

4.8 Observation Check List

Erythema (Visual grading) (Absent → Mild -The typical adherent white plaques Moderate- A roughly symmetric,

asymptomatic red lesion involving the midline of the posterior dorsal tongue. Sever -3). Oedema or ulcer (No ulcer-0, Minor ulcers- small, non-scarring, Major ulcers - 1cm or larger, Herpetiform ulcers- multiple tiny sores that can be very painful). Pain Rating Pain (Scale 0-no pain, 1-3 mild pain, 4-6 moderate, 7-10 severe). Foods swallow (Nil, Swallow Solid food, Swallow liquid food, Need parental or eternal nutritional support).

4.9 Feasibility of the Study

The feasibility of the study assessed in terms of outcome and availability of subjects as well as ethical aspects at the time of selection of statement of problems. Pilot study report shows that there is significant difference between pre and posttest after intervention.

4.10 Protection of Human Rights

The study was conducted after obtaining the approval from the dissertation committee. Permission was obtained from heads of nursing and radiotherapy department written consent from the radiation induced mucositis cancer patient were taken before the application.

4.11 Data Collection

Pre-test done by observing the mucosa for presence of mucositis for both the groups then pure honey is given to HONEY- group. Orasep was given to ORASEP- group. (Posttest) observation of mucosa was done on every fifth day, till ten days.

4.12 Plan for Data Analysis

The data analysis was planned to include descriptive and inferential statistics.

5. Findings

Table 1: It deals with the analysis of the demographic data of the samples.

	Oresep group (n-20)	Honey group (n-20)
<i>Variables</i>	<i>Frequency</i>	<i>Frequency</i>
1.AGE		
1. 21-30yrs	1(5.0)	2(10.0)
2. 31-40yrs	8(40.0)	4(20.0)
3. 41-50yrs	9(45.0)	8(40.0)
4. >51yrs	2(10.0)	6(30.0)
2.Gender		
1. Male	18(90.0)	17(85.0)
2. Female	2(10.0)	3(15.0)
3.Economical status		
1. Below 5000/-	10(50.0)	14(70.0)
2. 5001-10,000/-	5(25.0)	3(15.0)
3. >10,000-	4(20.0)	2(10.0)
4. Above 15,000	1(5.0)	1(5.0)
4.Educational qualification		
1. Illiterate	4(20.0)	4(20.0)
2. Primary	9(45.0)	8(40.0)
3. Secondary	7(35.0)	6(30.0)
4. Higher secondary	-	2(10.0)
5.Type of radiotherapy		
1. Nonadjacent	-	2(10.0)
2. Concurrent	20(100.0)	18(90.0)

5.1 Age in Years

The data present in table 1 and figure 3 indicate that in Orasep-group 1 members (5 percent) of the sample belong to the age group 21-30 years, 8 people (40 percent) are between 31-40 years and 9 people (45 percent) the sample belong to the age group 41-50 years and 2 people (10 percent) belong to the age group 51 years and above respectively. Similarly in Honey-group 2 members (10 percent) of the sample belong to the age group 21-30 years, 4 people (20 percent) are between 31-40 years and 8 people (40 percent) the sample belong to the age group 41-50 years and 6 people (30 percent) belong to the age group 51 years and above respectively.

5.1.1 Level of mucositis in Orasep of group

On baseline day 14 subjects (70%) were showing grade II and 6 subjects (30%) were showing grade III mucositis. After 5th day intervention 14 subjects (70%) were showing grade I and 6 subjects (30%) grade II mucositis. After 10th day 7 subjects (35%) were showing grade 0, 12 subjects (60%) grade I and remaining 1 subject (5%) were showing grade II mucositis the difference in grade of mucositis is significant at $p < 0.05$ on Baseline level, 5th day, and 10th day that orasep application was effective in reducing grade of mucositis.

5.1.2 Severity of erythema in Orasep group

On the base line day 15 subjects (75%) experienced moderate and 5 subjects (25%) experienced severe erythema, after 5th day 14 subjects (70%) experienced mild erythema and 6 subjects (30%) experienced moderate erythema after topical intervention. after 10th day 8 subjects (40%) had disappearance of signs and symptoms, while 12 subjects (60%) experienced mild erythema. The samples were treated with the orasep showed statistically significant improvement after 5th and 10th day receiving the topical intervention.

