

RESEARCH ARTICLE

Healthy Lifestyle Changes During the Period Before and After Cancer Diagnosis Among Breast Cancer Survivors

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Abstract

Aims: The purpose of the present study was to investigate healthy lifestyle changes during the period before and after breast cancer diagnosis in Taiwan. **Materials and Method:** Lifestyle changes during the period before and after cancer diagnosis were assessed by convenience sampling with a structured questionnaire for breast cancer survivors. **Results:** A total of 235 breast cancer survivors completed the healthy lifestyle scale. The mean values before and after breast cancer diagnosis of the participants were 3.27 and 3.73. The final five dimensions for the period before breast cancer diagnosis were: had not experienced stress; had exercised; had maintained sleep quality; had maintained body weight; and had maintained relationships. The final five dimensions for the period after breast cancer diagnosis were: sleep quality; had not experienced stress; relationship; had exercised; and had maintained body weight. A paired-t test was applied to examine the differences before and after cancer diagnosis, revealing that the total average scores of the participants on the healthy lifestyle scale clearly differed statistically ($t = -17.20, p < 0.01$); and the nine dimensions before and after testing also demonstrate a marked statistical difference ($p < 0.01$). **Conclusions:** These findings are helpful in understanding the healthy lifestyle changes during the period before and after cancer diagnosis among breast cancer survivors. It is expected that these results can offer references of self-care for this group of patients.

Keywords: Breast cancer survivors - healthy lifestyle - stress - relationships - exercise - sleep quality - body weight

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Introduction

The incidence rate of the breast cancer was 141.0 per 100,000 women per year in the United States (National Institutes of Health, 2010). According to statistics from 2001-2007 in the United States, the five-year relative breast cancer survival rate was 91.4% in White people, and 77.4% in Black or African American people (National Institutes of Health, 2010). The five-year relative breast cancer survival rate has been reported 82.6% in Taiwan (Bureau of Health Promotion, 2008). Because the population of breast cancer survivors has grown persistently, understanding the varying degrees of healthy lifestyles have become critical.

However, cancer survivors believe that implementing healthy behaviors can prevent cancer recurrence (Bloom et al., 2004; Rabin and Pinto, 2006). Pursuing healthy lifestyles deeply affects individual health conditions (Kushi et al., 2006). Healthy lifestyles facilitate fast recovery, coping with life stress, and improving the quality of life (Walker et al., 1995). Reinforcing the importance of weight management, regular exercise, and a plant-based diet can prevent and control cancer and can assist patients in making decisions regarding alcohol use to optimize risk reduction and increase physical activity (Demark-Wahnefried et al., 2008). However, cancer survivors are

generally obese and lead sedentary lifestyles. Many studies have shown that cancer survivors are low-level physical activity (Holmes et al., 2005; Meyerhardt et al., 2006; Holick et al., 2008; Irwin, 2008). Therefore, effective exercises improve not only the quality of life of cancer patients but also the prognosis for survival (Margaret et al., 2006). Magné et al. (2011) reviewed literature on the relationship between breast cancer and lifestyle, showing that physical activity is recommended to avoid excessive weight gain. Hence, exercising regularly, maintaining a healthy diet and regular rest, and achieving stress relief can substantially improve breast cancer survivors' health and quality of life (Kaelin, 2007; Wang and Chung, 2012). In addition, most breast cancer survivors appear susceptible sleep disorder (Carpenter et al., 2004; Dirksen and Epstein, 2007). Cancer survivors should be encouraged to exhibit healthy behaviors and lead a positive lifestyle (Rabin and Pinto, 2006; Norman, 2007; Demark-Wahnefried et al., 2008). About previous research on the lifestyles of breast cancer survivors, were described as follows. Yaw et al. (2011) examined 368 women with breast cancer, discovering that mean weight change from a year past diagnosis to study access were 2.73 kg. In fact, previous studies have investigated the healthy lifestyles of breast cancer survivors regarding quality of life and adaption (Kreitler et al., 2007). However, studies reporting that

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healthy lifestyle changes during the period before and after cancer diagnosis among breast cancer survivors are few. Therefore, the purposes of this study was to investigate the healthy lifestyle changes during the period before and after cancer diagnosis. It is expected that these results can offer references of self-care for breast cancer survivors.

Materials and Methods

Design

This study describes the healthy lifestyle changes during the period before and after cancer diagnosis. A convenience sampling was used. A structured questionnaire was used to conduct face-to-face interviews with the participants. The six interviewers were nursing students. Before executing the interviews, interviewers were trained.

Subjects

The study participants were recruited from supportive groups of breast cancer patients from ten hospitals in Taiwan. The inclusion criteria were (a) age greater than 18 years, (b) able to communicate in Chinese. The research proposal was approved by the ethics committee of the Institutional Review Board (IRB). A total of 235 patients were interviewed.

