

# Effectiveness Of STP On Lifestyle Modification For Head And Neck Cancer Patients Receiving Radiation Therapy In Selected Hospitals Of Guwahati, Assam.

Rumu Dutta Chowdhury<sup>1</sup>, Dr. A.C. Katak<sup>2</sup>, Dr.A.K.Kalita<sup>3</sup>

<sup>1</sup>(Professor-Medical Surgical Nursing-Apollo College of Nursing,Guwahati, Assam, India)

<sup>2</sup>(Former Director, Dr. B.Borooah Cancer Institute, Guwahati, Assam, India)

<sup>3</sup>(Professor &HoD, Dept. of Radiation Oncology, Dr. B.Borooah Cancer Institute, Guwahati, Assam, India)

## Abstract:

**Background:** Head and Neck (H&N) cancers are the fifth most common cancer and about 50% of all cancer patients receive Radiation Therapy (RT) as part of their treatment. Various mild to severe skin reactions due to RT cause a significant impact on patients' wellbeing as well as affecting the treatment outcome. Research findings have shown to improve the outcome of cancer treatment through educational intervention in different dimensions of nursing care. Since there are paucity of literature regarding effectiveness of educational intervention on lifestyle modification regarding prevention of radiation induced skin reaction among H&N cancer patients receiving RT, we have undertaken this study to investigate the Effectiveness of Structured Teaching Program (STP) to assess the knowledge on lifestyle modification for radiation induced skin reaction among H&N cancer patients receiving RT.

**Materials and Methods:** For this study two-group pre-test post-test quasi-experimental design was selected. Using purposive sampling technique, 40 nos. of newly diagnosed H&N cancer patients receiving 60-70 Gray of total radiation dose were selected and allotted 20 samples each in control and experiment group. Data was collected from April to May, 2022 using case record form for demographic details and self-structured knowledge questionnaire and practice rating scale for knowledge and practice assessment. After pre-test from both the group, Structured Teaching Program (STP) as educational intervention was given to the experimental group only and post was collected for both the group after 7 days of STP administration and data were analyzed using descriptive and inferential statistics.

**Results:** The result demonstrated that STP was helpful to increase the knowledge ( $t$  value 7.68\*,  $P < 0.001$ ) and practice ( $t$  value 4.67\*,  $P < 0.001$ ) in the experimental group compared to control group where STP was not administered. Hence, the study revealed that STP on Lifestyle modification was an effective mean to enhance the knowledge and practice of H&N cancer patients receiving RT on prevention of radiation induced skin reaction. **Conclusion:** Based on these study findings, it could be concluded that educational intervention helps to bring overall positive effect on the quality of life of H&N cancer patients receiving RT. Proper planning and efforts to implement those plans to address the issues of cancer patients receiving RT for improving their quality of life should be given due attention.

**Key Word:** Head & Neck Cancer, Radiotherapy, STP on Lifestyle Modification

Date of Submission: 15-08-2023

Date of Acceptance: 25-08-2023

## I. Introduction

Radiation therapy (RT) is a frequently used treatment modality for cancer with 40% cure directly attributed to RT.<sup>1</sup> Though it has an obvious positive effect in cancer but it negatively affect the healthy body cells causing mild to severe skin reactions which may cause treatment delays, compromised radiation dose, declined appearance, and functional limitations. Appropriate lifestyle modifications are important for patients undergoing RT to maintain healthy life, good skin health, delay complications like skin reactions, comfort, and trauma protection. Educational intervention regarding lifestyle modification may help H&N cancer patients receiving RT to prevent the occurrence of radiation reaction to skin. The aim of this study was to evaluate the effectiveness of educational intervention on prevention of radiation induced skin reaction by comparing pre and post knowledge and practice level among two groups of H&N cancer patients receiving RT.

## II. Material And Methods

In view of the nature of the problem selected for the present study, an evaluative research approach was adopted. The design selected for this study was two-group pre-test post-test quasi-experimental design. The study was conducted at Radiation Oncology Dept. of Dr. B. Borooah Cancer Institute (BBCI), Guwahati, Assam from April 2022 to May 2022. On every day basis, there was average 3-4 patients newly planned for RT in the Radiation Oncology Dept. of BBCI.

