

## RESEARCH ARTICLE

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# Effectiveness of Cognitive Restructuring on Intensity of Pain in Cancer Patients: A Pilot Study in Oncology Department of Tertiary Care Hospital

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### Abstract

**Background:** Pain is a most feared symptom among cancer patients. It not only affects physical health but it is a psychological burden and affects overall quality of life in cancer patients. it interferes the activity of daily living and treatment outcome. cognitive restructuring is very useful psychological treatment to reduce pain. **Objectives:** The purpose of the study was to assess level of pain, evaluate effectiveness of cognitive restructuring on intensity of pain and to find association of pain with demographic variables. **Methods:** Quasi experimental study was conducted in oncology department of SKIMS tertiary care hospital. Purposive sampling technique was used to select 22 patients for study group and 22 patients for control group. CBPS and Numerical rating pain scale was used to measure intensity of pain. Data collected by interview method. **Results:** The results showed significant difference  $p < 0.05$  at only in anxiety, face and activity on CBPS scores. Mean score of NPRS was 27.27% of moderate pain and severe pain reduced from 63.64 to 0% in study group after CR. Results revealed Significant association of pain with age, gender and period of illness. **Conclusion:** Based on findings of the study it is concluded that CR has significant impact in cancer patients on reducing pain and can ease problems related to pain. CR is an appropriate intervention to reduce the symptoms of cancer patients which has indirect impact on cancer treatment.

**Keywords:** Pain- cancer- oncology- tertiary care hospital- cognitive restructuring

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### Introduction

Cancer is the leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, Ferlay (2020) reported in his work. It has been reported (Makhlouf et al., 2020) that by 2030, there will be approximately 21.4 million new cancer cases per year, with approximately 13.3 million cancer patients expected to die from the disease. Cancer is a multi symptomatic disease with physical, psychological, social, spiritual, and emotional consequences. Cancer pain is one of the most common, detrimental, feared, and untreated cancer symptoms. It's a complex phenomenon with sensory, emotional, cognitive, and behavioral components. The severity of cancer pain is determined by a number of factors, including the type of cancer, stage of cancer, cancer treatment consequences, such as physical and psychological symptoms, and pain tolerance. Cancer pain differs from pain experienced by patients who are not suffering from cancer. Pain affects one-quarter of newly diagnosed cancer patients, one-third of cancer patients undergoing treatment, and

three-quarters of cancer patients with advanced disease. Cancer pain affects over half of all disease patients and more than seventy percent of those with advanced cancer (Li et al, 2018). In their study, Tegegn and Gebreyohannes (2017) discovered that 91.6 percent of cancer patients experienced pain of different severity, with 7 (8.4%) patients experiencing severe pain.

Another study by Beukenetal et al., (2017) found that 38.0 percent of all patients had moderate to severe pain in a meta-analysis. Furthermore, they discovered a 39.3 percent pain prevalence rate following curative treatment, a 55.0 % pain prevalence rate during anticancer treatment, and a 66.4 percent pain prevalence rate in advanced, metastatic, or terminal disease (Ger et al., 1998) observed that 65 percent of patients had substantial worst pain and 31 percent had significant average pain in an interview of 113 patients to identify the nature of cancer pain.

To figure out how often and severe pain is. The prevalence of pain was found to be 29.8%, according to Hamieh et al., (2018), The majority (37.8%) were in moderate discomfort, and nearly half (46%) received

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insufficient treatment (Gupta et al., 2015) conducted a prospective study with 126 patients to determine the prevalence of cancer pain. They discovered (75.40 percent) patients with pain, (62.70 percent) patients with moderate-severe (26.98 percent) chronic pain, and (13.49 percent) patients with neuropathic pain in their study. Furthermore, genitourinary, hematological, and head and neck cancers were related with the highest prevalence of pain, whereas breast and lung cancers were associated with the highest frequency of neuropathic and chronic pain. They came to the conclusion that pain is common among critically ill cancer patients.

In a prospective research, (Grond et al., 1996) discovered that 85 percent of pain was caused by cancer or anti neoplastic treatment (17%), 9 percent was caused by cancer illness, and 9 percent was caused by etiologies unrelated to cancer. They categorized pain as coming from nociceptors in bone (35 percent), soft tissue (45 percent), or visceral structures (33 percent), or as coming from somewhere else (34 percent). In addition, pain symptoms were found in the lower back (36 percent), abdominal area (27%), thoracic region (23%), lower limbs (21%), head (17%), and pelvic region (17%). (15 percent).

Patients' comfort is altered by untreated pain, which has a significant impact on their activities, motivation, interactions with family and friends, and general quality of life (Swarm et al., 2012). In a total of 76 cancer patients experiencing pain, 68 (89.2%) said that pain was interfering with their everyday activities Tegegn and Gebreyohannes (2017).

Pain is a complex stressor in and of itself. Physical, psychological, occupational, and financial costs are all affected by cancer pain Sturgeon (2014). (Nuhu et al., 2009). observed a strong link between pain and depressed and anxiety symptoms, suicidal ideations, poor sleep, decreased attention, lack of leisure time, unhappiness with health, and poor overall quality of life in a study of 210 consecutively hospitalized cancer patients.

Sturgeon (2014) interpreted that medical intervention alone will not totally heal the issue of pain; instead, a psychological approach is required to treat chronic pain. It focuses not only on the pain itself, but also on the patients' overall physical, emotional, and social well-being. Because cognitive therapies varies in scope, duration, and goals, they are regarded useful in pain relief (Swarm et al., 2012) found that patients with advanced cancer who were in pain reported worry, helplessness, discouragement, and a slew of other restrictions in their everyday lives, in addition to an inability to control their pain. The study revealed the difficulties faced by patients with advanced cancer who were dealing with pain on a daily basis. Pain is a psychological burden that reduces cancer patients' quality of life. (Strang and Qvarner, 1990) discovered a link between anxiety and depression and pain severity in a prospective research ( $p = 0.003$  and  $p = 0.0004$ ).

Patients who experienced no pain-free or almost pain-free intervals had higher levels of the parameters ( $p = 0.02$  and  $p = 0.002$ ). Furthermore, in 76 percent and 56 percent of the patients, pain had a detrimental impact on ADL functions and focus, respectively. They came to the conclusion that untreated pain not only causes physical

suffering, but also has an impact on various elements of one's quality of life.

