Efficacy of progressive muscle relaxation on fatigue among cancer patients undergoing radiation therapy

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Abstract:

Background: *Fatigue is highly prevalent in cancer patients undergoing radiation therapy. A progressive muscle relaxation is a promising approach to reducing fatigue associated with cancer and treatment.*

Aim: *The aim of this study is to investigate the efficacy of progressive muscle relaxation on fatigue among cancer patients undergoing radiation therapy.*

Methods: *A quasi-experimental design was adopted to assess the level of fatigue before and after progressive muscle relaxation between the experimental and control group. The study was conducted in the Outpatient Department (OPD), Radiation Therapy (RT) department at the Christian Medical College, Vellore. A total of 75 subjects (35 in each group) were recruited by simple random technique who fulfilled the inclusion criteria. Functional Assessment of Chronic Illness Therapy- Fatigue Scale (FACIT-FS) is used to collect the data. Progressive muscle relaxation was given to the experimental group, but not to the control group. The efficacy of progressive muscle relaxation was measured after 7 days of the treatment.*

Results: *The progressive muscle relaxation significantly reduced fatigue in the experimental group (p<.001) than in the control group. There is no significant association of fatigue with socio-demographic and clinical variables.*

Conclusion: *The findings indicated that progressive muscle relaxation would reduce fatigue among cancer patients undergoing radiation therapy.*

Keywords: *Fatigue and Progressive Muscle Relaxation (PMR)*

I. Introduction

Diseases are disorders of the body or the mind. All people experience diseases at some time in their lives. Cancer is the most feared of all diseases. The word "cancer" is viewed as being synonymous with death, pain, disfigurement, and dependency. The World Health Organization (WHO) estimated that 14.1 million adults suffered from cancer worldwide and there were 8.2 million deaths in 2012 (WHO, 2014). In 2015, there will be an estimated 1,658,370 new cancer cases diagnosed and 589,430 cancer deaths in the US (WHO, 2015). According to WHO cancer is one of the major causes of death in India, with about 2.5 million cancer patients, 1 million new cases added every year, and the chance of the disease rising five-fold by 2025 (WHO, 2015). Cancer-related fatigue has a profound effect on the whole person, physically, emotionally, and mentally, and can persist for months or even years following completion of treatment (Velthuis, Agasi-Idenburg, Aufdemkampe & Wittink, 2010). Fossa, Dahl and Loge (2003) reported 14-96% of cancer patients reported fatigue during their treatment. Prue, Rankin, Allen, Gracey, and Cramp (2006) reported that 19-82% of patients reported cancer-related fatigue during post-treatment. Cancer-related fatigue usually improves after radiation therapy, but some levels of fatigue may continue for months or years following treatment (Bower, 2005).

Many studies reported that psychological interventions, education, behavioural and supportive therapy during radiation therapy would reduce cancer-related anxiety, fatigue, poor quality of life, etc., These interventions were practical and cost-effective. Progressive Muscle Relaxation (PMR) training following cancer treatment indicates that subjects experienced a reduced state of anxiety, pain, fatigue, and symptoms of depression (Charalamus et al. 2015). PMR is one of the supportive therapies. It involves tensing and relaxation of major muscle groups and aims to reduce feelings of tension, lower stress, and induce relaxation. PMR appears to be decreasing the arousal of the autonomic and *central nervous system* and increasing parasympathetic activity (Anti-Cancer Fund, 2014). Progressive muscle relaxation can be administered or taught easily and is therefore in most cases a relatively inexpensive therapy (Helen Cooke and the CAM-Cancer Consortium, 2013). Progressive muscle relaxation is also within the scope of nursing practice and as a nursing intervention, requires no special equipment or training. It does not need the physician's supervision and can be implemented in a variety of settings.

II. Objectives

1. To assess fatigue among cancer patients undergoing radiation therapy.
2. To compare the efficacy of progressive muscle relaxation on fatigue between the control and experimental group
3. To study the association of fatigue with socio-demographic and selected clinical variables.

III. Methodology

Research approach
A quantitative research approach was used for the study.