**Study Design:** Two-group pre-test post-test quasi-experimental design

**Study Location:** Radiation Oncology Dept. of BBCI, Guwahati, Assam

**Study Duration:** April 2022 to May 2022.

**Sample size:** 40 H&N cancerpatients receiving RT.

**Sample size calculation:** Since the study is designed to evaluate the effect of pre and post intervention and considering mean difference will be an appropriate test in general for the study the formula is

$$\frac{2\sigma^2 (Z_\beta + Z_{\alpha/2})^2}{d^2}$$

$Z_\beta$  = standard normal variate for power = for 90% value is 1.28

$Z_{\alpha/2}$  = standard normal variate for level of significance, 1.96

d= effect size

To obtain a minimum of 5-point mean difference with 15 Standard Deviation a sample size of 20 for each group (Estimated 18 + considering 10% nonresponse rate (i.e. 2), 18+2 = 20 samples approx..) will be required to detect 90% power at 5% level of significance.

**Subjects & selection method:** Non probability purposive sampling was used to select the 40 subjects based on the following inclusion criteria and distributed them 20 each in two groups.

**Inclusion criteria:** Head and neck cancer patients who

1. Are above 18 years, either sex.
2. Are primary cases of H&N cancer
3. Are newly planned for RT.
4. Are receiving total dose of 60-70 Gy.
5. Are treated at Dr. B. Borooah Cancer Institute, Guwahati

**Exclusion criteria:** Head and neck cancer patients who

1. Have other concomitant diseases like presence of skin diseases, Diabetes Mellitus, and other immune-compromised diseases.
2. Are not present on the day during the data collection period.

### Procedure methodology

The data was collected from 40 H&N cancer patients receiving 60 -70 Gray of total radiation dose at Radiation Oncology Dept. of BBCI. Administrative approvals were taken from the Director – BBCI and Head of Radiation Oncology Dept., BBCI before conducting the study. To address the ethical issues, ethical clearance from the ethical committee of BBCI was collected initially and written Informed consent was taken from each sample. Data was collected ensuring anonymity and privacy of the subjects. Interview technique was used for collecting data from the sample. A Case record form was used to elicit the baseline variables of patient's demography and a validated Self-structured knowledge questionnaire and practice rating scale were used to assess the pretest knowledge and practice of the sample of both experimental and control group on the first day of starting RT. On the same day, the STP was administered only to the experimental group for 1 hr by using the flash cards and post test was conducted after 7 days by using the same knowledge questionnaire and practice rating scale for both the group.

### Variables under study:

**Independent variables:** STP on Lifestyle modification

**Dependent variables:** Knowledge and practice of H&N cancer patients receiving RT

**Demographic variables:** Gender, age, religion, marital status, educational status, occupation, place of residence, family history of cancer, personal habits, sources of information, type of cancer, stage of cancer, total dose of RT, duration of RT.

### Statistical analysis

The data was coded, entered in MS Excel worksheet first and then analyzed using descriptive and inferential statistics. Descriptive analysis was used viz. frequency, percentage, mean, SD and inferential

statistics like t-test tests were used to find the significance using SPSS. Pearson correlation coefficient was used to find out the existence of any association between the knowledge and practice level. 5% level of significance was considered as the standard for finding statistical significance.

### III. Result

To achieve the following objectives of the study, the findings were categorized under the 4 sections for making it more understandable and interpretable:

#### Objectives of the study:

1. To assess the pretest knowledge and practice scores on lifestyle modification among H&N cancer patients receiving RT of experimental and control group.
2. To assess the post-test knowledge and practice scores on lifestyle modification among H&N cancer patients receiving RT of experimental and control group.
3. To evaluate the effectiveness of STP on lifestyle modification in terms of knowledge and practice among H&N cancer patients receiving RT in experimental and control group.
4. To find the correlation between knowledge and practice scores on lifestyle modification among H&N cancer patients receiving RT of experimental and control group.

