

Effectiveness of Jacobsons relaxation technique on sleep quality and psychological well-being of patients undergoing chemotherapy

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ABSTRACT

Background: Cancer remains one of the major reason of disease and fatality globally. Chemotherapy is useful in managing the illness, but it has a number of adverse effects that are common and own a substantial influence on a person's overall quality of life and healing process. These adverse effects include poor sleep quality and diminished psychological well-being. Non-pharmacological treatments to enhance cancer patient's quality of life have been received more awareness in recent years. Jacobson Progressive Muscle Relaxation Technique (JPMRT) approach is one of them. Evidence-based, non-invasive, and simple to implement therapies that may be integrated into standard patient care are needed.

Objectives: To assess the sleep quality and psychological well-being among patients undergoing chemotherapy, evaluate the effectiveness of Jacobsons muscle relaxation technique on sleep quality and psychological well-being of patients and to associate the level of sleep quality and psychological well-being among cancer patients with selected socio-demographic variables.

Methodology: An evaluative review was carried out amongst cancer patients who underwent chemotherapy in cancer hospital, Belagavi. Considerable pre-test post-test control group design, 70 patients were selected by purposive sampling method as per inclusion criteria. Standardized tools such as PSQI and Ryff Scale was utilised to assess sleep quality and psychological well-being of the patients. Association of Data analysis with Fisher's exact test and paired t - test for comparison.

Results: At baseline, both the control and experimental groups exhibited poor sleep quality, with 80% of the control group and 100% of the treatment group reporting "fairly bad" sleep. Following the JPMRT intervention, experimental group demonstrated marked improvement, with 62.6% reporting "fairly good" sleep and 11.45% reporting "very good" sleep. Conversely, the control group exhibited minimal changes. Regarding psychological well-being, the pre-test revealed that most participants had average or poor scores (control: 80% average, 8.6% poor; experimental: 60% average, 25.7% poor). Post-intervention, the experimental group showed significant enhancement, with 54.3% attaining good psychological well-being and 40% achieving average levels. The non-study group showed only slight improvement. Statistically, the treatment group's psychological well-being improved significantly, with a mean difference of 15.857 ($t = -6.174$, $p < 0.05$), while sleep quality also showed consequential improvement, with a mean PSQI difference of 6.828 ($t = 12.909$, $p < 0.05$).

Conclusion: The findings suggest that Jacobsons Relaxation technique is an effective non-pharmacological therapy for improving both sleep quality and psychological well-being in cancer patients undergoing chemotherapy. Integrating JPMRT into oncology care may enhance holistic patient outcomes and support overall quality of life.

Keywords: Cancer, Chemotherapy, Sleep quality, Psychological well-being and Jacobsons muscle relaxation technique.

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INTRODUCTION

Cancer is a wide classification of disorders which can initiate in nearly any part of the body while cells that are malformed multiply out of control, they go across normal borderline to invade nearby areas of the body, or reach to other organs. A leading cause of deaths related to cancer is its advanced stage, known as metastasis. Alternative terms for cancer are malignant tumor and neoplasm. When carcinoma is detected early, it is

far more probable to respond to appropriate treatment, increasing the chances of survival, reducing morbidity, and lowering treatment costs. Surgery, chemotherapy, and radiation therapy are among treatment methods that can be used alone or in combined form. A collaborative group of cancer specialists advises the most effective treatment approach based on classification of tumor, cancer stage, clinical, and other considerations.^[1]

Chemotherapy medications frequently and unintentionally harm healthy cells, which results in side effects. Patients often experience nausea, hair loss, general lethargy and exhaustion. It can result from a number of factors, including the disease itself, side effects including anemia, and the direct consequences of treatment on the body. Based on the kind, stage, and grade of the disease, each person's cancer regimen strategy is unique. Chemotherapy can be applied at various phases of the cancer care process and its medications will target any fast proliferating and dividing cells, which regrettably includes healthy cells as well. It can sometimes totally eradicate or cure a malignancy. In other situations, it shrinks the tumor or lowers the risk that the cancer may return.^[2]

Sleep is one of the most pivotal components of the circadian rhythm, which is followed by the restoration of physical and mental skills, and it is one of the fundamental human demands according to Maslow's hierarchy of needs. Furthermore, sleep is an essential component of human existence and one of the momentous biological cycles for relieving exhaustion and preparing people for everyday tasks. Human health at any age is linked to the quantity and quality of sleep. It accounts for more than 30% of human existence. Sleep problems have become more prevalent in recent decades, and millions of individuals suffer from them. Cancer patient's growth, development, and survival depend on getting enough sleep. For their immune systems to function better.^[3]

Moreover, It is often known that stress from hospitalization can seriously interfere with

sleeping habits. Stress due to hospitalization can be linked to anxiety, despair, routine changes, and a different environment. Breathing practices and Jacobson Progressive Muscle Relaxation Technique are two non-pharmacological methods that have been shown to be successful in helping hospitalized patients improve their sleep quality.^[4]

Most of the cancer patients experience anxiety and depression that go undetected and untreated, which can negatively impact their wellness together with the course of their illness and compliance. Clients who experience depression

may have more illness and fatality as a result of modality and recovery issues.

Psychiatric co-morbidity is common among cancer patients; almost half of them have emotional problems. Being anxious, adjustment incapability, depressive mood, low self-esteem, or poor life satisfaction are the usual ways that psychological issues show up. The most endemic psychological condition among cancer patients is depression.^[5]

For both inpatients and outpatients, psychological well-being is crucial to better clinical results. The positive psychological components of well-being, however, have not been thoroughly investigated and examined in patients coping with a cancer diagnosis and treatment. Happiness, gratitude, positive affect, and a sense of purpose in life are examples of positive thoughts, feelings, and methods that make up positive psychological well-being. Despite the difficulties that come with receiving a cancer diagnosis and receiving treatment, patients are able to express positive psychological well-being upto some extent during their disease.^[6]

In fact, symptoms of distress such as anxiousness and being depressed can coexist with positive psychological well-being, and high levels of good psychological well-being such as optimism are not always accompanied by the absence of distress symptoms. Moreover, there is no correlation between distress and favorable psychological well-being and health-related outcomes. Therefore, initiatives to improve the well-being of all cancer patients should concentrate on reducing the detrimental effects of distress as well as increasing the quality components of well-being.^[6]

Pharmacological therapies, including opioids, non-steroidal anti-inflammatory medications, and sedatives, are an important component of current treatments. However, they have potential risks associated with these therapies, such as cognitive impairment, gastrointestinal issues, and reliance.

