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Psychological Factors Associated With Mental Adjustment to Breast Cancer: A Hospital-Based Observational Study

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Abstract

This study examined mental adjustment to breast cancer, that is, coping strategies. Participants were 130 women undergoing breast cancer treatment in two medical settings in Accra, Ghana. They completed questionnaires assessing mental adjustment to cancer, psychological distress (anxiety and depression), negative religious coping, body change stress, and illness perceptions. Data were analyzed using hierarchical linear regression. Results showed that patients who reported higher depression were more likely to engage in anxious preoccupation (worry and thinking about breast cancer). Higher depression was associated with a greater sense of helplessness/hopelessness. Moreover, patients higher in negative religious coping were more likely to experience a greater sense of helplessness/hopelessness. Illness perception facets of personal control and emotional response were positively associated with fatalism

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and anxious preoccupation, respectively. The results suggest that screening breast cancer patients for psychological morbidity could help identify patients with increased risks for maladaptive adjustment to the disease.

Keywords
breast cancer, distress, religious coping, illness perceptions, psychological adjustment

Introduction

The increasing breast cancer burden poses a considerable threat to the life expectancy of women worldwide (Cao et al., 2017). As of the end of 2020, 685,000 women lost their lives to breast cancer and 7.8 million women were living with the disease globally (WHO, 2021). In Ghana, breast cancer is the most invasive disease among women and girls, accounting for 31.8% of all cancer diagnoses in 2020 (Bray et al., 2022; Sung et al., 2021). The median survival from diagnosis to death among Ghanaian breast cancer patients was found to be 3.8 years, suggesting that breast cancer is an important contributor to disability-adjusted life years in Ghanaian women (Thomas et al., 2017). Despite this, breast cancer research efforts are not commensurate with the rising incidence and mortality rates of this health problem.

To improve breast cancer outcomes and survival in Ghana, optimal psychological adjustment to the disease is critical. Yet, poor psychological adjustment to breast cancer diagnosis and treatment in medical settings in Ghana remains an important problem (Iddrisu et al., 2020; Kudjawu & Agyeman-Yeboah, 2021). A related problem is that some healthcare practitioners seem to focus exclusively on the physical manifestations of the disease with little attention to psychological morbidity (Akuoko et al., 2022). Correspondingly, adjustment to breast cancer has become an important health priority for health professionals in Ghana. A systematic review of 41 longitudinal studies concluded that identifying psychological factors that reduce optimal adjustment at the point of breast cancer diagnosis could provide opportunities for patient referral for psychological assessment (Brandão et al., 2017).

A systematic review of 17 studies found the prevalence of depressive symptoms among breast cancer patients ranging from 9.4% to 66.1% with anxiety ranging from 17.9% to 33.3% (Maass et al., 2015). Another systematic review and meta-analysis of 36 studies, involving 16,298 breast cancer patients found the prevalence of anxiety to be 41.9% (Hashemi et al., 2020). From this research, we hypothesized that:

> H1: Psychological distress (anxiety and depression) is positively related to mental adjustment to cancer.

The harsh impact of breast cancer treatment on the body has been found to give rise to adverse mental health outcomes (Davis et al., 2020; Rodrigues et al., 2022). A meta-

analysis involving 12 studies has shown that women experience significant body stigma following breast reconstruction and breast-conserving surgery (Fang et al., 2013). Thus, there is growing evidence that body change stress affects adjustment to breast cancer (Ettridge et al., 2022; Kagee et al., 2018). From this research, we hypothesized that:

H2: Body change stress is positively related to mental adjustment to cancer.

There is evidence that religious coping or conviction can influence breast cancer patients' lives and health care (Aslan et al., 2021). Whereas positive religious coping has been found to improve health-related quality of life, negative religious coping has been shown to contribute to poor mental health outcomes (Aslan et al., 2021). Negative religious coping is "characterized by signs of spiritual tension, conflict and struggle with God and others, as manifested by negative reappraisals of God's powers (e.g., feeling abandoned or punished by God), demonic reappraisals (i.e., feeling the devil is involved in the stressor), spiritual questioning and doubting, and interpersonal religious discontent" (Pargament et al., 2011, p. 58). A longitudinal study found that negative religious coping affected breast cancer patients' ability to adjust well to the disease (Gall & Bilodeau, 2020). From this research, we hypothesized that:

H3: Negative religious coping is positively related to mental adjustment to cancer.

