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Effectiveness of Progressive Muscle Relaxation Technique on Reduction of Fatigue among Patients with Lung Cancer Admitted in Selected Cancer Hospitals of Bagalkot

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Abstract **Original Research Article**

Background of the study: Lung cancer is the uncontrol growth of abnormal cells that start off in one or both lungs, usually in the cells that line the air passages. The abnormal cells do not develop in to healthy lung tissue, they divide rapidly and forms tumors. Progressive muscle relaxation techniques refers to, a type of relaxation technique in which a person needs to tighten and relax each muscle group from forehead, eyes, jaw, neck, shoulder, fist, forearms, elbows, chest, stomach, back, buttocks, calf muscle, legs, feet and toes. ***Aim*:** the aim of study was to assess the effectiveness of progressive muscle relaxation technique in reducing fatigue among Lung cancer patients. ***Methodology*:** The research design selected for this study was quasi experimental one group pre-test post-test design. The sample size comprises of 50 lung cancer patients admitted in selected cancer hospitals of Bagalkot. The sampling technique adopted for this study will be probability simple random sampling technique. In the present study the data will be collected by using standardized fatigue assessment scale, the data analysis done by using descriptive and inferential statistics in terms of frequency distribution, percentage, mean, mean percentage, Standard Deviation, paired 't' test and Chi-square test. ***Result*:** The finding revealed that there is statistical significance different found between mean pre-test and post test scores **[t=19.62(P value=0.00001)]** and mean post-test level of fatigue will be significantly lower than the mean pre-test level of fatigue among lung cancer patients, A significant association was found between pre-tests scores with selected socio-demographic variables. ***Conclusion***: The study proved that administration of progressive muscle relaxation techniques on reduction of fatigue was effective, scientific, and Logical.

Keywords: Assess, effectiveness, progressive muscle relaxation techniques, fatigue, lung cancer.

INTRODUCTION

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. These contrast with benign tumors, which do not spread. Possible signs and symptoms include a lump, abnormal bleeding, prolonged cough, unexplained weight loss, and a change in bowel movements. While these symptoms may indicate cancer, they can also have other causes. Over 100 types of cancers affect humans [1].

Lung cancer is the uncontrollable growth of abnormal cells in one or both of the lungs. Cigarette smoking causes most lung cancers when smoke gets in the lungs. Lung cancer kills 1.8 million people each year, more than any other cancer. It has a 80-90% death rate, and is the leading cause of cancer death in men, and the second leading cause of cancer death in women. The large majority of people who get lung cancer have smoked for many years. However, there are types of lung cancers that appear in otherwise healthy patients who have never smoked. There are two main types of lung cancer, small cell lung cancer and non-small cell lung cancer. Small cell lung cancer typically responds well to chemotherapy and radiotherapy, and non-small cell lung cancer is more commonly treated with surgical removal of the lung tumors [2].

Fatigue is now recognized as one of the most common and distressing side effects of cancer and its treatment1. Fatigue may be elevated before treatment onset and typically increases during cancer treatment, including treatment with radiation2, chemotherapy3, hormonal, and/or biological therapies4. Prevalence estimates of fatigue during treatment range from 25% to 99% depending on the patient population, type of treatment received, and method of assessment1, 5. In the majority of studies, 30% to 60% of patients report moderate to severe fatigue during treatment, which in some cases may lead to treatment discontinuation. Fatigue typically improves in the year after treatment completion, although a significant minority of patients continues to experience fatigue for months or years after successful treatment. Studies of long-term cancer survivors suggest that approximately one-quarter to one-third experience persistent fatigue for up to 10 years after cancer diagnosis [3].

Progressive muscle relaxation (PMR) is a method of deep muscle relaxation that does not involve any medications, meaning it is a non-pharmacological intervention. The idea behind progressive muscle relaxation is that there is a relationship between a person's mind and body. The body responds to its environment by creating certain mind or body states such as anxiety, stress, and fear. When the body is in these states, the muscles tense up. Progressive muscle relaxation aims to reverse these body states back to more neutral, relaxed states. The technique is a two-step process. It involves learning to relieve the tension in specific muscle groups by first tensing and then relaxing each muscle group. When the muscle tension is released, attention is directed towards the differences felt during tension and relaxation so that the patient learns to recognize the contrast between the states [4].

Hence researcher has planned to undertake "A study to assess the effectiveness of progressive muscle relaxation technique on reduction of fatigue among patients with lung cancer admitted in selected cancer hospitals of Bagalkot."

MATERIAL AND METHODS

Study design and participants

Present study was Quasi-experimental one group pre-test and post-test design. Conducted between 10-05-2024 to 25-05-2024, A sampling technique adopted for this study will be simple random technique by using lottery method was used to select the 50 subjects for the present study. Lung cancer patients with stage I, stage II and stage III and who were able to understand read and write Kannada or English and available at the time of data collection are selected for the study. In the present study the data will be collected by using tool of Fatigue assessment scale with their scoring.