#### SECTION 1: Data on Demographic characteristics of Respondents

- ❖ The study demonstrated that majority of respondents 72.50% belongs to male with 27.50% female.
- ❖ Majority of respondents 19 (47.5%) were 61-80 years old, followed by 17 (42.5%) were in the age group of 41 to 60 years and only 4 (10%) were below the age group of 40 years.
- ❖ The present study also revealed that majority 35 (87.5%) had no family history of cancer.
- ❖ 18 (45%) of respondents had habit of tobacco consumption followed by 4 (10%) with smoking habit, 1 (2.5%) with history of alcohol consumption and 3 (7.5%) had all of these three habits whereas 13 (32.5%) had no such habits.
- ❖ Majority of the respondents 26 (65%) had their cancer originated in the oral cavity while 4 (10%) cases had cancer of hypopharynx and oropharynx each and 6(15%) had cancer originated from supraglottic larynx.
- ❖ 23 (57.5%) respondents were diagnosed at Stage 3 followed by 12 (30%) in Stage 4, while 3 (7.5%) were in Stage 2 and only 2 (5%) was diagnosed at Stage 1.
- ❖ 25 (62.5%) respondents received 60 Gy total dose of radiation for 6 weeks duration whereas 15 (37.5%) respondents received 70 Gy of total radiation dose for 7 weeks.

#### SECTION 2 : Difference of pretest and posttest knowledge and practice scores on lifestyle modification between experimental and control group.

To achieve the first 2 objectives, section 2 was organized to reflect the data on pre-test and post-test knowledge scores on lifestyle modification during RT among respondents of control and experimental group in 2a and 2b and the pre-test and post-test practice scores on lifestyle modification during RT among respondents of both the group in 2c and 2d. The obtained data were analyzed by using descriptive statistics and depicted in the following tables: Table 1, Table 2, Table 3 and Table 4.

#### 2a: Data on pre-test and post-test knowledge scores on lifestyle modification during RT among respondents of control group

Table-1 demonstrated the classification of Pretest and Posttest knowledge score of respondents on Lifestyle modification during RT in the control group. Majority of respondents 18 (90%) had inadequate knowledge level and only 2 (10%) respondents had moderate knowledge level with no one having adequate knowledge in pretest whereas during post-test also the table depicted the similar figure i.e. 17 (85%) had inadequate knowledge and 3 (15%) had moderately adequate knowledge. Hence, the above table states that the majority of respondents had inadequate knowledge level in both pre-test and post-test for control group.

**Table – 1:**Frequency and percentage distribution on pretest and posttest knowledge scores of respondents on lifestyle modification during RT (Control group)

N=20

Sl. No.	Knowledge Level	Category	Classification of Respondents (Control group)			
			Pretest		Post test	
			N	%	N	%
1.	Inadequate knowledge	<50% Score	18	90%	17	85%

2.	Moderately Adequate knowledge	50-75% Score	2	10%	3	15%
3.	Adequate knowledge	>75% Score	0	0%	0	0%
Total			20	100.0	20	100.0

**2b: Data on pre test and post test knowledge scores on lifestyle modification during RT among respondents of experimental group.**

Table-2 depicted the classification of Pretest and Posttest knowledge score of Respondents from experimental group on Lifestyle modification during RT which revealed that the majority of respondents 18 (90%) had inadequate knowledge, 2 (10%) respondents had moderately adequate knowledge and no one with adequate knowledge in pretest whereas after administration of STP in the post test, knowledge level had been enhanced. The table demonstrated that in posttest, 7 (35%) had adequate knowledge and 11 (55%) had moderately adequate knowledge and only 2 (10%) with inadequate knowledge. Hence, it is evident that after the educational intervention with STP on lifestyle modification, there was gain in knowledge compared to pretest of the same group. The respondents with inadequate knowledge in post test should go through the process again but as this was not included in this study hence, left untreated.