Illness perceptions reflect cognitive and emotional representations that patients make about an illness to understand and cope with it (Broadbent et al., 2015; Cannon et al., 2022). Evidence from a systematic review and meta-analysis demonstrated that illness perceptions of cancer patients influence coping strategies and illness outcomes (Richardson et al., 2017; Smit et al., 2019). The cognitive factors comprise *consequences* (beliefs regarding the impact of the illness on the patient), *timeline* (beliefs about the chronicity of the illness), *personal control* (beliefs about the uncontrollability of the illness), *treatment control* (beliefs about incurability of the illness through treatment and medication), and *identity* (beliefs about the illness' symptoms as the patient experiences them). The emotional factors comprise *concern* (fears and worries the patient experiences about the illness) and *emotions* (the negative emotional arousal the illness brings about in the patient). In addition, there is illness comprehensibility which comprises *understanding* (beliefs about the manifestations and treatment of the illness). Negative illness perceptions among breast cancer patients have been reported to be significantly associated with increased psychological distress and poor quality of life (Figueiras et al., 2022; Hopman & Rijken, 2015). From this research, we hypothesized that:

H4: Cognitive illness perceptions are negatively related to mental adjustment to cancer.

H5: Emotional illness perceptions are positively related to mental adjustment to cancer.
H6: Illness comprehensibility is negatively related to mental adjustment to cancer.

The hypotheses of this study are illustrated in Figure 1. The present study aimed to understand the psychological factors associated with mental adjustment to breast cancer diagnosis and treatment in a sample of Ghanaian patients receiving medical care.

Method

Research Design

This study used a cross-sectional survey design.

Participants and Procedure

Women living with breast cancer ($N = 130$) provided data for the current analysis (see Table 1). They were recruited at the Sweden Ghana Medical Centre (SGMC) and the Tema General Hospital in the Greater Accra Region of Ghana for this study. Both hospitals were chosen because they provide oncology treatment and care services. A total of 135 women were initially sampled, from the breast cancer registers at the two hospitals and were contacted via phone calls to invite them to the study. The invitation was done with the help of the assigned hospital staff. Two potential participants could not be reached via phone, whereas three participants declined participation for personal reasons. The aims of the study were explained to them and those who expressed interest in the study were recruited. Participants who expressed interest in the study were scheduled, at their convenience, to meet at the hospitals for data collection to begin during their hospital appointment days. During data collection, participants were assured of the confidentiality of their participation and the anonymity of their responses. The inclusion criteria were (a) a female diagnosed with breast cancer and receiving treatment, (b) a stable health condition following diagnosis and treatment, (c) not being diagnosed with co-morbidity, and (d) being 18 years or older. Participants completed a paper-and-pencil survey questionnaire in the English Language. It took approximately 15–25 min to complete a questionnaire.

Patient Consent and Confidentiality

All of the participants provided written informed consent, including consent for publication. De-identifying techniques were embedded in the survey questionnaire to guarantee patient confidentiality and anonymity of responses. Ethics approval was obtained from the Ethics Committee for the Humanities (Reference Number: ECH104/16-17) of the University of Ghana. All of the ethics procedures performed

