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Emotional Distress and Cognitive Emotion Dysregulation as Psychological Factors in Cancer Related Fatigue among Nigerian Cancer Patients.

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Abstract

Cancer related fatigue (CRF) is the most clinical and common symptoms that cause significant distress to cancer patients. Although, previous studies have shown that a number physiological factors are associated with CRF, less is known about psychosocial factors associate with fatigue. The purpose of this study is to investigate some important psychological factors associated with CRF such as emotional distress and cognitive emotion dysregulation. One hundred and twenty four (35 male and 89 females) cancer outpatients aged 18 to 77years with a mean age of 54.28 (SD: 14.21) drawn from a University Teaching Hospital South-East Nigeria participated in the study. The participants responded to the validated measures of the Multidimensional Fatigue Inventory, Hospital Anxiety and Depression Scale and Cognitive Emotion Regulation Questionnaire. Statistics was conducted using SPSS version 25. Data was analysed with hierarchical multiple regression. The results showed that anxiety significantly predicted all the five dimensions of CRF: general fatigue, physical fatigue reduced activity, mental fatigue and reduced motivation. The result also shows that cognitive emotion dysregulation (particularly, catastrophizing) significantly predicted physical fatigue, mental fatigue and reduced motivation. The finding in this study suggests the need for appropriate intervention aimed at reducing emotional distress particularly, anxiety which could result in higher level of CRF. Cancer patient could benefit from adaptive cognitive coping strategies to cope with CRF.

Keywords: Cancer-related fatigue, emotional distress, anxiety, depression, cognitive emotion dysregulation

INTRODUCTION

Cancer is a major public health concern and burden globally (Arbyn et al., 2011) and ranked the second leading cause of death in both developed and developing countries (WHO, 2018). In 2012, 14.1million new cases and 8.2 million deaths from cancer were reported worldwide (Ferlay et al., 2015). Researchers (Ferlay et al., 2015) reported that this burden is expected to increase tremendously to over 75million prevalent cases and 17 million cancer deaths by 2030. In sub-Saharan Africa, evidence suggests that most new cases of cancers are currently recorded in Africa and in low-and middle-income countries, increasing from15% in 1970, to 56% in 2008, and projected to reach about 70% by 2030 (Arbyn et al., 2011). In Nigeria particularly, WHO (2018) reported that 116,000 new cases of cancer are reported each year and that 41,000 cancer death was recorded in Nigeria in 2018.

Generally, cancer patients may experience physical, psychological, and social consequences that reduce their overall and health related quality of life even after completion of treatment. Such consequences includes lymphedema (impairment of the lymphatic system) (Ferrandina et al., 2012), sexual dysfunction (Ferrandina et al., 2012) bladder and bowel dysfunction (Park et al., 2007) and cancer-related fatigue (Prue, et al., 2010; Sekse et al., 2015). Among all the complications resulting from cancer and its treatment, Cancer-related fatigue (CRF) is the most commonly reported symptom (Weber & O'Brien 2017). CRF is a serious, distressing, disabling and complex clinical problem that greatly affect patient's quality of life (Weber O'Brien, 2017; Berger et al., 2015*;* Mustian et al., 2017*).*

The National Comprehensive Cancer Network (NCCN, 2014) defines CRF as a distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning (Berger et al., 2015). CRF is characterized