Several studies have shown painful experience and sleeping difficulties in cancer patients, and non-drug intervention such sound therapy, acupressure, deep breathing exercises and relaxation techniques have been investigated, but result differ with patient's condition and depends on type of therapy practiced.^[7]

Dr. Edmund Jacobsons described a relaxation technique that alternates between tightening and loosening fourteen distinct muscle groups. Jacobson created this extensively utilized method in the early 1920s. The goal of this relaxation method is to gradually and sequentially tense and then relax each and particular muscle group. This might assist an individual in concentrating on the distinction between tense and relaxed muscles, which can help an individual learn to pay greater attention to their body's impulses.^[8]

JPMRT is based on the idea that mental relaxation is facilitated by physical relaxation. The best thing about JPMRT is that it can be practiced almost anywhere and is self-guided. It involves the head, which includes the neck, jaw, and forehead, as well as the lower and upper body muscles. You may still benefit from it when working at your desk, waiting in traffic, or onstage before any performance, even it works best while you're lying down. Progressive muscular relaxation improves sports performance, reduces stress and

tension headaches, helps regulate the anxiety response, and relaxes you for better sleep.^[9]

MATERIALS AND METHODS

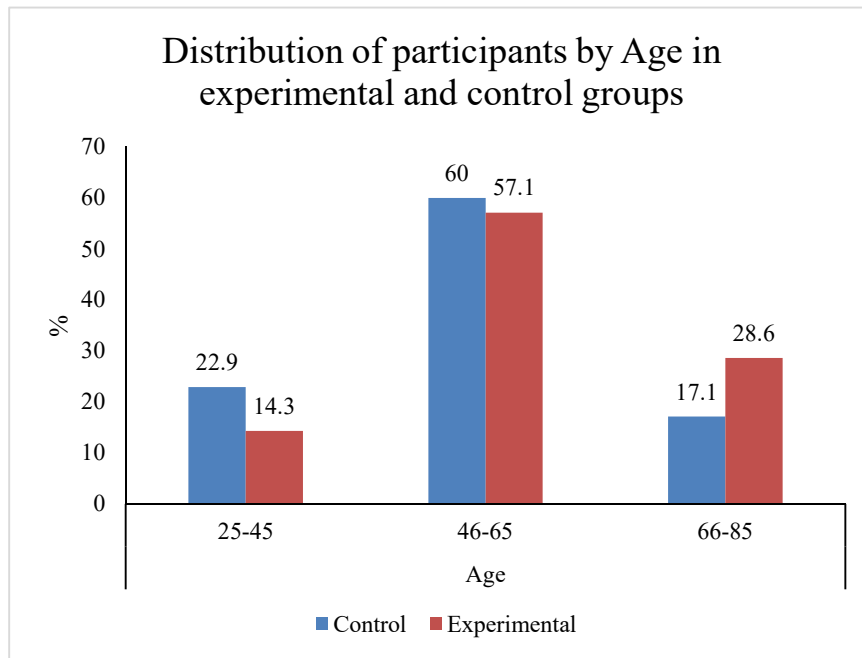
The present study adopted an evaluative research approach with pre test post test control group design to assess the effectiveness of Jacobsons muscle relaxation technique on sleep quality and psychological well-being on cancer patients undergoing chemotherapy. The study was conducted in the wards of KLES Sampatkumar S Shivanagi Cancer Hospital, Belagavi. The target population comprised cancer patients undergoing chemotherapy. A total of 70 patients those who met the inclusion and exclusion criteria were selected by using purposive sampling technique and divided equally into experimental and control group.

Demographic variables included are age, gender, marital status, education, occupation, monthly family income, type of family, place of residence, religion, substance use and family history of cancer. Patient having a minimum of one month of chemotherapy history or minimum of two chemotherapy sessions were included in the study. Whereas, Patients those are physically incapable to engage in exercise and already undergoing other alternative relaxation treatments such as yoga or meditation were excluded.