**Table – 2:** Frequency and percentage distribution on pre test and post test knowledge scores of respondents on lifestyle modification during RT (Experimental group)  
N=20

Sl. No.	Knowledge Level	Category	Classification of Respondents (Experimental Group)			
			Pretest		Post test	
			N	%	N	%
1.	Inadequate knowledge	< 50% Score	18	90%	2	10%
2.	Moderately Adequate knowledge	50-75 % Score	2	10%	11	55%
3.	Adequate knowledge	>75 % Score	0	0%	7	35%
Total			20	100.0	20	100.0

**2c: Data on pre test and post test practice scores on lifestyle modification during RT among respondents of control group.**

Table-3 demonstrated the classification of Pretest and Posttest practice score of respondents of the control group on Lifestyle modification during RT. Majority of respondents 19 (95%) had poor practice and only 1 (5%) respondents had good practice with no one having average practice in pretest. In the post test, the same figures had been repeated with 19 (95%) had poor practice and only 1 (5%) respondents had good practice with no one having average practice. Hence, the above table states that the majority of respondents had poor practice in both pre test and post test for control group.

**TABLE – 3:** Frequency and percentage distribution on pre test and post test practice scores of respondents on lifestyle modification during RT (Control group)  
N=20

Sl. No.	Practice Score	Category	Classification of Respondents (Control Group)			
			Pretest		Post test	
			N	%	N	%
1.	Poor practice	< 50% Score	19	95%	19	95%
2.	Average practice	50-75 % Score	0	0%	0	0%
3.	Good practice	>75 % Score	1	5%	1	5%
Total			20	100.0	20	100.0

**2d: Data on pre test and post test practice scores on lifestyle modification during RT among respondents of experimental group.**

**Table-4** depicted the classification of Pretest and Posttest practice score of respondents from experimental group on Lifestyle modification during RT which revealed that the majority of respondents 20 (100%) had poor practice with no one having average or good practice in pretest whereas after administration of STP in the post test, practice level had been enhanced. The table demonstrated that in post test 7 (35%) with

good practice and 12 (60%) with practice and only 1 (5%) with poor practice. Hence, it is evident that improvement in the practice level had been found after the educational intervention with STP on lifestyle modification, compared to pretest of the same group. The respondents with poor practice should go through the process again but as this was not included in the study hence, left untreated.

**TABLE – 4:** Frequency and percentage distribution on pre test and post test practice scores of respondents on lifestyle modification during RT (Experimental group)

**N=20**

Sl. No.	Practice Score	Category	Classification of Respondents (Experimental Group)			
			Pretest		Post test	
			N	%	N	%
1.	Poor practice	< 50% Score	20	100%	1	5%
2.	Average practice	50-75 % Score	0	0%	12	60%
3.	Good practice	>75 % Score	0	0%	7	35%
Total			20	100.0	20	100.0

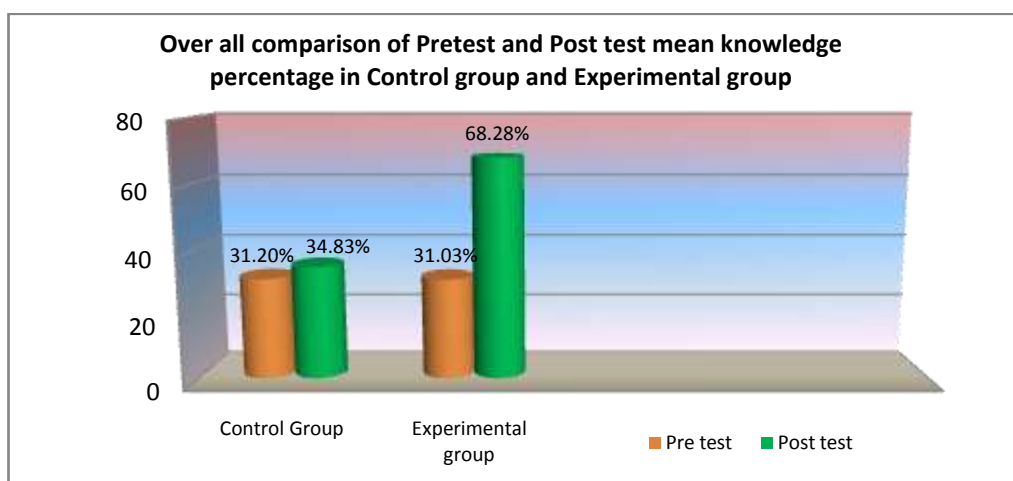
**Section 3: Data to find out the effectiveness of STP on knowledge and practice on lifestyle modification among H&N cancer patients receiving RT in control and experimental group.**

For the third objective of the study, the overall comparison of pretest and post test knowledge and practice score were carried out to observe the effectiveness of STP on Lifestyle modification among control and experimental group as shown in the Table 5 and Table 6 along with Fig 1 and Fig 2 respectively.

