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Exploring the Role of Self-Efficacy for Coping With Breast Cancer: A Systematic Review

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ABSTRACT

Background: Self-efficacy is a psychological source for helping patients adjust with breast cancer. The aim of the present review was to synthesize the studies on self-efficacy of women with breast cancer, to determine important factors affecting the perception of self-efficacy in breast cancer as well as to describe the role of self-efficacy in the breast cancer.

Methods: "Self-Efficacy (SE), Cancer-Related Self-Efficacy, Symptom-Management Self-Efficacy, Women, Breast Cancer, and Breast Neoplasms" , as keywords, were searched in PubMed, CINAHL, OVID, and Web of Science from 2000 to 2016. We included only original articles published in English language, measuring self-efficacy in women with breast cancer.

Results: Twenty-four articles were chosen based on the inclusion criteria. The results of this review revealed that demographic variables, breast cancer diagnosis and type of treatment, bio-psycho-socio-spiritual status, and physician-patient relationship affect cancer specific SE. SE impacts on physical and mental health, pain management, quality of life, body image, clinician-patient communication, and health information seeking behavior.

Conclusions: This review showed that breast cancer self-efficacy is a critical component for enhancement of goal-directed behaviors in patients and it should be supported by health care providers and family members. Findings of this review has some limitations, since great amount of findings were based on cross sectional data. Further research is needed to examine the impacts of breast cancer self-efficacy on health-related variables.

Introduction

Studies have shown that patients with higher self-efficacy (SE) could use an effective strategy to confront the illness and to arrive at an eligible psychological and medical consequence.¹ Cancer diagnosis, medical procedures, and treatment

are stressful situations for patients with cancer. Research in psycho-oncology field indicates that self-efficacy is an important factor in patients' capability to manage situations related to their cancer diagnosis and treatment.²

Perceived self-efficacy is a judgment of own personal ability to manage challenging contexts and arrive at a desired outcome.³ SE is an important concept in Bandura's social cognitive theory. In this theory, attention to interaction among cognition and other personal factors, behavior, and environment is important,⁴ and they influence on each other directionally.⁵ Therefore, SE is the result of an individual's thought patterns and emotional

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reactions, which, then, gives shape to the person's behavior.

SE affects the environment and social system.⁶ SE includes (a) estimation of difficult task, (b) generality (performing a task across various situations or only under limited circumstances), and (c) strength (high effort for completing a task and resiliency for attaining a goal).⁷

According to Social Cognitive Theory, SE is an individual's belief in own ability to succeed in own performance and this behavior will lead to certain outcomes.⁸ People's opinions about their ability to control and superiority over challenging situations are the central mechanisms of human agency, which are the impacts on goal seeking and goal attainment.⁴

⁶ The most influential sources which form SE include: mastery experience or performance outcome (past positive and negative experience in life), vicarious experience (other people's performances), social persuasion (including verbal persuasions), and physiological states (emotional arousal).⁹

In health context, SE affects health practices and for a patient, it is a cause of adaption to illness,¹⁰ increased well-being,¹¹ less psychological stress,¹² and lower functional disorder from the illness.¹³ Patients with higher SE experience lower challenges in their relationship with the health care team¹ and decreased SE related to physical dysfunction.¹⁴

Studies on patients with cancer have identified general SE as an individual factor for coping with cancer^{15,16} improving wellness,¹⁷ better quality of life^{18,19} and decreasing depression and anxiety in patients with cancer^{14,19,22} even in 1 year follow-up.¹⁸

Heitzmann *et al.*¹⁰ believed that cancer-specific SE includes 4 factors which are as follow: 1) independence (for doing daily living tasks) and thinking positively (hopeful attitude for coping with cancer)²³; 2) cooperating with a medical team (being self-confidence yourself by searching medical information and support); 3) coping with stress (patients' skill to be relaxed when facing with cancer diagnosis and treatment); and 4) managing emotions (patient's ability to express emotions and look for situations to share them).¹⁶

Patients with cancer with higher SE are better adjusted with cancer^{24, 25} and perhaps live longer than those with low rate of SE.¹⁹ They have higher self-care behaviors and lower physical symptoms of cancer.²⁶

Women with high SE managed and controlled symptom of cancer much more better.²⁷ One of the most common cancers in women is breast cancer.²⁸ SE in breast cancer survivors acts as a mediator of symptom distress¹⁵ and it has an influence on physical and psychological health.^{29, 30} Women with breast cancer who have a higher SE have lower depression and anxiety.¹⁸ Therefore, SE is a critical subject in oncology. Beliefs in individual efficacy impact on life choices, levels of motivation, quality

of functioning, persistence of severity, and dealing with distress.³¹

Various studies have been conducted on self-efficacy in women with breast cancer. Mohajjel Aghdam *et al.*³² studied self-efficacy in patients with breast cancer by a systematic method and synthesized 12 articles. They found that self-efficacy was related to quality of life, emotional wellness, and fatigue, though they did not determine the important factors affecting the perception of self-efficacy in women with breast cancer and did not examine the role of SE in the process of breast cancer (diagnosis, treatment, survivor and end stage). Therefore, the aim of this study, was to summarize and synthesize studies on self-efficacy for coping with breast cancer.