RESULTS

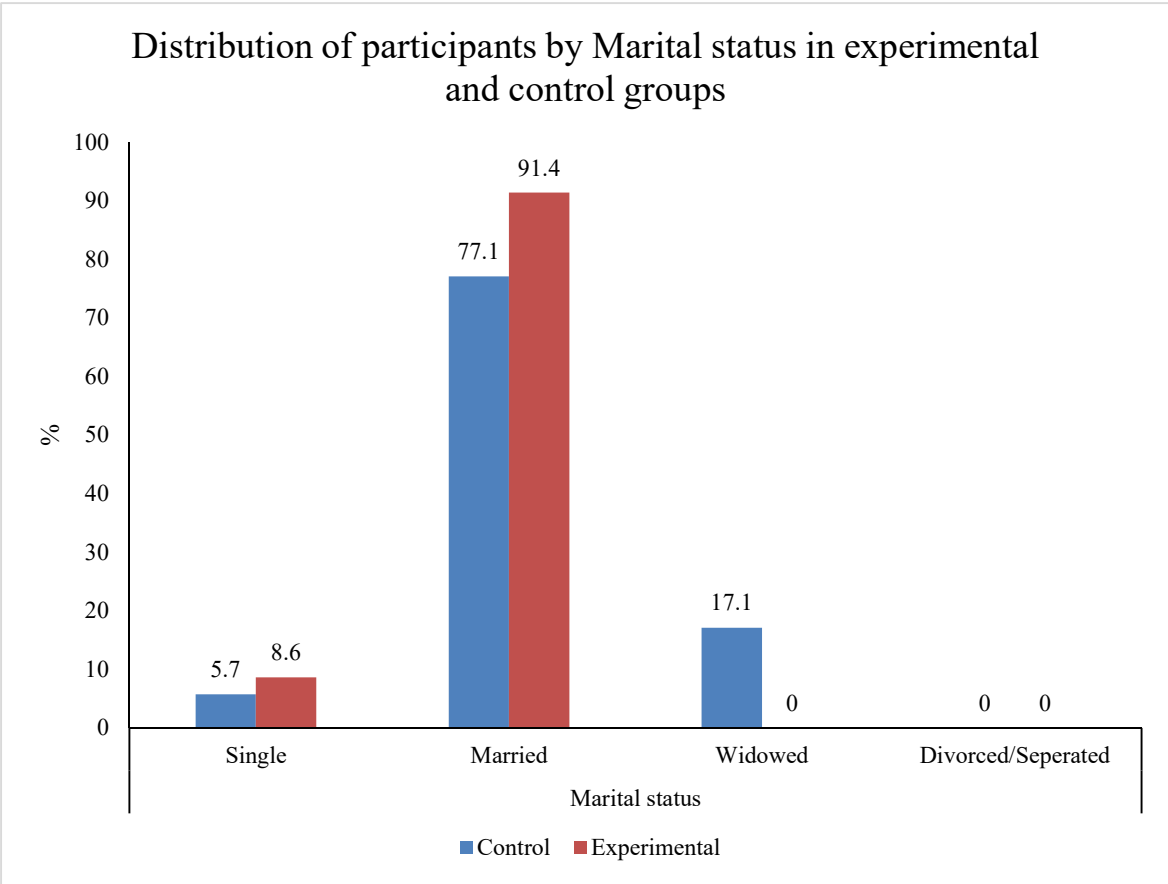
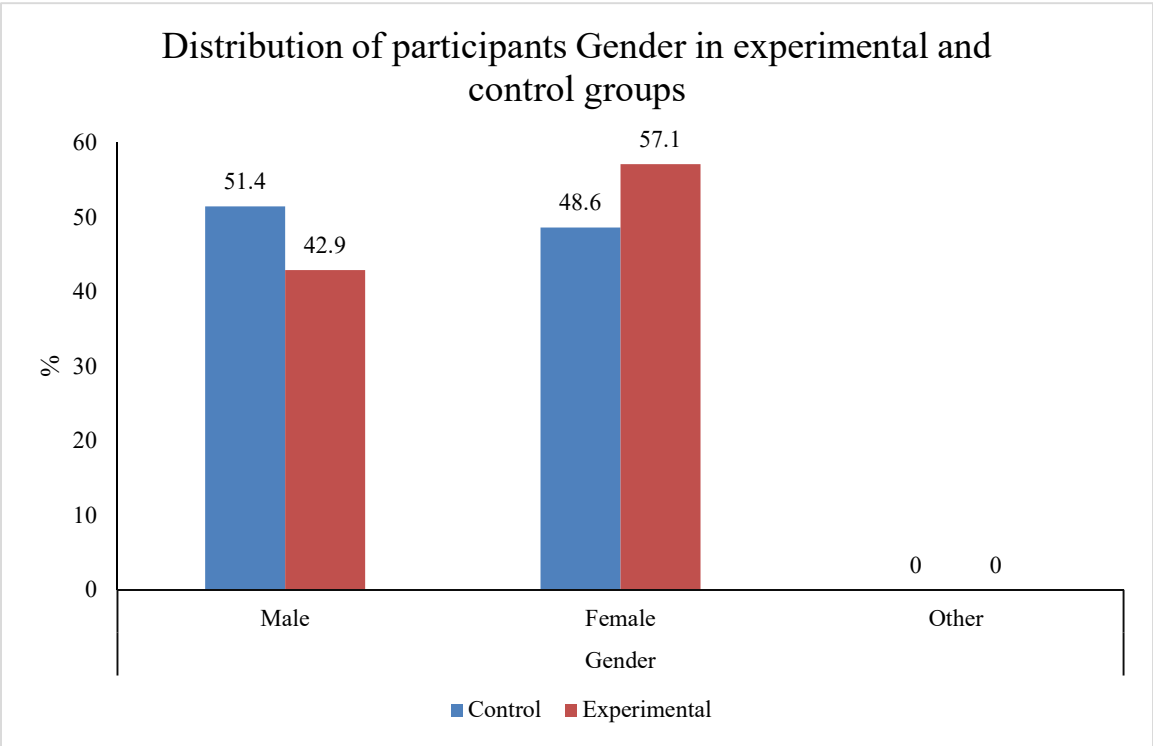
Table 1 Distribution of participants by socio demographic characteristics in experimental and control groups

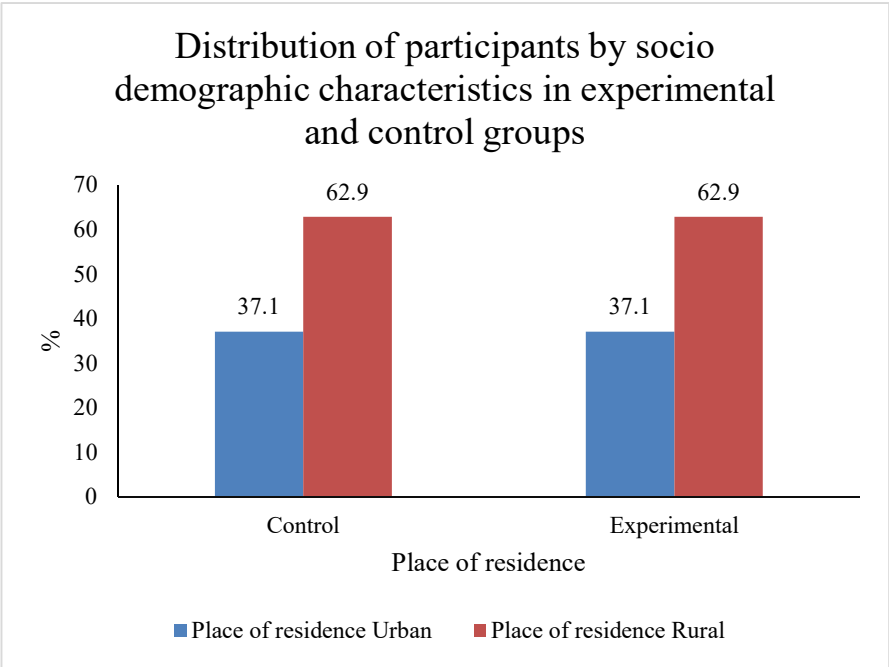
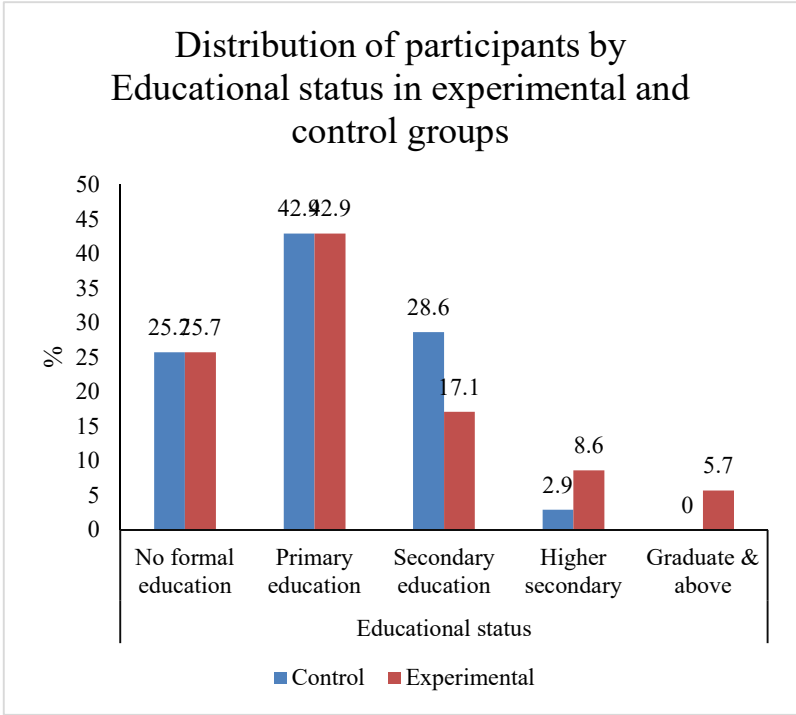
		Group (1-control,2 Experimental)			
		Control		Experimental	
		Count	Column N %	Count	Column N %
Age	25-45	8	22.9	5	14.3
	46-65	21	60.0	20	57.1
	66-85	6	17.1	10	28.6
Gender	Male	18	51.4	15	42.9
	Female	17	48.6	20	57.1
	Other	0	0.0	0	0.0
Marital statu	Single	2	5.7	3	8.6
	Married	27	77.1	32	91.4
	Widowed	6	17.1	0	0.0
	Divorced/Seperated	0	0.0	0	0.0
Educational status	No formal education	9	25.7	9	25.7
	Primary education	15	42.9	15	42.9
	Secondary education	10	28.6	6	17.1
	Higher secondary	1	2.9	3	8.6
	Graduate & above	0	0.0	2	5.7
Occupation	Unemployed	3	8.6	3	8.6
	Self employed	1	2.9	4	11.4
	Private employee	4	11.4	3	8.6
	Government employee	1	2.9	0	0.0
	Homemaker	13	37.1	20	57.1

