Psychological adjustment one year after the diagnosis of breast cancer: A prototype study of delayed post-traumatic stress disorder

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**Objective.** The utilization of a post-traumatic stress disorder (PTSD) diagnostic framework for categorizing the psychological adjustment of breast cancer (BC) patients has been debated. We wanted to study the prevalence of PTSD and predictors for PTSD.

**Design.** The current study is a one-year follow-up of 64 early BC patients.

**Methods.** PTSD, subclinical PTSD, delayed onset PTSD and several theory-driven predictive variables were examined.

**Results.** Thirteen per cent of the patients showed full symptoms of disease-related PTSD compared with 7% at the initial study (6 weeks after diagnosis). Considerable changes were observed in all PTSD clusters (intrusion, avoidance, and arousal), in most cases representing a decrease in symptom level. Immature defence style, emotional coping, avoidant behaviour, and negative affectivity were all implicated as predicting variables in a hierarchical multiple regression analysis which explained 65% of the variability of PTSD severity one year after diagnosis.

**Conclusions.** This study highlights the PTSD diagnosis as being highly relevant in oncology settings. Early screening for the above-mentioned four variables may help early identification of the patients most at risk of developing PTSD.

Breast cancer (BC) is the most common cancer among women in the world with a worldwide estimate of 1.15 million new cases each year (Parkin, Bray, Ferlay, & Pisani, 2005). The annual incidence in Europe is 130,000 (Mosconi & Leccese, 2004). Contemporary advances in screening, detection, and treatment methods have improved the 5- and 10-year survivability rates and as a result the age-adjusted survival rate is approximately 73% in developed areas of the world (Parkin et al., 2005). Despite the increased survival rates, being diagnosed with BC is often accompanied by high levels of distress (Vickberg, Bovbjerg, DuHamel, Currie, & Redd, 2000; Watson et al., 1991; Zabora, Brittenhofeszoc, Curbow, Hooker, & Piantadosi, 2001), a feeling of helplessness.

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(Watson et al., 1991), uncertainty (Oxlad, Wade, Hallsworth, & Koczwara, 2008), and mortal fear (Waring, 2000).

The attention of hospital staff in oncology wards is naturally focused on treatment, physical recovery, and dealing with the physiological side-effects of treatment. Although the majority of BC patients today have a good prognosis, the initial diagnosis and subsequent treatment and implications of BC appear to precipitate extreme stress for the patient, suggesting that paying attention to the mental health of BC patients can be very important for their quality of life. This may be particularly true for patients in remission who only come into contact with the hospital for the periodic testing of recurrence.

Categorizing the emotional turmoil of cancer patients has been a subject of some debate. Eckhardt (1999) suggested that a framework of traumatic stress is more adequate for describing the levels of distress and vulnerability of cancer patients than the more traditional perspectives such as coping and quality of life. The DSM-IV (American Psychiatric Association, 2000) now recognizes the diagnosis of a life-threatening illness as a traumatic event that may result in post-traumatic stress disorder (PTSD) which gives formal support to Eckhardt’s model. Elklit (unpublished) studied the prevalence of PTSD in a group of early BC patients. Similar to the findings of Andrykowski, Cordova, McGrath, Sloan, and Kenady (2000), a modest prevalence rate of 6% was reported; the relatively low levels of the avoidance criterion capped the PTSD prevalence rate. However, when testing for subclinical PTSD (typically meaning that the subjects lacked just one avoidance symptom in reaching a full diagnosis) a full 40% of the subjects were symptomatic. Reducing the criterion of avoidance symptoms from three to two is a theoretically legitimate approach to the measurement of subclinical PTSD in BC samples, and one which was employed by Green et al. (1998). As Mehnert and Koch (2007) explained, it is difficult to define (and measure) avoidant behaviour in early BC, since the nature of the disease and treatment procedures implies a continuous confrontation with potential trauma-related stressors. It is hypothesized that a follow-up study of BC patients, at a time where frequent hospital contact has ended, will result in an increased prevalence of PTSD as there will be less interference of treatment with avoidant behaviour. There are only a few follow-up studies of PTSD among BC patients, and the majority failed to employ validated measures of PTSD. Cordova et al. (1995), and Shelby, Golden-Kreutz, and Andersen (2008), used validated measures approximately 30 and 18 months, years post-treatment respectively, and reported that approximately 11 and 16%, respectively of their patients exhibited a full range of symptoms which met the criterion for a PTSD diagnosis. Tjemsland, Søreide, and Malt (1998) reported an increase in PTSD-like symptoms from 8% in 6 weeks after surgery, to 12% after a year. In contrast, Green et al. (1998) used the structured clinical interview diagnosis (SCID) and reported that a mere 2% of subjects displayed signs of full PTSD 4 to 12 months after completion of treatment. Andrykowski, Cordova, Studts, and Miller (1998) compared PTSD endorsement based on the SCID and a self-report instrument (the PTSD Checklist-Civilian Version PCL-C) and demonstrated a very high diagnostic efficiency with the self-report measure, suggesting that Green et al.’s findings cannot be dismissed simply as a result of differences in measurement methods. Based on their findings, Green et al. (1998) practically dismissed PTSD as a possible outcome of a diagnosis of BC. They suggested that the nature of the BC stressor does not fit the PTSD model, because it does not result in the imminent threat to the life of the patient and therefore fails to qualify as a criterion A trauma. They did report, however, common PTSD symptoms of intrusion (36% of the women) and hyperarousal (27% of the women). The nature of the diagnosis of a life-threatening illness is indeed different from other types of trauma. However, the
fact that a diagnosis of BC does not objectively indicate an immediate life-threat to the patient does not change the fact that most patients fear for their lives (Waring, 2000). The recent advances in medical treatments and survival rates is not yet enough to ensure that BC patients can receive their diagnosis without reacting with intense mortal fear. Such fears are further intensified by the discomfort associated with cancer treatment.

