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**THE EFFICACY OF NON-DRUG THERAPY IN
CANCER PAIN MANAGEMENT**

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ABSTRACT

This study sort to examine the effects of cognitive-behavioural therapy (CBT) on pain intensity (PI), occurrence and control of negative thoughts in response to pain (OCNT) and quality of life (QOL) in breast cancer patients who were experiencing physical pain. A pretest post-test control group quasi-experimental research design was utilised. Ninety patients with breast cancer who were experiencing physical pain were randomly assigned to three groups. Experimental group I received training in relaxation and guided imagery, while experimental group II had training in cognitive restructuring, in addition to relaxation and guided imagery. The control group received no CBT. The effects of CBT were tested on PI, OCNT and QOL, both among the three groups and between the two experimental groups, using Analysis of Variance and T-test, respectively. Subjects who received CBT experienced low PI than the control group. They perceived significantly fewer OCNT, and their health related QOL were better enhanced as compared with those who received no CBT. The subjects in experimental group II who had an additional benefit of cognitive restructuring training experienced fewer OCNT than those in experimental group I. There was no significant difference in PI and QOL between experimental groups I and II. The results indicated that CBT plays a significant role in the control of cancer pain.

INTRODUCTION

Pain is a subjective phenomenon. The International Association for the Study of Pain (IASP, 1979) defined pain as an unpleasant sensory and emotional experience that is associated with actual or potential tissue damage or described in terms of such damage.

Of the variety of medical conditions that give rise to pain, that of cancer is obviously one of the most severe, considering the fact that this illness tends to be life threatening, and there is no specific cure for this condition for now. There is, therefore, need to focus on additional methods for the management of cancer pain, as adjunct to the orthodox physical methods of management. In addition, there is paucity of literature on the use of psychological methods of pain management in cancer from Nigeria in particular, and from Africa in general.

The definition of pain proposed by IASP (1979), implies that pain is no longer simply a nociceptive event (that is activity produced in the nervous system

by potentially, tissue – damaging stimuli), but is recognised and accepted as a psychological one involving nociception, pain perception and pain expression. The interaction of cognitive, emotional, sociological, environmental and nociceptive aspects of cancer pain explains the multi-dimensional nature of cancer pain and suggests a model for multi model intervention. The challenge of untangling and addressing both the physical and psychological issues involved in cancer pain is essential to developing rational and effective management strategies. In advanced industrial societies, psychotherapeutic approaches to the treatment of cancer patients experiencing pain have been developed, tested and found to be effective in the management of cancer pain. In developing countries such as Nigeria, the physical approach to cancer treatment is still the norm. Even when it is realized that psychological treatment is needed, there is little or no scientific information on alternative methods of relieving pain among cancer patients. The psychological approach to the treatment of cancer pain is still poorly understood and therefore rarely applied.

It was in an attempt to find alternative methods of relieving pain among breast cancer patients in Nigeria, that this study sort to find out the efficacy of three psychological techniques, namely progressive muscle relaxation guided imagery and cognitive restructuring, in the management of pain in-patients with breast cancer.

METHOD

Subjects:

Out of the one hundred and ninety-eight (198) breast cancer patients attending both the radiotherapy and the surgical out-patient clinics of UCH, Ibadan, one hundred and ten subjects (110) were eligible for the study. Out of this number, ninety who indicated their willingness were eventually recruited to participate in the study. The table of random sampling was then used to systematically assign them to the three groups: experimental groups I, II and the control. All the subjects were receiving standard medical care and experiencing physical pain.

Instruments

A structured demographic questionnaire (SDQ) designed by this investigator was used to elicit general information on the socio-economic background of the respondents as well as the disease history and their management profile. The specific self-report instruments used for this study were:

- (i) The Brief Pain Inventory (BPI);
- (ii) The Inventory of Negative Thoughts in Response to Pain (INTRP); and
- (i) The Functional Assessment of Cancer Therapy – General (FACT-G Scale).

Data Analysis

The Statistical Package for Social Sciences (SPSS) was used for all statistical procedures and the data were analysed using simple descriptive statistics (means, standard deviation, frequencies and percentages) to describe

the sample. Analysis of variance (ANOVA) using the Duncan procedure for the Multiple Range Test was utilized to test for any difference in the means among the three groups in pain intensity, occurrence and control of negative thoughts in response to pain, the overall quality of life, for the pre and post tests. T-tests were computed to examine if there were any differences in the means for pain intensity, occurrence and control of negative thoughts in response to pain, and the overall quality of life, from the pre to the post tests between the two treatment groups. All hypotheses were tested at 0.05 level of significance.