In Emotional and social aspects of cancer pain in 93 consecutive in-patients, Strang and Quarnar (1990) found a link between pain and psycho social disorders in cancer patients. (51%) felt severe anxiety as a result of their pain, and (71%) had depressed pain-related symptoms, both of which were highly correlated with the severity of their pain. In roughly two-thirds of the patients, physical activities were impeded, while mental activities were seriously disrupted in 48% of the cases. Another study by Mystakidou et al., (2006) examined at psychological distress, the impact of pain severity, and its interfering aspects on anxiety and depression in a group of 120 advanced cancer patients. The study's findings revealed a strong link between pain interference with mood and anxiety as well as pain interference with interpersonal relationships and HAD-A ( $r = 0.474$ ,  $P.0005$ ). They reached the conclusion that pain interference and pain severity were both linked to psychological distress. Another cross-sectional study on 126 patients by Li et al., (2017) looked at the relationship between pain cancer and its impact on pain management, anxiety, and depression in Chinese patients. They discovered that patients who were in pain were more likely to experience anxiety and depression, with pain severity being a strong predictor of anxiety. Adequate pain assessment and adjustment were found to be essential for pain management. There are numerous studies that prove how pain intensity affects overall quality of life in cancer patients. one of the findings of Yang et al., (2012) study on the impact of cancer pain control on patients' quality of life revealed that cancer patients in Beijing with pain had a low quality of life, and that pain control would enhance cancer patients' quality of life. Another investigation by (Alcoforado et al., 2017) looked at the impact of pain on quality of life in 400 breast cancer patients in a cross-sectional study. 71.7 percent of patients reported pain, according to the findings. Patients with distant metastases and severe pain scored the lowest on the functional scale, with a mean of 49.9 (SD=17.3) ( $p = 0.009$ ). The study concluded that pain reduces the quality of life of breast cancer patients in advanced stages of the disease (Rodriguez et al., 2019) discovered that 69 percent of patients had current pain of moderate to severe severity that caused distress, was frequent/constant, or interfered with their life in a cross-sectional study. In addition, the patient with the greatest pain distress reported the most intense pain ( $r = 0.77$ ) and the most disturbance with everyday life ( $r = 0.78$ ). They came to the conclusion that cancer pain causes severe suffering and interferes with daily activities. Cancer pain affects sleep quality. In a cross-sectional study, (Jakobsen et al., 2019) investigated at sleep quality in patients with advanced cancer who were given a WHO Step III opioid for pain. They discovered that 78 percent of people have trouble sleeping. All PSQI components were impaired, and 44 percent reported pain trouble sleeping caused by pain. They found that the majority of cancer patients treated with Step III opioids had poor sleep quality (78 percent). Using a multidisciplinary approach, pain management could be handled at the molecular, behavioral, cognitive-affective, and functional

levels. Current psychological approaches to chronic pain management aid in increased self-management, behavioral change, and cognitive change. Roditi and Robinson (2011) revealed that pain is connection between mind and body, cognitive therapy helps in alteration of information and belief system of patient and modify to feel better. Cognitive restructuring is an effective therapy in pain management. It decatastrophizes the unrealistic thoughts about pain. Cognitive behaviour therapy has been widely used as a standard psychological intervention for pain Sturgeon (2014). Evidences indicates that if pain remains unrelieved across the cancer continuum, there is a risk for psychological distress hence, Cognitive training focuses on re framing pain-related catastrophic thoughts by preparing alternative and more adaptive thoughts to relieve psychological distress (Syrjala et al., 2014). Goodarzi et al., (2021) in a quasi experimental study suggested that cognitive-behavioral therapy and mindfulness-based cognitive therapy were effective on pain experience ( $P < 0.001$ ) with breast cancer.

Turner (2006) in a randomized controlled trial evaluated the efficacy of a brief cognitive-behavioral therapy (CBT) for chronic temporomandibular disorder (TMD) pain. They found significantly greater improvement in CBT group on belief, and catastrophizing measure. CBT group patients had clinically meaningful improvement in pain intensity (50% versus 29% showed  $> \text{or} = 50\%$  decrease,  $P = 0.01$ ), masticatory jaw function ( $P < 0.001$ ), and depression ( $P = 0.016$ ). Daniels (2015) mentioned that previously cognitive therapies has been used for psychological disorders only but now it is being used for different kinds of health problems like cancer pain.

As cancer patients have to deal with multiple challenges in both physical as well as psychological point of view and is worst experience of cancer patients. No doubt in hospitals their physical components are being taken care of but often psychological components are neglected. Pain is a common symptom as a result of disease and other cancer therapies it can lead to various psychological problems like anxiety and depression which impacts their overall quality of life. Therefore it is mandatory to incorporate psychological intervention with medical management. cognitive therapies have proven very effective therapies in relieving cancer pain. Cancer patient usually have catastrophic distortions about cancer pain experience. It becomes necessary to change these negative thought patterns, as cognitive restructuring is re framing the irrational or negative thought patterns into positive ones. As Cognitive restructuring is only one component of CBT, researcher could not find more literature on this component alone but in combination of behavioral therapy. However for the feasibility for cancer patients and focusing on cognitive part the aim of the this pilot study was to assess the effectiveness of cognitive restructuring on intensity of pain in cancer patients.

## Materials and Methods

The present study is quasi experimental two group pretest post test design. The statistical population in this study are patients more than 18 years admitted in medical

oncology department of SKIMS tertiary care center Srinagar Jammu and Kashmir. A total of 44 eligible patients were divided into two groups of experimental and control (22 for the experimental group and 22 for the control group). Eligibility criteria for participation included age over 18 year The patients had to fully comprehend and answer appropriately to the posed questions and patients with different modalities of treatment. Exclusion criteria were patients receiving psychotherapy, patients with cognitive impairment, critically ill, and sensory deficits.

### Research instrument

Chronic behavioral pain scale is an objective chronic pain assessment scale. This scale was created by (Agnes K et al., 2021) which consisted of five categories pain bother, anxiety, face, activity and interaction. Each category was graded from 0 to 2 creating a total summative minimum value of 0 (no pain) and maximum value of 10 (the worst pain). The first category involved asking the patient a question by using NRS while the other four categories were solely observational. The severity range similar as in the NRS a pain scale of no pain (0) mild (1–3), moderate (4–6), and severe.