Instruments

Fatigue Assessment Scale (FAS)

Fatigue Assessment Scale (FAS) will be used to assess the level of fatigue among patients lung cancer. The FAS is a 10 item evaluating symptoms of chronic fatigue. It consists of 10 statements, consists of categories. Each item of the FAS is answered using a five-point, Likert-type scale ranging from (1=never, 2=Sometimes, 3=Regularly, 4=Often, 5=always). Items 4 and 10 reverse-scored. Total scores can range from 10, indicating the lowest level of fatigue to 50 denoting the highest. Scale was translated to Kannada and then back translated to English. The reliability of the test was found out by using Karl Pearson's co-efficient of correlation formula. The reliability co-efficient for fatigue assessment scale obtained was r = 0.92.

Data Collection Procedure

Prior permission was taken from relevant institutions before the beginning of data collection procedure The data collection was carried out from (10-05-2024 to 25-05-2024), among lung cancer patients who are admitted in the BVVS HSK Hospital and Research Centre, Bagalkot. Permission was obtained from the medical superintendent of BVVS HSK Hospital before data collection. Written consent was obtained from 50 samples. Lung cancer patients were selected on the basis of Probability simple random sampling technique. Then the investigator conducted pretest on assessment of level of fatigue among lung cancer patients by using Fatigue assessment Scale. Then the Progressive muscle relaxation Technique was administered to the subjects for 20 minutes in a day for 7 consecutive days. Then the post-test fatigue was assessed after intervention for all the seven days.

Data Analysis

Data will be analysed by using descriptive and inferential statistics. Numerical data obtained from the sample was organized and summarized with the help of descriptive statistics like percentages, mean and standard deviation. Chi-square test used to find out association between the pre-test level of fatigue on progressive muscle relaxation technique with their selected socio-demographic variables among lung cancer patients.

RESULTS

Description of socio-demographic characteristics of subjects

Percentage wise distribution of lung cancer patients the Majority (42%) of the lung cancer patients were in the age group of 51-60 years, majority of lung cancer patients (84%) were male and remaining (16%) were females, most of lung cancer patients (70%) were Hindu, the majority of lung cancer patients (58%) were

had primary/secondary education, most of lung cancer patients (40%) were having the income of 10,001-15,000/-, most of lung cancer patients (84%) were married, most of lung cancer patients (56%)were residing in rural area, most of lung cancer patients (70%) were have mixed diet, most of lung cancer patients (62%) the habits of smoking, (28%) patients having the habit of alcohol, (8%) of patients having the other habits and (2%) patients with no any habits.

Assessment of pre-test and post-test level of fatigue among lung cancer patients

Table 5.11: Assessment of Mean, SD and paired 't' test of Pre and post test scores towards reduction of fatigue among lung cancer patients, N=50

Level of Fatigue	Mean	SD	Mean Diff.	SD Diff.	t-value	p-value
Pre-test	34.24	4.07	14.06	1.14	19.622	0.00001*
Post-test	20.18	2.93				

*p<0.05

The study results showed that Findings related to the significance of the difference between pre-test and post- test scores of the lung cancer patients shows that, difference between mean pre-test [34.24] with SD 4.07 and mean post-test [20.18] with SD 2.93, was found to be statistically difference at 0.05 level of significant **[t=19.622 (p valve=0.00001) p<0.05]**. As Hypothesis **H_1** states, the mean post-test level of fatigue will be significantly lower than the mean pre-test level of fatigue among lung cancer patients. Hence it is clear that there is a statistically difference between mean post-test level of fatigue and mean pre-test level of fatigue among lung cancer patients.

Hence H_1 is accepted

Evaluation of the Effectiveness of progressive muscle relaxation techniques on reduction of fatigue among lung cancer patients

Table 5.12: Comparison between Pre-test and post-test levels of fatigue score on reduction of fatigue among lung cancer patients, N=50

Levels of Fatigue	Pre test		Post test	
	NO	%	NO	%
No fatigue	0	0.00	42	84.00
Fatigue	22	44.00	08	16.00
Extreme Fatigue	28	56.00	0	0.00
Total	50	100.00	50	100.00
Wilcox on matched pairs test, Z= 5.645, p=0.00001*				

*p<0.05

The study results showed that Findings about the comparison of level of fatigue of lung cancer patients. In pre-test, the patients with no fatigue were 0 (0%), with a fatigue 22 (44%), with extreme fatigue 28(56%). In post-test, the patient with no fatigue were 42 (84%), with a fatigue 8 (16%), with an extreme fatigue were zero out of 50 subjects. The above stated results clearly suggest that lung cancer patient's level of fatigue was reduced in post-test, as compared to the level of fatigue in pre-test. Thus, the administration of progressive muscle relaxation techniques was successful in reducing the level of fatigue among lung cancer patients.

