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Posttraumatic growth and associated socio-demographic and clinical factors in Chinese breast cancer survivors

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A B S T R A C T

Purpose: The factors that affect posttraumatic growth (PTG) in breast cancer survivors have been discussed for many years, but it remains unclear which are most influential. The purpose of this study was to determine the level of PTG and identify associated socio-demographic and clinical factors in Chinese breast cancer survivors.

Methods and sample: A descriptive research design with a convenience sampling method was employed to collect data using the simplified Chinese version of the Posttraumatic Growth Inventory (PTGI-SC). This questionnaire was administered to 1227 participants recruited from eight tertiary hospitals and cancer survivor groups in Beijing between April 2010 and April 2012.

Key results: PTG is present in Chinese breast cancer survivors, with an average PTGI-SC score of 70.18 ± 15.85. There were five variables in the regression model: exercise, other chronic disease, income, education level, and work status. Exercise showed the strongest positive association with PTG after breast cancer. Household income and educational level also positively influenced PTG. Survivors with other accompanying chronic diseases had lower PTG. Retired survivors had the highest PTG, those working had moderate PTG, and those on sick leave had the lowest PTG.

Conclusions: PTG is common among Chinese breast cancer survivors. It is positively associated with exercise, income, education, and retirement, and negatively associated with the presence of other chronic diseases and working. The results may provide information on how to promote the development of PTG while nursing breast cancer survivors.

Introduction

Breast cancer is one of the most commonly diagnosed cancers in women, both in the developed and developing world (World Health Organization, 2010). When struggling with breast cancer, survivors often experience positive psychological changes. Tedeschi and Calhoun (1996) reported positive changes subsequent to stressful events or crises and coined the most widely used term, posttraumatic growth (PTG), which is considered to be the "positive psychological change experienced as a result of the struggle with highly challenging life circumstances" (Tedeschi and Calhoun, 2004). PTG can be assessed with the Posttraumatic Growth Inventory (PTGI) (Tedeschi and Calhoun, 1996) and PTGI scores in breast cancer survivors have been reported to range from 47 to 73 (Manne et al., 2004; Sears et al., 2003; Weiss, 2004).

It is widely accepted that PTG is common among breast cancer survivors, and promoting its development can improve psychological health. However, the PTG-associated factors after breast cancer remain conflicting. With regard to socio-demographic variables, it was reported that higher PTG was associated with higher educational level (Bellizzi and Blank, 2006; Bower et al., 2005; Cordova et al., 2007; Koutrouli et al., 2012; Kucukkaya, 2010; Sears et al., 2003) and higher household income (Bower et al., 2005; Koutrouli et al., 2012). Studies also reported that younger (Bellizzi and Blank, 2006; Cordova et al., 2007; Koutrouli et al., 2012; Manne et al., 2004; Mystakidou et al., 2008), married (Bellizzi and Blank, 2006), employed (Bellizzi and Blank, 2006) or religious (Ho et al., 2011) breast cancer survivors had higher PTG. Ethnicity also plays a role; one study reported that African American and Hispanic breast cancer survivors experienced greater benefits than non-Hispanic white women (Urcuyo et al., 2005). Conversely, other researchers have not found significant

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relationships between PTG and age (Tomich and Helgeson, 2004; Urcuyo et al., 2005; Weiss, 2004), educational level (Manne et al., 2004; Petrie et al., 1999; Wang, 2011), income (Manne et al., 2004; Petrie et al., 1999; Wang, 2011), employment/work status (Bellizzi et al., 2010; Kucukkaya, 2010), number of children (Wang, 2011), ethnicity (Sears et al., 2003), occupation (Kucukkaya, 2010), exercise (Morris et al., 2012), religion (Thombre et al., 2010). In addition, it was reported that there were no significant differences of PTG levels between breast cancer support volunteers (breast cancer survivors who help others newly diagnosed with breast cancer patients) and non-volunteers (Cohen and Numa, 2011). Regarding socio-demographic variables, a systematic review (Koutrouli et al., 2012) concluded that age, education, and economic status were associated with PTG. Based on clinical factors, it is hypothesized that survivors with a longer time since diagnosis (Manne et al., 2004; Sears et al., 2003) or less severe disease (Tomich and Helgeson, 2004) had higher PTG, and survivors with comorbidity (Bellizzi et al., 2010; Wang, 2011) had lower PTG. Chemotherapy was associated with PTG (Lelorain et al., 2010), while PTG was negatively related to radiotherapy (Mols et al., 2009). The majority of studies reported no association of PTG with surgery (Manne et al., 2004; Sears et al., 2003; Weiss, 2004) or breast cancer family history (Wang, 2011). The results of a longitudinal study may hold more weight, and the results of a study conducted in China (Wang, 2011) are more likely to represent typical Chinese conditions. That is, PTG in breast cancer survivors may be associated with time since diagnosis and with comorbidity.