RESULTS

The descriptive characteristics in relation to the demographic variables and other findings are displayed in Table 1-6.

Table 1: Descriptive Statistics for the Demographic Variable by Groups

	GROUP I		GROUP II		GROUP III		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Age (Years)								
25-30 years	2	6.7	3	10	4	13.3	9	10.0
31-48 years	19	63.3	22	73.3	20	66.7	61	67.8
49-60 years	9	30	5	16.6	6	20	20	22.2
Marital Status								
Never Married	-	-	2	6.7	3	10	5	5.6
Currently Married	22	73.3	25	83.3	24	80	71	78.9
Separated	-	-	-	-	2	6.7	2	2.2
Widowed	8	26.7	3	10	1	3.3	12	13.3
Religion								
Christianity	22	73.3	20	66.7	18	60	60	66.7
Islam	8	26.7	10	33.3	12	40	30	33.3
Educational Status								
Primary Education	1	3.3	-	-	-	-	1	1.1
JSS/SSS Education	9	30	10	33.3	9	30	28	31.1
Technical Education	17	56.7	15	50	16	53.3	48	53.3
University Education	3	10	5	16.6	5	16.6	13	14.4
Occupation								
Petty Trading	3	10	3	10	5	16.6	11	12.2
Professional/Senior Civil Servant	9	30	12	40	8	26.7	29	32.2
Business/Self employed	8	26.7	6	20	4	13.3	18	20.0
Student	-	-	-	-	2	6.7	2	2.2
Artisan	4	13.3	7	23.3	7	23.3	18	20.0
Not Employed	6	20	2	6.7	4	13.3	12	13.3
Income Per Annum								
6,000 - 20,000	6	20	2	6.7	2	6.7	10	11.1
20,000-60,000	16	53.3	19	63.3	15	50	50	55.6
60,000-120,000	3	10	6	20	7	23.3	16	17.8

Source: Field Survey, 1997

Group I: Relaxation/guided imagery group

Group II: Relaxation/guided imagery/cognitive restructuring group

Group III: Control group

Table 2: Means and Standard Deviation of the three groups (Pre-and Post-Training).

Inventory		Experimental Group I			Experimental Group II		Experimental Group III		
			Pre-training Prog	Post Training Prog	Pre- Prog	Post- Prog	Pre- Prog	Post- Prog	
BPI	Pain Intensity	No	2.7	1.7	2.8	1.6	2.9	2.5	
		SD	.50	.79	.43	.71	.30	.67	
FACTG	PWB	No	1.1	3.0	1.1	2.8	1.1	1.6	
		SD	.82	.49	.78	.59	.77	.91	
	F/FWB	No	1.7	2.6	1.7	2.5	1.6	1.6	
		SD	.75	.59	.65	.65	.52	.50	
	RWB	No	2.7	3.5	2.9	3.6	3.2	3.2	
		SD	.81	1.0	.71	.79	.62	.59	
	EWB	No	1.5	3.3	1.4	3.0	1.3	1.2	
		SD	.78	.44	.77	.62	1.0	.95	
	FWB	No	.70	2.2	.72	2.1	.54	.64	
		SD	.62	.84	.65	.74	.54	.52	
Overall			7.70	14.60	7.82	14.00	7.74	8.24	
INTRP	NSS	No	3.0	4.2	2.9	4.4	2.6	2.4	
		SD	.80	.42	.71	.38	.84	.71	
	NSOT	No	3.3	4.4	3.2	4.5	3.2	3.0	
		SD	.95	.37	.93	.37	1.0	.98	
	SBT	No	3.1	4.5	3.3	4.6	3.5	3.3	
		SD	1.0	.46	.99	.37	1.2	1.0	
	OBT	NO	3.4	4.4	3.3	4.5	4.1	3.6	
		SD	1.5	.79	1.5	.72	.3	1.6	
	Overall Means			12.80	17.50	12.70	16.00	13.60	12.50
	Frequency of negative thoughts	NO	2.2	3.5	2.0	3.6	1.9	1.9	
SD		.97	.77	.82	.71	.95	.90		
Degree of Control	NO	1.7	4.2	1.6	4.6	.93	.90		
	SD	1.1	.85	1.1	.85	1.0	.95		