**Table 5:** Over all comparison of pre test and post test mean, mean percentage and standard deviation on knowledge scores of respondents on lifestyle modification for patients receiving RT in control and experimental group.  
N=40

Area	Test	N	Max Score	Respondents knowledge				t(19)	P-Value
				Mean	Mean%	SD	Paired Diff (Mean±SD)		
Knowledge in control group	Pre Test	20	29	9.05	31.20%	4.81	-1.05±5.97	0.79	.441 NS
	Post Test	20	29	10.10	34.83%	3.7			
Knowledge in experimental group	Pre Test	20	29	9.00	31.03%	4.55	-10.8±6.29	7.68	<.001***
	Post Test	20	29	19.80	68.28%	3.66			

\*\*\* Very Highly Significant ( $P < .001$ )



**Fig 1:** Over all comparison of pre test and post test mean percentage of knowledge scores on lifestyle modification of patients receiving RT in control and Experimental group

Table 5 and Fig 1 depicted the difference of  $10.8 \pm 6.29$  in the knowledge level between pre test and post test with t value 7.68 in experimental group which was significantly higher than t value of control group, 0.79 ( $1.05 \pm 5.97$ ). Therefore, the findings revealed that the STP on Lifestyle modification was an effective teaching strategy to increase the knowledge level of the H&N cancer patients receiving RT.

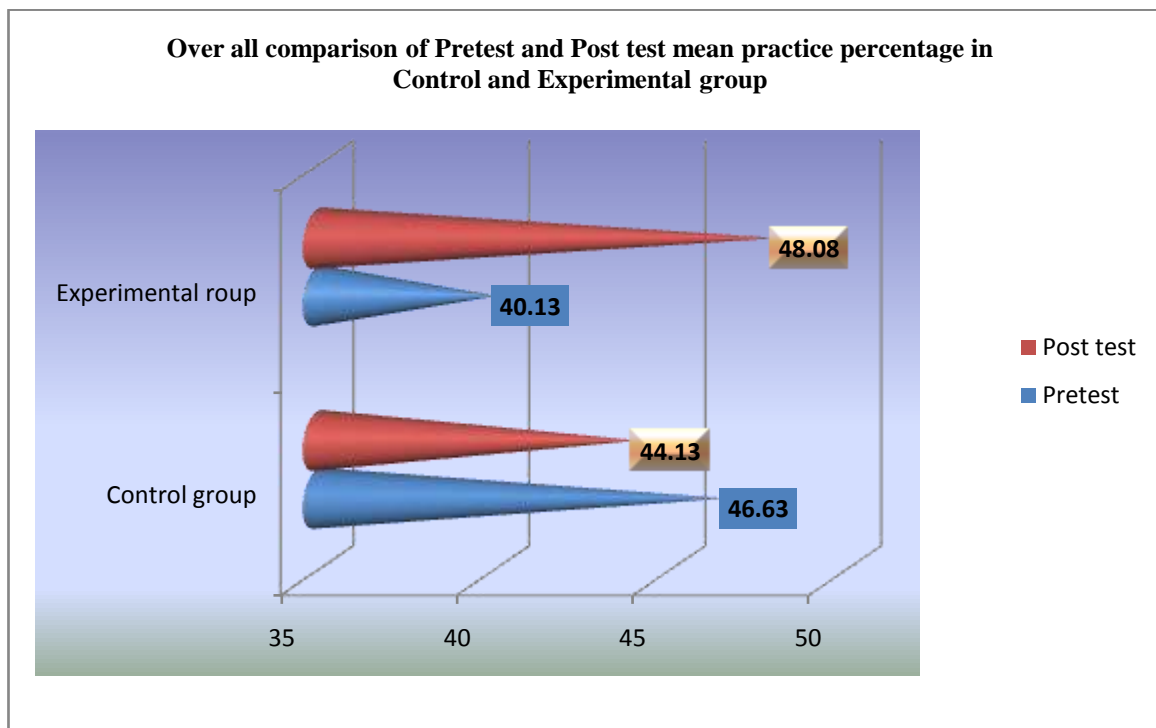
From the above findings, it was found that in the pretest the knowledge score was almost similar in both the control and experimental group whereas after administration of STP in the experimental group the knowledge score was significantly enhanced with no knowledge gain in the control group. Hence,  $H_1$  i.e. there are significant differences in the pre test and post test knowledge scores between experimental and control group on Lifestyle modification among H&N cancer patients receiving RT at 0.05 level was accepted.