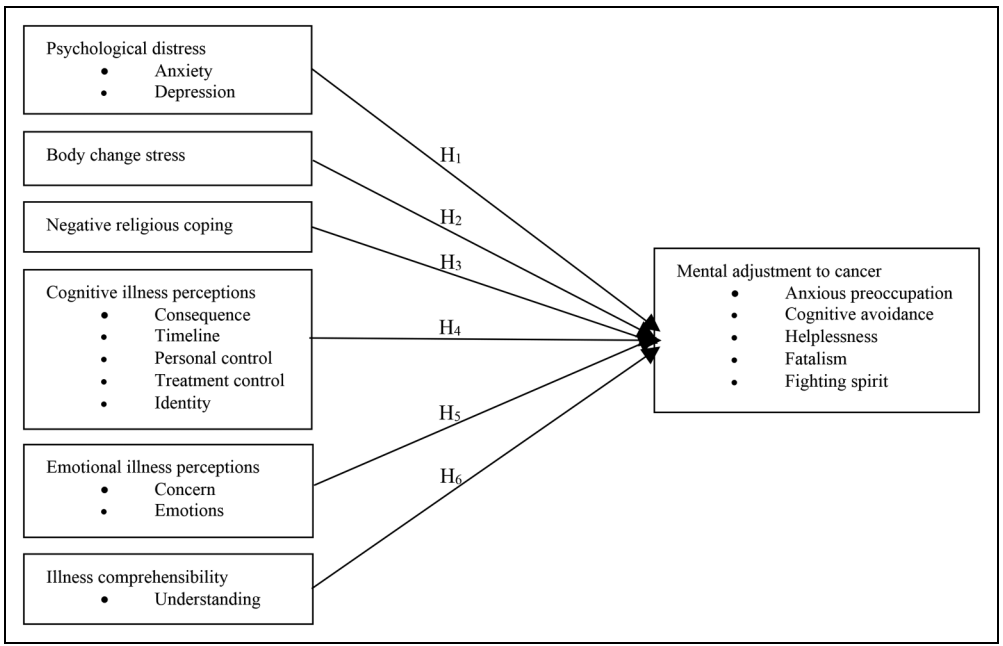

Figure 1. Hypothesized conceptual model with directional paths carrying H1–H6 depicting the hypotheses.

Table 1. Sociodemographic Characteristics of Study Participants ($N = 130$).

Variable	Frequency	Percentage	Mean	*SD*
Months since being diagnosed with breast cancer			30.02	29.91
Age range (years)				
18–35	23	17.7		
36–45	37	28.5		
46–55	33	25.4		
>56	36	27.7		
Gender				
Female	130	100.0		
Marital status				
Single	24	18.5		
Married	86	66.2		
Widowed	8	6.2		
Separated	1	0.8		
Divorced	11	8.5		
Educational level				
Tertiary	49	37.7		
Secondary	12	9.2		
Basic	69	53.1		
Religion				
Christianity	122	93.8		
Muslim	8	6.2		

in this study followed the ethical standards of the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Measures

Demographic Information. Participants completed a questionnaire battery including a biographical questionnaire on age, religion, marital status, educational level, and months lived with breast cancer.

Psychological Distress. Psychological distress was assessed with the Hopkins Symptoms Checklist (HSCL-25; Bantjes et al., 2020; Tay et al., 2017). The HSCL-25 assesses symptoms of anxiety and depression. The scale consists of 25 items divided into two dimensions; (a) anxiety and (b) depression. The anxiety dimension has 10 items that assess anxiety symptoms and the depression dimension has 15 items that assess depression symptoms. Each item on the scale is measured on a four-point Likert scale ranging from 1 (*not at all*) to 4 (*extremely*). Internal consistency reliability for

anxiety ($\alpha = .85$) and depression ($\alpha = .90$) was reported in previous research in Tanzania (Kaaya et al., 2002). Total scores were created separately for each domain by summing multi-item scores. Higher scores indicate higher depression and anxiety (psychological distress). In this study, Cronbach's alpha coefficients for the domains were anxiety ($\alpha = .794$) and depression ($\alpha = .741$).

Body Change Stress. Body change stress was assessed by The Breast-Impact of Treatment Scale (BITS; Frierson et al., 2006). The BITS is a 13-item scale developed to measure psychological stress associated with negative and distressing thoughts, emotions, and behavior that result from breast cancer surgery and related body disfigurement. Items on the scale are rated on a four-point Likert scale from 0 (*not at all*) to 4 (*often*). Frierson et al. (2006) reported a Cronbach alpha of ($\alpha = .91$) for the scale. The total score was calculated by summing all multi-item scores. Higher scores indicate greater distressing thoughts and emotions about body changes. In this study, Cronbach's alpha coefficient for the BITS was ($\alpha = .928$).

Negative Religious Coping. Negative religious coping was assessed by the Negative Religious Coping (NRC) dimension of the 14-item Brief RCOPE scale (Pargament et al., 2011; Rezaeipandari et al., 2021). Negative religious coping captures a sense of disconnectedness from a transcendent force and assesses spiritual tension, feelings of abandonment by a Supreme Being, and spiritual questioning of why one is the target of the stressor (Pargament et al., 2011). The NRC domain is made up of 7 items and is rated on a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*a great deal*). The domain was found to be internally consistent in previous research ($\alpha = .91$; Rezaeipandari et al., 2021). The NRC domain was also found to be reliable in a sample of women with fertility problems in Ghana ($\alpha = .71$; Oti-Boadi & Asante, 2017). The total score for the subscale was calculated by summing multi-item scores. Higher scores indicate greater disconnectedness from a transcendent force and a lack of meaning regarding one's distressing health condition. In this study, Cronbach's alpha coefficient for the NRC domain was ($\alpha = .881$).