### Numerical pain rating scale

NPRS is an subjective pain assessment 11 point scale from 0-10. 0 means no pain, 1-3 means mild pain, 4-6 moderate and 7-10 severe pain The patient is asked to make three pain ratings, corresponding to current, best and worst pain experienced over the past 24 hours.

### Data collection

After taking permission from medical superintendent, IEC committee, and Head of the department of medical oncology. This pilot study was conducted between August 2021 and September 2021. Non probability Purposive sampling technique was used for selection of subjects. 44 patients met the inclusion criteria and were entered in the study and were assigned into two groups study group (22) and control group (22). 3 patients from each group total 6 patients chosen for first 4 weeks. Again 6 patients were assigned for 2 weeks and 4 patients next two weeks. Informed consent was obtained from all patients. Questionnaire were administered as the pretest to measure dependent variables to both groups. After that, in study group each patient signed consent to attend the treatment, only one patient was taken at one time. Duration of time was 40 minutes per session. Study group received 6 sessions of CR for 6 days. Control group received no treatment. Post test was administered on 7th day. It is also worth noting that the pretest and post-test in control group, were administered at the same time and the same day with the experimental group.

## Results

All statistical analysis were performed by using chi square test, Wilcoxon signed rank test, Kruskalwallis H-test /Mann whitney U-test. Findings of the research showed that maximum 54.55% age group between 36-55, 63.64% females, 86.36% married, 45.45% illiterate,

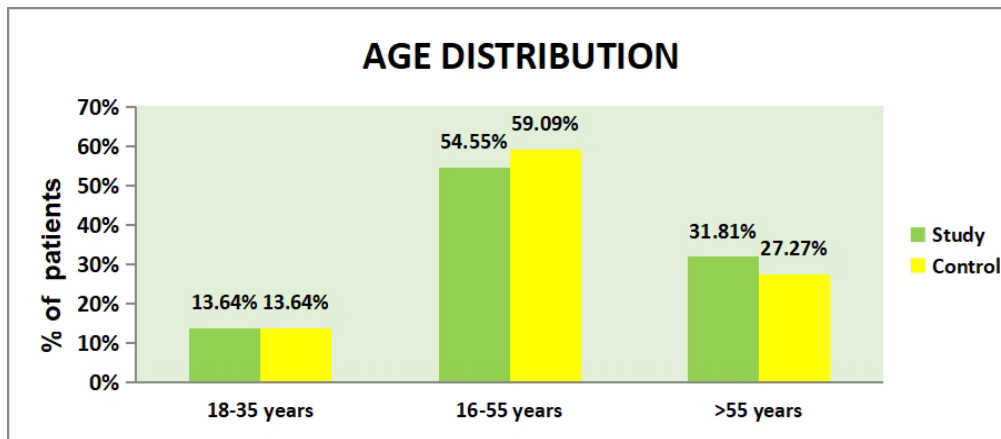


Figure 1.

63.64% rural area and maximum 50% monthly income were from study group. In control group 59.09% patients of age group between 36-55, maximum 68.18% were females, 86.36% were married, 40.91 % were illiterate, 68.18 from rural area and monthly income was 54.55%. The results showed significant difference  $p < 0.05$  at only in anxiety, face and activity on CBPS scores. Mean score of NPRS was 27.27% of moderate pain and severe pain reduced from 63.64 to 0.% in study group after CR. Results revealed Significant association of pain with age, gender and period of illness.

### Discussion

The purpose of the present study was to assess the effectiveness of cognitive restructuring on pain among cancer patients. Pain was assessed by NRPS and CBPS. These scales were feasible and effective in administration to patients (Brunelli et al., 2021). In cross sectional study revealed that NRS showed higher reproducibility when measuring pain exacerbation hence is more effective than other pain scales. After comparing pretest and post test scores of CBPS the results of this study showed that there was a significant difference only of three components of

Table 1. Demographic Information of Cancer Patients

Demographic variables		Group			
		Study (n=22)		Control (n=22)	
		n	%	n	%
Age	18-35 years	3	13.64%	3	13.64%
	36-55 years	12	54.55%	13	59.09%
	>55 years	7	31.81%	6	27.27%
Gender	Male	8	36.36%	7	31.82%
	Female	14	63.64%	15	68.18%
Marital status	Married	19	86.36%	19	86.36%
	UnMarried	0	0.00%	0	0.00%
	Divorced	3	13.64%	3	13.64%
	Widowed	0	0.00%	0	0.00%
Education	Illiterate	10	45.45%	9	40.91%
	Primary	6	27.27%	7	31.82%
	Middle school	4	18.18%	4	18.18%
	Secondary school	1	4.55%	1	4.55%
	Higher secondary	0	0.00%	0	0.00%
	Graduate and above	1	4.55%	1	4.55%
Residence	Rural	14	63.64%	15	68.18%
	Urban	8	36.36%	7	31.82%
Monthly family Income	< Rs.10,000	0	0.00%	0	0.00%
	Rs.10,000-20000	5	22.73%	5	22.73%
	Rs.20,000-30000	11	50.00%	12	54.55%
	> Rs.30,000	6	27.27%	5	22.73%