5.1.3 Severity of Oedema / ulcer in Orasep group

The pre-treatment 20 samples (100%) experienced major oedema/ulcer, after 5th day post treatment it was seen that 14 subjects (70%) experienced minor oedema/ulcer and 6 subjects (30%) sample experienced major oedema/ulcer, after 10th days 14 (70%) samples experienced minor oedema/ulcer, and 6 (30%) had no sign of oedema/ulcer.

To compare the means, this indicates that there was significant difference between the baseline mucositis score and 5th and 10th day's assessment score in orasep-group.

5.1.4 Intensity of pain in Orasep group

The intensity of pain experienced by samples before and after intervention in baseline day 13 subjects (65%) experienced moderate pain, 4 subjects (20%) experienced severe pain and 3 subjects (15%) experienced mild pain. After 5th day it was seen that majority 13 subjects (65%) experienced mild pain 3 subjects (15%) had no pain and 4 subjects (20%) had moderate pain After 10th day 11 subjects (55%) had no pain and 9 subjects (45%) experienced mild pain. Samples that were treated with the orasep application showed statistically significant improvement after post treatment 5th and 10th days.

5.1.5 Difficulty in swallow in Orasep group

Orasep-group on the Baseline day 13 subjects (65%) swallowed solid food, and 7 subjects (35%) swallowed liquid food after post treatment it was seen that after 5th day 11 subjects (55%) swallowed solid food and 9 subjects (45%) no difficulty in swallow food, after 10th days 8 subjects (40%) swallowed solid food, and 12 subjects (60%) no difficulty in swallow food. samples that were treated with the orasep application showed statistically significant improvement in 1st pair and 3rd pair sample test, while 2nd pair value is not significant.

5.1.6 Level of mucositis in Honey group

Baseline day 18 subjects observed a grade III mucositis and in 5 subjects grade II mucositis. After 5th day of intervention observed 7 subjects (35%) a grade II and 13 subjects (65%) a grade I mucositis, and 10th day observed 9 subjects (45%) had no sign of mucositis, and 11 subjects (55%) a grade I mucositis in the honey group. To compare the means, 0.9, 0.8, and 1.7 this indicates that there was significant difference between the baseline day mucositis score and 5th and 10th day's assessment score in Honey-group.

5.1.7 Severity of erythema in Honey group

The frequency and severity of erythema in respondents of Honey of groups after intervention. On the base line day 15 subjects (75%) experienced moderate and 5 subjects (25%) experienced severe erythema, after 5th day 16 subjects (80%) experienced mild erythema and 3 subjects (15%) experienced moderate and only 1 subjects (5%) no signs and symptoms shows erythema. after 10th day 9 subjects (45%) had disappearance of signs and symptoms, while 11 samples (55%) experienced mild erythema. there was significant difference between the baseline mucositis score and 5th and 10th day score.

5.1.7 Severity of Oedema / ulcer in Honey group

The severity of oedema/ ulcer experiencing by samples before and after treatment. Honey-group in the pre-treatment 15 subjects (75%) experienced minor oedema/ulcer, 5 subjects (25%) experienced major oedema/ulcer in post treatment it was seen that after 5th day 20 subjects (100%) experienced minor oedema/ulcer, after 10th days 12 subjects (60%) experienced mild oedema/ulcer, and 8 subjects (40%) had no oedema/ulcer. The actual p value was 0.05 so means values still significant. To compare the means that indicates that there was significant difference between the baseline day mucositis score and 5th and 10th day's assessment in Honey-group.

5.1.9 Intensity of pain in Honey group

Data showed that the 8 (40%) experienced mild pain, 7 (35%) samples experienced moderate pain and 5 subjects (25%) experienced severe in post treatment it was seen that after 5th day 15 subjects (75%) experienced mild pain, 3 subjects (15%) experienced moderate pain, 1 subjects (5%) experienced severe 1 subjects (5%) had no pain and after 10th days 4 subjects (20%) experienced mild pain, and 16 subjects (80%) had no pain. The means, this indicates that there was significant difference between the baseline mean score and weekly assessment mean score.

5.1.10 Difficulty in swallow in Honey group

Data shows the intensity of experiencing by client before and after intervention. Baseline day 16 subjects (80%) swallowed solid food, 4 subjects (20%) swallowed liquid food in 5th day post treatment it was seen that 12 subjects (60%) no difficulty in swallow food and 8 subjects (40%) swallowed solid food, after 10th days 13 subjects (65%) no difficulty in swallow food, and 7 subjects (35%) had swallow solid food. The compare the means, that indicates that there was significant difference between the 1st pair and 3rd pair score and 2nd pair value is not significant in Honey-group.