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by diminished energy and an increased need to rest, disproportionate to any recent change in activity level, and accompanied by variety of other characteristics, such as generalized weakness, diminished mental concentration, insomnia or hypersomnia, and emotional reactivity (Cella et al., 1998). Cancer patients can experience fatigue either before diagnosis, signalling to the individual the possibility of the disease or following cancer diagnosis as well as during or after treatment such as surgery, radiotherapy or chemotherapy (Smets et al., 1996; Hofman et al., 2007). Studies have generally reported that between 40-100% of cancer patients experience fatigue (De Waele & Van Belle, 2010; Yeh, Lau, Su, Tsai, Tu, & Lai, 2011). Hofman et al. (2007) contend that approximately 40% of patients reported fatigue at diagnosis and almost all patients experience fatigue at some point during cancer treatment; for patients being treated with chemotherapy or radiotherapy, the rates of CRF are 80% and 90% respectively. Other researchers showed that estimates for the incidence of CRF during treatment vary from 37% to 78% for lung cancer patients (Hickok et al., 1996), from 28% to 91% for those with breast cancer (Gaston-Johansson et al., 1999), and as low as 15% for patients with prostate cancer (Monga et al., 1999; Stone et al., 2000). Post treatment Cancer-related fatigue have a significant impact on the patient's physical function (Gerber et al., 2011), cognitive function (Menning et al., 2015), psychological well-being (Sekse et al., 2015), reduce overall health-related quality of life (Scott et al., 2011) and possibly influence survival rates (Paiva & Paiva, 2013).

According to Mustian, et al. (2017), the causes of CRF is complex and multidimensional and involves a vast array of potentially contributing factors. Tumour-related factors are those factors that are related to cancer itself. They include and are not limited to the following: anaemia, cytokine dysregulation, electrolyte abnormalities (potassium,

calcium, magnesium or sodium imbalance), dehydration, cachexia (wasting syndrome-loss of weight, weakness etc), pulmonary embolism (blockage of an artery in the lungs), renal failure, liver failure, hypoxia, adrenal insufficiency, neurological deficit, pain, and dyspnoea. Despite the complexity of CRF and is associated physiological factors, fatigue's psychosocial dimensions are still not well understood (Barello et al., 2013). Bower (2014) noted that there is considerable variability in the experience of CRF that is not explained by disease- or treatment-related characteristics, suggesting that a variety of factors may play an important role in the development and persistence of this symptom. Indeed, longitudinal studies have begun to identify genetic, biological, psychosocial, and behavioral risk factors for cancer-related fatigue. To this effect, this study aims at examining important psychological factors in CRF such as anxiety, depression, and cognitive emotion dysregulation.

Evidence has shown that anxiety and depression are the most significant emotional distresses experienced by cancer patients. CRF has been associated with a number of emotional distresses (Bower & Lamkin 2013) such as depression in cancer populations (Jacobsen et al., 2008). Studies (Obama et al., 2015) shown that both depression and anxiety were significantly associated with CRF. In another study, Ho et al. (2015) found that higher perceived stress, higher anxiety, and higher pain severity were associated with greater severity of CRF. Similarly, in a study assessing relationship between fatigue and psychological symptoms (depression, anxiety and stress) among 70 patients with gastrointestinal cancer, Atieh, and Hamidreza (2016) found a significant relationship between depression, stress, and anxiety and fatigue. In a study assessing the relationship between CRF and depression in 60 cancer patients currently undergoing chemotherapy treatments, Guess (2011) found that HADS depression scores had a statistically significant correlation with Multidimensional Fatigue Symptom Inventory-Short Form

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total scores (r=.676, p=.000). For the subscale MFSI-SF subscale scores, there was a statistically significant correlation between all the subscale scores except the mental and physical fatigue scale scores.