Research design
A quasi-experimental design was adopted to assess fatigue before and after progressive muscle relaxation between the experimental and control group.

Experiment group : Pre-test → PMR → Post-test
Control group   : Pre-test → No PMR → Post-test

The setting of the study
The study was conducted in Outpatient Department (OPD), Radiation Therapy (RT) Department, Christian Medical College, Vellore. This is 2695 bedded tertiary care center. Every day almost 5000 patients are registered in the OPD. Every month an average of 150 to 200 patients receive radiation therapy in the OPD. The department of Radiation therapy consists of 2 units. Patients receive RT from Monday to Friday in 3 different rooms according to their financial status and type of malignancy. In Room-1, TH-780 Tele Cobalt Unit-conventional technique and 2D technique are used. Head, neck, and oral cancer patients are treated in this room. In Room-2, Primus-3D conformal radiation technique is used. Pelvic and Breast cancer patients are treated in this room. All other patients are treated in Room-3, Clinac machine room- conformal technique, IMRT, 3DCRT, TBI, TSET.

Population
The population consists of adult male and female patients who are diagnosed to have cancer other than haematological cancers, malignant brain tumours, and those on palliative care, undergoing radiation therapy in the OPD.

Sample
The sample includes adult male and female cancer patients who received radiation therapy and fulfilled the inclusion criteria during the study period.

Criteria for sample selection
Inclusion criteria
Cancer patients who
1. are above 18 years
2. receive external radiation therapy with or without chemotherapy
3. complete 1-15 days of external radiation therapy
4. can read and write Tamil, English, Hindi, and Bengali
5. are willing to participate in this study

Exclusion criteria
Patients who
1. receive palliative care
2. have haematological cancer and malignant brain tumours
3. become critically ill during RT session/data collection
4. discontinue radiation therapy in between the treatment.

Sample size
The following formula was used to calculate the sample size

$$n = \frac{(Z_{\frac{\alpha}{2}} + Z_{1-\beta})^2 * 2 * sd^2}{d^2}$$

$Z_{\frac{\alpha}{2}}$ = 1.96 (5% level of significance)

$Z_{1-\beta}$ = 80% power

Standard deviation in group I (Control) = 8
Standard Deviation group II (Experimental) = 7
Mean difference =5
The required sample size to show a difference of about 5 units in mean SAS score was found to be 35 in each arm with 80% power and 5% level of significance. Ref: Charalamus et al. (2015).

Method of sample selection
Subjects were selected using a simple random sampling technique by lottery method.
Data collection instruments
Part I: Socio-demographic and clinical variables
Part II: Functional Assessment of Chronic Illness Therapy- Fatigue Scale (FACIT-FS)
Description of the instruments and scoring
Part I - Socio-demographic and clinical variables
Socio-demographic variables include age, sex, educational status and occupation. Clinical variables include the type of cancer, duration of illness, radiation site, number of radiation sessions completed and radiation dose.
Part II - Functional Assessment of Chronic Illness Therapy-Fatigue Scale (FACIT-FS) The FACIT-F scale, a standardized tool was used to assess fatigue. The scale consists of 13 items with responses on a five-point Likert scale. It assessed the severity of fatigue and the impact of fatigue on daily functioning over the past 7 days. Item No7 and 8 were reversely scored.
Scoring and Interpretation
Scoring: 0=not at all, 1=a little bit, 2= somewhat, 3=quite a bit, 4= very much
The score range is between 0 and 52.
Validity and Reliability
The FACIT-FS is a valid and responsive measure of fatigue in patients with cancer, with Cronbach's α =0.93 (Spichiger et al., 2012).
Pilot study
A Pilot study was conducted to assess the feasibility and to find out if the approach shows promise. It was conducted for one week (18-05-2015 to 25-05-2015). Twelve participants were recruited for the pilot study, six in the control group and six in the intervention group. Data were analyzed using descriptive and inferential statistics. After the pilot study, no changes were made to the instrument and the methodology.
Data collection procedure
The data was collected over a period of 6 weeks from 1/06/2015 to 12/07/2015 every day between 8 am to 6 pm except on Saturday and Sunday when no radiation therapy sessions are scheduled. The investigator selected subjects based on inclusion criteria, from the register maintained in the 3 treatment rooms the previous day. Subjects were recruited by lottery method into the control group in the first 2weeks. Experimental group subjects were recruited by lottery method for the next 4 weeks. Subjects were taken to separate room away from the main treatment areas. Informed consent was obtained and they were given the Functional Assessment of Chronic Illness Therapy- Fatigue Scale (FACIT-FS). All scales were completed within 30-40 minutes. Socio-demographic and clinical variables details were collected from the patient record. The investigator explained and demonstrated the PMR exercise to the experimental group and ensured that they understood the technique by supervising the subjects while they performed the PMR for the first time and thereafter for the remaining 4 days. Subjects performed exercise over a period of 20-25 minutes every day when they came for RT. They were instructed to perform PMR once more before going to bed. The investigator followed up with a reminder phone call in the late evening. On weekends the subjects were instructed to continue the exercise twice (morning and evening) at home and maintained a record which was checked by the investigator on the following Monday. The Control group did not receive PMR. Post-test was conducted after 7 days of pre-test in both the control and experimental group.

