

A Randomized Control Trial to Assess the Effectiveness of Ginger Water with Honey on Radiation Induced Esophagitis Patient with Esophagus Cancer at Selected Hospital Bagalkot

Sakkubai Adin¹, Mrs. Vanitha U. B.², Prof. Varesh G Chilapur³

¹M. Sc. II Year, Dept. of Medical Surgical Nursing, B. V. V. S. Sajjalashree Institute of Nursing Sciences Navanagar, Bagalkot

²Asst. Professor, Department of Medical Surgical Nursing, B. V. V. S. Sajjalashree Institute of Nursing Sciences, Navanagar, Bagalkot

³Professor and HOD, Department of Medical Surgical Nursing, B. V. V. S. Sajjalashree Institute of Nursing Sciences, Navanagar, Bagalkot

DOI: <https://doi.org/10.36347/sjams.2026.v14i05.017>

| Received: 22.03.2026 | Accepted: 09.05.2026 | Published: 11.05.2026

*Corresponding author: Sakkubai Adin

M. Sc. II Year, Dept. of Medical Surgical Nursing, B. V. V. S. Sajjalashree Institute of Nursing Sciences Navanagar, Bagalkot

Abstract

Original Research Article

Background: Radiation-induced esophagitis is a common and debilitating side effect in patients undergoing radiotherapy for esophageal cancer. This condition significantly impacts nutritional intake, quality of life, and overall treatment compliance. Traditional remedies like ginger and honey are known for their anti-inflammatory, antioxidant, and soothing properties. This study evaluates the effectiveness of ginger water with honey in managing radiation-induced esophagitis among esophageal cancer patients. **Objective:** To assess the effectiveness of ginger water with honey in reducing the severity of radiation-induced esophagitis among esophageal cancer patients. **Methods:** A true experimental pre-test post-test control group design was adopted. Sixty patients with esophageal cancer undergoing radiotherapy were selected using purposive sampling and randomly assigned into experimental (n=30) and control (n=30) groups through a lottery method. The intervention group received ginger water with honey, while the control group received routine care. Data were collected using socio-demographic variables and the CTCAE (Common Terminology Criteria for Adverse Events) scale. Statistical analysis included mean, standard deviation, paired and unpaired t-tests, and chi-square tests. **Results:** The present study revealed that difference between the experimental and control group mean pre-test and grades and standard deviation was [2.3±0.614] and control group having [2.37±0.7184] before giving the intervention and experimental group [1.6±0.855], control group [2.93±0.7396] after the intervention has given. The effectiveness was statistically tested by using paired 't' test which revealed that t value = 6.35 and the results was found to be significant at p<0.001 level of significance. **Conclusion:** The study proved that administration of Ginger water with honey intervention is an effective, well-tolerated, and inexpensive adjunct therapy for reducing radiation-induced esophagitis in esophageal cancer patients. Its incorporation into routine supportive care during radiotherapy can improve patient comfort and treatment compliance.

Keywords: Assess, Effectiveness, cancer patients, Ginger water with honey.

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INTRODUCTION

Esophagus is a narrow muscular tube extending from pharynx to the stomach, descends in front of the vertebral column goes through superior and posterior mediastinum. The esophagus is an important piece of the gastrointestinal tract and functions as a conduct for food and liquids that has been swallowed into the pharynx to reach the stomach [1-2].

Esophagitis refers to inflammation or injury to the esophageal mucosa. There are many causes of esophagitis and essentially the presentation is similar

which include retrosternal chest, heartburn, dysphagia or odynophagia [3].

Esophageal cancer (EC) is the ninth most common cancer and the sixth leading cause of cancer deaths worldwide. It is a highly fatal disease, accounting for more than 500,000 deaths each year. Esophageal squamous cell carcinoma (ESCC) and esophageal adenocarcinoma (EAC) are the two main EC histological subtypes that have distinct epidemiological and clinical features. Globally, ESCC is the most common EC subtype, which accounts for 80% of EC cases, and it can anatomically develop throughout the esophagus. On the

other hand, EAC (20%) is the most common subtype in white populations of developed countries, and it tends to develop in the distal esophagus. While the global incidence of ESCC is declining, a rapid and consistent increase in the incidence of EAC in western countries has been reported in the past 40 years [7]. Radiation-induced esophagitis is the most common local acute toxicity of radiotherapy (RT) delivered for the curative or palliative intent treatment of lung cancer. Although concurrent chemotherapy and higher RT dose are associated with increased esophagitis risk, advancements in RT techniques as well as adherence to esophageal dosimetric constraints may reduce the incidence and severity [14].