Few study have examined the association between cognitive emotion regulation (CER) and CRF. CER is the cognitive aspect of emotion regulation. It refers to an individual's cognitive coping strategies associated with regulating one's emotion. Abdi, Babapour, and Fathi (2011) defines CER strategies as cognitive responses to emotion-eliciting events that consciously or unconsciously attempt to modify the magnitude and/or type of individuals' emotional experience or the event itself. A number of studies (Garnefski, Kraaij, & van Etten, 2005; Yi, Zhu, & Auerbach, 2012) have demonstrated that the CER strategies used by individuals when they experience stressful life events affect the initial emotional response as well as its subsequent progression. Two broad categories of CER had been identified by researchers (Garnfelski, et al., 2001) namely adaptive and maladaptive. Adaptive CER strategies include acceptance, positive refocusing, positive reappraisal and refocusing on planning. They are crucial to a person's well-being and successful functioning and organization of adaptive behaviors following negative life events. Maladaptive strategies including self-blame, rumination, catastrophizing and other's blame, can result in maladaptive behaviors and are not conducive to a person's rehabilitation. As emphasized earlier, the diagnosis of cancer can be a catastrophic and threatening life event for many people. Thus, in patients that use adaptive CER strategies, the occurrence of negative emotions and adverse mood symptoms may be theoretically be minimized or alleviated (Wang et al., 2014). On the contrary, individuals who employ maladaptive cognitive emotion regulation may have their negative emotions heightened.

In this study, the emphases are on the less adaptive strategies and are termed cognitive emotion dysregulation.

Garnefski, Koopman and Kraaij, (2008) maintained that certain CER strategies that a person uses to deal with stressful life experiences may be an important factor for psychological distress and individual's quality of life. For instance, Garnefski et al. (2008) found that rumination was associated with the reporting of internalizing problems, as well as lower health-related QOL. In a study investigating the effect of CER on quality of life in women with breast cancer, Li et al., (2015) found that compared with control subjects, breast cancer patients more frequent use of catastrophizing and was the strongest negative predictor of lower quality of life in patients. In another study aimed at investigating the role of psychological and emotional factors in CRF syndrome in advanced non-small-cell lung cancer patients, Kieszkowska-Grudny et al. (2010) found that higher catastrophizing and lack of acceptance of the disease as well increasing levels of anxiety and depression were predictors of CRF occurrence.

Theoretical Framework

Among all the theories that tries to explain factors that account for CRF among cancer patients is the cognitive behavioural model of CRF (Donovan, Small, Andrykowski, Munster & Jacobsen, 2007). Cognitive behavioural model of CRF posit that there are some cognitive and behavioural aspect of the cancer patients which can precipitate as well as sustain CRF. This theory was based on the conceptual model developed by Wessely, Hotopf, and Sharpe (1998) who proposed a conceptual model that can be used to explain the persistence of fatigue in individuals with chronic medical illness. The important feature of the Wessely et al. (1998)'s model is based on the distinction drawn between factors that precipitate initial fatigue as well as those that perpetuate fatigue later in the course of the illness. In keeping with this conceptual model of Wessely et al. (1998),

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Donovan et al. (2007) developed a cognitive–behavioral model that identifies catastrophizing as a cognitive factor and lack of physical activity as a behavioral factor that may perpetuate fatigue following treatment for breast cancer. Several studies have provided preliminary support for cognitive behavioral theory of CRF. First a number of studies have shown that breast cancer patients who engage in more catastrophizing about fatigue experience greater fatigue and poorer quality of life (Jacobsen, Andrykowski, & Thors, 2004; Jacobsen, Azzarello, & Hann, 1999). Second, there is evidence that among breast cancer patients, greater physical activity during treatment is related to lower levels of fatigue (Berger & Higginbotham, 2000; Mock, Atkinson & Barsevick, 2001). In line with this study catastrophizing which is an aspect of cognitive emotion dysregulation can also result in emotional distress (anxiety and depression) which in turn may increase the rate of CRF of the cancer patients. Similarly, the emotional theories of CRF posits that psychological or emotional distress experienced by breast cancer patients can induce fatigue among them. Several studies (Obama et al., 2015; Bowera & Lamkin 2013; Andrykowski et al., 2005; Jacobsen, Donovan & Weitzner, 2003) have supported this position. For instance CRF is strongly correlated with depression in cancer populations (Jacobsen et al., 2003) and history of depression predicted post-treatment fatigue in a longitudinal study of breast cancer survivors (Andrykowski et al., 2005).