**Table 6:**Over all comparison of pre test and post test mean, mean percentage and standard deviation on practice scores of respondents on lifestyle modification for patients receiving RT in control and experimental group.

N=40

Areas	Test	N	Max Score	Respondents Practice				t(19)	P-Value
				Mean	Mean %	SD	Paired Diff(Mean±SD)		
Practice In Control Group	Pre Test	20	52	24.25	46.63	4.18	1.30±3.91	1.49	.153 NS
	Post Test	20	52	22.95	44.13	4.50			
Practice in Experimental Group	Pre Test	20	52	21.15	40.67	5	-3.85±3.69	4.67	<.001***
	Post Test	20	52	25	48.08	2.77			

\*\*\* Very Highly Significant ( $P < .001$ )



**Fig 2:** Over all comparison of pre test and post test mean percentage of practice scores on lifestyle modification of patients receiving RT in control and Experimental group

Table 6 and Fig 2 depicted that in practice, pretest mean ( $24.25 \pm 4.18$ ) was statistically insignificant with post test mean ( $22.95 \pm 4.50$ ) with  $t(19)=1.49$ ,  $p=.153$  in the control group whereas in experimental group, pre test mean ( $21.15 \pm 5.00$ ) was statistically significant with post test mean ( $25.00 \pm 2.77$ ),  $t(19)=-4.667$ ,  $P < .001$ . Hence, it is evident that educational intervention with the STP on lifestyle modification had a positive impact on the practice level of the H&N cancer patients receiving RT.

The above findings have shown that the post test practice score in the experimental group after administration of STP was higher compared to the post test score of control group and pretest values of both the groups. Hence,  $H_2$  was accepted i.e. there are significant differences in the pre test and post test practice scores between experimental and control group on Lifestyle modification among H&N cancer patients receiving RT at 0.05 level.

**SECTION 4: Data on correlation between the post test knowledge and practice score on lifestyle modification among H&N cancer patients receiving RT of experimental and control group.**

To find out the significant correlation between knowledge and practice scores on lifestyle modification among H&N cancer patients receiving RT among experimental and control group the statistical formula of Pearson correlation co-efficient was used.

**Table 7:** Correlation between the post test Knowledge and Practice on lifestyle modification among H&N cancer patients receiving RT of experimental and control group.

N-40

Post test areas	Mean %		Correlation Co-efficient
	Control Group	Experimental Group	
Post test Knowledge	34.83	68.28	0.476*
Post test Practice	44.13	48.08	

\*Significant at 5% Level,

(  $r_{(0.05, 38 \text{ df})} = 0.304$  )

Table-7 revealed that the correlation coefficient between the knowledge and practice on post test was 0.476, so it was positively correlated. The formula of Pearson Correlation Co-efficient was used to find out the correlation between knowledge and practice aspects on lifestyle modification among H&N cancer patients receiving RT. Hence, the hypothesis **H<sub>3</sub>** was accepted. It was found that the relationship between knowledge and practice on lifestyle modification among H&N cancer patients receiving RT was significant.

**IV. Discussion**

The present study aimed to assess the effect on STP on the knowledge and practice regarding Lifestyle modification among experimental and control group. The findings of the current study showed that there was difference in the pretest and post test level of knowledge and practice with administration of STP on Lifestyle modification in the experimental group only.