Weeks	Data collection schedule
1st week (Control group)	4 to 6 subjects/day for 5 days (pre-test)
2nd week (Control group)	Post-test for the previous week subjects 4 to 6 subjects/day for 5 days (pre-test)
3rd week 1st to 5th day (Experimental group)	Post-test for control group subjects of 2nd week 2-3 subjects /day (pre-test)
4th week 1st to 5th day (Experimental group)	Post-test for the previous week subjects 2-3 subjects/day (pre-test)
5th week 1st to 5th day (Experimental group)	Post-test for the previous week subjects 2-3 subjects/day (pre-test)
6th week (Experimental group)	Post-test for the previous week's subjects

Ethical considerations
The study was conducted after approval by the Research Committee of College of Nursing and Institutional Review Board (IRB) of CMC Vellore. Permission was obtained from Nursing Superintendent and Heads of the Radiation Therapy Department. The study also enrolled in the Clinical Trials Registry of India (CTRI). A written consent was obtained from all the participants, after informing them about the details of the

study. Confidentiality of the information was achieved by maintaining anonymity of the subjects and assigning subjects so that the response of the individual subjects could not be traced.

IV. Data analysis

Results of the study were analyzed using the Statistical Package for Social Sciences (SPSS) Version 17.0. Descriptive and Inferential statistics were used for analyzing the data.

Descriptive statistics

Percentage, frequency, standard deviation and mean were used to analyse the socio demographic and clinical variables of the subjects in the control and experimental group.

Inferential statistics

1. Chi square was used to check the homogeneity of control and experimental group.
2. Mann-Whitney U test was used to compare the efficacy of progressive muscle relaxation on fatigue between control and experimental group among cancer patients undergoing radiation therapy.
5. Kruskal-Wallis was used to associate fatigue with socio demographic and selected clinical variables.

Study period

Study was conducted in the OPD during the month of June for the period of six weeks from 01/06/2015 to 12/07/2015.

V. Report

Details of the data analysed and their findings under the following sections.

Section A: Distribution of subjects in the control and experimental group by socio-demographic and clinical variables.

Section B: Distribution of fatigue during pre-intervention and post-intervention.

Section C: Compare the efficacy of PMR on fatigue between the control and experimental group.

Section E: Association of fatigue with socio demographic and selected clinical variables.

Section A: Distribution of subjects in the control and experimental group by socio-demographic and clinical variables

Table 1 : Distribution of Subjects Based on Socio-demographic variables (N= 70)