The present study is a follow-up study based on the same sample as the Elklit (unpublished) study. The study had two goals. First of all, it measured PTSD symptoms among BC patients one year after diagnosis and estimated whether a trauma framework is adequate for describing their emotional reactions. Secondly, it tested the predictive value of four well-established PTSD risk factors which could be easily implemented into a short screening questionnaire. Based on the existing literature, a number of psychological factors occurring at the time of diagnosis and their potential for explaining PTSD after a year were highlighted.

There are several slightly overlapping psychological constructs which are likely to be good predictors of PTSD one year after diagnosis of BC. The first is the initial level of psychological traumatization and symptoms related to psychological trauma. Subclinical levels and symptoms of PTSD in close proximity to the diagnosis are expected to be strong predictors of PTSD a year later. Kangas, Henry, and Bryant (2005b) found that all patients suffering from PTSD one year after being diagnosed with cancer had met criteria for either full or subclinical acute stress disorder (ASD) within the first month post-diagnosis suggesting that initial symptom level is predictive of PTSD one year later. Andrykowski et al. (2000) similarly found that PTSD symptoms, particularly avoidance, correlated highly with PTSD severity one year later in BC patients. However, as mentioned earlier, the nature of the disease and treatment procedures may interfere with the measurement of PTSD in relation to avoidance symptoms, among early BC patients shortly after diagnosis.

A second group of potential predictors involves psychological defence mechanisms. Defence mechanisms are activated when central interests of the individual are threatened (Vaillant, 1992). Defence mechanism styles are classified into mature styles and immature styles. Repression and denial are examples of immature defence styles while humour, sublimation, and anticipation are examples of mature defence styles (Finzi-Dottan & Karu, 2006). In the short run, both mature and immature defence styles are thought to reduce traumatic distress by modifying our perceptions of the event (Bowins, 2006). However, in the long run, the use of immature defence styles may interfere with the cognitive processing of the trauma thereby increasing the risk of developing post-traumatic symptoms (Drageset & Lindstrøm, 2003; Olff, Langeland, & Gerons, 2005). The use of immature defence styles have shown to be related to poor psychological adjustment and psychopathological symptoms in general (Finzi-Dottan & Karu, 2006). Drageset and Lindstrøm (2003) found defence mechanisms in general to be related to lower levels of anxiety in BC patients. Finally, in a study of HIV-positive men and women, an immature defence style was shown to be significantly and positively related to the reporting of avoidance symptoms (Pedersen & Elklit, 1998).