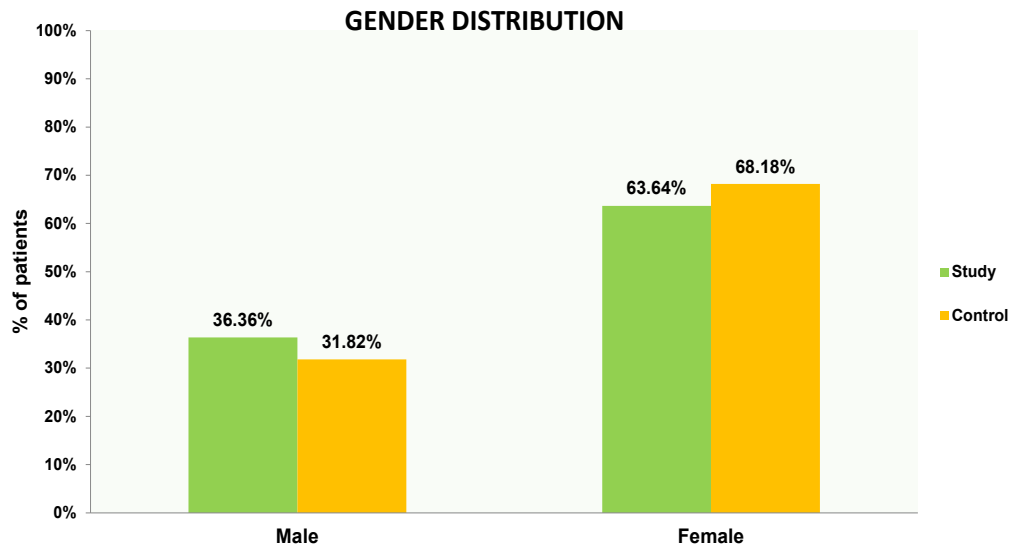


Figure 2.

Table 2. Clinical Information of Cancer Patients

Clinicalvariables		Group			
		Study (n=22)		Control (n=22)	
		n	%	n	%
Period of illness	<1year	13	59.09%	14	63.64%
	1-5 years	9	40.91%	8	36.36%
	>5 years	0	0.00%	0	0.00%
Site of cancer	Cancer of lungs	5	22.73%	4	18.18%
	Cancer of upper GI	7	31.82%	7	31.82%
	Cancer of lower GI	2	9.09%	2	9.09%
	Cancer of breast	4	18.18%	5	22.73%
	Others	4	18.18%	4	18.18%
Mode of treatment	Chemotherapy	20	90.91%	20	90.91%
	Radiotherapy	0	0.00%	0	0.00%
	Both	2	9.09%	2	9.09%
	Immunotherapy	0	0.00%	0	0.00%

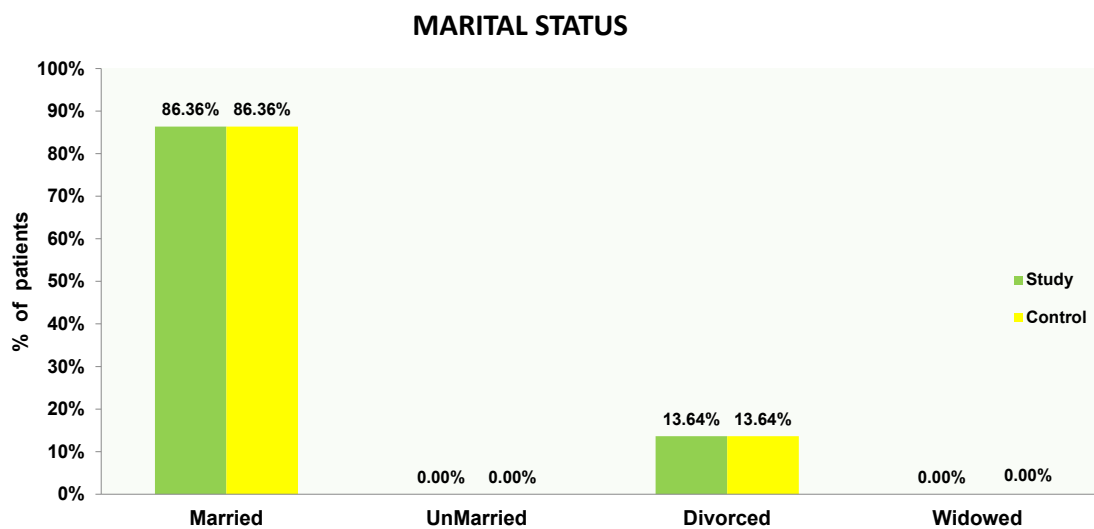


Figure 3.

Table 3. Comparison of Pretest and Post-Test Level of Chronic Behaviour Pain Scale Score (Study Group)

Behaviour score	Pretest		Posttest		Mean difference	Wilcoxon signed rank test
	Mean score	SD	Mean score	SD		
Pain	1.36	0.66	1.14	0.71	0.22	$z=1.89$ $P=0.06$ $DF=21$ (NS)
Anxiety	0.77	0.53	0.64	0.58	0.13	$z=2.04$ $P=0.05^*$ $DF=21$ (S)
Face	1	0.44	0.82	0.5	0.18	$z=2.16$ $P=0.04^*$ $DF=21$ (S)
Activity	0.55	0.51	0.36	0.49	0.19	$z=2.19$ $P=0.04^*$ $DF=21$ (S)
Interaction	0.36	0.49	0.32	0.48	0.04	$z=1.00$ $P=0.32$ $DF=21$ (NS)
Total	4.04	1.59	3.28	1.86	0.76	$z=2.71$ $P=0.01^{**}$ $DF=21$ (S)

Wilcoxon signed rank test; S, significant; NS, non significant

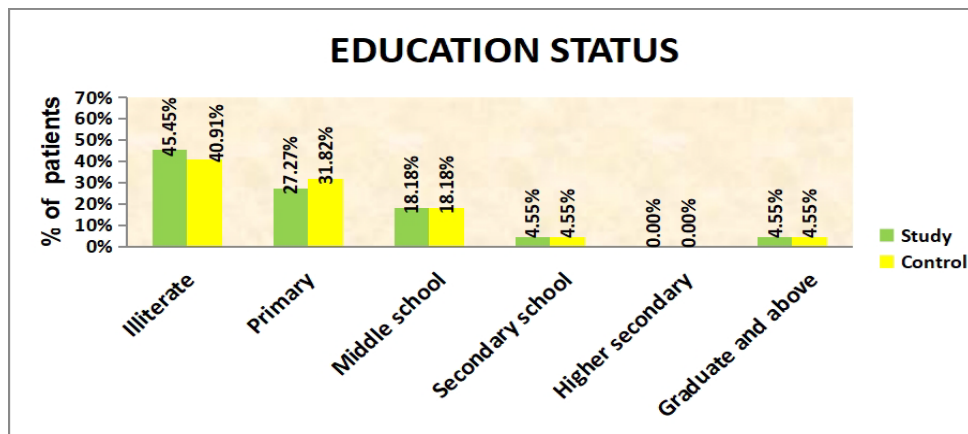


Figure 4.

this scale that is anxiety, face and activity between study and control group of patients.