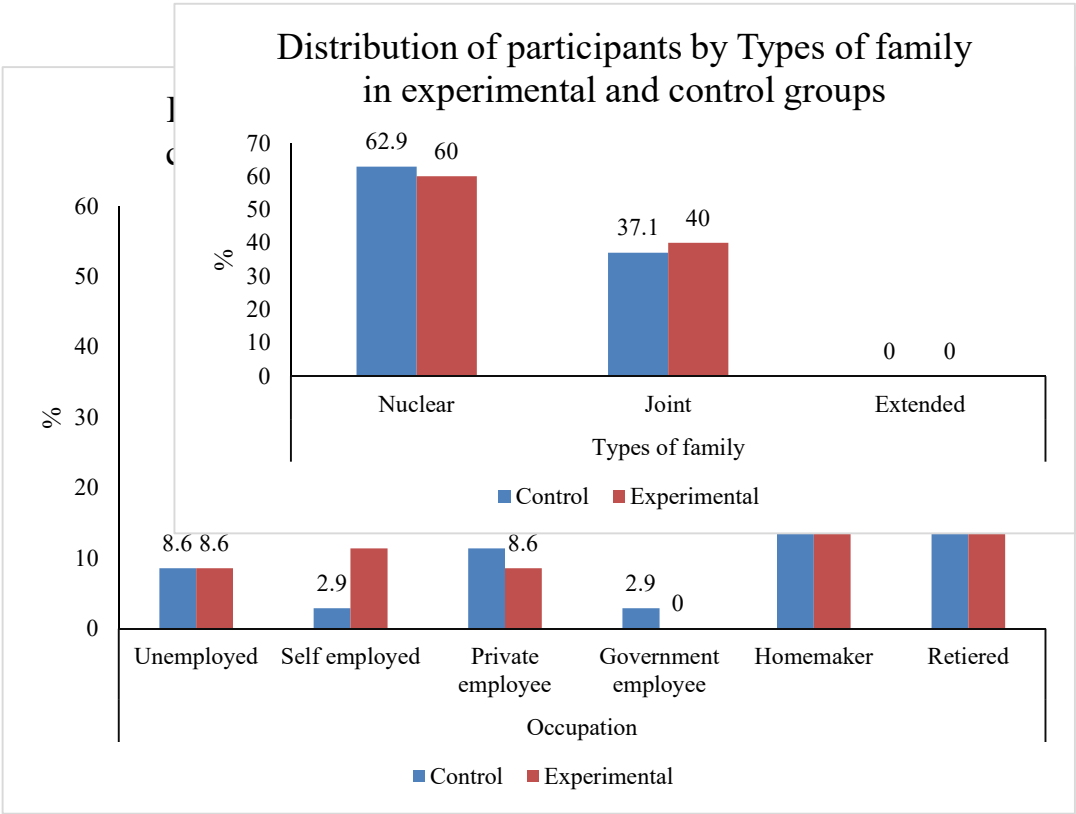


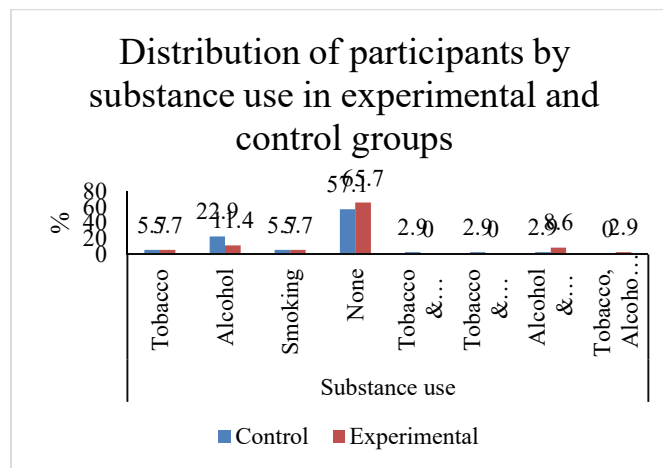
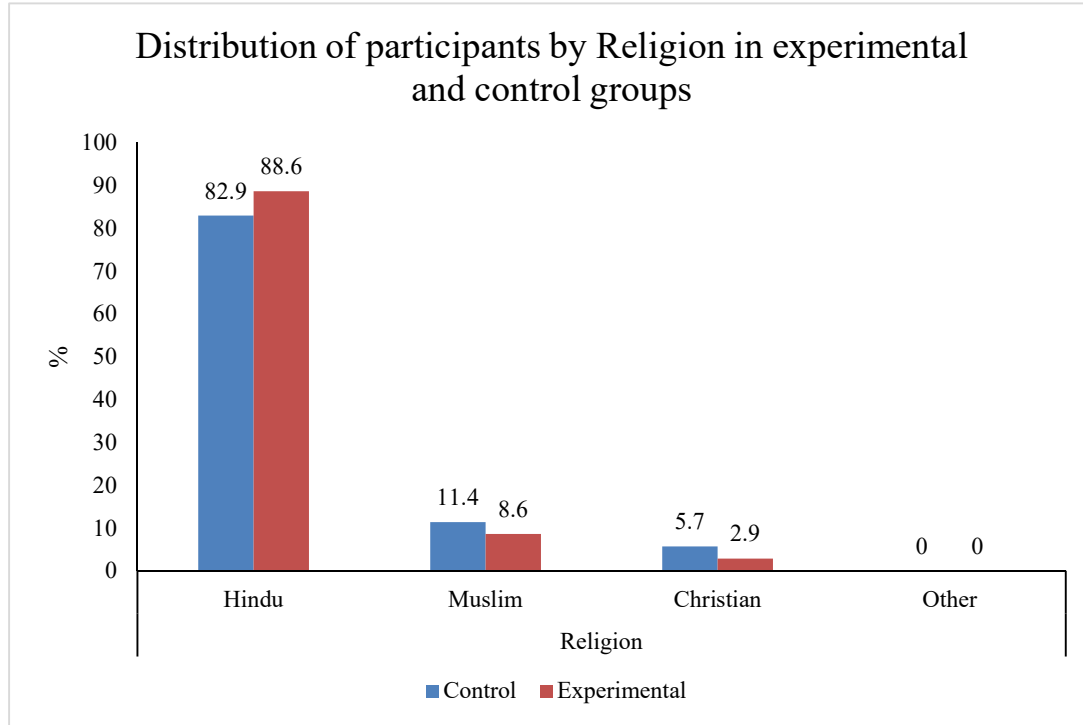
	Retiered	13	37.1	5	14.3
Monthlyincome	10000-30000	23	65.7	27	77.1
	30000-50000	11	31.4	8	22.9
	>50000	1	2.9	0	0.0
Types of family	Nuclear	22	62.9	21	60.0
	Joint	13	37.1	14	40.0
	Extended	0	0.0	0	0.0
Place of residence	Urban	13	37.1	13	37.1
	Rural	22	62.9	22	62.9
Religion	Hindu	29	82.9	31	88.6
	Muslim	4	11.4	3	8.6
	Christian	2	5.7	1	2.9
	Other	0	0.0	0	0.0
Substance use	Tobacco	2	5.7	2	5.7
	Alcohol	8	22.9	4	11.4
	Smoking	2	5.7	2	5.7
	None	20	57.1	23	65.7
	Tobacco & Alcohol	1	2.9	0	0.0
	Tobacco & Smoking	1	2.9	0	0.0
	Alcohol & smoking	1	2.9	3	8.6
	Tobacco, Alcohol & smoking	0	0.0	1	2.9
Family histroy	Yes	2	5.7	1	2.9
	None	33	94.3	34	97.1

both groups were similar.









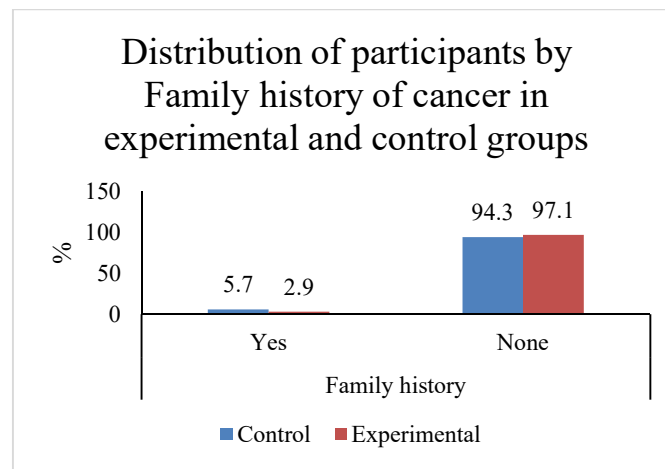


Table 2 Distribution of participants by PSQI Level in experimental and control group

PQSI		Group (1-control,2 Experimental)			
		Control		Experimental	
		Count	Column N %	Count	Column N %
Pre test	Very good	0	0.0	0	0.0
	Fairly good	6	17.1	0	0.0
	Fairly bad	28	80.0	35	100.0
	Very bad	1	2.9	0	0.0
Post test	Very good	0	0.0	4	11.4
	Fairly good	13	37.1	20	57.1
	Fairly bad	22	62.9	11	31.4

Table 2 Both groups had poor sleep quality at the pre-test; most participants were rated as "fairly bad" (Control: 80.0%, Experimental: 100.0%). There was absence of "fairly good" sleep in the experiment group and only 17.1% in the control group. The experimental group has noteworthy improved in the post-test, with 57.1% reporting fairly excellent sleep and 11.4% reporting very

good sleep, whereas the percentage of those reporting fairly bad sleep decreased to 31.4%. In contrast, the control group showed limited improvement, with 62.9% still having fairly bad sleep and only 37.1% in the fairly good category. This suggests that the experimental group's sleep quality was greatly enhanced by the intervention.