Source: Field Survey, 1997

Group I: Relaxation/guided imagery group

Group II: Relaxation/guided imagery/cognitive restructuring group

Group III: Control group

TABLE 3; Results of ANOVA Comparing the Performance of the Three groups on the Pain Variables

Pain variables	Pre-Test		Post-Test	
	F Ratio	Probability	F Ratio	Probability
Pain intensity	.8090	.4486	15.1737	.0001
Pain relief	1.7271	.1838	18.1800	.0001
Interference with general activity	.1125	.8938	49.3418	.0001
Interference with mood	.6038	.5490	137.7297	.0001
Interference with normal work	.4918	.6132	42.0764	.0001
Interference with walking ability	.5122	.6010	17.5646	.0001
Interference with relationship with people	1.9736	1.1451	119.2547	.0001
Interference with sleep	1.8927	.1568	89.8967	.0001
Interference with enjoying of life	4.6634	.0119	121.4550	.0001

Source: Computed
 Group I: Relaxation/guided imagery group.
 Group II: Relaxation/guided imagery/cognitive restructuring group
 Group III: Control group.

Table 4: Results of ANOVA Comparing the three Groups on the INTRP Indices

	Pre-Test		Post-Test	
	F Ratio	Probability	F Ratio	Probability
Negative Self-Statement (INSS)	.7867	.4585	127.3838	.0000
Negative Social Thoughts (INSOT)	.2304	.7947	52.9539	.0000
Self-blame Thoughts (ISBT)	.9763	.3808	31.7477	.0000
Others-blame Thoughts (IOBT)	.30594	.0520	3.3187	.0409
	0.57		53.85	

Sources: Computed
 Group I: Relaxation/guided imagery group.
 Group II: Relaxation/guided imagery/cognitive restructuring group
 Group III: Control Group.

Table 5: Results of ANOVA Comparing the Three groups on the FACT-G Indices

	Pre-Test		Post-Test	
	F Ratio	Probability	F Ratio	Probability
Physical Well-being (IPWB)	.0562	.09453	38.8353	.0000
Social/Family Well-being (IS/FWB)	.5644	.5708	27.1452	.0000
Relationship with Doctor (IRWD)	3.8438	.0251	1.5398	.2202
Emotional Well-being (IEWB)	.3895	.6786	81.2501	.0000
Functional Well-being (IFWB)	.7990	.4531	49.3023	.0000

Source: Computed
 Group I: Relaxation/guided imagery group,
 Group II: Relaxation/guided imagery/cognitive restructuring group
 Group III: Control group.

Table 6: T-Test Results Comparing the Performance of the 2 Experimental Groups on BPI, FACT-G and INTRP Scales

Scales	Pre-Test		T-Test	X ¹	X ²	T-Test
	X ¹	X ²				
BPI Variables	2.7	2.8	.43	1.7	1.6	.59
Pain Intensity						
Pain Relief	6.2	6.1	.52	9.0	8.4	.39
Interference with activity	2.3	2.3	.97	.73	.86	.33
Interference with mood	2.5	2.5	.99	.63	.83	.32
Interference with normal work	2.3	2.2	.90	.80	.90	.13
Interference with walking ability	2.1	1.8	.81	.60	.77	.43
Interference with relationship	2.3	2.3	.83	.67	.80	.23
Interference with sleep	2.4	2.4	1.00	.60	.80	.28
Interference with enjoyment of life	2.5	2.5	.77	.97	1.03	.23
FACT-G Variables	1.1	1.1	.80	3.0	2.8	.33
IPWB						
IS/FWB	1.7	1.7	.46	2.6	2.5	.57
RWB	2.7	2.9	.49	3.5	3.6	.19
EWB	1.5	1.4	.91	3.3	3.0	.07
FWB	7.0	7.2	.78	2.2	2.1	.48
INTRP Variables	3.0	3.0	.53	4.2	4.4	.007
NSS						
NSOT	3.3	3.2	.89	4.4	4.5	.001
SBT	3.1	3.3	.85	4.5	4.6	.001
UBT	3.4	3.3	.91	4.4	4.9	.001

Source Computed

X¹ = mean score for group 1
 X² = mean score for group 2

DISCUSSION

The research question for this study was find out the efficacy of three psychological techniques; progressive muscle relaxation, guided imagery and cognitive restructuring in the management of pains in-patients with breast cancer. The most important finding of this study was that the combination of CBT did have an effect on the ability of the subjects living with cancer to decrease their pain intensity. Scores for the ability to decrease pain scales were significantly greater for each of the treatment groups. These findings indicated that the combinations of relaxation and guided imagery, relaxation, guided imagery and cognitive restructuring skills did contribute to these cancer patients' ability to decrease pain. These findings supported McCaffery (1979) and McCaffery and Beebe's (1989) contention that a combination of interventions in addition to pain medication is necessary for effective pain management.