Pretest level of NRPS mean score showed severe level of pain 63.64% in study group 54.55% in control

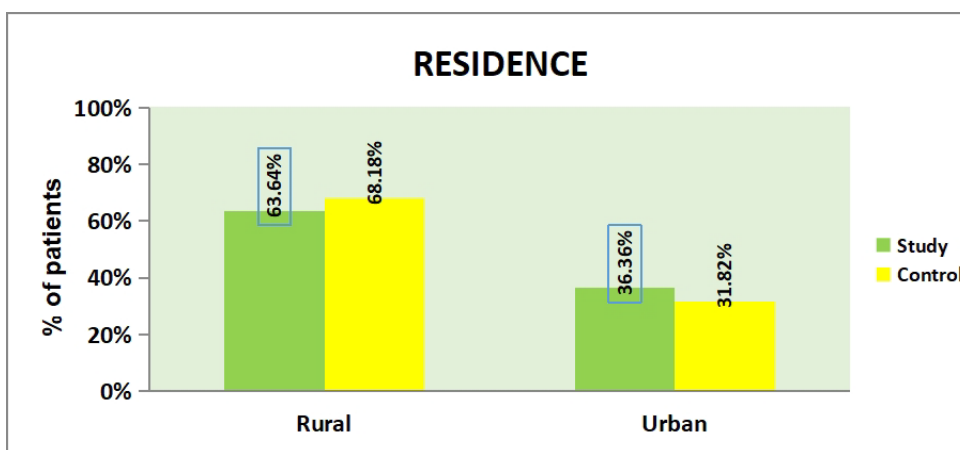


Figure 5.

Table 4. Comparison on Pretest and Posttest Level of Chronic Behaviour Pain Scale (Control Group)

Behaviour score	Pretest		Posttest		Mean difference	Wilcoxon signed rank test
	Mean score	SD	Mean score	SD		
Pain	1.25	0.71	1.15	0.53	0.1	$z=0.68$ $P=0.50$ $DF=21$ (NS)
Anxiety	0.66	0.59	0.54	0.5	0.12	$z=0.33$ $P=0.75$ $DF=21$ (NS)
Face	0.96	0.5	0.82	0.35	0.14	$z=0.37$ $P=0.72$ $DF=21$ (NS)
Activity	0.58	0.49	0.49	0.51	0.09	$z=1.00$ $P=0.31$ $DF=21$ (NS)
Interaction	0.32	0.48	0.27	0.46	0.05	$z=0.37$ $P=0.72$ $DF=21$ (NS)
Overall score	3.77	1.82	3.27	1.2	0.5	$z=1.05$ $P=0.30$ $DF=21$ (NS)

Wilcoxon signed rank test; S, significant; NS, non significant

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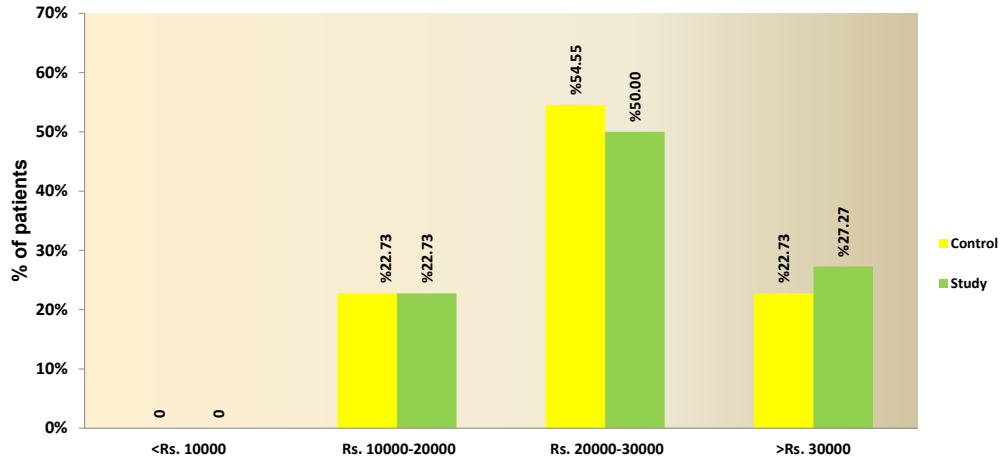


Figure 6.

Table 5. Wilcoxon Signed Rank Test Result on Comparison of Pretest and Post Test Numerical Pain Rating Score

	Pretest		Posttest		Mean difference	Wilcoxon signed rank test
	Mean score	SD	Mean score	SD		
Study	6.86	2.21	3.09	1.88	3.77	Z=3.80 P=0.001***DF=21(S)
Control	6.5	2.19	5.23	1.82	1.27	Z=1.91 P=0.06DF=21(NS)

DF, degree of freedom; S, significant

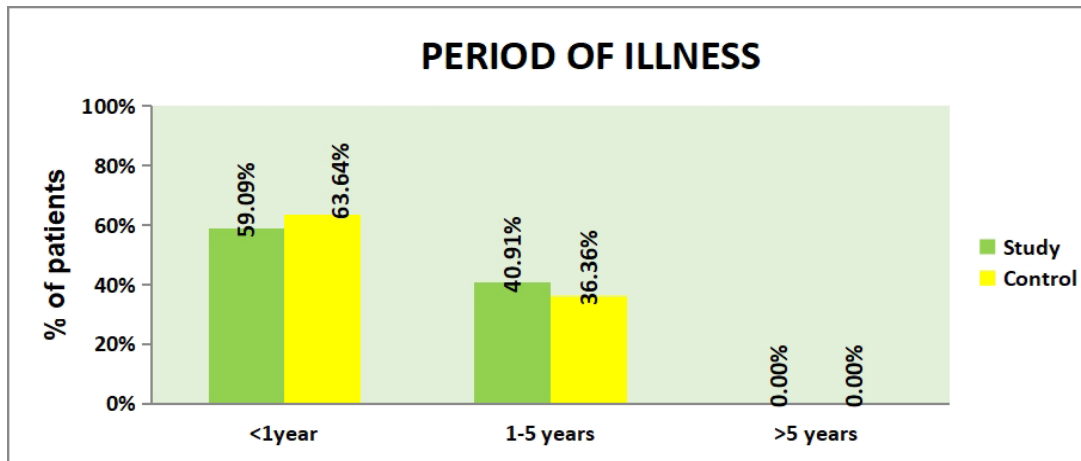


Figure 7.