In line with previous evidence, this study aims at investigating the contribution of psychological factors such as anxiety, depression and cognitive emotion dysregulation in CRF among Nigerian cancer patients.

We therefore hypothesize the following:

- Anxiety will significantly predict CRF

- Depression will significantly predict CRF
- Cognitive emotion dysregulations (self-blame, rumination, catastrophizing and blaming others) will significantly predict CRF

Method

Participants

The study comprised one hundred and twenty four (35 male and 89 females) cancer outpatients aged 18 to 77years with a mean age of 54.28 (SD: 14.21). Ninety nine (79.8%) were married while 24 (20.2%) were single. The full descriptions of the demographic characteristics of the participants are shown in Table 1 below:

Table i. Demographics and characteristics of the study population

Variables	Frequency	Percentage
Sample size	124	
Age	18 to 77	
Gender		
Male	35	28.2%
Female	89	71.8%
Marital Status		
Married	99	79.8%
Single	24	20.2%
Education		
Primary	27	21.8
Secondary	42	33.9
Tertiary	55	44.4
Cancer Diagnosis		
Breast cancer	76	61.3%
Lung Cancer	9	7.3%
Nose	4	3.2%
Liver	7	5.6%
Bone	3	2.4%
Neck	2	1.6%
Non-Hodgkin lymphoma	8	6.5%
Prostate cancer	15	12.1%

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Stage of Cancer		
Stage I	40	32.3%
Stage II	48	38.3%
Stage III	27	21.8%
Stage IV	9	7.3%
Duration of Cancer		
Less than 1 year	32	25.5%
1-2years	54	43.5%
3-4years	19	15.3%
5years and above	19	15.3%
Previous Treatment		
Chemotherapy	96	77.4%
Radiotherapy	18	14.5%
Surgery	4	3.2%
Drug	6	4.8%
Current Treatment	50	40.3%
Chemotherapy	68	54.8%
Radiotherapy	6	4.8%
Drug		

Instruments

The Multidimensional Fatigue Inventory (Smets et al., 1995)

The Multidimensional Fatigue Inventory measures CRF in five dimensions: general fatigue, physical fatigue, reduced activity, mental fatigue and reduced motivation. General fatigue includes general statements concerning a person's functioning. Physical fatigue refers to the physical sensation related to the feeling of tiredness. Reduced activity indicates individual‘s decrease in one’s daily activities. Reduced motivation measures a person’s lack of motivation to start any activity. While mental fatigue assesses some cognitive symptoms such as having difficulties concentrating. Every dimension contains four items with two items formulated in a positive (e.g. I feel fit) and two formulated in a negative direction (e.g. I feel fatigued). Items are given on a 7-point Likert-type scale and scores ranges from 7–28 for each subscales while the overall score ranges from 7 to 140 with higher scores indicating a greater sense of fatigue. The developers reported a Cronbach's alpha coefficients for each of the subscales: general fatigue- .93, physical fatigue- .90, reduced activities- .89, mental fatigue- .82 and reduced motivation- .83. For this present study a cronbach’s alpha of .90 was obtained for the entire scale. The cronbach’s alpha for the five subscales are as follows: General fatigue .76, physical fatigue .73, reduced activity .73, mental fatigue .70 and reduced motivation .67.

Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983).

The HADS is a 14 item self-report questionnaire developed to assess anxiety and depression for use in non-psychiatric hospital settings and in hospital outpatient departments (Zigmond and Snaith, 1983). The measure comprises 14 items divided equally between the two mood states (anxiety- 7 items and depression- 7 items), with 4-

point rating scales for each item. This scale is useful in assessing the presence or absence of depression and its severity in the patient diagnosed with cancer as it excludes somatic symptoms (such as fatigue, insomnia), which could be attributed to cancer and its treatment (Walker et al., 2007) thus enabling the provider to make a more accurate and confident diagnosis. For the degrees of abnormality Stern (2014) contend that for anxiety and depression scores of 8–10 shows Mild anxiety or depression, 11–14 shows Moderate anxiety or depression while scores between 15–21 indicate Severe anxiety or depression. For this study, the higher the score the higher the anxiety or depression. The HADS has good reliability with Cronbach's alpha coefficients of r = .93 for anxiety and .90 for depression subscales (Moorey et al., 1991). For this study the cronbach's alpha is .77 and .74 for anxiety and depression respectively.