Ginger is often used to help relieve nausea and vomiting. But ginger tea may also help relieve esophagitis caused by acid reflux. Ginger helps food move from the stomach into the small intestine. This means there's less time for stomach contents to move backward into the esophagus (reflux) and cause irritation [16].

Honey has potent antioxidant, analgesic, and anti-inflammatory properties. Sonis *et al.* has described that analgesic and anti-inflammatory activity of honey are due to inhibition of the signal amplification by proinflammatory cytokines such as tumor necrosis factor- α , interleukin-1 (IL-1) and IL-6 [18].

The cancer treatment is reducing the disease but arises more complications. Hence researcher thought, for esophagitis the natural ingredient which is having both anti-inflammatory, analgesic and antioxidant property which will be beneficial for the patient.

OBJECTIVES

- To assess the grades of the Radiation induced Esophagitis patient with esophagus cancer at selected hospital Bagalkot.
- To determine the effectiveness of ginger water with honey in experimental group and routine care in control group among Radiation Induced Esophagitis patients with esophagus cancer at selected hospital Bagalkot.
- To find out the association between pretest grades of Radiation Induced Esophagitis and their socio- demographic variables among patients with Esophagus Cancer.

METHODOLOGY

Research Approach and Design

A quantitative research approach was adopted using a true-experimental pretest–post-test control group design, which allows comparison between intervention and non-intervention groups.

Setting of the Study

The study will be conducted at Kerudi Cancer Hospital Bagalkot, Karnataka.

Population and Sample

Target population: The patient who are diagnosed with esophagus cancer in selected hospital of Bagalkot.

Accessible population: The accessible population for the present study consists of esophagus cancer at Kerudi Cancer Hospital Bagalkot.

- Sample Size

A total of 60 patients:

- Experimental group: 30
- Control group: 30

Sampling Technique

Non-probability purposive sampling technique was used to select participants who met the inclusion criteria.

Inclusion Criteria

The following criteria are used to select the sample in the present study:

Radiation Induced Esophagitis patient who are,

1. Aged between 20 year and above
2. Who are undergoing for radiation induced esophagitis with grade 0-2.
3. Admitted in Kerudi Cancer Hospital, Bagalkote.
4. Willing to participate in the study.
5. Who will follow the instruction.
6. Cancer staging with stage I, II.

Exclusion Criteria

The Study Excluded:

Radiation Induced Esophagitis patient who are,

- Very sick.
- Suffering with co-morbidities.

Variables of the Study

- **Independent variable:** Ginger water with Honey
- **Dependent variable:** Radiation Induced Esophagitis
- **Socio Demographic Variables:** Age, gender, education, marital status, Employed status.
- **Clinical Variables:** Stages of cancer, Duration of radiation therapy, Esophagus cancer parts, Current diet type.

Data Collection Tools

Section A: Sociodemographic Variables

Section B: Clinical Variables

Section C: Common Terminology Criteria for Adverse Events (CTCAE v3.0) scale to assess severity of esophagitis (Grades 1–5)

Standardized tool to assess severity of esophagitis

- **(Grades 1–5)**
 - Grade 1: Mild AE
 - Grade 2: Moderate AE

- Grade 3: Severe AE
- Grade 4: Life-threatening AE
- Grade 5: Death related to AE

4. Ginger water with honey intervention administered to experimental group
5. Control group received routine care
6. Post-test assessment on Day 7 for both groups.

Intervention:

The experimental group received ginger water with honey (10 g ginger boiled in 100 ml water) administered four times daily (30 minutes before and 1, 3, and 6 hours after radiotherapy) for 7 days. The control group received routine care.