A third potential group of predictors is coping strategies. The effect of various background variables and dispositional characteristics on traumatization is mediated by the individual’s use of coping strategies (Epping-Jordan et al., 1999). Adaptive coping has shown to improve psychological adjustment in women being diagnosed with BC although it is still unclear what constitutes adaptive coping (Drageset & Lindstrøm, 2003). In general, problem focused coping is expected to have a protective effect on mental health whereas emotion focused coping and avoidance focused coping are suspected
of preventing successfully dealing with a problem (Olff et al., 2005). This has been supported by research (Roger, Jarvis, & Najarian, 1993). We do not know of any prior studies specifically assessing emotion focused coping as a PTSD risk factor in BC patients but emotional coping has shown to be related to post-traumatic symptoms in a sample of HIV-positive men and women (Pedersen & Elklit, 1998).

Last but not least, the overlapping concepts of negative affectivity and neuroticism are suspected of making people more sensitive to stressful life-events (Kendler, Kuhn, & Prescott, 2004) and have been shown to play a role in the development of PTSD in non-cancer populations (Fauerbach, Lawrence, Schmidt, Munster, & Costa, 2000; Norris et al., 2002). Tjemsland et al. (1998) found that neuroticism (in their work termed emotional reactivity) significantly predicted post-traumatic stress symptoms in BC patients one year after surgery. Similarly, Matsuoka et al. (2005) found that neuroticism significantly predicted intrusive recollections in BC patients.

Existing research usually reports weak or non-significant relations between the degree of psychological traumatization and most demographic variables, disease severity, choice of treatment, social support etc (Kangas, Henry, & Bryant, 2005a; Tjemsland, Søreide, & Malt, 1996a). For this reason, the current study focused on the above-mentioned variables that: (1) have shown to be related to the development of PTSD following cancer and other trauma types and (2) are easy to measure by validated short self-report questionnaires. The latter is relevant because of the importance of early identification of high-risk individuals combined with the relatively limited resources available for this purpose. Therefore, we wanted to create a model that by spending a limited amount of resources could be used for the early identification of the individuals most at risk of developing PTSD.

**Method**

**Sample**

Eighty-one female patients from a previous study of psychological sequelae of BC (Elklit, unpublished) were contacted by mail 12 months after the initial study (T2), and asked to participate in a follow-up study. In the initial study that took place 6 weeks after diagnosis (T1), 100 consecutive women were contacted in a regional Danish hospital where they received physiotherapeutic aftercare of the arm and shoulder after surgery.

**Procedure**

Selection criteria for both the initial study and the follow-up included only patients who were diagnosed with BC for the first time and who were not in some way mentally impaired. Sixty-four agreed to participate in the follow-up study (translating to a 79% response rate). The drop-outs (N = 17; 21%) did not differ in one-way ANOVA or chi-square analysis from follow-up participants with regard to age, education, marital status, number of life-events within the last year, mortality risk, type of treatment, or the time between discovering a node and seeing a doctor. One-way ANOVA’s showed no significant differences on any of psychological variables between drop-outs and follow-up patients. The mean age of the sample was 56.3 years (SD 9.1; range 41–89 years). All the participants were Caucasian women, mostly (77%) married or cohabiting. In average, the patients completed 12 years of education (SD 3.7; range 7–25 years). At the time of diagnosis, the disease was characterized as ‘low risk’ for 11 (17%) of the subjects and
‘high risk’ for the remaining 53 (83%). Time since diagnosis is approximately 13 months. The treatments undergone by the patients were varied: non-adjuvant, chemotherapy, anti-oestrogen medication, and a combination of the two latter treatment methods. Most women also received local radiation treatment. Disease and treatment information was obtained from clinic records and from the Danish Breast Cancer Registry. The regional Helsinki committee approved the study.

**Measures**

The subjects were mailed a questionnaire which inquired about demographic variables, treatment course, experience of life-events, and body acceptance. Additionally, the questionnaire included the following standardized measures:

The Harvard Trauma Questionnaire (HTQ; Mollica *et al.*, 1992) was used to estimate current symptoms of PTSD. Part IV of the HTQ has been used extensively in Scandinavian countries and permits an assessment of whether or not a person suffers from PTSD (Bach, 2003). The HTQ was adapted to address whether the diagnosis of cancer is a potentially traumatizing event. The scale consists of 30 items, 16 of which correspond directly to PTSD symptoms as described in the DSM-IV-TR (APA, 2000). As is the case for many other measures of PTSD, the HTQ does not include an estimate of the degree to which the A2 (peritraumatic fear, helplessness, and horror) and F (functional impairment) criteria are met. The items are scored on a four-point Likert scale, and measure the intensity of the three core symptom groups of PTSD: intrusion, avoidance, and arousal. Only scores $\geq 3$ count for a diagnosis. Additionally, a subclinical level of PTSD is noted when the intrusion subscale is fully met but one of the other subscales misses just one symptom. Basing a probable PTSD diagnosis on symptom cluster criteria provides a more reliable estimate of prevalence than the use of cut-off scores which do not take into account the discrepancy in the number of symptoms needed to fulfil criteria for the different symptom clusters. The original Mollica *et al.*’s (1992) article found good reliability and validity for the HTQ. The HTQ has been widely used in Danish trauma studies where it has proved to be a reliable and valid measure of post-traumatic stress in accordance with the DSM-IV criteria (Bach, 2003). The alpha value in this study was .91 for the whole scale and .71, .86, and .79 for re-experiencing, avoidance, and arousal respectively.

Briere and Runtz (1989) originally developed the Trauma Symptom Checklist (TSC) to measure the occurrence of a variety of distress symptoms that often accompany trauma. The items are coded on a four-point Likert scale ranging from ‘no’ to ‘very often.’ In a validation study for the Danish version of the TSC, Krog and Duel (2003) conducted a factor analysis of 4,152 answers from 16 studies and concluded that 23 items of the TSC constituted two factors: negative affectivity and somatization. The revised version of the TSC has shown to have good reliability and good factor and criteria validity across different studies and can significantly differentiate between traumatised and non-traumatised populations (Krog & Duel, 2003). Only the negative affectivity subscale was used in this study. The alpha value for this subscale was .81.

The Defence Style Questionnaire-40 (DSQ-40; Andrews, Singh, & Bond, 1993) measures 20 defence mechanisms, which are categorized into three groups: mature, neurotic, and immature defence styles. The items are scored on a nine-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree.’ The revised version of the DSQ has good construct validity and the three factors correlate highly ($0.93-0.97$) with the same factors of the original 72-item DSQ (Andrews *et al.*, 1993). Alpha values for the three
factors have shown to be acceptable (.58–.80) and the three scales provide good test-retest reliability (.75–.85; Andrews et al., 1993). Elklit and Shevlin (2007) demonstrated that the DSQ is in good accordance with clinical assessment of subjects. The alpha values for the three subscales in the current study were .66, .70, and .81, respectively, for the mature, the neurotic, and the immature defence styles.

The Coping Styles Questionnaire (CSQ; Roger, Jarvis, & Najarian, 1993) was used to measure coping strategies. Originally, the CSQ included 60 items which measure four primary coping styles: rational, emotional, avoidant, and detached. Elklit (1996) confirmed the existence of the four styles in a validation study of the CSQ but noted that there was only partial agreement on the composition of the detached component. Elklit suggested keeping only the items, which have been shown in several studies to positively, and with substantial weight, contribute to the same factor structure. In accordance with this, the CSQ was reduced to 37 items, preserving the four primary coping components: rational coping (11 items), emotional coping (10 items), detached coping (6 items), and avoidant coping (10 items). The degree of concordance between the rational, emotional, and avoidant scales in the original and the revised version of the CSQ was high (67–84%) but as a result of the detachment factor in its original form being only partially supported the revised CSQ recycled only 6 of the original CSQ items. The four subscales have good test-retest reliability (.74–.85) and acceptable coefficient alphas (.66–.81) (Elklit, 1996). Alpha in the current study was .80 for the rational, .82 for the emotional, .63 for the detached, and .64 for the avoidant subscale.

**Statistics**

Nominal variables were compared with chi-square tests. Correlations were estimated with Pearson’s correlation coefficient. Changes in subscale scores were studied by paired samples t tests. Hierarchical multiple regression analyses were used to assess the effect of selected predictor variables on HTQ total score. A 0/1 (no/yes) coding was used for dichotomous variables. The analyses were performed by means of SPSS version 16.