Illness Perceptions. Illness perceptions (cognitive, emotional, and comprehensibility) were assessed by the 9-item Brief Illness Perception Questionnaire (B-IPQ; Broadbent, Petrie, et al., 2006; Broadbent, Wilkes, et al., 2015). Each item on the B-IPQ represents a domain. The B-IPQ measures patients' perception of illness consequences, timeline, personal control, treatment control, and identity (i.e., cognitive illness perceptions); concern and emotional response (emotional illness perceptions); and understanding and causes (i.e., illness comprehensibility). Eight of the items are quantitative and are rated on an 11-point Likert scale (range 0–10), using various responses (Broadbent et al., 2006). There is one qualitative item (open-ended) that asks the patients to list the most important causes of their illness. Only the eight quantitative domains were used in the present study. Consistent with extant literature (see Chan & Mak, 2016; Nie et al., 2018), total scores computed for each item were treated

as domain scores in the analysis. Higher scores reflect a more threatening view of the illness. The B-IPQ has demonstrated good construct validity in HIV-patient samples in Ghana (Anakwa et al., 2021).

Following previous research (see Haines et al., 2019; Nie et al., 2018), we did not compute internal consistency reliability for this scale because the items are rated on different response scales and are often treated as subscales (one-item scales) in research.

Mental Adjustment to Cancer. Mental adjustment to cancer was assessed by the Mini-Mental Adjustment to Cancer Scale (Mini-MAC; Pereira & Santos, 2014). The 29-item mini-MAC was administered to assess five cancer-specific coping strategies (domains); helplessness-hopelessness (8 items), anxious preoccupation (8 items), fighting spirit (4 items), cognitive avoidance (4 items), and fatalism (5 items). Each item is rated on a 4-point Likert scale ranging from 1 (*definitely does not apply to me*) to 4 (*definitely applies to me*). The mini-MAC has demonstrated reliability with alpha coefficients ranging from ($\alpha = .62$ to .88) in previous work (Boyes et al., 2011). Previous work in Ghana found alpha coefficients for the domains to range from ($\alpha = .66$ to .93; Kugbey et al., 2019). Total scores were calculated separately for each domain by summing the multi-item scores. Higher scores indicate a poorer adjustment to breast cancer diagnosis and treatment. In this study, Cronbach's alpha coefficients for the domains ranged from ($\alpha = .528$, mean-interitem correlation, $r = .305$) to ($\alpha = .844$).

Statistical Analysis

All of the analyses were conducted in SPSS (v25). Normality assumptions for a parametric test as well as missing data were examined. Scale items that violated the normality assumptions (skewness and kurtosis $> \pm 2$) were deleted from further analysis (see Cain et al., 2017; Kline, 2016). Exploratory factor analysis (EFA) was conducted on all multi-items to assess construct validity and dimensionality. The factorability of the data was determined using the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy $> .60$ and Bartlett's test of Sphericity at $p < .05$. The principal components extraction method was used together with Direct Oblimin rotation. Minimum factor loading was determined using the ($r > .40$) loading criterion (Field, 2018). Cronbach's alpha coefficient was calculated for each scale. Total scale scores were then created for the regression analysis. Bivariate correlation was requested to assess the relationship between the main variables (see Table 2).

To test the hypothesized association between the predictor variables and the outcome variable, five separate hierarchical linear regression analyses (Keith, 2019; Pallant, 2020) were performed (see Table 3) in three steps. This is because each of the five domains of the outcome variable (i.e., mental adjustment) was treated as a separate outcome variable. In Step 1, the demographic variables (age, religion, marital status, and education level) were entered as covariates and controlled for. In Step 2,