Methods

Articles examined in the present review were collected through a search in the following databases from 2000 to 2016: PubMed, CINAHL, OVID, Web of Knowledge, and Science Direct. We conducted a systematic search to obtain original studies relevant to self-efficacy for coping with breast cancer. In order to find MeSH keywords and entry terms, we used Medical Subject Heading and PubMed. We understood that self-efficacy is a MeSH heading and does not have any entry terms, and breast neoplasms is MeSH heading and have entry terms. Thus, keywords for the search included ("Self-efficacy" OR "Health self-efficacy" OR "Cancer-Related Self-Efficacy" OR "Symptom-Management Self-Efficacy") AND "Women" AND ("Breast Neoplasms" OR "Breast cancer").

Original articles published in English language measuring self-efficacy in women with breast cancer as an independent, mediator, and dependent variable were included. We included studies without any limitations about study design, sample size design, tools of measurement, stage of breast cancer, type of treatment, and demographic variables. The exclusion criteria were as follow: studies measuring another type of self-efficacy (for example physical activity self-efficacy), studies focusing on another cancer type, studies not focusing on self-efficacy for coping with breast cancer and studies which published before 2000.

A total of 8372 full text articles were found: 397 from PubMed, 1743 from CINAHL, 1299 from OVID, 866 from Web of Knowledge, and 4067 from the Science Direct. We screened the title of studies in database; duplicates were removed, some of those were about self-efficacy only or self-efficacy which was related to another type of cancer and some of those did not have any relation between self-efficacy and breast cancer. Therefore, we included 145 articles that were related to this study. Among full texts of selective studies, 121 of them did not meet the inclusion criteria; hence, those were excluded.

Finally, according to the inclusion criteria and the



aim of this study, 24 articles were included. Included studies based on these criteria were summarized in table 1. Recorded data included authors' name, aim of the research, country of the research, research sample size, participants' characteristics, research design, and as research findings shown in table 1.

The study design of these selected articles were as follow: 16 articles used cross sectional investigations^{14, 15, 29, 30, 33, 35-45} 5 articles were longitudinal studies,^{13, 18, 43, 46-48} 1 article used qualitative explorations,⁴⁹ 1 article used a randomized controlled trial,¹⁶ and 1 article used mixed method design.⁵⁰ Women participated in these studies suffered from breast cancer and were in the age range of 23 to 78 with stages I to IV breast cancer. Almost all participants had the history of breast cancer surgery, including breast conservation or mastectomy. Some of them received radiation therapy, chemotherapy or hormonal therapy, while they used mono or combined modality of treatments.

Fourteen studies were conducted in the United States of America,^{13-16, 30, 35-37, 39, 41, 42, 44, 45, 50} 1 was conducted in Canada,⁴⁹ 2 were carried out in the Europe,^{18, 43} 1 was done in Iran,⁴⁰ 1 was done in Turkey,⁴⁶ 3 were performed in Taiwan,^{33, 38, 48} 1 in china,²⁹ and 1 was done in Hong Kong.⁴⁷

Various assessment tools were used to measure self-efficacy in these studies. General self-efficacy

(GSE) scale (Cronbach's $\alpha=0.82$) was used in 5 studies the most common.^{18, 29, 43, 47, 50} The Cancer Behavior Inventory (CBI) (Cronbach's range=0.69 to 0.90) was used in 3 studies.^{36, 37, 40} The Symptom-Management Self-Efficacy Scale Breast Cancer (SMSES-BC) (coefficient $\alpha=0.96$ for the total scale) in 2 studies^{33, 38}; the Breast Cancer Self-Efficacy Scale (Cronbach's $\alpha=0.89$) was used in 2 studies^{35, 41} and the Stanford Emotional Self Efficacy Scale Cancer (SESES-C) (Cronbach's $\alpha=0.9$) in 2 studies.^{14, 30} Other assessment tools were used only once in these reviewed studies, including the Strategies Used by Patients to Promote Health (SUPPH) (Cronbach's $\alpha=0.92$ for the overall scale),⁴⁶ the Self-efficacy (Cronbach's $\alpha=0.93$),³⁴ Perceived Self-efficacy (Cronbach's $\alpha=0.93$),³⁹ the Breast Cancer Survivor Self-Efficacy Scale (Cronbach's $\alpha=0.93$),¹⁵ the Health self-efficacy (Cronbach's $\alpha=0.76$),⁴² the Self-Efficacy to Maintain Quality of Life Scale (SEQOL) (Cronbach's α range= 0.93 to 0.86),⁴⁸ the Modified Stanford Self-Efficacy Scale (Cronbach's $\alpha=0.91$),⁴⁹ and the Cancer self-efficacy (CSE) (Cronbach's $\alpha=0.8$).⁴⁵ In addition, 3 studies did not report the value of Cronbach's alpha for their used tools, which were the Stanford Inventory of Cancer Patient Adjustment,¹³ the Strategies Used by Patients to Promote Health (SUPPH),¹⁶ and the Perceived Efficacy in Patient-Physician Interactions (PEPPI).⁴⁴

Table 1. Characteristics of studies about self-efficacy for coping with breast cancer