**Results**

Forty-seven per cent of the respondents had not experienced any major life-events during the 12 months between T1 and T2. However, 20% reported the death of someone close to them, 15% reported some additional illness, and the remaining 18% reported experiencing one of the variety of other serious life-events. Few significant changes were found from T1 to T2. Table 1 summarizes the means, standard deviations, and values of all relevant scales and subscales used in the study at both T1 and T2. While the subjects showed an overall stable state, there were some notable significant changes in the PTSD cluster scores: both the intrusion and the arousal subscales of the HTQ, as well as the avoidant coping styles were measured to be significantly lower at T2.

PTSD cluster symptoms were measured by the HTQ algorithm. Table 2 describes the relative number of subjects who experienced the different levels of each PTSD cluster at T1 and T2. As can be seen, 75% met the intrusion criterion, 14% met the avoidance criterion, and 44% met the arousal criterion. This amounted to 13% of the subjects showing full PTSD symptoms at T2, compared with just 7% at T1. The variable that set the top limit for full PTSD symptomatology at T1 was avoidance (at least
Psychological adjustment

Table 1. Changes in traumatization, symptoms, coping styles, and defence styles: Paired samples

<table>
<thead>
<tr>
<th>Test</th>
<th>Variable</th>
<th>T1 Mean</th>
<th>T2 Mean</th>
<th>Difference</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTQ</td>
<td>Intrusion</td>
<td>8.33</td>
<td>7.70</td>
<td>.64</td>
<td>2.19</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td>Avoidance</td>
<td>10.24</td>
<td>10.16</td>
<td>.09</td>
<td>.2</td>
<td>.84</td>
</tr>
<tr>
<td></td>
<td>Arousal</td>
<td>10.68</td>
<td>9.7</td>
<td>.98</td>
<td>3.05</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>49.60</td>
<td>47.8</td>
<td>1.8</td>
<td>1.33</td>
<td>.19</td>
</tr>
<tr>
<td>TSC</td>
<td>Negative affectivity</td>
<td>19.64</td>
<td>17.98</td>
<td>1.66</td>
<td>1.82</td>
<td>.07</td>
</tr>
<tr>
<td>CSQ</td>
<td>Rational</td>
<td>27.64</td>
<td>27.16</td>
<td>.47</td>
<td>.658</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>Emotional</td>
<td>15.76</td>
<td>15.4</td>
<td>.34</td>
<td>.57</td>
<td>.57</td>
</tr>
<tr>
<td></td>
<td>Detached</td>
<td>12.63</td>
<td>13.31</td>
<td>−.68</td>
<td>−1.75</td>
<td>.09</td>
</tr>
<tr>
<td></td>
<td>Avoiding</td>
<td>20.31</td>
<td>19.17</td>
<td>1.14</td>
<td>2.1</td>
<td>.04</td>
</tr>
<tr>
<td>DSQ</td>
<td>Mature</td>
<td>45.06</td>
<td>45.43</td>
<td>−.37</td>
<td>−.29</td>
<td>.77</td>
</tr>
<tr>
<td></td>
<td>Neurotic</td>
<td>40.23</td>
<td>39.83</td>
<td>.46</td>
<td>.38</td>
<td>.71</td>
</tr>
<tr>
<td></td>
<td>Immature</td>
<td>74.00</td>
<td>71.85</td>
<td>2.15</td>
<td>.82</td>
<td>.42</td>
</tr>
</tbody>
</table>

Note. HTQ, Harvard Trauma Questionnaire; TSC, Trauma Symptom Checklist; CSQ, Coping Style Questionnaire; DSQ, Defence Style Questionnaire.

three avoidance symptoms are needed for a full diagnosis): only 7% of the subjects at T1 met the avoidance criterion, a number that doubled to 14% at the follow-up study.

The reliance on mean values in a prospective study is problematic as the means are blind to important changes within the sample. For example, low scores from recovery cases can mask high scores from cases of delayed onset PTSD. Table 3 which is inspired by Andrykowski et al. (2000) summarizes the changes in the subscales of PTSD (of at least 1 SD) between T1 and T2. It was found that 22% of the subjects had considerable changes in their intrusion scores, 67% of the changes were a decrease. Moreover, 37% had changes in their avoidance scores with slightly over half being an increase. Fifteen per cent had changes in their hyperarousal scores, and 89% of the change was attributed to a decrease in scores.