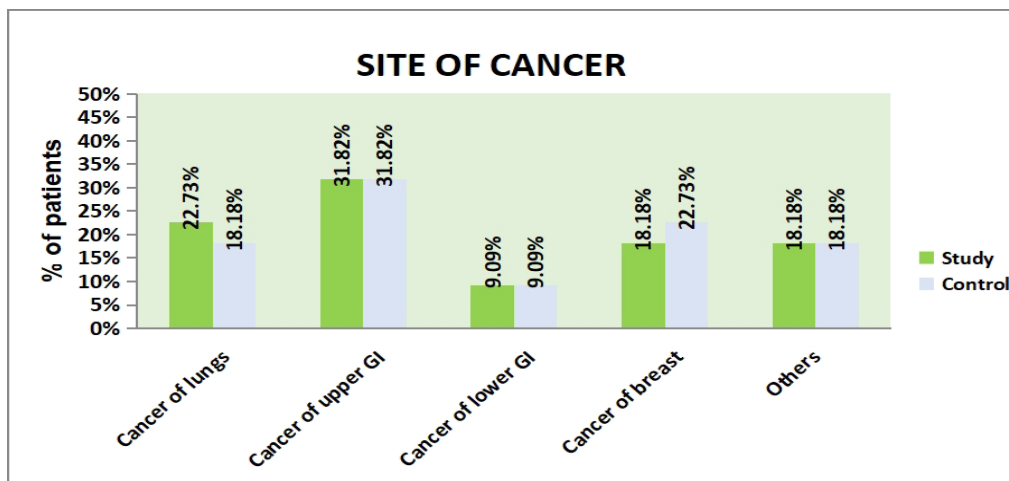


Figure 8.

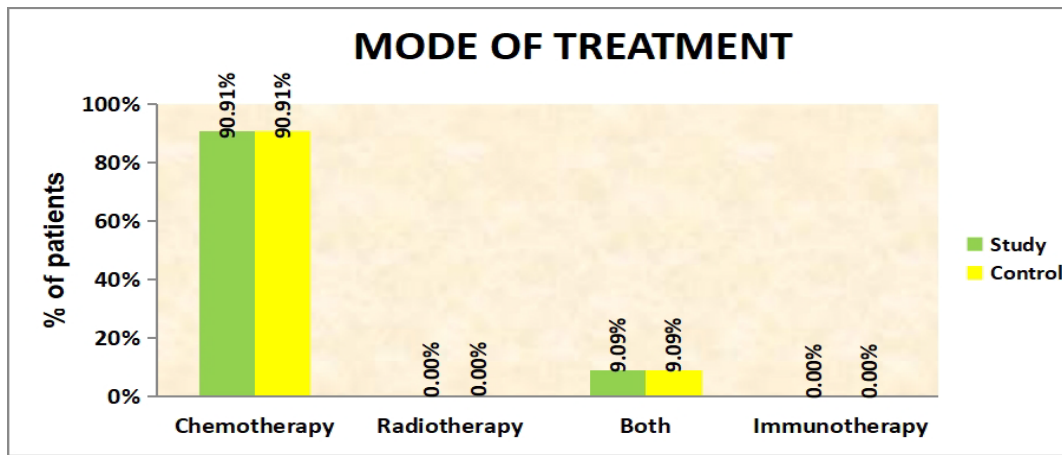


Figure 9.

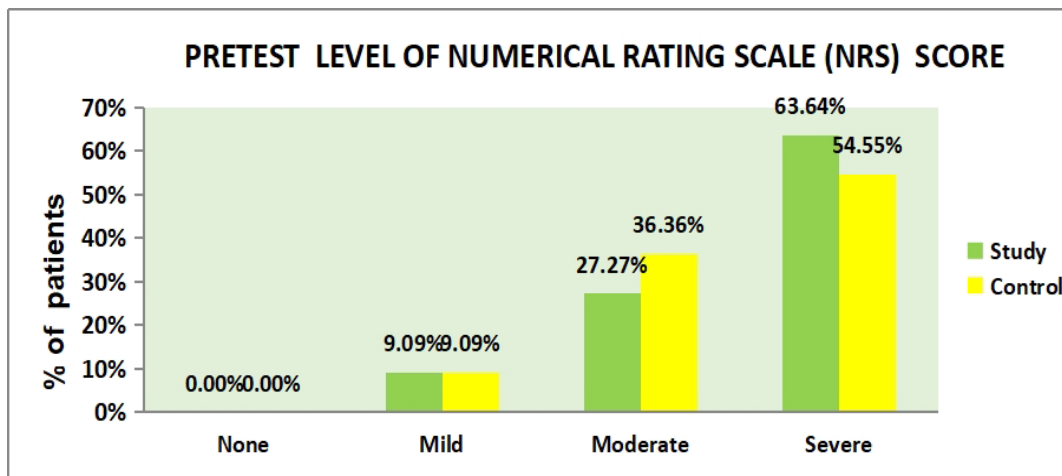


Figure 10.

group and in post test score in study group there was no severe level of pain in both groups. There was significant difference in moderate level of pain score between the groups. In study group there was reduction in pain from

severe to mild so there was significant difference in pain among cancer patients in study group after intervention of cognitive restructuring. In severity of pain this study is supported by study of (Beukenetal et al., 2007) in this