Authors and year of publication	Aim	Country	Sample size	Participant characteristics	Research design	Self-efficacy measure	Finding
Adams <i>et al.</i> ³⁵ (2016)	To examine the relationship between social constraints and physical symptom among breast cancer survivors.	USA	n= 1127	Mean age 57 years. Average time since diagnosis breast cancer 5.9 years. Average years of education 14.5. 74.2% married, 9.2% widowed, 7.9% single, 7.1% divorced	Cross-sectional	Breast Cancer Self-Efficacy Scale	High levels of partner and health care provider social restriction were correlated with decrease breast cancer SE ($P < 0.0001$). path analysis model showed that breast cancer self-efficacy mediated relationships between partner social restriction and physical symptom (fatigue, sleep disturbance, and attentional functioning)
Liang <i>et al.</i> ³⁸ (2016)	To determine relationship between symptom distress and quality of life and to examine a mediating role of symptom-management self-efficacy between symptom distress and quality of life.	Taiwan	n=201	Mean age 53.6 years. 70.6% Married, 48.8% stage I and 32.8% stage II, and III. 64.7% a diagnosis of metastatic disease.	Cross-Sectional	Symptom-Management Self-Efficacy Scale Breast Cancer (SMSES-BC)	Distress did not significantly correlate with symptom-management SE and patients' QOL. Significant positive correlation between Symptom-management SE and patients' QOL. Symptom-management self-efficacy was mediation role effect on the relationship between patients' symptom distress and QOL.
Nejad <i>et al.</i> ⁴⁰ (2015)	To determine the level of cancer-related self-efficacy in Iranian women with breast cancer.	Iran	n=91	68.1% of patients under 50 years old. 95.6% of them married, 63.7% of patients had primary school education. 56% at 2nd stage of the disease.	Cross-Sectional	Cancer Behavior Inventory (CBI)	Education and time since diagnosis predicate SE. Patients who have high level of academic education had higher self-efficacy compared to those with non-academic educations. Self-efficacy in patients increased by passing of time. Age of patients did not correlate with self-efficacy. Marital status did not associate with self-efficacy.



Authors and year of publication	Aim	Country	Sample size	Participant characteristics	Research design	Self-efficacy measure	Finding
Zhang <i>et al.</i> ²⁹ (2015)	To determine the role of self-efficacy in relationship between uncertainty and self-care behavior.	China	n=97	Mean age 51.76 years. 42.3% completed high School education. 92.8% married. 60.8% diagnosis of stage II breast cancer. 60.8% receive chemotherapy and 39.2% chemotherapy and radiation therapy.	Cross-Sectional Descriptive	General Self-Efficacy Scale (GSE)	Two demographic variables which decrease self-efficacy in breast cancer were: young age and no college education. Relationship between uncertainty and SE was not statistically significant. Both SE and uncertainty independently predicted self-care behavior. SE positively correlated with self-care behavior when controlling effect of uncertainty. SE did not mediate in relationship between uncertainty and self-care behavior.
Liang <i>et al.</i> ³³ (2015)	To develop and evaluate the Psychometric of the Symptom-Management Self-Efficacy Scale Breast Cancer (SMSES-BC).	Taiwan	n=152	Mean age was 55 years old. 64.7% had a diagnosis of metastatic breast cancer. 65.2% receiving chemotherapy, 37.6% hormone therapy and 24.9% target therapy	Cross-Sectional	Symptom-Management Self-Efficacy Scale Breast Cancer (SMSES-BC) related to chemotherapy.	Exploratory factor analysis showed three factors as follow: Managing chemotherapy-related symptoms, acquiring problem solving and managing emotional and interpersonal disturbances were extracted from SMSES-BC scale. Reliability of SMSES-BC was accepted for measuring symptom-management self-efficacy related to chemotherapy for breast cancer.
Shelby <i>et al.</i> ³⁹ (2014)	To evaluate correlation between physical symptoms, self-efficacy for coping with symptoms, and functional, emotional, and social well-being in women taking adjuvant endocrine.	USA	n=120	Average age 63.66 years old. (Range, 45-84years). 66.1 %married, 56.3 % had a college degree. 55.4 % of women underwent breast conserving surgery. 52.7 % chemotherapy and 75 % radiation therapy. 82.1 % aromatase inhibitor and 17.9 % of women took Tamoxifen	Cross-Sectional	Perceived Self-Efficacy	Older women had higher SE ($P < 0.05$). Women who had lower SE showed higher physical symptoms ($P < 0.05$). Interaction between physical symptoms and SE was significant ($\beta = 0.05$, $P < 0.001$). Patients who had lower SE reported that physical symptoms were associated with lower functional well-being ($P < 0.001$). Physical symptoms did not correlate with well-being among women with high SE ($P < 0.05$). SE for coping with symptoms had moderated relationship between physical symptoms and emotional well-being. physical symptoms in patients who have high SE, did not relate to functional and emotional well-being.
Chang <i>et al.</i> ⁴⁸ (2014)	To explore differences between women who delay and who do not delay for seeking cancer diagnosis, and understand key factors predicting self-efficacy over time.	Taiwan	n= 80	Mean Age 49 years (range: 35–71). 23.9% married. 60% senior/high school education. 49.3% employed. 64.2% Stage I, II. 23.9 % Stage III, IV.	Longitudinal	Self-Efficacy to Maintain Quality of Life Scale (SEQOL)	Patients who delay a breast cancer examination had a decrease in self-efficacy after surgery compared to women who did not delay. Hope at the first doctor visit was an important factor that predicted of self-efficacy. Anxiety negatively influenced on self-efficacy, especially for the patients who did not delay. Self-efficacy was developed over time (first physician visit for breast examination and biopsy (T1); 1 week after first visit to receive the diagnostic histology report (T2); 2 months after the first visit, when patients wanted to be informed of the surgical pathology report (T3).) Depression, anxiety, and neuroticism showed negative correlation with self-efficacy.