Next, we examined the relative contribution of T1 variables in predicting the degree of traumatization at T2. Relations were tested using a hierarchical multiple regression model and the results are summarized in Table 4. A four-factor model predicted 64.5% of the HTQ total score at T2. The predictors entered into the model were: immature defence style, emotional coping, avoidance symptoms as measured by the HTQ, and

Table 2. Number of PTSD symptom criteria and PTSD clusters fulfilled at times T1 and T2 (rounded valid percents): N = 56

<table>
<thead>
<tr>
<th>Number of symptom criteria</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>≥4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>14</td>
<td>25</td>
<td>43</td>
<td>43</td>
<td>7</td>
</tr>
<tr>
<td>T2</td>
<td>27</td>
<td>20</td>
<td>11</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Avoidance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>53</td>
<td>55</td>
<td>21</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td>T2</td>
<td>19</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Arousal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>31</td>
<td>33</td>
<td>12</td>
<td>33</td>
<td>16</td>
</tr>
<tr>
<td>T2</td>
<td>16</td>
<td>17</td>
<td>19</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>PTSD criteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>13</td>
<td>26</td>
<td>35</td>
<td>40</td>
<td>44</td>
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<tr>
<td>T2</td>
<td>44</td>
<td>21</td>
<td>7</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>
negative affectivity measured by the TSC. All the variables were significant when first entered into the model. However, the use of immature defence styles appeared to be mediated by emotional coping strategies, which in turn appeared to be mediated by avoidance symptoms. When all variables were controlled for, only avoidance symptoms and negative affectivity made an independent and significant contribution.

Table 4. Relative contribution of study variables from T1 to T2 in traumatization (HTQ-total score) using hierarchical multiple regression analysis

<table>
<thead>
<tr>
<th>Step</th>
<th>Increments in adjusted R²</th>
<th>F</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.12</td>
<td>4.51</td>
<td>.18</td>
<td>.08</td>
<td>.31*</td>
</tr>
<tr>
<td>Step 3</td>
<td>.31</td>
<td>6.24</td>
<td>.14</td>
<td>.08</td>
<td>.25</td>
</tr>
<tr>
<td>Step 3</td>
<td>.31</td>
<td>15.38</td>
<td>.15</td>
<td>.06</td>
<td>.26*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.66</td>
<td>.38</td>
<td>.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.58***</td>
</tr>
<tr>
<td>Step 4</td>
<td>.15</td>
<td>21.01</td>
<td>.15</td>
<td>.05</td>
<td>.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.26</td>
<td>.33</td>
<td>.08</td>
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<td>.25*</td>
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<td></td>
<td></td>
<td></td>
<td>.55***</td>
<td></td>
</tr>
</tbody>
</table>

Note. Adjusted R² of the whole model = .65; HTQ: Harvard Trauma Questionnaire; *p < .05; **p < .01; ***p < .001.

Discussion

Several researchers studied possible predictors of PTSD among cancer patients. As both Gurevich, Devins, and Rodin (2002) and Kangas et al. (2005a) summarize, there is little or no effect of disease-related or treatment-related variables. Only a few studies concluded that demographic variables were implicated as predictor variables, however, such variables proved to have only a weak predictive power over symptomatology. Early
identification of cancer patients who are likely to require mental health assistance should therefore focus on psychological factors. Besides, their diagnostic value for screening of PTSD, identifying predicting variables can also benefit the development of specific psychological interventions. Another reason to study and treat PTSD in cancer survivors is the unfortunate risk of cancer recurrence (Andrykowski et al., 2000). The survivors of BC have an increased likelihood of facing a similar trauma at a later time. Patients that develop PTSD symptoms after a first BC diagnosis are at a high-risk of developing a second PTSD triggered by the recurrence of cancer. Cella, Mahon, and Donovan (1990) concluded that 78% of their patients reported that the recurrence of cancer was more distressing than the initial diagnosis.

The psychological welfare of BC patients in the first year post-treatment is generally not considered a hospital responsibility in Denmark where private organizations and private psychologists under a national mental health scheme (Elklit & Nielsen, 2008) provide services. The findings of the current study shed some light on several aspects that characterise BC patients a year after treatment. First, it appears that patients still report high levels of post-traumatic stress one year after being diagnosed with BC. Although there was a trend towards decreased symptoms in mean HTQ total and symptom cluster scores for the whole sample, this decrease was small and was only significant for intrusion and arousal. Epping-Jordan et al. (1999) similarly found that depressive symptoms and avoidance did not change during the first 6 months following diagnosis. This possibly reflects the patients’ insecurities regarding the future development of their illness, as well as the hardships involved with undergoing treatment. The extent of maintained and increased symptom levels over time makes BC (and probably other malignant diseases) extraordinary in comparison with other traumatic events (Green et al., 1998). A much longer symptom-free period of time may be necessary for traumatised BC survivors to feel that they are outside of the ‘danger zone’. Whether there is a gradual natural decline in symptom levels can only be answered by follow-up studies conducted after longer time periods of patients being cancer-free. Therefore, assuming that physical recovery and positive test results indicate the end of the emotional turmoil is likely to be wrong.