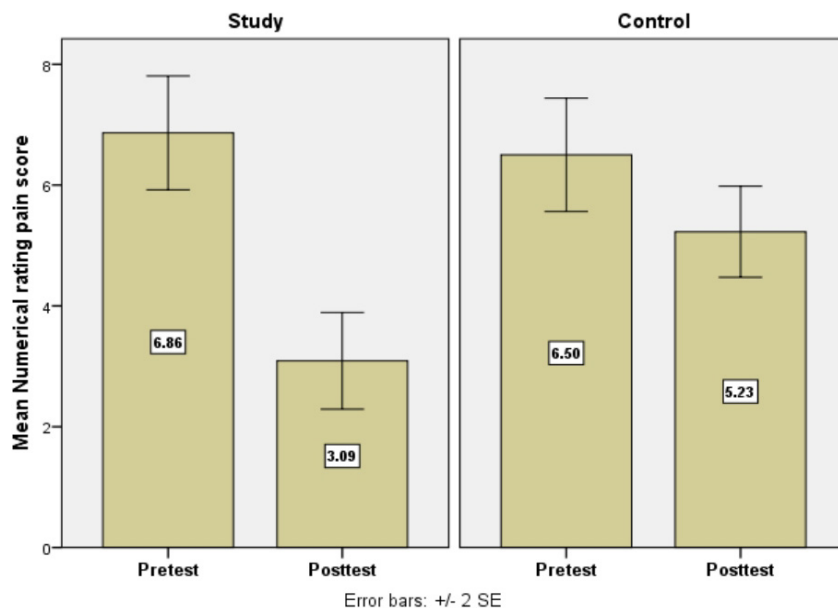


Figure 11.



Table 6. Kruskalwallis H-test /Mann whitney U-test Results on Association between Chronic Behaviour Pain Scale (CBPS) Scores and Demographic Variables (Study Group)

Demographic variables	CBPS Pain reduction score			n	Kruskalwallis H-test /Mann whitney U-test
	Pain reduction=	Pretest –Posttest	SD		
Age	18-35 years	0.67	0.58	3	z=0.91 p=0.63(NS)
	16-55 years	1.08	1.51	12	
	>55 years	0.43	0.79	7	
Gender	Male	1.2	1.27	8	z=2.02 p=0.05*(S)
	Female	0.55	0.97	14	
Marital status	Married	1	1.28	19	z=1.39 p=0.16(NS)
	UnMarried	0	0	0	
	Divorced	0.5	0.3	3	
	Widowed	0	0	0	
Education	Illiterate	1.2	1.32	10	z=3.13 p=0.53(NS)
	Primary	0.33	1.03	6	
	Middle school	1	1.41	4	
	Secondary school	0	0	1	
	Higher secondary	0	0	0	
	Graduate and above	0	0	1	
Residence	Rural	0.86	1.41	14	z=1.27 p=0.20(NS)
	Urban	0.75	0.89	8	
Monthly family Income	< Rs.10,000	0	0	0	z=0.28 p=0.86(NS)
	Rs.10,000-20000	1.2	1.79	5	
	Rs.20,000-30000	0.64	1.12	11	
	> Rs.30,000	0.83	0.98	6	
Period of illness	<1year	0.46	0.77	13	z=2.27 p=0.05*(S)
	1-5 years	1.5	1.21	9	
	>5 years	0	0	0	
Site of cancer	Cancer of lungs	1.4	1.34	5	z=3.23 p=0.36(NS)
	Cancer of upper GI	0.29	0.49	7	
	Cancer of lower GI	0	0	2	
	Cancer of breast	0.5	1.29	4	
	Others	1.75	1.71	4	
Mode of treatment	Chemotherapy	0.8	1.24	20	z=0.30 p=0.75(NS)
	Radiotherapy	0	0	0	
	Both	1	1.41	2	
	Immunotherapy	0	0	0	

FNS, not significant; S, significant;  $p > 0.05$  not significant;  $p \leq 0.05$  significant; on the basis of Kruskalwallis H-test and Mann whitney U-test Above table shows the association between chronic behaviour pain scale (cbps ) reduction score and demographic variables among study group. The scores in Male patients and 1-5 years period of illness is equal to 0.05 hence shows significant association of these two variables only.

study they concluded that as per the severity of pain is concerned more than one-third graded their pain as moderate or severe. Present study in terms of severity of pain is in line with another study conducted by (Ger et al., 1998 ) showed in their result that 65% cancer patients had worst pain and 31% had average pain.

The research findings of this study showed that cognitive therapy reduces pain among cancer patients in experimental group. This finding is commensurate with some of the researchs (Bardideh and Kakabaraee, 2018) which showed that these therapies not only relieves pain but improves self efficacy after easing cancer pain.

In a randomized control trial (Kwekkeboom et al.,

2018) used brief CBT intervention for the pain, in advanced cancer they concluded that in addition to relieving pain this intervention also reduces fatigue, and improves sleep disturbances. Cancer pain exacerbates other problems like anger which makes disease more worsen. In a study of (Najmeh et al., 2020) results showed that there was a significant difference between the intervention and control groups in terms of anger and pain variables ( $p < 0.0001$ ), they concluded use of cognitive-behavioral pain intervention such as conventional cognitive-behavioral pain therapy has been effective to reduce pain.

Cognitive restructuring originates from cognitive evolution it activates the thought pattern by which a

Table 7. Kruskalwallis H-test /Mann whitney U-test Association between Chronic Behaviour Pain Scale (cbps ) Scores and Demographic Variables (Control Group)

Demographic variables	CBPS Pain reduction score			n	Kruskalwallis H-test /Mann whitney U-test
	Pain reduction= Pretest –Posttest	SD			
Age	18-35 years	1.33	2.08	3	z=0.95 p=0.62(NS)
	16-55 years	-0.33	2.27	13	
	>55 years	1.57	1.81	6	
Gender	Male	1.5	1.69	7	z=1.55 p=0.12(NS)
	Female	-0.07	2.34	15	
Marital status	Married	0.53	1.98	19	z=0.10 p=0.92(NS)
	UnMarried	0	0	0	
	Divorced	0.33	4.04	3	
	Widowed	0	0	0	
Education	Illiterate	0.1	2.28	9	z=2.16 p=0.44(NS)
	Primary	0.83	2.32	7	
	Middle school	-0.5	1.29	4	
	Secondary school	4	0	1	
	Higher secondary	0	0	0	
	Graduate and above	3	0	1	
Residence	Rural	1	2.08	15	z=1.20 p=0.22(NS)
	Urban	-0.38	2.33	7	
Monthly family Income	< Rs.10,000	0	0	0	z=2.88 p=0.23(NS)
	Rs.10,000-20000	2	2.12	5	
	Rs.20,000-30000	0.18	1.89	12	
	> Rs.30,000	-0.17	2.64	5	
Period of illness	<1year	0.46	2.22	14	z=0.17 p=0.86(NS)
	1-5 years	0.56	2.35	8	
	>5 years	0	0	0	
Site of cancer	Cancer of lungs	1.6	1.52	4	z=1.60 p=0.66(NS)
	Cancer of upper GI	0.29	2.69	7	
	Cancer of lower GI	2	2.83	2	
	Cancer of breast	0	2.58	5	
	Others	-0.75	1.26	4	
Mode of treatment	Chemotherapy	0.65	2.25	20	z=1.15 p=0.25(NS)
	Radiotherapy	0	0	0	
	Both	-1	1.41	2	
	Immunotherapy	0	0	0	

NS, not significant; s, significant p>0.05 not significant; p≤ 0.05 significant; Above Table shows no significant association between chronic behaviour pain scale (cbps ) score and demographic variables among control group. It was assessed using non parametric Kruskalwallis H-test and Mann whitney U-test.

