Stress and Suicidal Ideation in Breast Cancer Patients

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Abstract
Breast cancer continues to be the most common cancer affecting women. Growing numbers of women are surviving the disease due to increasingly effective treatments; however, both the diagnosis and the treatment can constitute a series of stressors for the patient and it is widely accepted that psychological distress is common in this population. Psychological sequelae include depression, anxiety, stress, a sense of loss of control, and sometimes to the point of developing a Post-traumatic Stress Disorder (PTSD). Inordinate stress has been shown to be significantly correlated with suicidal ideation (SI) and some patients may experience SI as a means of feeling they have some control over their circumstances in the face of the stress of adjusting to their cancer diagnosis and treatment. With the rising numbers of newly diagnosed breast cancer patients, especially in developing countries, it is incumbent on oncology healthcare professionals to be able to identify patients at risk and to refer them timeously for psychotherapeutic intervention.

Keywords: Breast cancer, Stress, Suicidal ideation, Cognitive Behaviour Therapy, Psycho-oncology.

Introduction
Patients diagnosed with potentially life-threatening diseases such as cancer often experience distressing emotional reactions which can lead to thoughts of suicide and research demonstrates that cancer is one of the somatic diseases most commonly associated with elevated suicide risk [1-3]. Suicide risk can occur in these patients because the disease can constitute a life crisis resulting in a gamut of psychological problems [4-6]. The associated risk of suicide is 2- to 4-fold higher and the standardized mortality ratio of suicide is 1-11 times higher compared to the general population [7]. The psychological distress experienced by cancer patients at the time of diagnosis and during adjuvant treatment is well documented in the literature and may be related to several associated comorbidities, such as pain, surgery-related anxiety, financial issues, and side effects from treatment. Suicide risk for breast cancer patients in particular, has been reported to be 1.35 to
1.37 times higher than that of the general population [8]. Breast cancer is a leading cancer among the female population worldwide, as well as in the majority of countries in Africa, according to data from 26 African countries for the year 2012 [9]. The disease is the most frequent cause of cancer death in less developed regions, causing one in five deaths in African women which demonstrates a shift from the previous decade where cervical cancer was the most common cause of cancer death [10]. Breast tumors tend to be diagnosed at a decade or two younger and present at more advanced stages compared to developed countries. The incidence of breast cancer increases with age, and people in Africa are living longer due to better control of human immunodeficiency virus (HIV) and other infectious diseases which implies that there will be significantly greater numbers of patients with suicidal ideation diagnosed with diseases such as breast cancers and HIV-positive persons [11] in the future. For example, one in four South Africans develop cancer and one in two is likely to know someone that has cancer [2,4].

**Stress and cancer**

Somatic disease appears to play a key role in suicidal risk due to heightened vulnerability to physical and psychological stressors. Thus, patients with a chronic and potentially devastating illness, such as cancer, may be particularly at risk for suicide [12]. Factors that lead to elevated stress levels in cancer patients include, inter alia, the diagnosis itself, the disruption caused by the disease, undergoing adjuvant therapy and the concomitant side-effects, increased dependency and the fear of pain and suffering [2,13,14]. The levels of stress may vary between patients, however there is evidence to suggest that cancer patients may experience stress levels such that the patient may be diagnosed with PTSD [15]. Recent studies have demonstrated that the prevalence of PTSD diagnoses in breast cancer is higher than that in colorectal, head and neck, and prostate cancers but lower than that in brain, gynecological, and hematological cancers [16]. Even with symptoms insufficient to warrant a diagnosis of full-blown PTSD, patients with higher numbers of subsyndromal PTSD have been found to experience SI [17].

An important aspect of understanding the stress response is that a distinction needs to be made between physiologically-based and psychologically-based stress [18]. Neuropsychological mechanisms can be precipitated by both chronic and acute stress following a life event such as the diagnosis of cancer that have implications for disturbances in various neurotransmitters and neurohormones, which are critical co-morbid aetiological considerations in suicidal behaviour. Given this, the final pathways of the human stress response can be conceptualised as following two routes: a physiological and a psychological one where the cognitive model forms the bedrock of the psychological pathway which posits that difficulty in cognitively processing a particular stressor can trigger a stress response as, for example, seen in PTSD which is a trauma/stressor-related disorder. Perception and cognitive appraisal are important in this process, and input from the pre-frontal cortex and frontal lobes (the decision making and higher cognitive centres of the brain) moderates psychological, emotional and behavioural sequelae. The physiological pathway that involves many neurotransmitter systems is concomittantly implicated and the noradrenergic and endogenous opiate systems, as well as the hypothalamic-pituitary-adrenal axis, become hyperactive in individuals with inordinate stress
levels. Neurotransmitters are involved in both the stressed patient's physical and psychological functioning. The physiological and psychological pathways, therefore, interact closely, producing a stress cascade that simultaneously involves the endocrine and autonomic nervous systems, thus incorporating a hormonal dimension. Interactions between neurotransmitters, stress hormones and the immune system resulting from chronic/enduring stress can change the balance between various neurotransmitters. Activated hormonal responses include the corticotropin-releasing factor, the adrenocorticotropic hormone, adrenalin (epinephrine), noradrenalin (norepinephrine), the corticosteroids (aldosterone) and glucocorticoids (cortisol).