Cognitive Emotion Regulatory Questionnaires (Garnfelski, Kraaji, & Spinhoven, 2001)

Cognitive Emotion Regulation Questionnaire is a 36 item scale that assesses the cognitive aspects of emotion regulation and individual differences in cognitive aspect of coping. Garnfelski, et al., (2001) divided the cognitive coping strategies into two groups: adaptive and maladaptive. The adaptive strategies are acceptance, positive refocusing, refocus on planning, positive reappraisal, and putting into perspective, while the maladaptive strategies are self-blame, rumination, catastrophizing and blaming others. In this study the maladaptive strategies are used as a measure of cognitive emotion dysregulation. The subscales have four items each and are scored on a 5 likert scale ranging from 1 almost never to 5 almost always. Individual subscale scores are obtained by summing up the

scores belonging to particular subscale or CER strategy (from 4 to 20). Higher scores reflect greater use of the strategy. Internal consistencies as reported by the developers range from .68 to .81. For the present study, the cronbach's alpha scales are as follows: self-blame .73, catastrophizing .55, other's blame .85 and rumination .52.

Procedure

The researcher with the approval from the Ethics committee UNTH, the researcher approached the cancer outpatients undergoing oncology treatment at the UNTH- Ituku Ozalla. As they wait to see their doctors, the researcher addressed them generally about the study as well as the aim of the study. The researcher with the help of one research assistants administered the questionnaires individually to patients who volunteered to participate in the study. Literate patients who could understand the items of the scales were allowed to fill the questionnaires by themselves while patients not literate were assisted by the researcher and research assistants by explaining each of the items to the in Native Igbo language. One hundred and fifty questionnaires comprising of section A: bio-data and section B: Items of the scales were distributed to them. However, twenty six questionnaires were discarded for incomplete filling while one hundred and twenty four (124- 82.67% return rate) completed questionnaires were used for data analysis.

Design and Statistics

The design of this study is cross-sectional research design. Data was managed using SPSS version 25. Data was analysed with hierarchical multiple regression.

Results.

Pearson correlation was first performed to test the correlation among the study variables (Table 1). Second, in order to test the predictive values of the independent variables

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(anxiety, depression, and CER) on the dependent variable (CRF), a hierarchical regression analysis was conducted. In step 1 of the hierarchical multiple regression, we controlled for the effects of demographic variables (gender, age, education, duration of cancer). In step 2 and 3, anxiety, depression and cognitive emotion dysregulation were regressed on CRF (Table 2).

Table 1: Descriptives Statistics and Correlation among the Study Variables

SN	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	**Age**	48.95	14.21	-												
2	**Gender**	-	-	.05	-											
3	**Anxiety**	10.97	3.97	-.17	.02	-										
4	**Depression**	12.19	2.94	-.01	.10	.32**	-									
5	**Self- blame**	8.00	3.56	-.04	-.03	-.00	.06	-								
6	**Rumination**	13.50	3.07	-.05	-.07	.38**	.29**	-.07	-							
7	**Catastrophizing**	12.41	3.67	.03	-.04	.47**	.20*	.04	.29**	-						
8	**Others Blame**	8.72	4.17	-.14	-.04	.18*	.00	.14	.07	.28**	-					
9	**General Fatigue**	17.53	6.17	.13	.05	.38**	-.10	.03	.21*	.35**	.15	-				
10	**Physical Fatigue**	17.81	5.62	-.04	.05	.39**	-.04	.01	.07	.34**	.16	.67**	-			
11	**Reduced Activity**	18.45	5.60	.04	.08	.37**	.01	-.03	.15	.24**	.05	.61**	.68**	-		
12	**Mental Fatigue**	15.96	5.62	.05	-.06	.35**	.03	.02	.19*	.41**	.22**	.56**	.52**	.40**	-	
13	**Reduced Motivation**	15.36	5.07	.16	.01	.41**	.10	-.02	.29**	.39**	-.04	.53**	.52**	.44**	.50**	-