Socio-demographic variables	Control Group		Experimental Group		Total		p-value
	n= 35		n=35		n=70		
	n	%	n	%	n	%	
Age (years)							
18-30	2	8.6	3	8.6	5	7.1	
31-45	14	28.6	10	28.6	24	34.3	0.531
46-60	14	51.4	18	51.4	32	45.7	
>61	5	11.4	4	11.4	9	12.9	
Sex							
Male	11	31.4	15	42.9	26	39.1	0.331
Female	24	68.6	20	57.1	44	62.9	
Education							
Primary	12	34.3	12	34.3	24	34.3	
High School	4	11.4	4	11.4	8	11.4	
Higher Secondary	6	17.1	7	20	13	18.6	0.994
Graduate	9	25.7	9	25.7	18	25.7	
Postgraduate	4	11.4	3	8.6	7	10	
Occupation							
Employed	16	45.7	16	45.7	32	45.7	1
Unemployed	19	54.3	19	54.3	38	54.3	

Table 1 shows the socio-demographic variables of subjects in the control and experimental group among 70 subjects. The majority of the participants in the control group (51.4%) were in the age group 46-60

years, 68.6% were females, 34.3% had primary education and 54.3% were unemployed. Majority of the participants in the intervention group (51.4%) were in the age group 46 to 60 years, 57.1% were females, 34.3% were completed primary education and 54.3% were unemployed.

Table 2: Distribution of Subjects Based on Clinical Variables (N=70)

Clinical variables	Control Group (n=35)		Experimental Group (n=35)		Total (n=70)		p-value
	n	%	n	%	n	%	
Type of Cancer							
Breast	10	28.6	6	17.1	16	22.9	
Female genitourinary	7	20	7	20	14	20	
Male genitourinary	2	5.7	0	0	2	2.9	
GI tract	6	17.1	6	17.1	12	17.1	0.462
Head and Neck	10	28.6	14	40	24	34.3	
Lung	0	0	1	2.9	1	1.4	
Sarcoma	0	0	1	2.9	1	1.4	
Duration of illness (months)							
01-Jun	20	57.1	18	51.4	38	54.3	
07-Dec	13	37.1	17	48.6	30	42.9	0.267
>12	2	5.7	0	0	2	2.9	
Duration of radiation treatment (weeks)							
01-Apr	9	25.7	7	20	16	22.9	
05-Jul	25	71.4	28	80	53	57.7	0.492
>8	1	2.9	0	0	1	1.4	
Number of sessions completed (days)							
01-Oct	26	74.3	32	91.4	58	82.9	0.057
Nov-15	9	25.7	3	8.6	12	17.1	
Radiation site							
Head and Neck	10	28.6	14	40	24	34.3	
Chest wall	10	28.6	8	22.9	18	25.7	
Abdomen	1	2.9	3	8.6	4	2.7	0.409
Pelvis	14	40	9	25.7	23	32.9	
Limbs	0	0	1	2.9	1	1.4	
Dose (Gy)							
30-40	2	5.7	4	11.4	6	8.6	
50-60	18	51.4	20	57.1	38	54.3	0.5
>60	15	42.9	11	31.4	26	57.1	

Table 2 demonstrates the clinical variables of subjects in control and experimental group. Among 70 subjects, the majority of the participants in the control group (28.6%) were affected with breast and head and neck cancer, 57.1% had illness for 1-6 months, 71.4% received 5 to 7 weeks of treatment, 74.3% completed 1-10 days of radiation sessions, 28.6% received radiation in the region of head and neck and chest wall, 51.4% received 50-60Gy dose. In the experimental group, 40.0% were affected with head and neck cancer. 51.4% had illness for 1-6 months, 80% received 5 to 7 weeks of treatment, 91.4% completed 1-10 days of radiation sessions, 40.0% received radiation in the region of head and neck, 57.1% received 50-60Gy dose.

Section B: Distribution of fatigue during pre and post-intervention.

Figure 1. Distribution of subjects based on the mean score of fatigue during pre and post-intervention (N=70)