In the context of cancer both types of stress pathways are relevant. The disease itself causes physical stress reactions where, for instance, pain may cause severe distress. In addition, cancer treatments also cause physiological stress where excessive demand is placed on the body through invasive and painful treatment interventions. Psychological stress seems to be rooted in the knowledge of having a potentially life-threatening disease and living with the consequences thereof. Cancer patients may experience symptoms of cancer-related stress such as intrusive thoughts, strong negative emotions regarding cancer diagnosis and treatments and avoidant thoughts and behaviours all of which are associated with poorer quality of life and there is solid evidence that the course of cancer is affected by emotional stress [19]. This corresponds with many studies which show that a reduction in stress results in an improved quality of life [2,4,19,20].

In the South African context, stress levels in this country are particularly high due to, inter alia, factors such as economic issues, political uncertainty, crime and social transition [21]. This results in numerous stress-related disorders and can contribute to certain such lifestyle disorders, health-risk behaviours, suicidal behaviours and difficulty coping with change [22]. Further, social attitudes and cultural beliefs about cancer can profoundly affect how patient's perceive themselves, their disease, their future and their will to live [2]. In addition to this, a diagnosis of cancer is an extremely stressful life event and is clearly associated with an increase in psychological distress. Extensive research suggests that psychological stress associated with cancer diagnosis and treatment contributes to impaired immunity [20]. Additionally the relationship between stress and cancer has been suggested in studies that patients diagnosed with cancer suffer a variety of stressors such as fear of dying, fear of invasive treatments, fatigue, additional expenses and social isolation [23].

**Stress, suicidal ideation and cancer**

Suicidal ideation (SI) is a broad term that refers to thoughts of engaging in any suicide-related behavior, ranging from transient and intermittent thoughts about death and more severe rumination and creation of a plan to kill oneself [24,25]. Passive suicidal ideation, or a passive desire to die, can be differentiated from active suicidal ideation (where individuals have a specific plan and intent to die) [26]. Passive suicidal ideation can be characterized as "emotionally coloured thoughts", or a wish, where the patient feels that life is not worth living or that it would be better to be dead. One third of individuals with suicidal attempts in the past had passive suicidal ideation, or had plans for committing suicide [27]. Stressful life events have been consistently identified as a reliable risk factor for suicidal behavior and research has indicated that stress is positively
associated with suicidal ideation [24,28-30]. The interpretation of findings of studies related to SI in cancer patients is confounded by the fact that patients suffering from diseases that threaten their life may be more preoccupied with thoughts of death than of suicide and it is important to distinguish between these [27].

Many cancer patients hold suicidal behavior as a means of maintaining some sense of control over their lives as they are forced to adjust to the stress of their diagnosis and treatment [5]. A plethora of studies has demonstrated that suicidal ideation is common in cancer patients and survivors [1,3,6,31]. Suicidal thoughts and impulses are some of the most challenging symptoms in patients with cancer, and may occur both during and after treatment [32]. Some disparity appears in the literature with respect to the points at which suicidal ideation is highest and the factors that precipitate such thoughts. Some research suggests that suicide risks is highest during the first year after diagnosis and that this risk decreases over time. Kim [1] found that there was a similar prevalence of suicidal ideation in both short- and long-term follow-up studies following breast cancer, but that the factors associated were markedly different between the two points of evaluation. In the short-term suicidal ideation was associated with depression and physical disability, whereas in the long-term, living alone, anxiety and advanced stage of cancer were significant factors.