Note: *p < .05, **p< .01; SD: Standard Deviation

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The result I table 1 showed that among the demographic variables, only education had significant negative relationship with physical fatigue ($r = -.21$, $p < .05$) and reduced motivation ($r = -.26$, $p < .01$). This indicate the higher the education the lower the physical fatigue and reduced motivation respectively.

For the main predictor, table 1 showed that anxiety had positive relationship with all the five dimensions of CRF: general fatigue ($r = .38$, $p < .01$), physical fatigue ($r= .39$, $p < .01$), reduced activity ($r = .37$, $p < .01$), mental fatigue ($r = .35$, $p < .01$) and reduced motivation ($r = .41$, $p < .01$). This indicate that the higher the anxiety the higher the CRF. Similarly, among the cognitive emotion dysregulation, rumination had significant positive relationship with general fatigue ($r = .21$, $p < .05$) mental fatigue ($r = .19$, $p < .05$) and reduced motivation ($r = .29$, $p < .01$) indicating the higher the use of rumination coping strategies, the higher the general fatigue, mental fatigue and reduced motivation. The result also showed that catastrophising had significant positive relationship with all the five dimensions of CRF: general fatigue ($r = .35$, $p < .01$), physical fatigue ($r= .34$, $p < .01$), reduced activity ($r = .24$, $p < .01$), mental fatigue ($r = .41$, $p < .01$) and reduced motivation ($r = .39$, $p < .01$). This indicate that the higher the use of catastrophizing the higher the CRF. Other blame had significant positive relationship with only mental fatigue ($r = .22$, $p < .01$) dimension of CRF. However, depression and cancer related self-efficacy had no significant relationship with any of the five dimension of CRF.

Table 2: Hierarchical Multiple Linear Regression with Five Dimensions of CRF

	GF	S1	S2	S3	PF	S1	S2	S3	RA	S1	S2	S3	MF	S1	S2	S3	RM	S1	S2	S3
Variables																				
Age		.13	.20*	.19*		-.04	.04	.02		.04	.11	.09		.05	.12	.10		.16	.24**	.19
Gender		.04	.05	.07		-.06	.06	.07		.08	.08	.09		-.06	-.06	-.03		-.00	-.01	-.01
Dep			-.16	-.19*			-.19*	-.19*			-.14	-.15			-.09	-.12			-.05	-.09
Anxiety			.47***	.34***			.46***	.38***			.44***	.39***			.41***	.24*			.47***	.34***
Self-bl				.04				.00				-.01				.01				-.01
Rum				.10				-.07				.02				.07				.12
Catastrop				.18				.21*				.09				.26***				.24*
Other's B				.07				.04				-.03				.12				-.14
Adj R^2		.00	.18***	.20		-.01	.16***	.18		-.01	.15***	.12		-.01	.12***	.18*		.01	.20***	.25*
ΔR^2		.02	.19	.05		.00	.19	.04		.01	.17	.01		.01	.14	.08		.03	.20	.02
ΔF		1.11	14.47	1.77		.26	13.75	1.54		.05	11.95	.25		.33	10.06	3.13		1.54	15.38	2.81

NB: ***p < .001, **p<.01. *p <.05. GF: General fatigue, PF: Physical fatigue, RA: Reduced activity, MF: Mental fatigue, RM: Reduced motivation. S1: Step 1, S2: Step 2, S3: Step 3., Dep= Depression, Self=bl= self-blame, catastrop: Catastrophizing.

