



The prevalence rate of deviations in body constitutions and related factors in follow-up stage breast cancer patients—A nationwide study



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ABSTRACT

Objectives: The aim of this study was to apply a rigorous traditional Chinese medicine (TCM) body constitution questionnaire (BCQ) to survey the prevalence rate of deviations in body constitution and to explore the health-related lifestyle behavior factors of deviations in body constitution.

Design: A cross-sectional study was administered through postal mail. Subjects were recruited from a national organization for breast cancer patients (Taiwan Breast Cancer Alliance).

Setting/main outcome measures: Data were obtained from 311 breast cancer patients by questionnaires including a demographic record sheet, lifestyle behavior scales and the BCQ (Yang-Xu, Yin-Xu, and Stasis). Differences concerning the presence of body constitutions were analyzed by Chi-square tests and analyses of variance, and potential predictive factors were analyzed using multivariate logistic regression.

Results: In total, 55.3% of the subjects had a Yang-Xu constitution, 61.0% had a Yin-Xu constitution, and 47.6% had a Stasis constitution. A total of 42.8% of the patients displayed a combination of the three types of body constitutions. Feeling stressed, physical exercise, and favoring fried food were predictors of the combined Yang-Xu, Yin-Xu and Stasis constitutions ($p < 0.05$). Staying up late was significantly associated with Yin-Xu ($p = 0.017$), and favoring salty food was significantly associated with Stasis ($p = 0.019$).

Conclusions: A high prevalence of deviations in body constitutions was observed in the follow-up stage of breast cancer patients. Increasing the adherence to healthy lifestyle behaviors might strengthen and balance body constitution, which could improve supportive care in breast cancer survivors.

1. Introduction

Breast cancer is one of the most common malignancies in women worldwide,¹ with an overall five-year survival rate of up to 90% in developed countries.^{1,2} The related occurrence of a second malignancy and chronic disease is increasing among breast cancer survivors because of their prolonged lifespan.^{3,4} Although many factors, including treatment methods and genetic factors, have been proposed as prognostic factors in breast cancer patients,^{5,6} some studies have shown that healthy lifestyle behaviors could markedly increase the survival rate and decrease the recurrence rate of breast cancer survivors.^{7,8}

Suggestions for healthy lifestyle behaviors to prevent disease have become an important issue for the follow-up stages of breast cancer patients. Breast cancer patients' compliance with healthy lifestyle behaviors is lacking.⁹ Enhancing patients' motivation to change health behavior is the main goal for healthcare providers.

Traditional Chinese medicine (TCM) has been incorporated into the national health care system, and most medical fees are covered by National Health Insurance (NHI) in Taiwan. TCM is generally combined with Western medicine in the treatment course or recovery period of breast cancer patients.^{10,11} According to a previous study, 81.5% of newly diagnosed breast cancer patients in Taiwan have used TCM at

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least once.¹² A primary reason for the use of TCM was the belief that TCM could adjust the deviated body constitution, enhance the immune system, and prevent the recurrence of breast cancer.¹³ In addition, TCM theories note that any deviation in body constitution could influence patients' health status and treatment outcome. The measurement of and regulation of an individual's deviated body constitution might prevent or help treat a disease.¹⁴ Previous studies have shown that deviations in body constitution reduced the survival rate of cancer.¹⁵ The aggravated autonomic nervous system (ANS) function resulted in a poor prognosis for recovery from illness in cancer patients.^{16,17} Adjustment of the deviation in body constitution could minimize the frequency of illness by regulating health-related factors, such as diet and food properties, exercise, sleep, emotion, and living environment.^{18–21}

This study combined the concepts of TCM body constitution and the beliefs of TCM therapies in breast cancer patients. We aimed to understand the prevalence and health-related lifestyle behavioral factors of deviations in body constitution in follow-up stage breast cancer patients and thereby stimulate patients' motivation to adhere to healthy lifestyle behaviors. The exact distribution of deviations in body constitutions in follow-up stage breast cancer patients has not been studied thoroughly or frequently; therefore, our study applied a rigorous body constitution questionnaire (BCQ) to survey the prevalence rate of deviated body constitutions and to explore health-related lifestyle behavioral factors. The results could allow medical personnel to plan TCM health promotion programs to fit the demands of TCM and personal needs in follow-up breast cancer patients.

2. Materials and methods

2.1. Participants

Initially, the sample size was estimated using G*Power: Statistical Power Analyses.²² Logistic regression was used to compute the required sample size. The α error probability was set to 0.05; the power was 0.95; and the odds ratio was set at 1.8. The calculated sample size was 245. According to the recovery and completion rates, a total of 450 eligible breast cancer patients were enrolled from the 37 branches of the Taiwan Breast Cancer Alliance (TBCA) from June to December 2012. The inclusion criteria for the patients were as follows: (1) Pathology-confirmed breast cancer; (2) Ambulatory status and ability to perform all activities of self-care with the Eastern Cooperative Oncology Group (ECOG) performance scores of grade 1 or 0; (3) No evidence of distant metastasis; (4) Junior high school graduate or above; (5) No acute disease in the past month; and (6) Agreed to sign an informed consent form and to participate in this study. Each patient was invited to join this study by the TBCA, and upon agreement to the informed consent form, instructions and questionnaires were sent by post mail to each woman. Protecting the privacy of the patient was described in the instructions. All patients completed the questionnaires anonymously with the assistance of a well-trained investigator (SC Lin) on a dedicated telephone line. Patients who did not complete the questionnaires were excluded. The questionnaires were sent to a total number of 450 patients, and 311 of these patients completed the forms and were included in the study.