However, most of the previous studies were mainly designed to identify other associations, such as the dynamic change of PTG after breast cancer and the influence of intervention on PTG. The results of the associations between PTG and socio-demographic and clinical factors in these studies showed affiliations with other findings. However, these studies did not follow a strict design that dictated which PTG-associated factors were collected. Also, the sample sizes of some of the studies were not sufficiently large; this may have decreased representativeness, which can impact the stability and reliability of the results. Therefore, the clinical utility of these results is questionable, making it necessary to perform a study with a large sample size to obtain reliable results to guide clinical nursing practice. The work described here had two aims: (1) to identify the level of PTG after breast cancer in Chinese breast cancer survivors and (2) to find possible relationships between PTG and socio-demographic and clinical characteristics.

Methods

Design and sample

A descriptive survey design was used. The breast cancer survivors were included if they met the following criteria: (1) 18 years of age or older, (2) definitively diagnosed by a histopathological examination, and (3) had undergone breast cancer surgery, chemotherapy, or radiotherapy. This study was implemented in eight tertiary hospitals and several cancer survivor groups (organizations mostly run by health care professionals and cancer survivor volunteers recruited to help other cancer survivors) in Beijing between April 2010 and April 2012. A convenience sampling method was used to collect data. We contacted 1344 breast cancer survivors; 91 of them refused to participate in this study, mainly because either they were not interested or had no time for it. Finally, a total of 1253 breast cancer survivors were recruited. After providing informed consent, all participants were asked to answer the written questionnaire on the basis of their changes after breast cancer and return it to the hospital. Researchers checked the completeness of questionnaires when they were finished. We excluded 26 incomplete questionnaires, which resulted in a total of 1227 qualifying questionnaires.

Simplified Chinese version of the PTGI (PTGI-SC)

The PTGI was originally developed by Tedeschi and Calhoun (1996) to measure psychological growth after trauma. It is a 21-item questionnaire with answers rated from 0 to 5 (0 means "I did not experience this as a result of my crisis," and 5 means "I experienced this to a very great degree as a result of my crisis"). It consists of five factors: relating to others (seven items), new possibilities (five items), personal strength (four items), appreciation of life (three items), and spiritual change (two items). The scale yields a total score ranging from 0 to 105, with higher scores reflecting greater psychological growth. Tedeschi and Calhoun (1996) reported both good internal reliability ($\alpha = 0.90$) and test–retest reliability (0.71) over a 2-month period.

The PTGI was translated into the traditional Hong Kong Chinese version (PTGI-C) by Ho et al. (2004) to measure a Hong Kong population in 2004. However, the language used in Hong Kong is traditional Chinese, which is different from simplified Chinese on the Chinese mainland, so we had to translate it to the simplified Chinese version (PTGI-SC) first. The PTGI-SC was then translated, modified, and validated. The content validity index of the PTGI-SC was 0.980 and Cronbach's α for the total PTGI-SC was 0.92 (Liu et al., 2014).

Ethical considerations

Ethical approval was obtained from the university's institutional review board (code number: 2010 SY24). The purpose and nature of the study was explained to all participants by the researchers. All participants were asked to sign a written consent form before participating in the study.

Statistical analyses

The data were input into Epidata 3.0 software. After systematic logic error detection, the database was imported into SPSS 16.0. Descriptive statistics were used to summarize responses to the PTGI-SC. First, univariate analysis was used to screen PTG-associated factors. The partial correlation coefficient was used to identify the relationship between PTG and numerical data. The measurement data were analyzed by analysis of variance (ANOVA) if they were normally distributed with homogeneity of variance. If not, the Mann–Whitney *U*-test or Kruskal–Wallis *H*-test was used. Variables with $p < 0.2$ in the univariate analysis were entered into the regression model (Stankov et al., 2012). We used dummy variables to mark categorical variables. Multiple regression analysis was used to identify the factors influencing PTG after breast cancer using an "enter" procedure for dummy variables and a "stepwise" procedure for quantitative and ordinal categorical variables. We set the probabilities of F to enter or remove a variable as 0.05 and 0.10, respectively.

Results

Characteristics of the study sample

All the participants were women and aged between 26 and 79 years of age (53.30 ± 8.05 years). The time since breast cancer diagnosis ranged from 4 months to 26 years, with a median of 3.5 years. Overall, 2.7% participants had no children, 84.4% had one child, and 12.9% had more than two children. A total of 68.5% of participants had graduated from middle school, and 79.5% were