Table 3 Distribution of participants by Ryff Psychological well being Scale in experimental and control group

Ryff		Group (1-control,2 Experimental)			
		Control		Experimental	
		Count	Column N %	Count	Column N %
Pre test	Poor	3	8.6	9	25.7
	Average	28	80.0	21	60.0
	Good	4	11.4	5	14.3
Post test	Poor	0	0.0	2	5.7
	Average	28	80.0	14	40.0
	Good	7	20.0	19	54.3

Table 3 : 80.0% of the control group's participants had average psychological well-being at the pre-test, with 11.4% having good and 8.6% having

poor psychological well-being. The experimental group had slightly lower baseline well-being, with 60.0% being average, 25.7% poor, and 14.3%

good. The experimental group improved significantly in the post-test, with 54.3% attaining good well-being, 40.0% average, and only 5.7% bad. The control group, on the other hand, showed very little progress, with 80.0% of the patients still

being average, barely 20.0% being good, and none falling into the poor category. This implies that psychological well-being was successfully improved by the intervention

Table 4 Association of PSQI and socio demographic characteristics in experimental and control group

Socio demographic variable		PSQI levels									Chi - square
		Control				Chi - square	Experimental				
		Ver y good	Fairl y good	Fairly bad	Very bad		Ver y good	Fair ly good	Fairly bad	Ver y bad	
Age	25-45	0 (0.00)	0 (0.00)	8 (100.00)	0 (0.00)	4.829 (0.305)	0 (0.00)	0 (0.00)	5 (100.00)	0 (0.00)	-
	46-65	0 (0.00)	5 (23.81)	15 (71.43)	1 (4.76)		0 (0.00)	0 (0.00)	20 (100.00)	0 (0.00)	
	66-85	0 (0.00)	1 (16.67)	5 (83.33)	0 (0.00)		0 (0.00)	0 (0.00)	10 (100.00)	0 (0.00)	
Gender	Male	0 (0.00)	2 (11.11)	15 (83.33)	1 (5.56)	1.708 (0.526)	0 (0.00)	0 (0.00)	15 (100.00)	0 (0.00)	-
	Female	0 (0.00)	4 (23.53)	13 (76.47)	0 (0.00)		0 (0.00)	0 (0.00)	20 (100.00)	0 (0.00)	
	Other	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	
Marital statu	Single	0 (0.00)	0 (0.00)	2 (100.00)	0 (0.00)	3.331 (0.774)	0 (0.00)	0 (0.00)	3 (100.00)	0 (0.00)	-
	Married	0 (0.00)	6 (22.22)	20 (74.07)	1 (3.70)		0 (0.00)	0 (0.00)	32 (100.00)	0 (0.00)	
	Widowed	0 (0.00)	0 (0.00)	6 (100.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	
	Divorced/Seperated	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	
Educatio nal status	No formal education	0 (0.00)	2 (22.22)	7 (77.78)	0 (0.00)	4.410 (1.000)	0 (0.00)	0 (0.00)	9 (100.00)	0 (0.00)	-
	Primary education	0 (0.00)	2 (13.33)	12 (80.00)	1 (6.67)		0 (0.00)	0 (0.00)	15 (100.00)	0 (0.00)	
	Secondary education	0 (0.00)	2 (20.00)	8 (80.00)	0 (0.00)		0 (0.00)	0 (0.00)	6 (100.00)	0 (0.00)	
	Higher secondary	0 (0.00)	0 (0.00)	1 (100.00)	0 (0.00)		0 (0.00)	0 (0.00)	3 (100.00)	0 (0.00)	
	Graduate & above	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	2 (100.00)	0 (0.00)	

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		0)	)	)	)		0)	0)	0)	0)	
Occupati on	Unemployed	0 (0.0 0)	0 (0.00)	3 (100. 00)	0 (0.00)	11. 552 (0.6 31)	0 (0.0 0)	0 (0.0 0)	3 (100.0 0)	0 (0.0 0)	
	Self employed	0 (0.0 0)	0 (0.00)	1 (100. 00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	4 (100.0 0)	0 (0.0 0)	
	Private employee	0 (0.0 0)	2 (50.0 0)	2 (50.0 0)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	3 (100.0 0)	0 (0.0 0)	
	Government employee	0 (0.0 0)	0 (0.00)	1 (100. 00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	0 (0.00)	0 (0.0 0)	
	Homemaker	0 (0.0 0)	3 (23.0 8)	10 (76.9 2)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	20 (100.0 0)	0 (0.0 0)	
	Retiered	0 (0.0 0)	1 (7.69)	11 (84.6 2)	1 (7.69)		0 (0.0 0)	0 (0.0 0)	5 (100.0 0)	0 (0.0 0)	
Monthly income	10000-30000	0 (0.0 0)	3 (13.0 4)	19 (82.6 1)	1 (4.35)	3.9 49 (0.6 62)	0 (0.0 0)	0 (0.0 0)	27 (100.0 0)	0 (0.0 0)	-
	30000-50000	0 (0.0 0)	3 (27.2 7)	8 (72.7 3)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	8 (100.0 0)	0 (0.0 0)	
	>50000	0 (0.0 0)	0 (0.00)	1 (100. 00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	0 (0.00)	0 (0.0 0)	
Types of family	Nuclear	0 (0.0 0)	4 (18.1 8)	18 (81.8 2)	0 (0.00)	1.6 95 (.60 4)	0 (0.0 0)	0 (0.0 0)	21 (100.0 0)	0 (0.0 0)	-
	Joint	0 (0.0 0)	2 (15.3 8)	10 (76.9 2)	1 (7.69)		0 (0.0 0)	0 (0.0 0)	14 (100.0 0)	0 (0.0 0)	
	Extended	0 (0.0 0)	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	0 (0.00)	0 (0.0 0)	
Place of residenc e	Urban	0 (0.0 0)	3 (23.0 8)	9 (69.2 3)	1 (7.69)	2.4 03 (.34 7)	0 (0.0 0)	0 (0.0 0)	13 (100.0 0)	0 (0.0 0)	-
	Rural	0 (0.0 0)	3 (13.6 4)	19 (86.3 6)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	22 (100.0 0)	0 (0.0 0)	
Religion	Hindu	0 (0.0 0)	4 (13.7 9)	24 (82.7 6)	1 (3.45)	5.1 12 (0.3 04)	0 (0.0 0)	0 (0.0 0)	31 (100.0 0)	0 (0.0 0)	-
	Muslim	0 (0.0 0)	2 (50.0 0)	2 (50.0 0)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	3 (100.0 0)	0 (0.0 0)	
	Christian	0 (0.0 0)	0 (0.00)	2 (100. 00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	1 (100.0 0)	0 (0.0 0)	
	Other	0 (0.0 0)	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	0 (0.00)	0 (0.0 0)	
Substanc	Tobacco	0	0	2	0	15.	0	0	2	0	-