Whether PTSD is an appropriate framework for explaining the emotional and cognitive reactions of BC patients has been open to some debate. Mehnert and Koch (2007) for example, suggest that a diagnosis of adjustment disorder (AD) is possibly more appropriate than a diagnosis of PTSD. However, the DSM-IV-TR describes AD as usually involving an immediate onset, if the stressor is an acute event, which usually resolves after 6 months (APA, 2000). The current study found that although mean HTQ levels in the total sample remained relatively stable, further analysis revealed that symptoms at subgroup level were far from unchanged during the first year post-diagnosis. There were considerable changes in PTSD subscale scores in between 15 and 37% of the patients. This is in accordance with the findings by Andrykowski et al. (2000). Some of these changes reflected an increase in symptom reports and in fact, there was more than a doubling in the number of full PTSD cases. This is similar to Tjemsland et al. (1996a, b, 1998) who estimated (on the basis of self-report inventories) that 8% of their subjects met PTSD criteria 6 weeks post-operatively whereas 12% met PTSD criteria 12 months post-operatively. Thus, two longitudinal studies now suggest that ‘delayed-onset’ PTSD is possible in BC patients.

Directly comparing the overall PTSD rates with other studies is difficult because of the different time frames, and the low number of studies which used validated PTSD measures. However, Cordova et al. (1995) used validated measures approximately 3 years post-treatment and reported similar levels of PTSD. It is generally advisable to be
cautious when dismissing cancer patients as ‘PTSD-free’, particularly close to the time of diagnosis or while the patients are still in treatment. As mentioned earlier, the symptom clusters of PTSD are dynamic in the first year and results indicate a large increase in the number of PTSD cases. There is also a substantial interference of treatment and disease factors with the three symptom clusters of PTSD (Kangas, Henry, & Bryant, 2007; Mehnert & Koch, 2007) which contributes to the difficulty of correctly diagnosing PTSD shortly after diagnosis. For example, while the patient undergoes chemotherapy, sleep disturbances, anxiety, and irritability can be mistakenly dismissed as side effects of the treatment. The patient’s attempts at avoidance in the first week and month after diagnosis can also be masked or negated by the frequent engagement with medications, treatments, control tests etc (Mehnert & Koch, 2007). This hypothesis was supported by the current study. The mean arousal levels decreased by one third from T1 to T2. While diagnosing PTSD is initially problematic with BC patients and may result in an under-estimation of the number of affected patients, follow-up studies show that PTSD and especially delayed onset-PTSD is nonetheless a very fitting framework.

The first part of this study focused on PTSD and symptom clusters as diagnostic entities. However, when examining possible risk factors for PTSD we have treated post-traumatic symptoms as existing on a continuum. The reason for this is that the first part of this study clearly illustrated that patients move in and out of diagnostic categories in the first year after receiving a cancer diagnosis. Furthermore, patients suffering from subclinical PTSD may require a similar level of assistance as patients meeting criteria for full PTSD (Shelby et al., 2008). Therefore, we find it more useful to identify risk factors associated with greater symptom severity rather than with a categorical PTSD diagnosis. We examined a number of variables suspected of attributing to symptomatology. The first good predictor of PTSD severity was the defence style of the patient, in that patients with an immature defence style at T1 reported higher levels of symptomatology at T2. To the best of the authors’ knowledge, no earlier studies have examined the role of defence mechanisms on BC survivors, prospectively. Derogatis, Abeloff, and Melisaratos (1979) suggested that the utilisation of suppression and denial are associated with lower adjustment levels and survival rates. Defence mechanisms are unconscious barriers which are intended to protect the self from potentially harmful information. They are activated prior to the cognitive processing of information, and can therefore mediate the effects of a traumatic event by interfering with the processing and incorporation of crucial trauma-relevant information into the patient’s knowledge. An immature defence style (including for example ‘denial’) is also likely to interfere with help-seeking behaviour and acceptance of social help.