Table 2. Descriptive Statistics and Intercorrelations among the Study Variables ($N = 130$).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Preoccupation	—																
2. Avoidance	−.239**	—															
3. Hopelessness	.341***	−.058	—														
4. Fatalism	−.076	.347***	−.114	—													
5. Fighting spirit	−.132	.362***	−.350***	.171	—												
6. Anxiety	.261**	−.412***	.256**	−.075	−.319***	—											
7. Depression	.426***	−.221**	.361***	−.053	−.201*	.643***	—										
8. Body change	.223**	−.074	.113	.068	.016	.255**	.289***	—									
9. Religious coping	.243**	−.078	.309***	−.192*	−.060	.073	.184*	.273**	—								
10. Consequence	.112	−.069	.184*	−.005	−.105	.366***	.405***	.217**	.034	—							
11. Timeline	.103	−.084	.028	.171	−.138	.146	.176*	.191*	.131	.291***	—						
12. Personal control	−.177*	.170	−.182*	.280***	.160	−.186*	−.148	.006	−.150	−.066	.043	—					
13. Treatment control	.053	.194*	−.151	.006	.276***	−.206*	−.081	.161	.035	−.209*	−.083	.097	—				
14. Identity	−.019	−.126	.144	−.112	−.225**	.060	−.061	−.037	.029	.105	−.091	−.006	−.404***	—			
15. Concern	.020	.204*	.024	.074	.217**	−.037	.072	.081	.030	−.074	.093	.129	.371***	−.300***	—		
16. Understanding	−.011	.083	−.229**	.059	.141	−.157	−.036	.112	.072	.019	.154	.081	.227**	−.131	.098	—	
17. Emotional response	.352***	−.232**	.291***	−.108	−.193*	.482***	.479***	.207*	.257**	.586***	.185*	−.294**	−.183*	.083	−.054	−.051	—
M	7.22	13.75	5.46	7.58	10.93	9.68	10.84	19.50	6.59	6.39	5.35	7.82	8.52	1.72	9.12	6.92	5.73
SD	3.39	2.66	2.56	0.94	1.39	3.66	3.71	7.29	3.09	2.49	2.60	2.16	1.76	2.11	0.97	2.45	2.63

Note. M = mean, SD = standard deviation. *$p < .05$, **$p < .01$, ***$p < .001$ (2-tail).

Table 3. Regression of Mental Adjustment to Cancer on Anxiety, Depression, Body Change Stress, Negative Religious Coping, and Illness Perceptions ($N = 130$).

	Mental adjustment to cancer									
	Anxious preoccupation		Cognitive avoidance		Helplessness		Fatalism		Fighting spirit	
Variable	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 1		.051		.062		.012		.063		.058
Age	−.05		.07		−.09		−.02		.05	
Religion	−.04		−.09		.05		−.09		−.19*	
Education	−.20		.21*		.01		.16		−.11	
Marital status	.02		−.10		.01		−.21*		.01	
R^2	.051		.062		.012		.063		.058	
Adjusted R^2	.020		.032		−.020		.033		.028	
Step 2		.200***		.152***		.195***		.047		.115**
Anxiety	−.01		−.47***		.07		−.09		−.36	
Depression	.41***		.13		.31**		.03		.00	
Body change stress	.08		.02		−.07		.13		.12	
Religious coping	.14		−0.5		.28**		−.21*		−.09	
R^2	.251		.214				.110		.174	
Adjusted R^2	.201		.161		.153		.050		.118	
Step 3		.058		.058	.207	.082		.086		.106*
Consequence	−.21		.20		.05		−.01		.08	
Timeline	.06		−.09		−.04		.15		−.14	
Personal control	−.05		.04		−.09		.22**		.09	
Treatment control	.12		.01		−.08		−.09		.09	
Identity	.05		−.06		.12		−.10		−.14	
Concern	−.02		.16		.09		−.02		.17	

(continued)

Table 3. (continued)

	Mental adjustment to cancer									
	Anxious preoccupation		Cognitive avoidance		Helplessness		Fatalism		Fighting spirit	
Variable	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Emotions	.25*		−.13		.02		−.02		−.04	
Understanding	−.08		.02		−.19*		.02		−.02	
R^2	.309		.271		.288		.195		.280	
Adjusted R^2	.210		.166		.186		.079		.176	

Note. Age (1 = 18–35 yrs, 2 = 36–45 yrs, 3 = 46–55 yrs, 4 = >56 yrs); religion (1 = Christianity, 2 = Islam); education (1 = tertiary, 2 = secondary, 3 = basic); marital status (1 = single, 2 = married, 3 = widowed, 4 = separated, 5 = divorced). *$p < .05$, **$p < .01$, ***$p < .001$.

psychological distress (anxiety and depression), body change stress, and negative religious coping were entered into the regression equation to evaluate their predictive utility. In Step 3, all of the illness perception domains were entered into the equation. The statistical significance of model relationships was determined using $p < .05$ or better.