Authors and year of publication	Aim	Country	Sample size	Participant characteristics	Research design	Self-efficacy measure	Finding
García-Jimenez <i>et al.</i> ⁴³ (2014)	To examine the relation between cancer self-efficacy and spiritual well-being with acculturation, and study the mediating role in the relationship between acculturation and Self-rated health.	USA	n =333	Mean age 58.25 years, 27% had completed 6th grade or less and 42% had completed 7th grade high school. 31% more than high school. 40% breast conserving surgery and 60% mastectomy.	Cross-sectional telephone survey	Cancer self-efficacy (CSE)	Greater cancer self-efficacy was one factor of this study that had positive correlation with English proficiency. Higher cancer self-efficacy and greater inner peace had significant correlation with better self-rated health. Cancer self-efficacy and inner peace reduces effect of English proficiency on self-rated health. Cancer self-efficacy impacted on the self-rated health by the means of spiritual well-being related to inner peace and meaning in one's life.
Griggs <i>et al.</i> ⁴⁴ (2014)	To evaluate the impact of Hispanic ethnicity and patient self-efficacy on adjuvant chemotherapy.	USA	n= 397	Mean age 47.8 years Among blacks, 30.7% Non-Hispanic white, 5.3% Non-Hispanic black, 56.9% Hispanic and 7.1% Asian/Pacific islander. 45.8% had completed less than high school and 54.2% were high school graduate. 19.4% stage I, 56.2% stage II, and 24.4% stage III.	Cross-sectional	Perceived efficacy in patient-physician interactions (PEPPI)	Patient self-efficacy did not correlate with chemotherapy. Ethnicity or patient self-efficacy (in communicating with physician's team) did not effect on receiving adjuvant chemotherapy.
Champion <i>et al.</i> ⁴¹ (2013)	Descriptive develop and psychometric of breast cancer self-efficacy scale (BCSES).	USA	n=1,127	Average age 57.1, 75% married, 59% had completed high school or two years of colleges	Cross-sectional	Breast Cancer Self-Efficacy Scale (BCSES)	Breast cancer self-efficacy scale (BCSES) was reliable and factor analysis showed that the scale was unidimensional. Predictive validity showed that BCSES correlated with quality-of-life (including physical, psychological, and social dimensions) and overall well-being. BCSES was significantly correlated with lower fatigue and attentional function. Increased level of BCSES associated with lower level of depression, anxiety, and fear of recurrence.
Melchior <i>et al.</i> ⁴³ (2013)	To determine relationship between fear of disease progression during the year following diagnosis of breast cancer and general self-efficacy (SE).	Germany	n= 118	Mean age 54.2 75% married, 53.9% had completed secondary general school. 41.4% were employed 89% sustained breast surgery, 34.7% received chemotherapy, 26.3% received radiotherapy, 9.3% received both chemotherapy and radiotherapy and 15.3% received hormone therapy.	Cross-sectional	General Self-Efficacy Scale	High general SE correlated with lower fear of disease progression (FoP). SE was an important factor for prediction of FoP. Prediction of SE by FoP was influenced by the relationship between demographic and medical characteristic of FoP.
Lam <i>et al.</i> ⁴⁹ (2012)	To understand correlation between self-efficacy and obtain a post-mastectomy breast reconstruction (PMBR) surgery information.	Canada	n= 10	Age range 29-75 years Time from breast cancer diagnosis was 11.5 months.	Qualitative interview	Modified Stanford Self-Efficacy Scale And Semi-structured qualitative interview	Women with lower self-efficacy had a passive role in receiving PMBR information. Women with higher self-efficacy had an active role in searching PMBR information. Physicians provided emotional support for women who had lower self-efficacy for coping with cancer and highest breast cancer knowledge.