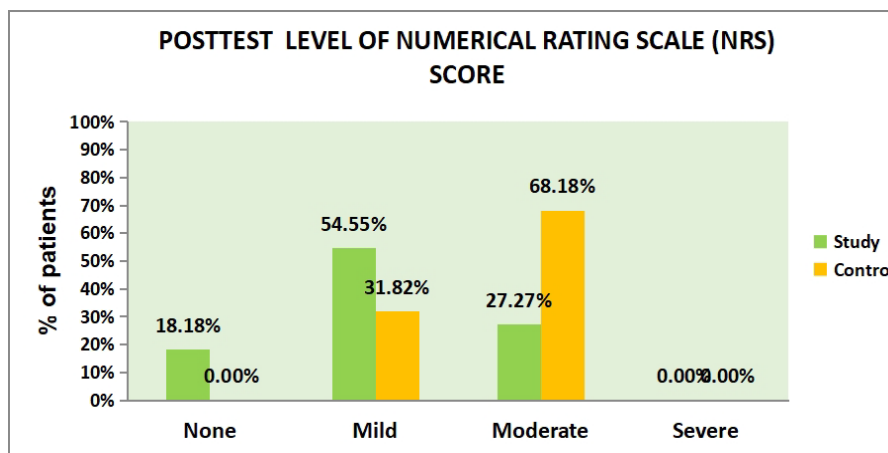


Figure 12.

Table 8. Association between Numerical Rating Scale (NPRS) Scores and Demographic Variables (Study Group)

Demographic variables	NRS Pain reduction score			n	Kruskalwallis H-test /Mann whitney U-test
	Pain reduction= Pretest –Posttest	SD			
Age	18-35 years	1.23	4.04	3	z=5.99 p=0.05*(S)
	16-55 years	3.92	2.02	12	
	>55 years	4.77	2.64	7	
Gender	Male	5	2.2	8	z=1.69 p=0.11(NS)
	Female	3.07	2.76	14	
Marital status	Married	3.79	2.86	19	z=0.09 p=0.92(NS)
	UnMarried	0	0	0	
	Divorced	3.67	1.53	3	
	Widowed	0	0	0	
Education	Illiterate	4.2	2.78	10	z=0.06p=0.99(NS)
	Primary	3.83	1.6	6	
	Middle school	4.25	2.63	4	
	Secondary school	4	0	1	
	Higher secondary	0	0	0	
	Graduate and above	-3	0	1	
Residence	Rural	4.36	1.69	14	z=1.56 p=0.11(NS)
	Urban	2.75	3.81	8	
Monthly family Income	< Rs.10,000	0	0	0	z=0.79 p=0.67(NS)
	Rs.10,000-20000	4.6	1.52	5	
	Rs.20,000-30000	3.27	2.97	11	
	> Rs.30,000	4	3.1	6	
Period of illness	<1year	2.5	2.27	13	z=2.09 p=0.05*(S)
	1-5 years	4.99	2.98	9	
	>5 years	0	0	0	
Site of cancer	Cancer of lungs	5.4	2.79	5	z=3.85 p=0.26(NS)
	Cancer of upper GI	3.43	2.3	7	
	Cancer of lower GI	4.5	0.71	2	
	Cancer of breast	1.25	3.3	4	
	Others	4.5	2.08	4	
Mode of treatment	Chemotherapy	3.85	2.8	20	z=0.71 p=0.49(NS)
	Radiotherapy	0	0	0	
	Both	3	1.41	2	
	Immunotherapy	0	0	0	

NS, not significant; S, significant p>0.05 not significant; p≤ 0.05 significant

person becomes willing to engage himself in self care and social care activities. it helps patient to become more aware of his own thoughts and emotions what ever is perceived in his environment he become aware of weather the thoughts are realistic and understands the relevance of emotions to thoughts an in a more realistic way they become aware the way emotions impact the behaviour and would be able to change his opposite reactions to various emotions. After cognitive restructuring the patient becomes capable to identify his own negative thoughts and unpleasant emotions. Finally by writing or recording his own thoughts the method assist the patient to enhance efficient cognitive skills to handle emotional and problematic situations.

#### Recommendations

CR is a part of CBT and is feasible so to incorporate with medical and nursing management. Nurse is a primary care giver in any hospital or community settings. As a practitioner she is in a good position to provide cognitive restructuring therapies without extensive specialized training. nursing care relies on holistic approach. Nurses are already acquainted with psychological issues of patients and their management as having mental health subject already in their basic courses. They can help cancer patients by providing them CR manuals and handouts or simply guide them to record their negative thoughts on their dairies related to symptoms or disease.

Conclusion as a general conclusion it can be stated that patients suffering from the devastated disease like cancer which is multi symptomatic is related with thought process. the negative impact of cognitive process because

of pain not only affects patient but his social and cultural life. Regular assessment of pain is mandatory for these patients because of pain leads to anxiety depression and hampers quality of sleep. medical management can be combined with cognitive restructuring to meet both physical as well as mental needs of cancer patients. To this end by the use of cognitive reconstruction techniques helps patient to gain mastery to identify automatic negative thoughts about pain. cognitive restructuring reduces catastrophic thinking related to pain thus improves overall quality of life. Therefore CR is effective in maintaining realistic thought pattern and overall control on pain.

## Author Contribution Statement

None.

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## Conflict of interest

No conflict of interest.

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