Results

Table 1 reports the characteristics of the 130 participants. The majority of the participants (28.5%) were between the age range of 36 to 45 years. Almost two-thirds (66.2%) reported being married. About 38% of the participants (37.7%) reported receiving tertiary education. The average duration since being diagnosed with breast cancer was 30.02 months ($SD = 29.91$). Most participants (93.8%) indicated that they were Christians. Table 2 shows the intercorrelations between the main study variables and their descriptive statistics. As can be seen in Table 2, most of the variables are moderately related.

Table 3 presents the results of the hierarchical regression analysis. As shown in Table 3, participant educational level was positively associated with cognitive avoidance ($\beta = .21$, $p < .05$), marital status was negatively associated with fatalism ($\beta = -.21$, $p < .05$), and religion was negatively associated with fighting spirit ($\beta = -.19$, $p < .05$). In addition, anxiety was negatively associated with cognitive avoidance ($\beta = -.47$, $p < .001$), depression was positively associated with anxious preoccupation ($\beta = .41$, $p < .001$) and helplessness/hopelessness ($\beta = .31$, $p < .01$). Moreover, negative religious coping was positively associated with helplessness/hopelessness ($\beta = .28$, $p < .01$) but was negatively associated with fatalism ($\beta = -.21$, $p < .001$). Body change stress was not associated with any of the mental adjustment domains, at least in this sample. The regression model at Step 2 explained an incremental variance of 20.0% in anxious preoccupation ($\Delta R^2 = .200$, $F(8,119) = 4.98$, $p < .001$), 15.2% in cognitive avoidance ($\Delta R^2 = .152$, $F(8,119) = 4.04$, $p < .001$), 19.5% in helplessness/hopelessness ($\Delta R^2 = .195$, $F(8,119) = 3.88$, $p < .001$), and 11.5% in fighting spirit ($\Delta R^2 = .115$, $F(8,119) = 3.13$, $p < .01$).

Further, as can be seen in Table 3 the cognitive illness perceptions facet of personal control was positively related to fatalism ($\beta = .22$, $p < .01$). In contrast, the emotional illness perceptions facet of emotional response was positively related to anxious preoccupation ($\beta = .25$, $p < .05$). Besides, the illness comprehensibility facet of understanding was negatively related to helplessness/hopelessness ($\beta = -.19$, $p < .05$). The regression model at Step 3 explained an incremental variance of 10.5% in fighting spirit only. Taken together, the hierarchical model accounted for a total of 21.0% in anxious preoccupation (adjusted $R^2 = .210$, $F(16,111) = 3.11$, $p < .001$), 16.6% in cognitive avoidance (adjusted $R^2 = .166$, $F(16,111) = 2.59$, $p < .01$), 18.6% in helplessness/hopelessness (adjusted $R^2 = .186$, $F(16,111) = 2.81$, $p < .01$), 7.9% in fatalism (adjusted $R^2 = .079$, $F(16,111) = 1.68$, $p = .060$), and 17.6% in fighting spirit (adjusted $R^2 = .176$, $F(16,111) = 2.69$, $p < .01$).

Discussion

We found that mental adjustment to breast cancer (coping strategy) was associated with psychological morbidity (depression, negative religious coping) in breast cancer patients receiving treatment in medical settings in Ghana. Depression was positively associated with the mental adjustment domain of anxious preoccupation and helplessness/hopelessness, providing partial support for H1. Specifically, the significant positive relationship between depression and anxious preoccupation and helplessness/hopelessness demonstrates that breast cancer patients who experienced higher levels of depression were not only highly preoccupied with the disease, but also they experienced a greater sense of helplessness/hopelessness. In other words, higher depression seems to focus patients' attention more on the disease than on other equally important tasks of daily living to the extent that some of them feel at a loss regarding how to cope with the disease. These results are consistent with those of various previous research which found anxiety and depression to be prevalent in cancer patients six months post-diagnosis (Boyes et al., 2011; Howell et al., 2022; Kugbey et al., 2020; Martino et al., 2021), affecting optimal mental adaptation to the disease (Fortin et al., 2021; Ng, Mohamed, Kaur et al., 2017). Evidence shows that cancer patients who engaged in helplessness/hopelessness and anxious preoccupation as coping strategies reported higher anxiety and depression and lower health-related quality of life (Johansson et al., 2011). Previous work in Ghana among breast cancer patients found that anxious preoccupation and helplessness-hopelessness coping adversely affected quality of life (Kugbey et al., 2019). Other work found that long-term breast cancer survivors were at increased odds of severe symptoms of anxiety and depression which seemed to persist for about 10 years, following diagnosis (Maass et al., 2019). Systematic reviews and meta-analyses have reported similar results (Hashemi et al., 2020; Maass et al., 2015).