The techniques used in this study have proven to be efficacious in improving patients' health related QOL and potentially helping patients to live longer. This is in line with the view of Spiegel, Bloom and Yalom (1989), Cleeland (1989); Andersen (1992); Farzanegan (1990); Fishman (1992); Mckee (1989); and Syrjala et al., (1995). These findings demonstrated that CBT can be effective in assisting patients to tolerate pain more successfully, and they are therefore relevant in cancer care as adjuvant psychological therapy (ART), aimed at enhancing the efficacy of the physical form of treatment.

As evident from this study, the QOL of subjects who benefited from the CBT were better enhanced despite the incurability of their disease. This confirmed the belief that QOL is more than absence of dysfunction or distress, that it includes a sense of well-being and life satisfaction (Campbell, Converse, Rodgers, 1976). This is important for health care providers working in busy in and out patient settings to note when their time with patients is limited and they must intervene effectively to provide pain relief. In line with Fishman's (1992) observation, CBT can be an effective non-medical treatment for the alleviation of pain-related suffering in patients with advanced disease and in enhancing the overall QOL of such patients.

Improved QOL in the experimental groups as shown in this study supports Calman's model (1984a and b) that one method to improve QOL is to provide patient's with accurate information concerning the benefits, risks, alternatives and outcomes of treatment. It was no surprise then that the subjects in the experimental groups were able to make informed decision about their health. As a result, they are more likely to have expectations that match reality or their actual experiences.

These results were consistent with the meta-analysis of Fernandex and Turk (1989), who found guided imagery to be the most powerful psychological strategy for reducing persistent pain. Results were also consistent with the meta-analysis of Meyer and Mark (1995) who concluded that psychological interventions have positive effects on emotional adjustments, functional adjustment and treatment disease-related symptoms in adult cancer patients. Our results replicated the findings of Turner and Jensen (1993) where all three-treatment groups (relaxation with imagery, cognitive training, and cognitive training relaxation with imagery) reported similar reductions in pain compared to untreated patients.

The cognitive restructuring technique was effective in decreasing the occurrence of OBTs (Paranoid ideation) among the subjects who received this

intervention (Table 3 and 10 for the ANOVA and t-test results). These results are consistent with the views of Turk, Meichenbaum and Genest (1983), who opined that comprehensive approaches to pain management emphasize the importance of modifying maladaptive negative thought patterns in pain patients. The patients who benefited from this technique were able to identify their automatic dysfunctional thoughts and underlying beliefs that allow for a more rational response, thus allowing for restructuring or modification of thought processes or cognition.

Finally, the subjects reported that they found all of the intervention to be beneficial for managing their pain. It has been proven from the findings of this study that Nigerian population of breast cancer patients can also benefit from psychological intervention in the management of their pain, like other cancer patients in the Western World. This, however, has implication for clinical practice in Nigeria. Based on our findings which supported findings from many foreign studies, the techniques of progressive muscle relaxation, guided imagery, and cognitive restructuring (thought monitoring, forming adaptive cognition, logical reasoning, positive affirmation) could be offered to cancer patients interested in learning more about them. This is valuable for nurses, doctors, and psychologists working in busy in-patient and outpatient oncology settings in Nigeria. Clinicians should provide cancer patients in pain with a variety of strategies, in addition to pain medication, to assist them to cope with their pain.

When cancer patients are experiencing severe pain, it may be difficult for them to focus on progressive muscle relaxation or guided imagery exercises, but they may benefit from deep breathing exercises, distraction techniques, utilising positive affirmations or monitoring and control of negative thoughts. However, when they are experiencing milder to moderate levels of pain, they could benefit from progressive muscle relaxation or guided imagery exercises.

Improving the overall QOL for cancer patients experiencing pain is a goal for all clinicians. The interventions of progressive muscle relaxation, guided imagery and cognitive restructuring supply health care providers with a broader selection of potentially effective pain treatment modalities which may be utilised along with pain medication for effective pain management for cancer patients in Nigeria.

The implication of this study's upshot to policy makers in our health industry therefore is that, more psychologists should be involved in the comprehensive management of cancer patients in Nigeria, using the multi-modal approach which views the patient from the holistic point.

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