The overall mean pre test knowledge score in the control and experimental group was 31.20% and 31.03%. After administration of STP on lifestyle modification in the experimental group the knowledge score was enhanced to 68.28% during post test with  $t_{19}$  value 7.68\* and  $p=0.001$  which was highly significant compared to the post test knowledge score of control group which was 34.83% with  $t_{19}=0.79$  without STP administration.

In the practice aspect, the overall mean pre test practice score was 46.63% and 40.67% in the control and experimental group respectively. After administration of STP on lifestyle modification in the experimental group, the post test scores on practice in the control group and experimental group was 44.13% and 48.08% respectively. Statistically, the practice scores in the experimental group was found highly significant with  $t_{19}$  value 4.67 at  $p<.001$  compared to control group.

Hence, the STP on lifestyle modification for prevention of radiation induced skin reaction was found effective in increasing knowledge and practice among H&N cancer patients receiving RT. These findings were supported by a study conducted by Nigam K (2016) to assess the effectiveness of educational input on the side effect management to improve quality of life among patients with H&N Cancer undergoing RT. The study demonstrated enhancement of the patients' knowledge with post test mean score  $18.70 \pm 3.06$  in experimental group which was significantly higher than the control group  $11.50 \pm 5.00$  and the post-test practice mean score was significantly higher ( $16.40 \pm 1.86$ ) in experimental group compared to the control group ( $10.00 \pm 3.01$ ).<sup>5</sup>

The knowledge and practice scores of H&N cancer patient receiving RT had also found to be correlated with the Pearson correlation coefficient value of 0.476 at 5% Level of significance on post test scores between the knowledge and practice of the experimental group, so it was found to be positively correlated. Similar finding was demonstrated by the study done by Pareek S, Mehta S and Goyal H (2017). According to which, with correlation co-efficient value of 0.3613 knowledge and practice aspects were found to be correlated ( $r_{29}=0.355, p=0.05$ ).<sup>4</sup>

From these finding it was evident that there was lack of knowledge and practice among H&N cancer patients receiving RT on lifestyle modification in the pretest in both the experimental and control group. But with the educational intervention of STP on lifestyle modification both the knowledge and practice aspect was improved in the experimental group and it was also found that with increase in the knowledge score, there was enhancement in the practice level too.

**V. Conclusion**

The study concluded that STP on Lifestyle modification had significantly favorable effect on knowledge and practice on lifestyle modification on prevention of radiation induced skin reaction among H&N

cancer patients receiving RT. Prior awareness regarding the preventive measures at the beginning of therapy help the patient to exercise positive health behavior and easy acceptance to the treatment thus it helps in improving quality of life with minimum side effects of cancer treatment.

### **References**

- [1]. Sung Hyuna , Jacques Ferlay , Rebecca L Siegel, Global Cancer Statistics 2020: GLOBOCAN Estimates Of Incidence And Mortality Worldwide For 36 Cancers In 185 Countries, CA Cancer J Clin. 2021 May;71(3):209-249. Doi: 10.3322/Caac.21660. Epub 2021 Feb 4.
- [2]. Head And Neck Cancer: Statistics, ASCO Journals, March 2023. Available At: <https://www.cancer.net/cancer-types/head-and-neck-cancer/statistics>
- [3]. Sharma JD, Barman D Et Al, Burden Of Head And Neck Cancers In Kamrup Urban District Cancer Registry Of Assam, India: A Retrospective Study. IJRMS, 2014;2(4) Online ISSN 2320-6012
- [4]. Pareek S, Mehta S, Goyal H, 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. Doi: 10.5958/2454-2660.2017.00043.6
- [5]. Nigam K, Prakash K (2016) Quasi Experimental Non Randomized Study On Effectiveness Of Instructional Strategy On Knowledge, Practice And Quality Of Life Of Head And Neck Cancer Patients Receiving Radiotherapy In Selected Cancer Research Institute, Uttarakhand. J Nucl Med Radiat Ther 7:313. Doi: 10.4172/2155-9619.1000313