Data Collection Procedure

1. Ethical clearance obtained
2. Informed consent taken
3. Pretest assessment using CTCAEv scale

Data Analysis Plan

- **Descriptive statistics:** Mean, SD, frequency, percentage
- **Inferential statistics:**
 - Unpaired t-test (between groups)
 - Chi-square test (association)

RESULTS

Section-I: Frequency and percentage distribution of sociodemographic and clinical variables.

Table 1: Frequency and Percentage Distribution of Sociodemographic and Clinical Variables (N = 60)

SI.NO	Socio Demographic Variables	Description	Experimental Group		Control Group	
			Frequency	Percentage %	Frequency	Percentage %
1	Age in years	21-30yrs	7	23.33%	6	20%
		31-40yrs	3	10%	6	20%
		41-50yrs	10	33.33%	12	40%
		51-60yrs	10	33.33%	6	20%
2	Gender	Male	17	56.66%	16	53.33%
		Female	13	43.33%	14	46.66%
3	Education	Illiteracy	13	43.33%	11	36.66%
		Primary /high School	14	46.66%	15	50%
		Graduation	3	10%	4	13.33%
		PG	0	0	0	0
4	Marital status	Married	28	93.33%	28	93.33%
		Unmarried	2	6.66%	2	6.66%
5	Employed status	Govt employee	0	0	2	6.66%
		Private	7	23.33%	3	10%
		Cooli	23	76.66%	19	63.33%
		Retired	0	0	0	0
		Former	0	0	6	20%
6	Diet	Vegetarian	6	20%	10	33.33%
		Mixed	24	80%	20	66.66%

In the experimental group, most participants were aged 41–50 and 51–60 years (33.3% each), followed by 21–30 years (23.3%), with the least in 31–40 years (10%). In the control group, the majority were 41–50 years (40%), while other age groups each accounted for 20%. Males predominated in both groups (experimental: 56%; control: 53%), with females comprising 43% and 46%, respectively. Most participants had primary/high school education

(experimental: 46%; control: 50%), while a smaller proportion were graduates (10% and 13%, respectively). The majority of participants in both groups were married (93.3%), with only 6.6% unmarried. Most participants were daily wage workers (experimental: 76.6%; control: 63.3%), followed by private employees, with very few government employees. A mixed diet was most common in both groups (experimental: 80%; control: 66.6%), while the remaining participants were vegetarians.

Table 2: Frequency and percentage distribution of clinical variable

SI.No	Clinical Variables	Description	Experimental group		Control group	
			Frequency	Percentage	Frequency	Percentage
1	Stages of cancer	First stage cancer	0	0%	0	0%
		Second stage cancer	14	46.66%	11	36.66%
		Third stage cancer	9	30%	11	36.66%
		Fourth stage cancer	7	23.33%	8	26.66%
2	Duration of radiation	1-5 days	0	0%	0	0%

Sl.No	Clinical Variables	Description	Experimental group		Control group	
			Frequency	Percentage	Frequency	Percentage
	therapy	6-10days	1	3.33%	2	6.66%
		11-15days	14	47%	12	40%
		15days above	15	50%	16	53.33%
3	Esophagus cancer parts	Upper 1/3 rd	6	20%	10	33.33%
		Lower 1/3 rd	12	40%	14	46.66%
		Middle 1/3 rd	12	40%	6	20%
4	Current diet type	Regular diet	12	40%	10	33.33%
		Soft diet	7	23.33%	12	40%
		Liquid diet	11	36.6%	8	26.66%

The data in table show that experimental group, most participants were in stage II (46.6%), followed by stage III (30%) and stage IV (23.3%). In the control group, stage II and III each accounted for 36.6%, while 26.6% were in stage IV. The majority of participants in both groups had radiation therapy for more than 15 days (experimental: 50%; control: 53.3%). The least were in the 6–10 days category (3.3% and 6.6%, respectively). In the experimental group, the lower and middle third of the esophagus were equally affected (40% each), while 20%

had upper third involvement. In the control group, the lower third was most common (46.6%), followed by upper third (33.3%) and middle third (20%). In the experimental group, most participants were on a regular diet (40%), followed by liquid (36.6%) and soft diet (23.3%). In the control group, soft diet was most common (40%), followed by regular (33.3%) and liquid diet (26.6%).