5.1.11 Comparison of posttest of Orasep and Honey in Level of mucositis among the patients undergoing radiotherapy

The mean score of 0.7, Std. Deviation .571 in reducing level of mucositis in Orasep group and mean score honey group of 0.55, Std. Deviation 0.510. Both are equal; as mean shows honey application is slightly better than the Orasep application. It's proved that honey application is slightly better than the Orasep application. Shows that p value is greater than 0.05 so null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention

5.1.12 Comparison of posttest of Orasep and Honey application in erythema on radiation induced mucositis in patients undergoing radiotherapy

That the mean score of 0.6, Std. Deviation .507 in reducing severity of erythema in Orasep group and mean score honey group of 0.55, Std. Deviation 0.510. statistically findings shows that there is no differences in effectiveness of Orasep and honey. Both are equal; as mean shows honey application is slightly better than the Orasep application. It's proved that honey application is slightly better than the Orasep application in reducing severity of erythema Shows that p value is greater than 0.05 so null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention

5.1.13 Comparison of post test of Orasep and Honey application in Oedema/ulcer on radiation induced mucositis in patients undergoing radiotherapy

The mean score of 0.70, Std. Deviation .470 in reducing severity of Oedema in Orasep group and mean score honey group of 0.60, Std. Deviation 0.503 as mean shows honey application is slightly better than the Orasep application. It's proved that honey application is slightly better than the Orasep application in reducing severity of Oedema. Shows that p value is greater than 0.05 so null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention.

5.1.14 Comparison of post test of Orasep and Honey application of intensity in Pain on radiation induced mucositis in patients undergoing radiotherapy

The mean score of 0.45, Std. Deviation .510 in reducing intensity of pain in Orasep group and mean score honey group of 0.20, Std. Deviation 0.410 as mean shows honey application is slightly better than the Orasep application. It's proved that honey application is slightly better than the

Orasep application in reducing intensity of pain Shows that p value is greater than 0.05 so null hypotheses accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention

5.1.15 Comparison of post test of Orasep and Honey application in difficulty of Food swallow on radiation induced mucositis in patients undergoing radiotherapy

The mean score of 0.40, Std. Deviation .503 in reducing difficulty in food swallowing in Orasep group and mean score honey group of 0.35, Std. Deviation 0.489 as statistically findings shows that there is no differences in effectiveness of Orasep and honey. Both are equal; mean shows honey application is slightly better than the Orasep application. It's proved that honey application is slightly better than the Orasep application in reducing difficulty in food swallowing. Shows that p value is greater than 0.05 so null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention

5.1.16 Distribution a radiation induced mucositis based on selected demographic variables

This showed that, the age, gender, Economical status, Educational qualification, and Type of radiotherapy. There all variables do not show significant association between a radiations induced mucositis and demographic variables.

6. Discussion of Findings

Findings show that the baseline day mean score of grade of mucositis 2.25 and it was decreased to .60 on the 10th day of application this difference was significant and it was proved that there is significant reduction of grade of mucositis after Orasep topical application.

In Orasep application group, the mean of paired observations difference decreased after 5th day intervention 0.6 and 10th day 1.6. It statistically proved that Orasep was effective in reducing the grade of mucositis. In honey group it is found that baseline day mean score of grade of mucositis was 2.25 and reduced from to 0.55 on the 10th day of intervention. It was proved that there is significant reduction of grade of mucositis after topical honey application. In honey application group, the mean of paired observations difference decreased on baseline day 0.9, after 5th day intervention 0.8 and 10th day 1.7. It statistically proved that honey was effective in reducing the grade of mucositis

6.1 Observation Check List

Another significant finding of this study was all four variables pair sample test in Orasep and honey group was significant but the honey is slightly better than Orasep in reducing difficulty food swallow. Orasep is slightly better than honey on reducing severity of Oedema.