e use		(0.0 0)	(0.00)	(100. 00)	(0.00)	877 (.48 1)	(0.0 0)	(0.0 0)	(100.0 0)	(0.0 0)	
	Alcohol	0 (0.0 0)	1 (12.5 0)	7 (87.5 0)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	4 (100.0 0)	0 (0.0 0)	
	Smoking	0 (0.0 0)	0 (0.00)	1 (50.0 0)	1 (50.0 0)		0 (0.0 0)	0 (0.0 0)	2 (100.0 0)	0 (0.0 0)	
	None	0 (0.0 0)	5 (25.0 0)	15 (75.0 0)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	23 (100.0 0)	0 (0.0 0)	
	Tobacco & Alcohol	0 (0.0 0)	0 (0.00)	1 (100. 00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	0 (0.00)	0 (0.0 0)	
	Tobacco & Smoking	0 (0.0 0)	0 (0.00)	1 (100. 00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	0 (0.00)	0 (0.0 0)	
	Alcohol & smoking	0 (0.0 0)	0 (0.00)	1 (100. 00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	3 (100.0 0)	0 (0.0 0)	
	Tobacco, Alcohol & smoking	0 (0.0 0)	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.0 0)	0 (0.0 0)	1 (100.0 0)	0 (0.0 0)	
Family history	Yes	0 (0.0 0)	0 (0.00)	2 (100. 00)	0 (0.00)	1.5 05 (1.0 00)	0 (0.0 0)	0 (0.0 0)	1 (100.0 0)	0 (0.0 0)	-
	None	0 (0.0 0)	6 (18.1 8)	26 (78.7 9)	1 (3.03)		0 (0.0 0)	0 (0.0 0)	34 (100.0 0)	0 (0.0 0)	

TABLE 4 : The findings showed that the majority of participants in the control group had fairly bad sleep quality, irrespective of their socio-demographic characteristics. Across age, gender, marital status, education, income, family type, residence, religion, substance use, and family history, most participants were classified as having fairly bad sleep, while only a small proportion reported fairly good sleep. None of

these variables showed a statistically significant association with PSQI scores ($p > 0.05$). In the experimental group, all participants were categorized as having fairly bad sleep during the pre-test, resulting in no variation in PSQI scores across socio-demographic variables. Overall, socio-demographic factors did not significantly influence sleep quality in either group.

Table 5 Association of Ryff Psychological well being Scale and socio demographic characteristics in experimental and control group

Socio demographic variable		Ryff Psychological well being Scale							
		Control				Experimental			Chi-square (Sig.)
		Poor n (%)	Average n (%)	Good n (%)		Poor n (%)	Average n (%)	Good n (%)	
Age_G	25-45	1 (33.33)	7 (25.00)	0 (0.00)	1.990 (0.900)	1 (11.11)	3 (14.29)	1 (20.00)	0.910 (1.000)
	46-65	2 (66.67)	16 (57.14)	3 (75.00)		5 (55.56)	12 (57.14)	3 (60.00)	
	66-85	0 (0.00)	5 (17.86)	1 (25.00)		3 (33.33)	6 (28.57)	1 (20.00)	
Gender	Male	3	12	3	4.07	4	11	0	4.425

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		(100.00)	(42.86)	(75.00)	4 (0.150)	(44.44)	(52.38)	(0.00)	(.115)
	Female	0 (0.00)	16 (57.14)	1 (25.00)		5 (55.56)	10 (47.62)	5 (100.00)	
	Other	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
Marital status	Single	0 (0.00)	2 (7.14)	0 (0.00)	1.945 (0.849)	0 (0.00)	3 (14.29)	0 (0.00)	1.308 (0.711)
	Married	3 (100.00)	20 (71.43)	4 (100.00)		9 (100.00)	18 (85.71)	5 (100.00)	
	Widowed	0 (0.00)	6 (21.43)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
	Divorced/Seperated	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
Educational status	No formal education	0 (0.00)	7 (25.00)	2 (50.00)	4.163 (0.866)	2 (22.22)	5 (23.81)	2 (40.00)	7.323 (0.458)
	Primary education	2 (66.67)	12 (42.86)	1 (25.00)		3 (33.33)	9 (42.86)	3 (60.00)	
	Secondary education	1 (33.33)	8 (28.57)	1 (25.00)		2 (22.22)	4 (19.05)	0 (0.00)	
	Higher secondary	0 (0.00)	1 (3.57)	0 (0.00)		0 (0.00)	3 (14.29)	0 (0.00)	
	Graduate & above	0 (0.00)	0 (0.00)	0 (0.00)		2 (22.22)	0 (0.00)	0 (0.00)	
Occupation	Unemployed	0 (0.00)	3 (10.71)	0 (0.00)	14.889 (0.087)	0 (0.00)	3 (14.29)	0 (0.00)	6.313 (0.609)
	Self employed	1 (33.33)	0 (0.00)	0 (0.00)		1 (11.11)	3 (14.29)	0 (0.00)	
	Private employee	0 (0.00)	3 (10.71)	1 (25.00)		1 (11.11)	2 (9.52)	0 (0.00)	
	Government employee	1 (33.33)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
	Homemaker	0 (0.00)	12 (42.86)	1 (25.00)		4 (44.44)	11 (52.38)	5 (100.00)	
	Retiered	1 (33.33)	10 (35.71)	2 (50.00)		3 (33.33)	2 (9.52)	0 (0.00)	
Monthly income	10000-30000	2 (66.67)	19 (67.86)	2 (50.00)	7.168 (0.149)	7 (77.78)	17 (80.95)	3 (60.00)	1.281 (0.634)
	30000-50000	0 (0.00)	9 (32.14)	2 (50.00)		2 (22.22)	4 (19.05)	2 (40.00)	