Authors and year of publication	Aim	Country	Sample size	Participant characteristics	Research design	Self-efficacy measure	Finding
Ziner <i>et al.</i> ¹⁵ (2012)	To explore the role of self-efficacy for predicting a fear of recurrence breast cancer.	USA	n=1,128	45% were diagnosed at 45 or younger and 55% were diagnosed from age 55–70. 75% married, 64% had college education, 47% received lumpectomy, 51% received mastectomy, and about 2% had both lumpectomy and mastectomy.	Cross-Sectional Survey	Breast Cancer Survivor Self-Efficacy Scale	Age at diagnosis breast cancer had not significant correlation with survivor SE. Patients who had higher level of fear of recurrence disease, felt anxiety, and thought about breast cancer and recalled it had not high level self-efficacy. Breast cancer survivor SE, which was a mediator variable, affected the relation of fear of recurrence, anxiety and recall patents.
Mosher <i>et al.</i> ³⁷ (2010)	To examine the association between self-efficacy with pain management and distress.	USA	n=87	Mean age 50 years (Age range 28-72 years). 56.3% were inferior than sophomore, 50.6% married or marriage equivalent, 50.6% stages I-III and 49.4% stage IV, 89.7% received chemotherapy, 43.7% received radiation, 50.6% mastectomy and 31.0% lumpectomy	Cross-Sectional	Cancer Behavior Inventory (CBI)	Greater level of SE for coping with cancer was not significantly correlated with obstacles to pain treatment. Patients with higher level of SE had not a misunderstanding about cancer-related pain and treatment. Patients with higher level of SE were searching and comprehending medical information and perceived barriers to pain management. Older age, loss of radiation history was predictor of higher SE for coping with cancer. Greater SE for coping with cancer was predictor of less distress.
Namkoong <i>et al.</i> ⁴² (2010)	To evaluate the role of health self-efficacy on related effects of attain treatment information within computer-mediated breast cancer support groups on emotional well-being,	USA	n=177	Mean age 51 years. 27.1% were college graduates. 9.6% stage 0, 16.4% stage I, 29.9% stage II, 15.3% stage III, 5.1% stage IV, and 4.0% had Inflammatory breast cancer.	Cross-Sectional	Health Self-Efficacy	Transferring treatment information within computer-mediated breast cancer support groups significantly affected emotional well-being for the patients who had higher health self-efficacy, but they had negative influence on those with lower health self-efficacy. Giving treatment information within computer made emotional well-being by means of health self-efficacy.
Rottmann <i>et al.</i> ¹⁸ (2010)	To examine the role of perceived self-efficacy in predicting breast cancer patients' emotional, physical and social well-being and to study the role of mental adjustment styles in the relation.	Denmark	n =684	Mean Age 54.54 years. (range: 29–81), 21% stage I, 40% stage II and 23% stage III.	Longitudinal	Danish version of the general self-efficacy (GSE) scale	Women in Higher education had higher GSE (general self-efficacy) and better physical functioning. Higher GSE had significant correlation with 3mental adjustment styles. Greater self-efficacy had correlation with emotional well-being after 12 months. Fighting spirit, anxious preoccupation, and Helplessness–hopelessness nearly effect on self-efficacy. Self-efficacy had a direct effect on emotional functioning. Among of self-efficacy, physical and social well-being, there were no significant correlation. Significant correlation were seen among self-efficacy, education, and time since diagnosis. Self-efficacy predicted active approach-oriented adjustment style and emotional well-being in patients with breast cancer for 1 year later.
Antle <i>et al.</i> ⁵⁰ (2009)	To examine the effect of breast cancer support group on increasing spiritual well-being and self-efficacy for cancer management.	USA	n=41	Average age 58.16 years.. 44.4% married. 63.5% had completed high school 58% early stage, 4% locally advanced, 16% spread to lymph nodes, and 14% spread to another part of the body.	Mixed-Methods Design	General Self-Efficacy Scale	Spiritual well-being had a positive significant correlation with cancer management SE. Spiritual-based support group intervention effect on the well-being and cancer management SE. Women who participated in spiritual support group learned coping strategies, obtained positive thinking, and met other survivors.