To find out the Association between pre-tests level of fatigue with their selected socio demographic variables among the lung cancer patients

Table 5.13: Association between levels of pre-test fatigue with their selected socio-demographic Variables, N=50

Sl. No	Socio-Demographic Variables	Chi-square	P value	Association
1	Age	0.05	0.823	Not significant
2	Gender	0.63	0.427	Not significant
3	Religion	0.07	0.791	Not Significant
4	Educational status	0.02	0.887	Not significant
5	Family monthly income	0.03	0.862	Not significant
6	Marital status	0.02	0.887	Not significant
7	Area of residence	0.01	0.920	Not Significant
8	Diet	1.52	0.217	significant
9	Habits	0.08	0.777	Not significant

The study results showed Findings related to the association between pre-test fatigue scores of lung cancer patients with their selected socio demographic variables reveals that, there was no significant association found between the pre-test level of fatigue of lung cancer patients of Age ($\chi 2$=0.05, P=0.823), Gender ($\chi 2$=0.63, P=0.427), Religion ($\chi 2$=0.07, P= 0.791), educational status ($\chi 2$=0.02, P=0.887), family monthly income ($\chi 2$=0.03, P=0.862), marital status($\chi 2$=0.02, P=0.887), area of residence($\chi 2$=0.01, P=0.920), and habits ($\chi 2$=0.08, P=0.777) No significant association found between fatigue score and other. But in diet ($\chi 2$=1.52, P=0.217), there will be significant.

Hence H2: is rejected for the all socio-demographic variables.

DISCUSSION

This Quasi-experimental study included a sample of 50 lung cancer patients admitted in HSK Hospital and Research Centre, Bagalkot. Findings revealed that, highest percent (60.0%) of lung cancer Patients were having fatigue, The results of the present study are support with the study conducted by Mr. Toqan D *et al*., (2022), effect of progressive muscle relaxation exercise on anxiety reduction among nursing student during their clinical trials. The study results showed that the age of the participant was 21 (SD=2.182) years. Also, majority of the participant were 69 (76.71%) were females. To compare the differences between student anxiety before and after progressive muscle relaxation training a paired 't' test was used. The study revealed a significant difference between before and after progressive muscle relaxation techniques [5].

The results of the present study are support with the study conducted by Shambhavi1 Diana Lobo (2024), Effect of Multimodal Intervention on Cancer related Fatigue and Quality of Life among Patients Undergoing Cancer Treatment. The results showed that the mean pre-test fatigue score of the cancer patients (pre-test mean ¼ 25.21) was lower than their mean post-test fatigue scores (post-test 1 ¼25.83, post-test 2 ¼ 28.28, and post-test 3 ¼ 34.72). In the repeated measures analysis of variance (ANOVA), p-value is less than 0.05 ($p < 0.05$) and hence there was a significant difference between the fatigue scores before and after the MMI that indicates the effect of MMI on reduction of CRF among patients undergoing cancer treatment [6].

RECOMMENDATIONS

- Similar study can be conducted to assess the effectiveness of progressive muscle relaxation techniques on reduction of fatigue, with the Multi interventional techniques.
- Similar study can be conducted by using 2 or more variables as a comparative study.

CONCLUSION

After thorough analysis of the data, it is understood that reduction of fatigue are co related and interventions like progressive muscle relaxation techniques are helpful in lung cancer patients to enhance their quality of life and reduce their fatigue. Effectiveness of progressive muscle relaxation technique on reduction of fatigue among patients with lung cancer mean score pre-test [34.24] with SD 4.07 and mean post-test [20.18] with SD 2.93. Hence it is clear that there is a statistically difference between mean post-test level of fatigue and mean pre-test level of fatigue among lung cancer patients.

Ethical Consideration

The study was approved by the Institutional Ethical Clearance Committee, BVVS Sajjalashree Institute of Nursing Sciences, Bagalkot.

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Conflicts of Interest: There are no conflicts of interest

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REFERENCES

1. Cancer – Signs and symptoms". NHS Choices. Archived from the original on 8 June 2014. Retrieved 10 June 2014.
2. World Health Organization. (2018). Latest global cancer data: Cancer burden rises to 18.1 million new cases and 9.6 million cancer deaths in 2018. International agency for research on cancer. Geneva: World Health Organization, 12, 1-4.
3. Groenvold, M., Petersen, M. A., Idler, E., Bjorner, J. B., Fayers, P. M., & Mouridsen, H. T. (2007). Psychological distress and fatigue predicted recurrence and survival in primary breast cancer patients. *Breast cancer research and treatment*, 105, 209-219.
4. Chand, S. P., & Marwaha, R. (2023). "Anxiety", Stat Pearls, Treasure Island (FL): Stat Pearls Publishing, PMID 29262212, retrieved 2023-03-30
5. Toqan, D., Ayed, A., Joudallah, H., Amoudi, M., Malak, M. Z., Thultheen, I., & Batran, A. (2022). Effect of progressive muscle relaxation exercise on anxiety reduction among nursing students during their initial clinical training: a quasi-experimental study. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 59, 00469580221097425.

6. Shambhavi, S., & Lobo, D. (2024). Effect of Multimodal Intervention on Cancer-Related Fatigue and Quality of Life among Patients Undergoing Cancer Treatment—Pilot Study (Part 1). *Journal of Health and Allied Sciences NU, 14*(1), 124-132.