Fatigue during pre and post intervention
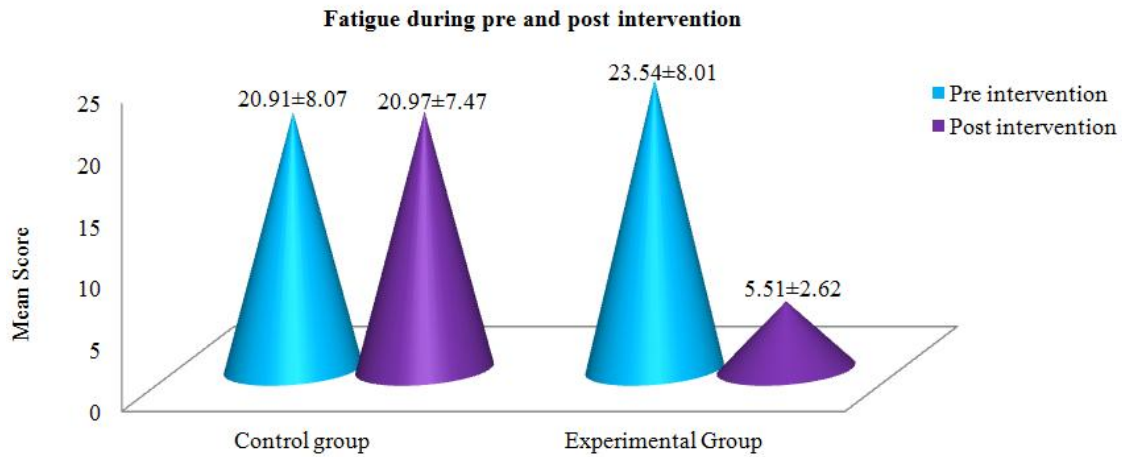
Figure 1 shows that in the control group the mean±SD score of fatigue during pre-intervention was 20.91±8.07 and in the post intervention was 20.97±7.47, but in the experimental group pre and post intervention mean±SD score of fatigue was 23.54±8.01 and 5.51±2.62 respectively.

Section C: Compare the efficacy of PMR on fatigue between control and experimental group.

Table 3 Comparison of Efficacy of PMR on Fatigue between Control and Experimental Group (N=70)

	Group	n	Mean	Standard Deviation	Mean difference	Z value	p Value
Post Intervention	Control	35	20.97	7.47	18.19	-6.861	<.001
	Experimental	35	5.51	2.62			

Table 3 denotes that during the post intervention the mean±SD score of fatigue in the control group was 20.97±7.47 and in the experimental group was 5.51±2.62 with mean difference of 18.19 which is statistically significant at the level of p<.001.

Section D: Association of fatigue with socio demographic and selected clinical

Table 4: Association of Fatigue with Socio-demographic variables (N=70)

Socio-demographic variables	Fatigue		Test statistic		p Value
	n	Mean	Standard Deviation		
Age(years)					
18-30	5	15.60	5.1	7.940	0.052
31-50	24	20.54	7.3		
51-65	32	24.43	8.8		
>65	9	22.55	6.2		
Sex					
Male	26	22.30	8.3	0.001	1.000
Female	44	22.18	8.0		
Education					
Primary	24	25.08	7.8		0.064
High school	8	20.75	10.26		
Higher Secondary	13	18.00	7.0	8.885	
Graduate	18	20.55	7.5		
Post graduate	7	26.28	5.6		
Occupation					
Employed	32	20.87	8.2	-1.051	0.293
Unemployed	38	23.36	7.8		

Table 4 highlights that there is no evidence of statistically significant association of fatigue with socio demographic variables.

Table 5 Association of Fatigue with Selected Clinical Variables (N=70)

Clinical variables	Fatigue		Test statistic	P-Value
	n	Mean	Standard Deviation	
Type of cancer				
Breast	16	20.43	8.4	
Female genitourinary	14	26.00	7.6	
GI tract	12	20.91	7.8	
Head and Neck	24	22.37	8.3	3.904	0.563
Male genitourinary	2	20.50	0.7	
Lungs	1	25.00	-	
sarcoma	1	11.00	-	
Number of session completed (days)				
1-10	58	22.01	8.4	-0.531	0.596
11-15	12	23.25	6.4	
Radiation site				
Abdomen	4	21.25	9.0		0.590
Chest wall	18	21.16	8.2	
Head &Neck	24	23.37	8.3	2.813	
Limbs	1	11.00	-	
Pelvis	23	23.56	7.7	
Duration of illness (months)				
1-6	38	23.65	9.3		
7-12	30	20.83	5.9	3.246	0.197
>12	2	16.00	7.0	

Table 5 shows that there is no evidence of statistically significant association of fatigue with selected clinical variables.