Authors and year of publication	Aim	Country	Sample size	Participant characteristics	Research design	Self-efficacy measure	Finding
Akin <i>et al.</i> ⁴⁶ (2008)	To examine the relationship between quality of life and self-efficacy of breast cancer patients undergoing chemotherapy	Turkey	n=141	Average age 49 years (range 25–70); 29.1% breast-sparing surgical procedure, 47.5% received mastectomy and 23.4% had no history of breast surgery. All of them received chemotherapy.	Longitudinal	Strategies Used by Patients to Promote Health	Educational level and occupation were found to be significant factors in self-efficacy ($P < 0.05$). Income level and employment statuses were not significant factors in level of self-efficacy ($P < 0.05$). BMI was a significant factor in self-efficacy ($P < 0.05$). The type of breast surgery was not a significant factor in the level of SE. Age and marital statuses were not significant factors in self-efficacy between Turkish women with breast cancer. Self-efficacy was found to have negative relationship with disease stage and duration of breast cancer. SE had positive effect on health behaviors. The chemotherapy protocol was found to have an effect on the level of self-efficacy ($P < 0.05$). Difference between the pre-chemotherapy and post-chemotherapy self-efficacy was not found to be statistically significant. A negative relationship was found between self-efficacy and psychological symptoms (mood distress).
Lam <i>et al.</i> ⁴⁷ (2007)	To study relationship between short-term post-surgical adjustment with self-efficacy.	HongKong	n= 367	Mean age 51.1 years. 75% married, 58% had at least completed secondary education, 35% were employed full time. 71% received radical mastectomy (MRM). 21% breast conserving therapy (BCT), 6% had MRM followed by breast reconstruction, 55.7% current adjuvant therapy chemotherapy, 13% received radiation therapy and 34.4% hormonal therapy.	Longitudinal Cohort	Generalized self-efficacy The Chinese version of Generalized Self-Efficacy Scale	Women with high SE had better self-image. SE did not directly influence psychological morbidity. Women with high SE had more vulnerable to E-OI. Women with higher SE expected fewer negative attitude to surgery compared to women with low SE. SE directly enhanced extra-familial relationships, and self-image. SE indirectly impacted on impairing self-image and sexuality.
Manne <i>et al.</i> ¹³ (2006)	To study the development of self-efficacy over time among women with early stage breast cancer and to evaluate the relation between self-efficacy and specific psychological relationship, and functional outcomes.	USA	n= 95	Mean age 50.8 92% married. 68% had completed college period, 14.7% were ductal carcinoma insitu, 35.8% stage 1, 47.4% stage 2, and 2.1% stage 3 breast cancer. 24% received mastectomy, and 76% breast-conserving surgery. 68.6% received chemotherapy and 25% received radiation.	Cross-Sectional and Longitudinal	Stanford Inventory of Cancer Patient Adjustment (SICPA)	Cancer-specific SE consists of coping with medical procedures, communication, activity management, personal management, effective management, and self-satisfaction. Activity management and self-satisfaction significantly improves over time, but communication cancer SE decrease overtime. Cancer SE was stable, but 2 factor of efficacy, namely activity management and self-satisfaction showed significant increase over 1 year after participation follow up.
Palesh <i>et al.</i> ³⁰ (2006)	To investigate the relationship between self-efficacy, satisfaction with social support, stressful life events, and mood disturbance in women recently diagnosed and living in rural communities.	USA	n=82	Mean age 57.4 years. 68.3% married. 43% received mastectomy, 79.27% received lumpectomy, 7.3% had reconstructive surgery, 50% received chemotherapy, 42.68% received hormone Therapy, 59.76% received radiation treatment.	Cross-Sectional	Stanford Emotional Self-Efficacy Scale–Cancer	High level of mood disturbance was related to lower emotional SE. No significant relation was found between mood disturbance and emotional SE. Higher emotional self-efficacy increased the persistence of patient against mood disturbance. Women living in rural communities had greater efficacy to manage their emotions, confront death, and present at the moment; they had experienced lower distress.



Authors and year of publication	Aim	Country	Sample size	Participant characteristics	Research design	Self-efficacy measure	Finding
Collie <i>et al.</i> ³⁶ (2005)	To examine the correlation between self-efficacy, coping, social support, and problematic interaction with health care team.	USA	n=89	Mean age 57 years (Range, 31-82 years). 26.1% lived in rural towns or cities; 31.8% were 5 miles away, 19.3% were 10 miles away From their towns or cities. 44.9% received mastectomies, 51.8% received chemotherapy, 65.4% received radiation, and 48.7% received hormone therapy 67.4% were married and 55.2% were not employed.	Cross-Sectional	The Cancer Behavior Inventory (CBI)	Women who had higher level of self-efficacy for coping with cancer, were involved in seeking and understanding medical information and had fewer problematic communication with health care team (physician and nurse). Patients who had difficult interaction with physician team were found to be less emotional SE (P < 0.001)
Han <i>et al.</i> ¹⁴ (2005)	To investigate the correlation between patients' psychosocial characteristics and problematic interactions with physicians.	USA	n= 352	Mean age 49.7 years. (Range: 23-78), 76.7% were married, 44.3% stage I, 47.7% stage II and 6.1% stage III of breast cancer.54 % received mastectomy, and 46% received a lumpectomy. 67.2% received chemotherapy and 41.5% received hormone therapy.	Cross-Sectional	Stanford Emotional Self Efficacy Scale Cancer (SESES-C)	Women who had traumatic stress symptoms and less emotional self-efficacy showed problem in relationship with physician team. Problematic communication with physician team could decrease emotional self-efficacy in patients with breast cancer.
Lev <i>et al.</i> ¹⁶ (2001)	To evaluate the impact of self-efficacy intervention on patients' self-care self-efficacy.	USA	n=56	Mean age 50 years (Range, 30-72years). 79% were married. 38% had completed high school. 36% stage I, 47% stage. 45% experienced lumpectomy surgery, and 38% received mastectomy.	Experimental research designs: random assignment	Strategies Used By Patients to Promote Health (SUPPH)	Self-efficacy increased the quality of life and decreased symptom distress for women who were diagnosed with breast cancer. Women who received chemotherapy showed increased SE and higher quality of life and perceived lower distress.

Results

This section includes an overview of studies based on their research questions.

1. What are the important factors affecting the perception of self-efficacy in women with breast cancer?

Age: Studies showed that SE is related to age. Based on the included studies, older women reported higher SE for coping with cancer³⁷ and showed higher levels of SE (P < 0.05).^{39,49} Moreover, younger age was related to lower levels of SE in women with breast cancer.^{29,35}

Education: education was a significant factor in different dimensions of SE (P < 0.05).¹⁸ Women with academic education, compared to those who did not have any academic education, had higher SE. While, women without any college education reported lower SE.⁴⁰

Socioeconomic status (SES): In this review, socioeconomic was one of the variables that had been investigated. Lam *et al.*⁴⁹ found that women who were employed full time or retired showed high SE (P < 0.01). They showed that occupation was an

effective factor on SE (P < 0.01), while income level was not a significant factor in the level of SE (P < 0.05).⁴⁶

Palesh *et al.*³⁰ found that women who had recently been diagnosed with stage 0 through III breast cancer (43% of women had mastectomy, 79.27% had lumpectomy, 7.3% had reconstructive surgery, 50% received chemotherapy, 42.68% had hormone therapy, 59.76% had radiation treatment) lived in rural communities, had high level of self-efficacy, and lower distress.