Instruments

The participants were demanded to complete the healthy lifestyle scales (before and after of the breast cancer diagnosis), as well as general demographic information. Most items for the questionnaire were obtained from literature and existing questionnaires. We conducted a content validity assessment with professional experts. We invited three cancer nursing professionals and two cancer clinicians to accomplish expert content validity review the items using a content validity index (CVI) (Lynn, 1986).

Demographic (e.g. age, education, marital status, religion, employment status, income, family history of cancer, menopausal status, parity experience, breastfeeding experience) and clinical information (e.g. cancer stage, years since initial diagnosis, BMI) was collected.

Healthy Lifestyle Scale

This scale contain two parts before and after of the breast cancer diagnosis. Each part includes 42 items that are rated based on five grades: strongly oppose - strongly agree (1-5). Total scores range from 42 to 210, with a higher score indicating a higher healthy lifestyle level. This scale includes nine dimensions (e.g. intake & output, keep body weight, have not smoking and drink wine, have not pollution, exercise, sleep quality, have not stress, relationship, and attitude). The Cronbach's alpha of the healthy lifestyle scale (before and after of the breast cancer diagnosis) are 0.85 and 0.75.

Analysis

SPSS 20.0 (SPSS, Inc., Chicago, IL, USA) for Windows software analyzed data to decide demographic

characteristic percentages, means, standard deviations (SD), and related factors. A paired-t test was applied to examine the differences before and after cancer diagnosis

Results

Demographic Characteristics

A total of 235 breast cancer survivors completed and returned questionnaires. The average participant age is 56 years (SD=9.0years), and the average time since initial diagnosis is 8.0 years. The average BMI is 23.0. Among the participants in this study, 42.6% completed education at a junior high school level and 77% were married. About 72.3% participants reported being unemployed, 88.1% had childbirth experienced and 82.1% of participants were in the menopausal status (Table 1).

This healthy lifestyle scale includes 42 items. The mean healthy lifestyle scales (before and after breast cancer diagnosis) of the participants were 3.27 (SD=0.64) and 3.73 (SD=0.31). The top five items for the period before the breast cancer diagnosis were had not smoked, had not drunk wine, had not experienced feelings of arrogance, had not experienced feelings of jealousy, and had a bowel movement ≥ 3 times/week). The top five items for the period since breast cancer diagnosis were have not smoked, have not drunk wine, have not experienced feelings of arrogance, have not experienced feelings of jealousy, and have felt appreciative and grateful toward

Table 1. Demographic Characteristics of breast Cancer Survivors (n=235)

Variables	Mean (SD)	N (%)
Age (years)	56.0(9.0)	
Years since initial diagnosis (years)	8.0(4.7)	
BMI	23.0(3.2)	
Senior education		
Junior high school		79 (33.7%)
Senior high school		100 (42.6%)
College and above		56 (23.9%)
Marital Status		
Married		181(77.0%)
Others		54(23.0%)
Employment Status		
Unemployed		170(72.3%)
Employed		65(27.7%)
Religious		
No		39(16.6%)
Have		196(83.4%)
family history of cancer		
Yes		96(40.9%)
No		139(59.1%)
Childbirth experience		
Yes		207(88.1%)
No		28(11.9%)
Breastfeeding experience		
Yes		100(42.6%)
No		135(57.4%)
Menopausal status		
Yes		193(82.1%)
No		42(17.9%)
Cancer stage		
0		18(7.7%)
I		87(37.0%)
II		98(41.7%)
III		28(11.9%)
IV		4(1.7%)

Table 2. The Top Five Items During the Period Before and after Cancer Diagnosis (n=235)

Variables (before)	Mean±SD	Variables (after)	Mean±SD
16. had not smoked	4.79±0.65	16. had not smoked	4.87±0.43
12. had not drunk wine	4.33±0.82	12. had not drunk wine	4.62±0.64
38. had not experienced feelings of arrogance	4.12±0.81	38. had not experienced feelings of arrogance	4.29±0.70
34. had not experienced feelings of jealousy	3.89±0.89	34. had not experienced feelings of jealousy	4.25±2.66
13. had a bowel movement≥3 times/week	3.88±1.05	40. have felt appreciative and grateful toward others	4.15±0.81

Table 3. The Final Five Items During the Period Before and after Cancer Diagnosis (n=235)

Variables (before)	Mean±SD	Variables (after)	Mean±SD
24. have not a great sense of responsibility	2.14±1.01	24. have not a great sense of responsibility	2.89±1.09
25. have not a fast-paced life.	2.33±1.13	29. have not perfection	3.02±0.98
29. have not perfection	2.38±1.07	20. sleep quality	3.07±1.15
23. minimal stress from my life and work	2.58±1.09	30. a lot of friends	3.15±0.99
14. exercise (3 times/week)	2.62±1.18	19. go to bed before 11:00pm	3.18±1.13

Table 4. The Final Five Dimensions During the Period Before and after Cancer Diagnosis (n=235)

Variables (before)	Mean±SD	Variables (after)	Mean±SD
have not stress	2.35±0.99	sleep quality	3.21±0.78
exercise	2.62±1.18	have not stress	3.24±0.86
sleep quality	2.98±0.83	relationship	3.36±0.64
keep body weight	3.20±1.28	exercise	3.38±1.27
relationship	3.23±0.63	keep body weight	3.39±1.41

others (Table 2).