A recent Chinese study found that cancer patients are at high risk for suicide [25], particularly when they are informed about the cancer diagnosis or hospitalized for cancer treatment. Further, although cancer patients’ risk of suicide may decrease over time, the elevated suicide risk in patients can still persist for many years after the diagnosis and treatment of cancer. In addition, studies also indicate that other types of non-fatal suicidal behaviors [27], i.e., desire for hastened death and suicidal thoughts and plans, are fairly common in cancer patients. Zhong [25] also found that depression and anxiety were two most significant contributing factors to SI. The researchers suggest that this finding differs from what is generally acknowledged to be the most significant contributing factor for suicidality in the general population, namely depression. This difference could be partly attributed to the high level of psychological stress due to the cancer diagnosis or treatment in these cancer patients. A 2016 study showed differences in suicide risk according to the psychological construct of level of anxiety among advanced cancer patients. That is, when the level of anxiety increases from normal (low) to mild, moderate, or higher levels, the risk of suicide also significantly increases [33].

The impact of cancer diagnosis among young patients appears to be similar to that of the elder adults, with the first year after diagnosis clearly constituting a highly stressful period. The ongoing increased risk of suicide attempt throughout the follow-up after cancer diagnosis indicates that the ensuing cancer treatment, physiological distress related to cancer and its treatments, disease recurrence and a potential lack of treatment options at the final stage have as well an important influence on the psychological well-being of the young patients [34]. There are, however, some studies that suggest that the SI in cancer patients is, in fact, lower than that of the general population [35]. Important risk factors for (SI) in cancer patients have been identified as depression, hopelessness, uncontrolled pain, and difficult interpersonal relationships [33,36]. SI in cancer patients has been associated with moderate-to-severe pain. In the
literature, the association between pain and elevated risk of SI is very complex. A survey reported that pain, especially prolonged or uncontrolled pain, was the most common reason for SI of cancer patients who considered suicide a reasonable/justifiable future option [25]. Other factors such as loss of control, deficits in physical functioning and loss of autonomy may lead to suicide vulnerability in cancer patients. It becomes evident that there is a clear overlap between factors affecting stress and factors associated with SI. Although short-term stress may be adaptive, maladaptive responses such as magnification, rumination, helplessness to pain- or non-pain-related stressors may increase cortisol secretion and elicit a sensitized physiological stress response. Ultimately, an attenuated or exaggerated stress response may perpetuate cortisol dysfunction, widespread inflammation, and pain [37].

**Cognitive behavioral therapy to mitigate the effects of stress**

Cognitive Behavioral Therapy (CBT) is a short-term, goal-oriented psychotherapy treatment that takes a practical approach to problem-solving. It is a directive, time-limited, structured approach which can be used to treat various mental health disorders. CBT explores the links between thoughts, emotions and behavior. The goal of therapy is to challenge patterns of thinking or behavior that are the foundation of much of the distress that patients face, and so to alleviate distress by helping patients to develop more adaptive cognitions and behaviours [38].

CBT has been shown to be effective in mitigating various psychosocial impacts on breast cancer [39]. Its cost-effectiveness has been demonstrated even in treating depressed youth [40], and it is an effective therapy for psychological symptoms of cancer survivors and patients. Interventions that use CBT techniques to teach better stress management in combination with health behavior education may have the greatest impact on psychological adaptation. These findings suggested that CBT should be used as a psychological intervention of choice for breast cancer survivors and patients when possible [41]. A briefer Cognitive Behavioural Stress Management (CBSM) intervention, which was briefer than the norm (5 weeks vs. 9–20 weeks), had beneficial effects on adjustment for women with breast cancer and was particularly effective for those with increased global stress [42]. Adjustment to cancer ultimately encompasses, among others, ongoing attempts by patients to effectively optimize their ability to alleviate or manage the physiological, psychological, behavioural, and social consequences of their individual experience of coping with cancer [2,43].

**Conclusion**

The association of stress with a diagnosis of and treatment for breast cancer is well documented in the literature. There is also a clear correlation between elevated levels of physiological and psychological stress and suicidal ideation in these patients both immediately after diagnosis and sometimes well into the treatment trajectory and beyond. Whilst oncology treatments have improved over the years to the point where cancer is now considered a chronic disease, the quality of life of many patients may be compromised by factors such as stress to the point of suicidal ideation. Psychotherapeutic intervention such as CBT have been shown to be effective in the management of stress in breast cancer patients. Oncology healthcare professionals, particularly in
developing countries like South Africa where the demographics of diagnosis are shifting, should be aware of the prevalence and symptomatology of stress in order to better identify patients at risk of such distress and refer them for appropriate psychotherapeutic treatment.

References