Marital status: Family, as a component of social system and social support, is a source of SE. In the present review, marital status of Iranian⁴⁰ and Turkish⁴⁶ women with breast cancer did not have a significant relation with SE.

Breast cancer diagnosis and treatment: Some of the studies in this review examined the effects of diagnosis and diagnosis time, stage of breast cancer, treatment, and type of breast surgery on SE.

Chang *et al.*⁴⁸ examined the difference between women who sought cancer diagnosis with and without a delay; they found that a delay in seeking medical examination was related to an increase in SE



at the first physician visit for breast examination and doing biopsy (T_1), while it decreased in SE at 1 week after the first visit and at a time when patients received the diagnosis (T_2); it also increased SE during 2 months after the visit when patients returned to be informed of surgical pathology (T_3). However, in non-delayers, SE increased significantly from T_1 to T_3 after surgery.

Akin *et al.*⁴⁶ found that the duration of time diagnosis was not a significant factor in a level of SE. In contrast, Nejad⁴⁰ found that time diagnosis was a predictor of SE in women with breast cancer; 13 months since diagnosis can be defined as a newly diagnosed associated with low SE. The chemotherapy protocol for patients also influences the level of SE ($P < 0.05$).⁴⁶ SE increased a little during the treatment compared to pre-treatment, though the authors have not found any difference between the pre-chemotherapy and post-chemotherapy.⁴⁶ Mosher *et al.*³⁷ among 87 women who were in stages I-III (50.6 %) and in stage IV (49.4%) received chemotherapy (89.7%), radiation (43.7%), mastectomy (50.6%) and lumpectomy surgery (31.0%), showed that the absence of radiation therapy predicated SE.

Akin *et al.*⁴⁶ found that SE, among 141 women with breast cancer who had breast spring surgical procedure (29.1%), mastectomy, (47.5%) and those who did not have any history of breast cancer (23.4%), the type of breast surgery was not a significant factor in the level of SE, the history of breast cancer in the family member was not a significant factor.

Physical and psychosocial statuses: In this study, we found that one of the health factors that affects SE is BMI (Body Mass Index). BMI was a significant factor in self-efficacy breast cancer ($P < 0.05$).⁴⁶

Studies reported psychosocial and spiritual variables affect the SE of women with breast cancer. Laing *et al.*³³ explored 4 factors affecting the Symptom-Management Self-Efficacy for breast cancer related to chemotherapy. They were: acquiring problem solving, management, chemotherapy-related symptom, managing emotional, and interpersonal disturbance. Manne *et al.*¹³ also explored 6 factors affecting Cancer-specific SE. The factors were: coping with medical procedures, communication, activity management, personal management, effective management, and self-satisfaction.

Hope ($P < 0.001$) and extraversion ($P < 0.05$) were positively correlated with SE.⁴⁸ Antle *et al.*⁵⁰ showed a significant positive correlation between spiritual well-being and cancer management SE ($P < 0.05$). They examined the effects of a spiritual-based support group on breast cancer management SE among women, 58% of whom were at early stage, 4% of whom were locally advanced, and 16% of whom experienced cancer spread to lymph

nodes. They found that intervention was effective to increase SE among African American cancer survivors with the mean age of 58.16 years.

We found that among psychological statuses, depression, anxiety, and neuroticism were negatively correlated with lower SE ($P < 0.001$). Lower stress predicted SE for coping with cancer, and symptom distress did not significantly correlate with symptom-management SE.³⁵

Finally, among environmental elements, higher level of partner social constraints had relationship with lower breast cancer SE ($P < 0.001$).³⁵

Clinician-Patient communication: Physician communication behaviors with patient affect cancer-related SE.⁵¹ Chang *et al.*⁴⁸ in a longitudinal study on 80 women, in which 64% of whom were in stage I, II and 23.9% of whom were in stage III or IV breast cancer, found that hope at the first physician visit is a key factor that predicts the change of SE, but social constraints (experience criticism and avoidance in dialog) has a reversal effect on setting treatment. Adams *et al.*³⁵ found that high levels of social constraints from health care provider (doctors and nurses) were correlated with decreased breast cancer SE ($P < 0.001$). Absolutely, self-efficacy in women leads to fewer communication difficulties with a health care team (physician and nurse).³⁶ Han *et al.*¹⁴ found that women who had problems in interacting with medical team had less emotional SE ($P < 0.001$).

2. What is the impact of perceived self-efficacy on the process of breast cancer in female patients (diagnosis to treatment)?

