Body image and emotional distress in newly diagnosed cancer patients: The mediating role of dysfunctional attitudes and rumination

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ABSTRACT
Body image concerns (BIC) has been reported to be associated with emotional distress for cancers across various sites. This study sought to examine two cognitive vulnerability mechanisms: dysfunctional attitudes and rumination, and their combined effects on the relationship between BIC and emotional distress in newly diagnosed Asian cancer patients. Participants were 221 newly diagnosed adult cancer patients who were assessed on BIC, rumination, dysfunctional attitudes, and emotional distress. Path analysis was used to examine the hypothesized mediation model. The hypothesized mediation model controlling for age, sex, marital status, education level, cancer type, cancer stage, and treatment modality revealed that both dysfunctional attitudes and rumination mediated the relationship between BIC and emotional distress. The present study provides evidence for a mediating role of dysfunctional attitudes and rumination between BIC and emotional distress. Psychological treatment should target dysfunctional attitudes and rumination in cancer patients experiencing BIC.

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Introduction
The global incidence of cancer was estimated to be about 14 million new cases in 2012 (World Health Organization, 2016). Although, cancer survival rates have also improved with medical advances in early detection and treatment (Naughton & Weaver, 2014), psychological adjustment in cancer remains a challenge for many patients (Blazquez & Cruzado, 2016; Brown, Levy, Rosberger, & Edgar, 2003; Rumsey & Harcourt, 2004). One underrecognized aspect of psychological adjustment in cancer relates to body image concerns (BIC) (Blazquez & Cruzado, 2016; Choi et al., 2014; Fingeret, Teo, & Epner, 2014; Przedziecki et al., 2013). In particular, cancer treatments such as surgery, chemotherapy, and radiotherapy may result in significant changes to patients’ physical appearance, including breast loss in mastectomy, chemotherapy-induced hair loss, weight loss, or other bodily changes (Choi et al., 2014; Fingeret et al., 2014; Harrington, Jones, & Badger, 2009; Przedziecki et al., 2013; Sharpe, Patel, & Clarke, 2011). Difficulties in adjusting to these physical changes or anticipated changes have been associated with emotional distress, depression, and anxiety, and poorer outcomes among cancer patients (Blazquez & Cruzado, 2016; Choi et al., 2014; Fingeret et al., 2014; Przedziecki et al., 2013; Sharpe et al., 2011).

Body image concerns (BIC) consists of affective, cognitive, and behavioral dimensions (Hopwood, Fletcher, Lee, & Ghazal, 2001), and is largely due to treatment and associated side effects that may alter the body’s physical and psychological integrity (Boquien et al., 2016; Choi et al., 2014; Fan & Eiser, 2009; Hopwood et al., 2001; Przedziecki et al., 2013). Although visible changes to the body are obvious sources of BIC, non-visible changes may also contribute to BIC. For example, some men report diminished feelings of masculinity and increased BIC after surgical removal of the prostate (Harrington et al., 2009); similarly, diminished feelings of femininity and increased BIC has been associated with breast cancer mastectomy or chemotherapy-induced hair loss in women (Chen,
Liao, Chen, Chan, & Chen, 2012; Choi et al., 2014; Przedzieniecki et al., 2013).

BIC has been shown to affect a significant proportion of cancer patients across multiple disease sites. BIC has been reported to be prevalent in 75% of patients with head and neck cancer (Fingeret et al., 2014), 33% of patients with breast cancer (Bahkt & Najaf, 2010), and more than 50% of patients with prostate cancer (Harrington et al., 2009). In addition, some cancer patients undergo immediate and aggressive treatment due to the severity of the disease which may increase the risk for experiencing BIC (Boquiren et al., 2016; Choi et al., 2014; Przedzieniecki et al., 2013). Cancer patients with BIC are likely to experience persistent negative psychological sequelae which subsequently increase their risk of experiencing emotional distress (Boquiren et al., 2016; Choi et al., 2014; Przedzieniecki et al., 2013; Sharpe et al., 2011).

More importantly, studies have also reported high levels of BIC in newly diagnosed cancer patients who may be beginning or undergoing treatment (Hopwood et al., 2001). Although immediate disfigurement is highly distressing, expectation of future disfigurement has been reported to elicit BIC. Among the side effects associated with cancer treatment, chemotherapy-induced hair loss has been reported to be associated with significant negative changes in patients' perceived attractiveness, sexuality, and self-esteem which may result in emotional distress (Choi et al., 2014; Hunt & McHale, 2005). Previous research has observed that some cancer patients may refuse to undergo chemotherapy due to expected hair loss (Tierney, Taylor, & Closs, 1992), while some breast cancer patients have reported greater distress associated with hair loss than mastectomy (Choi et al., 2014; Freedman, 1994).