The final five items for the period before the breast cancer diagnosis were had not a great sense of responsibility, had not a fast-paced life, had not perfection, minimal stress from my life and work, and exercise≥3 times/week. The final five items for the period after breast cancer diagnosis were have not a great sense of responsibility, have not perfection, sleep quality, a lot of friends, and go to bed before 11:00 pm (Table 3).

The healthy lifestyle scale includes 9 dimensions. The final five dimensions for the period before breast cancer diagnosis were had not experienced stress, had exercised, sleep quality, had maintained body weight, relationship. The final five dimensions for the period after breast cancer diagnosis were sleep quality, had not experienced stress, relationship, had exercised, had maintained body weight (Table 4). A paired-t test was applied to examine the differences before and after cancer diagnosis, revealing that the total average scores of the participants on the healthy lifestyle scale clearly differ statistically ($t = -17.20$, $p < 0.01$). This indicates that cancer diagnosis increased the healthy behaviors of the participants; and the nine dimensions before and after testing also demonstrate a marked statistical difference ($p < 0.01$).

Discussion

In this study, the average BMI is 23.0. The majority of participants in this study had a normal BMI. This result is not supported by some studies (Kacem et al., 2010; Yaw et al., 2011). Furthermore, the results of this study show that the average participant age is 56 years and the majority of participants were in the menopausal status. These results are similar to several other studies (Ferrucci et al., 2011; Panjari et al., 2011; Turner, 2011). Breast cancer survivors in this study for the period after breast cancer diagnosis were have not smoked, have not drunk

Table 5. The Healthy Lifestyle Changes During the Period Before and after Cancer Diagnosis (n=235)

Variables M±SD	t
total	-17.20**
before	3.27±0.42
after	3.73±0.31
1.intake & output	-16.74**
before	3.24±0.55
after	3.85±0.46
2.keep body weight	-3.0**
before	3.20±1.29
after	3.39±1.41
3.have not smoking and drink wine	-8.36**
before	4.24±0.60
after	4.53±0.47
4.have not pollution	-5.29**
before	3.40±.91
after	3.60±.81
5.exercise	-9.22**
before	2.62±1.18
after	3.38±1.27
6.sleep quality	-5.24**
before	2.98±.83
after	3.21±.78
7.have not stress	-13.85**
before	2.35±1.0
after	3.24±.86
8.relationship	-3.65**
before	3.22±.63
after	3.36±.64
9.attitude	-10.13**
before	3.50±.49
after	3.83±.44

wine, have not experienced feelings of arrogance, have not experienced feelings of jealousy, and have felt appreciative and grateful toward others. They stopped smoking and drinking wine, which promoted good health (Norman et al., 2007; Demark-Wahnefried et al., 2008; Holick et al., 2008; Weiner et al., 2010; Magné et al., 2011). Therefore, cancer patients took action to decrease stress or change their mood, which improved their lifestyles (Rabin and Pinto, 2006; Wang and Chung, 2012).

This study showed that healthy lifestyles before and after breast cancer diagnosis such as have not a great sense of responsibility, have not perfection. Moreover, the breast cancer survivors in this study reported that they were still troubled by stress. These results were consistent with many studies (Stewart et al., 2001; Panjari et al., 2011; Wang and Chung, 2012). The majority of participants in this

study had reported having sleep problems. The majority of participants in this study had sleep problems. All of these studies are supported by several studies (Stewart et al., 2001; Carpenter et al., 2004; Dirksen & Epstein, 2007; Wang et al., 2010; Ferrucci et al., 2011; Panjari et al., 2011; Wang and Chung, 2012). They reported lack of exercise, these observations are supported by numerous studies (Holmes et al., 2005; Meyerhardt et al., 2006; Holick et al., 2008; Irwin, 2008; Wang and Chung, 2012).

This study applied a paired-t test to examine the differences before and after cancer diagnosis. The healthy lifestyle scores clearly differ statistically, indicating that cancer diagnosis increases healthy behaviors. However, these results were consistent with many studies (Norman et al., 2007; Weiner et al., 2010; Demark-Wahnefried et al., 2008; Holick et al., 2008; Magné et al., 2011). Cancer survivors attempted to change their unhealthy behaviors.

This study had limitations. This research was based on breast cancer survivors reflecting on their healthy lifestyles. The study design could be a long-term follow-up to determine healthy lifestyle factors that are more realistic. Future research could consider conducting long-term follow-up to survey the characteristics of healthy lifestyles.

In conclusion, after breast cancer diagnosis, the breast cancer survivors in this study reported having problems with sleep quality, stress, relationships, exercising, and maintaining body weight. The total average scores on the healthy lifestyle scale clearly differ statistically (the differences before and after cancer diagnosis). It is expected that these results can offer a reference of self-care for breast cancer survivors. We encourage cancer survivors to improve their lifestyles.

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