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	>50000	1 (33.3 3)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
Types of family	Nuclear	3 (100.00)	17 (60.71)	2 (50.00)	1.84 9 (0.559)	4 (44.44)	15 (71.43)	2 (40.00)	2.931 (0.284)
	Joint	0 (0.00)	11 (39.29)	2 (50.00)		5 (55.56)	6 (28.57)	3 (60.00)	
	Extended	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
Place of residence	Urban	1 (33.33)	11 (39.29)	1 (25.00)	0.46 3 (1.000)	2 (22.22)	10 (47.62)	1 (20.00)	2.231 (0.285)
	Rural	2 (66.67)	17 (60.71)	3 (75.00)		7 (77.78)	11 (52.38)	4 (80.00)	
Religion	Hindu	2 (66.67)	24 (85.71)	3 (75.00)	4.98 3 (0.284)	9 (100.00)	20 (95.24)	2 (40.00)	9.937 (0.010)*
	Muslim	0 (0.00)	3 (10.71)	1 (25.00)		0 (0.00)	1 (4.76)	2 (40.00)	
	Christian	1 (33.33)	1 (3.57)	0 (0.00)		0 (0.00)	0 (0.00)	1 (20.00)	
	Other	0 (0.00)	0 (0.00)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
Substance use	Tobacco	1 (33.33)	1 (3.57)	0 (0.00)	17.6 52 (0.129)	1 (11.11)	1 (4.76)	0 (0.00)	8.848 (0.523)
	Alcohol	1 (33.33)	5 (17.86)	2 (50.00)		0 (0.00)	4 (19.05)	0 (0.00)	
	Smoking	0 (0.00)	2 (7.14)	0 (0.00)		1 (11.11)	1 (4.76)	0 (0.00)	
	None	0 (0.00)	18 (64.29)	2 (50.00)		6 (66.67)	12 (57.14)	5 (100.00)	
	Tobacco & Alcohol	0 (0.00)	1 (3.57)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
	Tobacco & Smoking	0 (0.00)	1 (3.57)	0 (0.00)		0 (0.00)	0 (0.00)	0 (0.00)	
	Alcohol & smoking	1 (33.33)	0 (0.00)	0 (0.00)		0 (0.00)	3 (14.29)	0 (0.00)	
	Tobacco, Alcohol & smoking	0 (0.00)	0 (0.00)	0 (0.00)		1 (11.11)	0 (0.00)	0 (0.00)	
Family histroy	Yes	0 (0.00)	2 (7.14)	0 (0.00)	0.81 2 (1.000)	0 (0.00)	1 (4.76)	0 (0.00)	1.219 (1.000)
	None	3 (100.00)	26 (92.86)	4 (100.00)		9 (100.00)	20 (95.24)	5 (100.00)	

TABLE 5 : The analysis showed that most participants in both the control and experimental groups had average psychological well-being, regardless of their socio-demographic characteristics. In the control group, factors such as age, gender, marital status, education, occupation, income, family type, residence, religion, substance use, and family history showed no statistically significant association with psychological well-being ($p > 0.05$). Similarly, in the experimental group, most variables were not significantly associated with psychological well-being. However, religion was found to have a significant association with psychological well-being in the experimental group ($\chi^2 = 9.937$, $p = 0.010$).

CONCLUSION

This study evaluates the efficacy of Jacobsons Progressive Muscle Relaxation Technique on sleep quality and psychological well-being of malignancy patients undergoing chemotherapy in hospital. The pre-test performed to identify the range of disturbance in quality of sleep and psychological well-being of cancer patients undergoing chemotherapy which shows that, patients had fairly bad sleep in both the groups but it was enhanced to good and fairly good in the intervention group and remained unchanged in the control group during post test. With respect to psychological well-being, some patients had poor level and few patients had average level in b study group and non study group further it was witnessed that the patients maintained average and good psychological well being in intervention group and the control group had constant score while taking post test and with respect to activities the patients affected. In comparison with the first and second group, there is noteworthy differentiation in the scores, better sleep quality and psychological well-being in the experiment group than the control group.

The analysis of findings indicates that the Jacobsons Progressive Muscle Relaxation exercise had impact in recovering the patients with effective sleep and psychological well-being which is evidenced from the computed 't' test which was significant at 0.05 level of significance in the experimental group.

The pre test scores regarding sleep quality and psychological well-being reveals that it was not significantly correlated with their selected personal variables of participants of both variables of participants of one and the other group.

Therefore, the result came with a conclusion that the prevalence of chemotherapy affiliated disturbed sleep and affected well-being is

commonly seen among patients who underwent chemotherapy. The relaxation technique is one of the efficient and capable method to improve sleep without interruption as well as psychological well-being. Thus, professionals practicing in health care sector should consider JPMRT as one of the effective exercise to decrease psychological distress and have better quality of sleep amongst the patients receiving chemotherapy. This study proves that JPMRT have remarkable improvement in the patients sleep quality and well-being.

NURSING IMPLICATIONS

The research conclusion utilized in the following mentioned fields of nursing profession.

Nursing practice

The results of the study highlights about the side-effects of chemotherapy on the patients have extreme influence on both physical and psychological aspects of living. Although, previous studies and review of literature stresses that most of the patients complains about difficulty to fall asleep due to many intrinsic factors and have psychological distress such anxiety, depression and agitation. Nurses practicing in the hospital and accompanying the patients throughout t their treatment and hospitalization must administer the Jacobsons Progressive Muscle Relaxation Technique whenever required and make sure that patient is consistently practicing the exercise in order to reduce the repercussion of the chemotherapy such as disturbed sleep and well being of the patient. JPMRT can be included as a part of routine care for the patients to overcome the adverse effects of chemotherapy.

Nursing Education

To enhance patient care, focusing on preventive and community –based service updated education is necessary. However, nurses and nursing students to be educated about the incidence, frequency, investigation, interventions and complications of cancer. Nurse educator plays an vital role in educating the nursing staffs and students regarding JPMRT and successfully implementing in clinical practice for enhancement of sleep pattern and better living.

Nursing Administration

Nursing administrator should strategize in systematic implementation of Jacobsons Progressive Muscle Relaxation Technique practice in hospital. Including, proper execution of training programs, managing education system, available resources and staff competence to practice the procedures in the future. The nurse administrator should apply practice of JPMRT in the hospital setting because the present and past

studies show positive influence on the sleep quality and well-being on the patients receiving cancer treatment and chemotherapy.

Nursing Research

Cancer and its treatment is a mandatory topic for research, as the new cancer cases are drastically accelerating and will have a dramatic impact on mortality and morbidity of cancer patients. The affect of chemotherapy such as impaired sleep and psychological well-being should have various pharmacological and non-pharmacological treatment options. This study supports in mitigating psychological distress and improving sleeping pattern. The study findings also highlight the need for future research in nursing practice to examine this intervention's applicability to cancer patients receiving chemotherapy. It is obvious that the current study can help future investigations provide findings that are comparable.

Limitations

- ❖ The sample size was limited to 70 patients who received chemotherapy, in which 35 patients belonged to control group and the rest 35 patients were in experimental group. Therefore, the results cannot be extended to a broader population.
- ❖ The present study employs non-probability purposive sampling, as there is limited generalization of the results apart from the study sample.

Recommendations

- Future studies can be carried out on large randomized control trials involving a variety of population.
- Assess JPMRT long-term effects on sleep, psychological well-being and quality of life in chemo patients.
- JPMRT should be implemented as a routine conservative management in oncology unit.

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