Emotional coping was the second variable this study concluded to have good predictive power on PTSD severity. The use of emotion-focused coping strategies was associated with more PTSD symptoms. This adds to the findings by Drageset and Lindstrøm (2003) by indicating that although problem-focused and avoidant coping were not related to decreased symptomatology they appear to be more adaptive when used by BC patients than emotion-focused coping. This finding is furthermore in accordance with results from the study on HIV patients mentioned earlier (Pedersen & Elklit, 1998).

Using an estimation of PTSD symptoms and common trauma-related symptoms at T1 to predict PTSD at T2 is based on the fact that subclinical levels of PTSD are often reported to predict later PTSD. Mehnert and Koch (2007) reported that the relative risk of having PTSD at T2 was six times as high among patients who were diagnosed with PTSD at T1. Observing non-clinical PTSD symptoms at T1 is beneficial for identifying the symptomatic patients who did not meet the criteria for a full PTSD diagnosis. We found that avoidance
was the only symptom cluster to significantly predict PTSD severity one year later. This is interesting as 37% of the patients showed substantial changes in the reporting of avoidance symptoms from T1 to T2 which was in accordance with our hypothesis that avoidance is low in patients still undergoing treatment for BC. A possible explanation for this finding is that high levels of avoidance may interfere with successful processing of the cancer experience. The final variable entered in the regression analysis proved to be the strongest predictor of PTSD severity. The finding that negative affectivity was associated with an increased risk of reporting cancer-related post-traumatic stress symptoms is in accordance with previous studies on neuroticism in BC patients (Matsuoka et al., 2005; Tjemsland et al., 1998). Negative affectivity has been implicated in several kinds of symptomatology (Hettema, Prescott, & Kendler, 2004; Kendler et al., 2004) and thus appears to serve as a non-specific predictor of psychopathology in general. Negative affectivity may increase the risk of developing PTSD by affecting cognitive appraisal of trauma-related stimuli as negative affectivity/neuroticism is associated with a tendency to experience negative and upsetting emotions (Costa & McCrae, 1987).

**Implications for clinical practice and future research**

The results of this study support the usefulness of the PTSD diagnosis in cancer settings. A significant minority of BC patients come to suffer from PTSD over time. The results from this study suggest that early screening for the use of immature defence styles, emotional coping strategies, avoidance, and negative affectivity may help to identify those most at risk of developing cancer-related symptoms of PTSD. The early identification of these patients may help decrease suffering over time. Future research is needed to confirm these findings and to search for alternative ways of identifying at-risk patients early on. The 79% response rate in this study suggests that postal surveys can be a relatively efficient way of contacting patients. However, response rates may be increased by giving patients the opportunity of responding via the internet which may make it easier for some respondents to answer and prevent data loss due to questionnaires getting lost in the mail. By increasing the response rates researchers can limit the risk that responders may not be representative of BC patients. Furthermore, the present findings show that although the mean symptom level in the total sample did not change much over time, there were significant differences at subgroup level with some patients reporting a significant symptom decrease and others reporting an increase in symptom severity leading to more patients meeting criteria for a PTSD diagnosis at T2 than was the case at T1. More research is needed to examine which psychological variables are related to symptom changeover time. Such research is invaluable for clinical efforts to prevent intensification of symptoms and aid recovery from PTSD.

**Conclusion**

The findings from this study provide further evidence that the psychological outcomes of a cancer diagnosis can be long lasting. Moreover, although there was a general decrease in post-traumatic symptomatology and general distress in the first year after diagnosis, more than twice as many women met criteria for a PTSD diagnosis at T2 compared to T1. Indeed, the PTSD diagnostic framework seems very well suited for describing the psychological state of BC survivors one year after diagnosis. This highlights the need for early identification of at-risk individuals. Four variables at T1, all measured on validated, short, self-report type questionnaires were identified as strong predictors...
of PTSD at T2. Together, they explain approximately 65% of the variability of PTSD symptomatology at T2. Their application for screening can be easily implemented in a self-report questionnaire with less than 50 items. Further work on identifying additional predictors and increasing the predictive power of the model is still needed.

References


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