In addition, negative religious coping was positively associated with helplessness/hopelessness but inversely associated with fatalism, providing partial support for H3. Specifically, an increase in negative religious coping also brought about an increase in helplessness/hopelessness (i.e., feeling at a loss and having low meaningfulness in life).

Higher negative religious coping and fatalistic beliefs (i.e., convictions that their breast cancer is pre-determined and that they had little power in altering its course, including treating it with conventional medicine). In other words, an increase in negative religious coping also attracts an increase in fatalism, given that the two variables are conceptualized negatively. This result finds support in recent research which reported that negative religious coping negatively impacts adjustment and life satisfaction in breast cancer patients aged 65 years and older (Aslan et al., 2021). Other previous work reported that negative religious coping is associated with depressive moods in breast cancer patients (Gall & Bilodeau, 2020; Hebert et al., 2009; Ng, Mohamed, Sulaiman et al., 2017). In addition, the research found that feeling punished and abandoned by God (negative religious coping) increases anxiety levels and depressive moods in breast cancer patients, thereby affecting adjustment to the disease (Thuné-Boyle et al., 2013).

Moreover, consistent with our prediction, emotional illness perceptions (i.e., emotional response) were positively related to anxious preoccupation, providing partial support for H5. The illness comprehensibility facet of understanding was negatively related to helplessness/hopelessness, providing support for H6. Taken together, participants who perceived that breast cancer had a higher emotional impact on their lives experienced higher preoccupation with the disease, whereas those who had a greater understanding of the disease also were less likely to experience helplessness/hopelessness regarding the outcome of the disease. These results compare favorably to those reported in other work (Hopman & Rijken, 2015; Price et al., 2012), which found a strong relationship between illness perceptions and illness outcomes.

In contrast, body change stress was not associated with any of the domains of mental adjustment to breast cancer in the present study. This result does not support H2. Specifically, patients' feelings about their body image did not influence the type of coping strategy they used. This result is consistent with that of a longitudinal study among breast cancer patients which found that initial body image at baseline did not predict later psychological adjustment to the disease (Moreira & Canavarro, 2010). Some researchers argued that breast cancer patients could reach a point in the treatment and care continuum where the will to live becomes stronger than how they look or how much they have changed (Bonsu et al., 2014). Thus, it is possible that the present sample does not consider body change stress to have the ability to influence their adjustment to the disease. The cognitive illness perceptions facet of personal control was positively related to fatalism. This result does not support H4. Specifically, the positive relationship between personal control and fatalism indicates that patients who perceived themselves as having more personal control over their breast cancer were more likely to resign to fate hoping that a transcendent force would intervene to heal them of the disease, given their belief that the disease is pre-determined. This finding is consistent with that of earlier research, which found that breast cancer patients who engaged in fatalistic coping felt powerless to change the outcome of their illness (Cheng et al., 2013).

Further, anxiety was negatively associated with the mental adjustment domain of cognitive avoidance. That is, patients who experienced high levels of anxiety were less likely to distract themselves from worrying and thinking about the disease. Anxiety and depression were not associated with mental adjustment domains of fighting spirit and fatalism in this study. Illness perception domains of timeline, identity, consequence, and treatment control were not associated with mental adjustment to breast cancer in this study. One possible explanation for these nonsignificant results is that our participants did not consider them to be salient for impacting psychological adjustment to breast cancer.

Implications of the Results

The present results have implications for clinical practice given psychological morbidity's association with adverse mental health outcomes and health-related quality of life in Ghanaian patients. The present study has shown that psychological morbidity is prevalent in most breast cancer patients undergoing treatment in

medical settings in Ghana. Previous work has also shown that anxiety and depression could persist in most breast cancer patients six to ten years post-diagnosis. Thus, our results suggest that Ghanaian breast cancer patients would benefit from a routine psychosocial assessment at diagnosis and post-diagnosis to identify patients with increased risks for psychological morbidity. This suggestion is consistent with that of Kagee (2022a) who called for psychosocial support to help cancer patients deal with depressed mood, anxiety, and the fear of death. Relatedly, Kagee (2022b) argued that psychosocial assessment techniques such as motivational interviewing, mindfulness-based stress reduction, and problem-solving therapy could help to identify cancer patients experiencing psychological distress.