VI. Discussion

The core purpose of the study was to determine the efficacy of PMR on fatigue among cancer patients undergoing Radiation therapy. The study was quasi experimental in nature. Total of 70 subjects (35 participants in the control group and 35 in the experimental group) participated in this study. Subjects were selected using simple random sampling technique by lottery method. The investigator used descriptive and inferential statistics to analyze the data.

Socio-demographic variables: The present study findings reveal that among 70 subjects, 45.7% were in the age group of 46-60. Most of subjects (62.9%) were female, 34.3% of the subjects completed primary education and 54.3% of the patients were unemployed. The present findings are supported by a study done by Nayak et al. (2015) which showed that out of 768 subjects, majority of the cancer patients 30.2% belonged to the age group of 51–60 years, most of them were females (57.2%) and 39.2% were primary school educated. In contrast a study done by Smets et al. (1998) which reported that out of the 250 subjects, 147(58%) of the subjects were male, 80 (34%) completed lower-level education. In an another study conducted by Huang,Wilkie and Ting (2000) reported that out of 37 subjects, majority of the subjects 27 (73%) were male and 57% completed high school education among subjects who underwent radiation therapy.

Clinical variables: Analysis of clinical variables shows that among 70 subjects, 34.3% of the subjects had cancer of head and neck while 22.9% were with breast cancer. With regard of duration of illness, 54.3% had illness for 1-6 months. This study report is consistent with a study done by Nayak et al. (2015) on symptoms experienced by cancer patients and barriers to symptom management which showed that around 40% of the patients suffered from head and neck cancers while most of the patients (76.2%) were suffering from the illness for less than 6 months. In contrast a study by Mackenzie, Carey, Sanson-Fisher and D'Este (2013) showed that of the 454 subjects who were recruited, 29% were diagnosed with breast cancer, 9.8% with head and neck cancer, 5.1% with colorectal (bowel) cancer and 4.2% with lung cancer. The present study shows that out of 70 subjects, 24 (34.3%) received head and neck radiation, 23% received radiation to pelvic region. Findings of the study were contrary to a study done by Poirier (2011), who reported that among 77 subjects, majority 34 (44%) of the subjects received radiation to the breast, 10 (13%) to the head and neck and 11 (14%) to the pelvis. The present study also shows that 82.9% completed 1-10 sessions of radiation, 57.1% received more than 60 Gy of radiation.

Assess the level of fatigue

The findings of the present study highlight that in the control group the mean±SD score of fatigue during pre-intervention was 20.91±8.07 and post score was 20.97±7.47. In the experimental group during pre-intervention mean±SD fatigue score was 23.54±8.01and post intervention mean ±SD score was 5.51±2.62. There was a significant reduction in the mean fatigue score after PMR. This finding is supported by a study done by Demiralp, Oflaz and Komurcu (2010). In the control group pre intervention mean fatigue score was 4.27±1.57 and post intervention score was 5.90±2.45 and in the experimental group score pre intervention score was 3.95±2.22 and post intervention score was 3.89±2.27. The present study was also consistent with a study done by Kwekkeboom, Abbott-Anderson and Wanta (2010), the report highlighted that average mean fatigue scores was 4.90 ±1.86 during the pre-treatment and mean score 3.44 ±2.11 during post-treatment. Dhruva et al. (2010) reported that evening fatigue was worse for women who were employed and morning fatigue were worse for patients with a higher disease stage and more medical co-morbidities. Poirier (2006) stated that 48% of the study participants reported some fatigue at baseline, increasing to 97% at the completion of radiation therapy, diminishing to 55% at the one month follow up visits.

Compare the efficacy of progressive muscle relaxation on a fatigue between control and experimental group.