Given that the majority of research has focused on assessing BIC after the completion of treatment (Boquiren et al., 2016; Przedzieniecki et al., 2013; Sharpe et al., 2011), there is a lack of information on the severity of BIC in newly diagnosed cancer patients who may be beginning or undergoing treatment. Some newly diagnosed patients may already experience physical disfigurement due to surgical procedures (e.g., mastectomy and colostomy) or radiotherapy (e.g., radiological burns) while other patients may experience physical disfigurement due to primary cancer (e.g., head and neck cancer). Visible disfigurement resulting from both primary cancer and treatment have been reported to be associated with BIC and emotional distress with negative downstream effects on self-esteem and quality of life (Choi et al., 2014; Kadelo-Collins et al., 2011; Lundstedt et al., 2011; Przedzieniecki et al., 2013; Rhoten, Murphy, & Ridner, 2013; Sharpe et al., 2011). Thus, BIC may be an important yet underrecognized aspect of psychological adjustment in cancer survivorship and care.

**Dysfunctional Attitudes and Rumination: Cognitive Vulnerabilities to Emotional Distress**

The role of maladaptive cognitive styles and content in the development and maintenance of emotional distress have been well studied in both cancer (Gonzalez & Jacobsen, 2012; Lam, Lim, Tan, & Mahendran, 2015) and non-cancer populations (Burney & Basten, 2009; Lo, Ho, & Holland, 2008; Spasojevic & Alloy, 2001). Based on Response Styles Theory (Nolen-Hoeksema & Morrow, 1991), two cognitive vulnerability mechanisms dysfunctional attitudes and rumination, have been identified to contribute significantly to the onset and maintenance of emotional distress, depression, and anxiety (McLaughlin & Nolen-Hoeksema, 2011; Nolen-Hoeksema, 2000; Nolen-Hoeksema, Wisco & Lyubomirsky, 2008; Nolen-Hoeksema & Morrow, 1991). Specifically, the Response Styles Theory conceptualizes rumination as a maladaptive coping style where ruminating on dysfunctional attitudes disrupts information processing, impairs problem-solving, and exacerbates emotional distress (Nolen-Hoeksema, 2000; Nolen-Hoeksema & Morrow, 1991). Previous research in Asian cancer patients lends further credence to the model by observing the influence of dysfunctional attitudes and rumination on depressive symptomatology (Lam et al., 2015).

Dysfunctional attitudes refer to a set of maladaptive cognitive schemas that may be influenced by negative life events (e.g., receiving a cancer diagnosis), and predominate and distort an individual’s thought processes (Burney & Basten, 2009; Nolen-Hoeksema, 2000). Specifically, experiencing persistent thoughts of hopelessness and uncertainty has been reported to increase the risk of depression and anxiety respectively (Nolen-Hoeksema, 2000). Furthermore, previous research reports that vacillating between thoughts of hopelessness and uncertainty is likely to account for the high comorbidity rates between depression and anxiety (McLaughlin & Nolen-Hoeksema, 2011; Nolen-Hoeksema, 2000).

While negative cognitive content may contribute to emotional distress, the manner in which the content is processed is also important in the development and maintenance of emotional distress (Burney & Basten, 2009; Lam et al., 2015; Nolen-Hoeksema & Morrow, 1991). According to the Response Style Theory, rumination involves the engagement with recurring negative thoughts about symptoms, causes, and consequences of emotional distress (Burney & Basten, 2009; Nolen-Hoeksema & Morrow, 1991). This subsequently creates a vicious cycle between negative thoughts and emotional distress through cognitively biased processing of, and attention to negative cognitive content which results in pessimistic and catastrophic outcome expectancies (e.g., “Why did this happen to me?” and “I’ll never feel good again”) (Burney & Basten, 2009; McLaughlin & Nolen-Hoeksema, 2011; Nolen-Hoeksema & Morrow, 1991). Hence, rumination has been reported to exacerbate and prolong emotional distress symptomatology (Burney & Basten, 2009; Lam et al., 2015; Nolen-Hoeksema & Morrow, 1991).

**BIC and Cognitive Vulnerabilities: Ascertaining the Pathways to Emotional Distress**

Despite the demonstrated association between BIC and emotional distress (Boquiren et al., 2016; Fingeret et al., 2014; Przedzieniecki et al., 2013; Rumsey & Harcourt, 2004; Sharpe et al., 2011), few research has investigated the mechanisms linking the association between BIC and emotional distress in cancer patients; although one recent study has examined the protective role of self-compassion in mediating the link between BIC and emotional distress (Przedzieniecki et al., 2013). Cognitive behavioral models of body image highlight the role of maladaptive schemas and cognitive styles as the main mechanisms linking BIC to emotional distress (White, 2000). Ruminating on pessimistic and catastrophic thoughts pertaining to one’s body image such as, “I am inadequate”, “looks are everything”, and “they think I am ugly” may result in a cascade of negative emotions and cognitions that precipitate and perpetuate emotional distress (Ridolfi & Crowther, 2013; White, 2000). This suggests that the identification of potential risk mechanisms such as dysfunctional attitudes and rumination may be important in understanding the link between BIC and emotional distress by extending previous knowledge on cognitive behavioral models of body image. An improved understanding of the risk mechanisms linking BIC to emotional distress may better guide the development of psychological interventions to address negative cognition and prevent the exacerbation of emotional distress in cancer patients. This is especially important given previous research which suggested that although BIC is important for Asian cancer patients, it may not be adequately addressed by healthcare professionals in oncology (Gopal, Beaver, Barnett, & Ismail, 2005; Lam & Fielding, 2002; Zeng, Li, Wang, Ching, & Loke, 2011).
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