SECTION II:

Table 3: Mean score and standard deviation of pre -test and post -test of experimental and control group.

Assessment	Experimental group		Control group	
	Mean	SD	Mean	SD
Pretest day 1	2.3	0.614	2.37	0.7184
Posttest day7	1.6	0.855	2.93	0.7396

The table 3 shows that mean score and SD of Esophageal cancer patients in experimental group pretest mean score is 2.3 and SD is 0.614. The posttest mean score is 1.6 and SD is 0.855. In the control group pretest

mean score is 2.37 and SD is 0.7184, posttest mean score is 2.93 and SD is 0.7396.

SECTION III:

Table 4: To assess the grades of Radiation Induced Esophagitis in Experimental groups.

Assessment	Mean	Sd	T value	P value
Pre test	2.3	0.614	6.35	0.001
Post test	1.6	0.855		

Findings related to the significant of the differences between Pretest and posttest of radiation induced esophagitis patients shows that difference between Mean Pretest (2.3) level of significant [$t=6.35$ (p value = 0.001)]. As Hypothesis states, **H1**: There will be significant difference between mean Pretest and mean posttest scores of Experimental group of patients with

radiation induced esophagitis among esophagus cancer. Hence it is clear that there is statistically difference between mean pretest level and mean posttest level of radiation induced esophagitis among the esophagus cancer, Hence H1 is accepted.

SECTION IV:

Table 5: To assess the effectiveness of Ginger water with honey on Radiation induced Esophagitis in Experimental and control group

Groups		Mean	T value	P value	Significance
Experimental group	Pretest	1.6	6.45961	0.0001	Significant
Control group	Post test	2.93			

Despite the comparison of Experimental and control group were calculated with 'paired t test'. The calculated t value is 6.45961 and the significance level of

0.05. The table T value is less than calculated value. Hence it is significant and accepted the H2.

SECTION V:

Table 6: To find out the association between the pre-test grades of Radiation Induced Esophagitis and their socio-demographic variables among patient with esophagus cancer in both the groups

SI.NO	Description	Chi square	P value	Significance
1	Age	1.086	0.29	Not significant
2	Gender	3.8335	0.050	Not significant
3	Education	0.2217	0.637	Not significant
4	Marital status	0.0388	0.8438	Not significant
5	Employed status	0.0815	0.7752	Not significant
6	Diet	0.1357	0.7125	Not significant

Table 6 Shows that, in experimental group the pretest scores of esophagitis CTCAV is not associated with sociodemographic variables (Age, Gender, Education, Marital status, Employed status, Diet). The chi square test table value is less than the p value at the level of significance 0.05.

Hence, the **H3** socio -demographic variables is rejected for the variables were not significantly associated with pretest grade of radiation induced esophagitis patents with $p < 0.05$ in experimental group.

Table 7: Association among the clinical variables in experimental group

SI.NO	Description	Chi square	P value	Significance
1	Stage of cancer	0.0024	0.960732	Not significant
2	Duration of Radiation Therapy	0.1357	0.71254	Not significant
3	Esophagus cancer parts	0.0226	0.88043	Not significant
4	Current diet Type	1.8245	0.176783	Not significant

Table 7 Shows that, in experimental group the pretest scores of esophagitis CTCAVE is not associated with clinical variables (stage of cancer, Duration of radiation, esophageal cancer parts, Current diet type). The chi square test table value is less than the p value at the level of significance 0.05.

Hence, the **H3** clinical variables is rejected for the variables were not significantly associated with pretest grade of radiation induced esophagitis patents with $p < 0.05$ in experimental group.

Table 8: Association among the socio demographic variables in control group

SI.NO	Description	Chi square	P value	Significance
1	Age	2.2222	0.136037	Not significant
2	Gender	0	1	Not significant
3	Education	1.1538	0.28274	Not significant
4	Marital status	0.0096	0.92208	Not significant
5	Employed status	10.7556	0.00104	Not significant
6	Diet	0.6	0.438578	Not significant

Table 8 Shows that in control group the sociodemographic variables (Age, Gender, Education, Marital status, Employed status, Diet) did not shows statistically not significant association with pretest grade of radiation induced esophagitis patents at $p < 0.05$.