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The results in table 2 showed that among the demographic variables added I step, only education significantly and negatively predicting physical fatigue (β = -.22, p < .05) reduced motivation (β = -.24, p < .05). This showed that the higher the education the lower the physical fatigue and reduced motivation.

For the main predictors, when depression added in step 2 did not predict any of the five dimensions of CRF. Anxiety was added in step 3 significantly predicted all the five dimensions of CRF: general fatigue (β = .46, p < .001), physical fatigue (β = .44, p < .001), reduced activity (β = .42, p < .001), mental fatigue (β = .40, p < .001) and reduced motivation (β = .44, p < .001). This indicate that the higher the anxiety the higher the CRF.

When the four dimensions of cognitive emotion dysregulation was added in step 4, only catastrophizing significantly predicted physical fatigue (β = .20, p < .05), mental fatigue (β = .26, p < .01) and reduced motivation (β = .22, p < .05). This showed the higher a cancer patient use catastrophizing as coping strategies, the higher the CRF.

Discussion

This study investigated emotional distress (anxiety and depression) and cognitive emotion dysregulation as important factors in CRF. We found that anxiety predicted all the five dimensions of CRF: general fatigue, physical fatigue, reduced activity, mental fatigue and reduced motivation. The results indicated that as anxiety increases, CRF increases. This is in line with previous studies (Obama et al., 2015; Ho et al., 2015; Atieh & Hamidreza, 2016) which found that cancer patients with anxiety exhibited higher level of CRF. This can be understood because anxiety as subjective feelings of fear, worry and despondency with its varied physiological reactions (such as increased heart rate,

hypertension, nauseas, breathing difficulties, and sleep disturbances) could impact negatively on cancer patients and invariably increase the patient's fatigue level.

The study also found that among the four cognitive emotion dysregulation included in the study, only catastrophizing significantly predicted physical fatigue, mental fatigue and reduced motivation dimensions of CRF. This reveals the higher the cancer patients engage in catastrophizing as coping strategies, the higher the CRF. This finding is in consistent with other researches (Kieszkowska-Grudny et al., 2010) which found that higher catastrophizing predicted CRF occurrence. It will be noted that catastrophizing in form of emphasizing the negativity of any negative events could exacerbate that experience more and cause greater emotional distress. This could invariably increase the CRF.

The study has important implication for clinical practice. Since the study found that cancer related fatigue is one of the disabling experience in cancer patients, there is need for proper assessment of fatigue among cancer patients as recommended by National Comprehensive Cancer Network (NCCN, 2014). In addition the association of anxiety with CRF connotes that pathological fear could exacerbate CRF. Thus patients could be benefit from a proper distress assessment so that appropriate psychological intervention will be administered. In additions, cancer patient could also benefit from adaptive cognitive coping strategies to cope with cancer as maladaptive coping strategies had been linked to increased CRF. Finally, studies have shown that incorporating CBT into regularly scheduled medical visits can be a practical way to integrate it into patient care (Keefe, Abernathy, & Campbell, 2005). This will greatly reduce cognitive emotion dysregulation (eg. Catastrophising) and anxiety commonly found among cancer patients.

Conclusion

The study investigated the role of anxiety, depression and cognitive emotion dysregulation in CRF. We found that anxiety predicted all the five dimensions of CRF: general fatigue, physical fatigue, reduced activity, mental fatigue and reduced motivation. Cognitive emotion dysregulation (catastrophizing) significantly predicted CRF. We recommend fatigue and distress screening among cancer patients for proper psychological intervention. Psychological interventions such as CBT should be employed in oncology setting particularly in Nigeria where such intervention is grossly deficient. This will go a long way to reduce the high rate of CRF, emotional distress and cognitive emotion dysregulation among cancer patients.

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