Psychological adjustment to cancer (coping strategies) is crucial to health outcomes and requires constant cognitive and behavioral changes. Thus, a patient's coping style (mental adjustment) can help oncology specialists to make treatment decisions. In this study, we found that negative religious coping affects optimal adjustment to breast cancer. This result advances our understanding of the role of negative religious coping in psychological adjustment in Ghanaian breast cancer patients. This finding provides opportunities for oncologists, psychologists, and nurses to appreciate Ghanaian breast cancer patients' religious/spiritual struggles and do more to provide culturally and contextually relevant breast cancer care by integrating religion into care. Health providers need to identify patients with increased risks for negative religious coping for early intervention. Where necessary, oncologists and psychologists may refer breast cancer patients to trained spiritual leaders for assistance.

Because of the implication of illness perceptions (cognitive, emotional, and comprehensibility) in poorer mental adjustment to breast cancer in the present sample, we recommend that psychologists work with oncologists to use cognitive restructuring (Clark, 2022; Purdon, 2021) approaches to manage illness-related beliefs and emotions of Ghanaian breast cancer patients. This cognitive reappraisal process could help patients to develop positive meanings for their illness. A positive understanding of their illness may give rise to emotional self-regulation and adaptive coping.

Limitations

We acknowledge the following limitations of the present study. First, the cross-sectional data used limits our ability to make causal interpretations of the relationships between the study variables. Second, the data were collected using self-report measures which are known to be susceptible to response bias such as social desirability, malingering, and acquiescence. In addition, participants in this study were recruited from two hospitals (private and public). Patients may differ in their treatment and care experiences. We did not examine differences in treatment experiences in the present study. We combined simple random sampling with purposive sampling to recruit participants for this study. This sampling technique limits the generalizability of the results. Future studies could compare psychological adjustment in breast cancer patients recruited in private and public hospitals.

Conclusion

The present study found evidence of psychological morbidity (depression, negative religious coping) was associated with poorer adjustment to breast cancer in patients undergoing treatment in two medical settings. Patients who reported higher depression also reported higher anxious preoccupation with breast cancer (worry and thinking). They also experienced a greater sense of helplessness/hopelessness in coping with the disease. Patients higher in negative religious coping felt a greater sense of helplessness/hopelessness. Illness perception facets of personal control (cognitive illness perceptions) and emotional response (emotional illness perceptions) were associated with fatalistic and anxious preoccupation coping, respectively. However, patients who had a greater understanding of their breast cancer (illness comprehensibility) were less likely to feel helpless/hopeless.

The results suggest that screening breast cancer patients for depression and negative religious coping could help identify patients with increased risks for maladaptive adjustment to the disease. Other results suggest that breast cancer patients may benefit from intervention programs aimed at restructuring their cognitive and emotional illness beliefs. Our results imply that holistic breast cancer care involving a multidisciplinary team (psychologists, medical oncologists, and radiotherapists) may improve mental adjustment to the disease.

Authors' Contributions

Conceptualization was carried by Enoch Teye-Kwadjo, Henrietta Ama Nyameke Dadzie, Kwaku Oppong Asante, Margaret Amankwah-Poku, Angela Anarfi Gyasi-Gyamerah, Charity S. Akotia, Joseph Osafo, Rizwana Roomaney, Ashraf Kagee, Emmanuel Amankwaa-Frempong. Data curation was carried by Enoch Teye-Kwadjo and Henrietta Ama Nyameke Dadzie. Methodology was done by Enoch Teye-Kwadjo, Henrietta Ama Nyameke Dadzie, and Kwaku Oppong Asante. Formal analysis and investigation was carried by Enoch Teye-Kwadjo. Writing–original draft preparation was carried by Enoch Teye-Kwadjo. Writing–review and editing was carried by Enoch Teye-Kwadjo, Ashraf Kagee, and Rizwana Roomaney.

Availability of Data and Material

The data on which the article reports are available from the corresponding author on written request.

Consent to Participate

Informed consent was obtained from all individual participants included in the study.

Consent for Publication

Consent for publication was obtained from all of the participants included in the study.

Code Availability

Not Applicable.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics Approval

Ethics approval was obtained from the Ethics Committee for the Humanities (Reference Number: ECH104/16-17) of the University of Ghana. All of the ethics procedures performed in this study followed the ethical standards of the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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