Hence, the **H3** is rejected sociodemographic variables were not significantly associated with pretest grade of radiation induced esophagitis patents with $p < 0.05$ in control group.

Table 9: Association among the clinical variables in control group

SI.NO	Description	Chi square	P value	Significance
1	Stage of cancer	3.5885	0.05818	Not significant
2	Duration of Radiation Therapy	0	1	Not significant
3	Esophagus cancer parts	0.8333	0.36131	Not significant
4	Current diet Type	2.4	0.121335	Not significant

Table 9 Shows that, in Control group the pretest scores of esophagitis CTCAVE is not associated with clinical variables (stage of cancer, Duration of radiation, esophageal cancer parts, Current diet type). The chi square test table value is less than the p value at the level of significance 0.05. Hence, the **H3** clinical variables is rejected for the variables were not significantly

associated with pretest grade of radiation induced esophagitis patents with $p < 0.05$ in Control group

DISCUSSION

The study findings demonstrated a reduction in the severity of radiation-induced esophagitis in the

experimental group, as reflected by decreased mean post-test scores, while the control group showed worsening symptoms. The within-group analysis revealed a statistically significant improvement in the experimental group, and between-group comparison confirmed the superiority of the intervention over routine care. These findings suggest that ginger water with honey is effective in reducing esophagitis severity. A study by Al-Waili *et al.*, reported that honey reduces inflammation and enhances healing in radiation-induced mucosal injury. Overall, the study supports the use of ginger water with honey as a simple, cost-effective, and non-invasive intervention for managing radiation-induced esophagitis

CONCLUSION

The study concludes that ginger water with honey was effective in reducing radiation-induced esophagitis among patients with esophageal cancer when compared to routine care. The intervention demonstrated significant improvement in symptom severity, supporting its therapeutic benefit. Therefore, ginger water with honey may be considered as an effective, safe, and low-cost complementary intervention for managing radiation-induced esophagitis and can be recommended for routine clinical practice in oncology care settings.

REFERENCES

1. Siddiqui DMI. the oesophagus. eso siddiqui DMI. the oesophagus. esophagus. slideshare.net; 2018 phagus. slideshare.net; 2018
2. Owusu.G. Anatomy of the oesophagus [Internet]. SlideShare. 2019 [cited 2024 Mar 31]. Available from: <https://www.slideshare.net/GeorgeOwusu1/anatomy-of-the-oesophagus-153406515>
3. Antunes C, Sharma A. Esophagitis [Internet]. PubMed. Treasure Island (FL): StatPearls Publishing; 2020. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK442012/>
4. Sheikh M, Roshandel G, McCormack V, Malekzadeh R. Current Status and Future Prospects for Esophageal Cancer. *Cancers (Basel)*. 2023;15(3):765. Published 2023 Jan 26. doi:10.3390/cancers15030765
5. Baker S, Fairchild A. Radiation-induced esophagitis in lung cancer. *Lung Cancer* [Internet]. 2016 Oct 1; Volume 7:119–27. Available from: <https://doi.org/10.2147/lctt.s96443>
6. Tracy Norfleet, Christine Giordno, The best 4 drinks for Esophagitis (Plus 4 to avoid), Published on March 7, 2024, <https://www.goodrx.com/conditions/gerd/what-to-drink-for-esophagitis>
7. Samdariya S, Lewis S, Kauser H, Ahmed I, Kumar D. A Randomized Controlled Trial Evaluating the Role of Honey in Reducing Pain Due to Radiation Induced Mucositis in Head and Neck Cancer Patients. *Indian J Palliat Care*. 2015 Sep-Dec;21(3):268-73. doi: 10.4103/0973-1075.164892. PMID: 26600693; PMCID: PMC4617032.
8. Al-Waili NS, Salom K, Al-Ghamdi AA. Honey for wound healing, ulcers, and burns; data supporting its use in clinical practice. *Scientific World Journal*. 2011; 11:766–787.