The mean score of Orasep group was in reducing the grade of mucositis 0.70 while honey group was in reducing the grade of mucositis 0.55 it proves that the honey is slightly better than the Orasep application. The mean score of variables Erythema 10th day 0.60, Oedema 10th day 0.70,

Pain 10th day 0.45, and Food swallow 10th day 0.40 in Orasep group. In honey group mean score of variables Erythema 10th day 0.55, Oedema 10th day 0.60, Pain 10th day 0.20 and Food swallow 10th day 0.35 respectively it proves that the honey is slightly better than the Orasep application.

6.2 Comparison of posttest between the effectiveness of topical application of Orasep verses honey

- Grade of mucositis-** The mean score of 0.7, Std. Deviation .571 in reducing level of mucositis in Orasep group and mean score honey group of 0.55, Std. Deviation 0.510. Null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention
- Erythema-** The mean score of 0.6, Std. Deviation .507 in reducing severity of erythema in Orasep group and mean score honey group of 0.55, Std. Deviation 0.510. null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention.
- Oedema /ulcer-** The mean score of 0.70, Std. Deviation .470 in reducing severity of Oedema in Orasep group and mean score honey group of 0.60, Std. Deviation 0.503. null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention.
- Pain-** The mean score of 0.45, Std. Deviation .510 in reducing intensity of pain in Orasep group and mean score honey group of 0.20, Std. Deviation 0.410 null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention
- Food swallow-** The mean score of 0.40, Std. Deviation .503 in reducing difficulty in food swallowing in Orasep group and mean score honey group of 0.35, Std. Deviation 0.489 null hypothesis accepted therefore there is no significant difference on radiation induced mucositis in Orasep and honey groups after the 10th day intervention

6.3 Association between selected demographic variables and mucositis score

The study found association between pre-test knowledge score and selected demographic variable like age, gender, educational qualification, monthly income, and type of radiotherapy. Chi square was used to find association. There all variables do not show significant association between a radiations induced mucositis and demographic variables.

7. Conclusion

Based on the findings of the study the following conclusions can be drawn. The result of this study revealed that grade of mucositis assessed both subjectively and objectively and topical application of honey is same effect of Orasep on radiation induced mucositis. Observation on base line day's 5th day and 10th day the application revealed no significant differences between the effect of Orasep and honey. The difference was significant & it statistically proved that

Orasep and honey same was effective in reducing the grade of mucositis.

8. Scope of the Study

a) Nursing Education

The result of the study emphasized the need for correlating in order to understand and advice on using a allopathic as well as herbal remedies such as honey to the radiation induced mucositis it also effective reducing grade of mucositis, pain, ulcer, and difficulty in swallowing thus the nurses who follow these measures in a holistic manner will be given an opportunity to practice honey application to the radiation induced mucositis patients for reducing pain, ulcer, erythema and grade of mucositis. Honey applied topically to the oral mucosa of patients undergoing radiation therapy appears to provide a distinct benefit by limiting the severity of mucositis. Honey is readily available, affordable and well accepted by patients making it useful for improving the quality of life.

b) Nursing Service

Radiation therapy is the most widely used interventions for the treatment of cancer. Patients for head and neck cancer Severe adverse reactions due to these therapies such patients will develop some degree of oral mucositis. The incidence of oral mucositis was especially high in patients receiving radiation therapy for head and neck cancer. In addition, they also contribute to economic ramifications of the affected patient. Nurse working in radiotherapy department and oncology hospital need to take up chance to applying, using honey to radiation induced mucositis patients to the reducing to the grade of mucositis, pain and ulcer same as Orasep gel.

c) Nursing Administration

The nurse administrator should organize activities to explain and train the nurses can play in important role decreasing the radiation induced mucositis and their complications in radiotherapy patients. The nurse administration should take interest in dissemination the information through instructional material. Inclusion of new procedures the Nursing service department can be facilitated by the data obtained from the study

d) Nursing Research

The exploratory survey base line data for conducting other research studies research should be done on honey application on radiation induced mucositis among radiotherapy patient by reducing pain, erythema and ulcer and intervention to practice related procedures. The researchers may have to take up a role in preparing designing managing steps through scientific rational and facts from criteria reasoning. The more precise, clear and specific body system and its effect of honey application on radiation induced mucositis among radiotherapy patient by reducing pain, erythema and ulcer.

Nurses and nursing students must play an active role in ongoing research regarding radiation induced mucositis and its prevention. This may increase the awareness of the nurses, and may also highlight the important role that nurses can play in decreasing the complications due to radiation induced mucositis in radiotherapy patients.

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