This present study reveals that in the control group during the post intervention the mean±SD score of fatigue in the control group was 20.97±7.47 and in the experimental group was 5.51±2.62 with mean difference of 18.19, which is statistically significant at the level of p<.001. The result shows that PMR reduced fatigue in the experimental group. This study is supported by a study done by Potthoff et al. (2013) on an effectiveness of progressive muscle relaxation on breast cancer patients undergoing adjuvant radiotherapy. The result showed that intervention program reduced fatigue, improved quality of life and potentially the prognosis after breast cancer. A similar study done by Pathak, Mahal, Kohli and Nimbran (2013) showed that pre assessment mean±SD fatigue scores of subjects were 33.80±10.62 in intervention group (PMR) and 33.24±7.02 in controls where as in the post assessment mean±SD scores were 28.52±12.74 and 36.52±7.53 in intervention and control group respectively(p<.01). It is evident that PMR along with routine standard treatment is effective in reducing fatigue among hospitalized cancer patients receiving radiotherapy.

Associate fatigue with socio demographic and selected clinical variables.

The present study highlights that socio demographic variables such as age, sex, education, occupation and selected clinical variables such as type of cancer, number of sessions completed, radiation site, duration of illness did not influence level of fatigue. This shows that there is no evidence of statistically significant association of fatigue with socio demographic and selected clinical variables. In contrast a study done by Smets et al. (1998) reported that severity of fatigue is associated with many variables such as age, types of cancer, anxiety and depression. The present study finding also contradicted by a descriptive, longitudinal study done by Merriman et al. (2010) on predictors of the self-reported fatigue in women with breast cancer undergoing radiation therapy, the investigator found that younger age was associated with higher levels of fatigue at the time of the simulation visit. In the present study clinical variables such as type of cancer, number of sessions completed, radiation site and duration of illness did not influence fatigue. This finding is supported by a study done by Coniefer (Unpublished thesis, 2005) reported that there was no association of fatigue with duration of illness (p=0.673). Sarna and Conde (2001) described the relationship of patterns of physical activity and fatigue during radiation therapy. Results showed that no direct relationship was found between the perception of fatigue and the cumulative dose of radiation.

VII. Summary

Major findings of the study

In the experimental group pre and post intervention mean±SD fatigue score was 23.54±8.01 and 5.51±2.62 respectively, demonstrating that PMR place role on reducing fatigue.

In the experiment group there is a significant reduction in the level, fatigue and after the intervention (p<.001.). This shows that PMR was effective.

There is no evidence of statistically significant association of fatigue with socio demographic (age, sex, education status and occupation) and selected clinical variables (types of cancer, number of sessions completed, radiation site and duration of illness).

Limitations

Site, dose and duration of radiation may have a bearing on patient's anxiety, fatigue and quality of sleep.

Chemotherapy, sedation and anaemia may influence the findings.

Subject responses may be influenced by their physical and psychological status at the time of interview.

Night and weekend self reporting may not be accurate.

Other aspects of quality of sleep were not included.

Implications of the study

The implications of the study are discussed related to Nursing Practice, Nursing Education and Nursing Research.

Nursing Practice

PMR can be included as a regular routine intervention and in patient education so that patients can practice this technique by themselves.

Nurses need to be sensitized to the emotional needs in managing anxiety of subjects.

Assessment of fatigue before, during and post RT will help the nurses to plan appropriate intervention.

Those experiencing high level of fatigue should be managed by nurse educators/counsellors.

Progressive Muscle Relaxation videos and pamphlets can be made available to patients undergoing radiation therapy so that they can view it at their convenience and prepare themselves to face the challenge of radiation therapy related fatigue.

In service education can be arranged to prepare nurses to take the responsibility to teach the patients progressive relaxation exercise in various conditions.

Screening more systematically for fatigue among patients with newly diagnosed cancer, a problem that has largely been neglected in oncologic practice

VIII. Conclusion

Most patients who undergo radiation therapy experience varying levels fatigue due to the diagnosis and treatment modalities. Patients experiencing high levels of these distressing symptoms must be identified and managed by qualified nurse educators/counsellors. When aware, nurses can anticipate these difficulties and take necessary steps to alleviate them. PMR can be implemented in the regular practice in hospital setting and at home which will help patients receiving RT to prepare themselves physiologically and psychologically to reduce fatigue .

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