2.2. Measurements

2.2.1. Demographic record sheet

All patients were asked to report their demographic information, including age, initial breast cancer stage, how long their breast cancer had been followed-up, emotions and lifestyles. The patients were divided into three age groups as follows: younger than the 25th percentile, the 25th to 75th percentile, and older than the 75th percentile. The length of time their breast cancer had been followed-up reflected the duration from the date they had completed surgery, chemotherapy or radiotherapy to the date they answered the ques-

tionnaires. Based on the 90% overall five-year survival rate of breast cancer,² the follow-up duration cut-off point was set at 5 years. Feeling stressed and the lifestyle factors were previously described factors^{23,24} and included physical exercise, properties of favorite foods, and amount of sleep. Feelings of stress were measured by the following question, "How much stress have you felt in the past month?", and the response was a 0–10 numerical rating score. A score of 0–2 was defined as "feeling no stress"; a score of 3–5 as "feeling mild stress"; a score of 6–8 as "feeling moderate stress"; and a score of 9–10 as "feeling extreme stress". Physical exercise was defined as exercise activity three to five times per week for at least 30 min. The patients answered "yes" or "no". According to TCM theory, food properties include acidic, bitter, sweet, spicy, salty, and fried as well as cold drinks and cold food.^{18,25} The answers were categorized according to frequency per week as "no", "seldom", or "often". The patients were asked to respond with a "yes" or "no" regarding whether they went to sleep after midnight more than five times per week. The face validity and content validity of health-related factors in body constitution items were evaluated by three TCM doctors and two TCM nursing experts. The content validity index (CVI) was 0.88.

2.2.2. Body constitution questionnaire (BCQ)

The BCQ was developed by Su²⁶ and was based on TCM body constitution theory. Body constitution has been interpreted by TCM to be the physiological and psychological state maintained by the dynamic combination of materials (Yin) and energy (Yang) in the human body.^{14,17} When Yin-Yang is deviated, such as Yang-Xu or Qi-Xu, Yin-Xu or Blood-Xu, or Stasis or Phlegm in the body, some psychophysiological symptoms and signs appear. A Yang-Xu constitution implies that a person has diminished energy in maintaining body function and exhibits symptoms such as chest tightness, fatigue, shortness of breath, cold intolerance, and a loose stool.^{27–30} A Yin-Xu constitution indicates that the materials necessary to perform or maintain body functions are weakened, which leads to symptoms of thirst, sleeplessness, hot flushes, and a hard stool.^{14,28,29,31} A Stasis constitution indicates that the dynamic Yin and Yang interactions are slowed and deficient. A Stasis constitution might express symptoms such as dizziness, chest tightness, poor peripheral circulation, fluid retention in the body, and numbness in the limbs.²⁵ Most clinical evaluations of body constitution type were previously conducted according to TCM using four diagnostic processes (i.e., inspection, listening and smelling, inquiry, and palpation) based on the physicians' judgment.³² Recently, the reliable and valid BCQ was developed,^{14,27} which could be used in research or clinical practice. In this study, we used the tools of the Yang-Xu (BCQ+), Yin -Xu (BCQ-) and Stasis (BCQs) questionnaires that were developed by researchers in Taiwan to measure deviations in body constitution.

The BCQ was used to measure the psychological and physiological states of deviations in body constitution in each patient during the past month. The BCQ consists of 44 items with a five-point frequency scale ranging from 1 (never) to 5 (always) and intensity scales ranging from 1 (not at all) to 5 (very severe). All items are organized into three independent BCQs as follows: 19 items in the Yang-Xu constitution (BCQ+) with scores ranging from 19 to 95; 19 items in the Yin-Xu constitution (BCQ-) with scores ranging from 19 to 95; and 16 items in the Stasis constitution (BCQs) with scores ranging from 16 to 80. Some items belonged to all three questionnaires. A higher BCQ+, BCQ-, or BCQs score indicates a more pronounced Yang-Xu, Yin-Xu, or Stasis constitution, respectively. The subject was considered to have a Yang-Xu constitution if the sum of BCQ+ scores was ≥ 30.5 .^{14,27} A total BCQ- score ≥ 29.5 was considered a Yin-Xu constitution.³³ A patient with a sum of BCQs scores ≥ 26.5 was considered to have a Stasis constitution.³⁴ The BCQ was established through a Delphi process, and assessments of internal validity, internal consistency, test-retest, and criterion-related tests were used to confirm the reliability and validity of the BCQ.^{14,27,33–35} The Cronbach's α and intraclass correlation

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