Physical symptom: SE is a significant factor for understanding how women with breast cancer manage physical symptoms.⁵¹ Shelby *et al.*³⁹ examined the correlation among physical symptoms, SE and functional, emotional, and social well-being in women taking adjuvant endocrine (82.1% received aromatase inhibitor, 17.9% were taking Tamoxifen, and 55.4% underwent conserving surgery). Interaction between physical symptom and SE was significant ($\beta=0.05$, $P < 0.001$). Women who had lower SE showed greater physical symptom ($P < 0.05$). Physical symptom was associated with lower functional well-being ($P < 0.001$). Therefore, SE for coping with symptom moderated relationship between physical symptom and emotional well-being.

Adams *et al.*³⁵ found that SE mediated relationship between partner and health care social constraints and physical symptom. Breast cancer SE had a mediator role between social constraints and fatigue, sleep disturbance, and lower attentional functional.

Self-care and self-rated health: Self-care behavior helps patients to cope with symptoms of cancer.⁵² Garcia- Jimenez *et al.*⁴⁴ reported that higher cancer SE and greater inner peace significantly



correlated with better self-rated health among women, 19.4% of whom were in stage I, 56.2% of whom were in stage II, and 24.4% of whom were in stage III of breast cancer.

García-Jimenez, *et al.*⁴⁵ also reported that cancer SE could influence the self-rated health by means of spiritual well-being related to inner peace and meaning in one's life among women, 40% of whom had experienced breast conserving surgery and 60% of whom had received Mastectomy. Zhang *et al.*²⁹ found that SE is positively correlated with self-care behavior, when it had controlled the effect of uncertainty. Since uncertainty and SE were not significantly correlated, they independently predicted self-care behavior.

Pain management: Self-efficacy for managing pain symptoms is a patient's main ability to manage physical and psychological symptoms of cancer.⁵³ Mosher *et al.*³⁷ examined the association of SE with pain management and distress among 87 women, among whom 50.6% were in stage I or II, and 49.4% were in stage III or IV breast cancer (89.7% received chemotherapy, 43.7% received radiation, 50.6% had mastectomy, and 31% had lumpectomy surgery). They found that SE does not have any relation with barriers to pain management ($P < 0.05$). Self-efficacy did not predicate barriers to pain management. Higher self-efficacy, lower average pain level, and fewer barriers to pain management together predicated less stress, accounting for 39% the variance.

Quality of life: SE plays an important role in the patient's quality of life.⁵⁰ Studies have demonstrated that SE has a significant correlation with quality of life among cancer survivors.⁵⁴ Lev *et al.*¹⁶ examined the effect of SE intervention on patient's self-care self-efficacy among 56 women who were in stage I (36%) and stage II, III (47%) breast cancer (38% had mastectomy, 45% had lumpectomy surgery). They found that the increase of SE influences quality of life. SE was highly correlated with all the domains of quality of life. Symptom-management self-efficacy had a significant correlation with the symptomatic quality of life ($P < 0.01$). Symptom-management self-efficacy had a mediation effect on relationship between patient's symptom distress and quality of life.³⁸ Patients who had lower symptom distress through higher symptom-management self-efficacy were shown to have greater quality of life.

Wellbeing: studies showed that SE correlates with psychological health and well-being.¹³ Rottmann *et al.*¹⁸ found that SE correlates with an approach-oriented adjustment style (more fighting spirit and less anxious preoccupation and helplessness-hopelessness), but it does not correlate with fatalism and cognitive avoidance. SE predicted emotional well-being.⁴¹ Palesh *et al.*³⁰ found no significant correlation between SE and mood disturbance ($P < 0.001$). Greater mood disturbance was related to

lower emotional SE ($P < 0.001$). Greater SE for coping with cancer was only a predictor of less distress.³⁵

Fear of recurrence is one of the challenges of survivors.¹³ Ziner *et al.*¹⁵ evaluated the effect of age at diagnosis on fear of breast cancer recurrence and identified the predictor of fear of recurrence by using SE as a mediator among 1128 women, among whom 47% had lumpectomy and 51% had a mastectomy surgery. They showed that higher perceived risk of recurrence ($P < 0.01$), knowledge of someone with a recurrence ($P < 0.001$), and breast cancer reminders ($P < 0.005$) were related, inversely, to breast cancer survivor SE. Breast cancer survivor SE explained about 18% ($P < 0.001$) of the variance in the fear of recurrence.

Melchior *et al.*⁴³ found a negative correlation between fear of progression and SE ($P < 0.001$). SE significantly increased the explained variance of initial fear of progression. As SE increased, depression, anxiety, and fear of recurrence decreased.

Self-image: body image is one of the complex issues in patients with breast cancer.⁵⁵ Lam *et al.*⁴⁷ examined the relationship between SE with short-term post-surgical adjustment among 367 women who had radical mastectomy (71%) or conserving surgery (21%) and found that women who had high SE had higher self-image ($P < 0.05$), because SE enhanced the self-image. They showed that women with low SE overestimated the negative effects of surgery and were more disappointed, while patients with high SE underestimated surgical impacts.

Health Information Seeking Behavior: seeking health information is an active coping strategy for chronic illness.⁵⁶ Collie *et al.*³⁶ found that women with breast cancer who had self-efficacy for coping with cancer sought and understood medical information.

Lam *et al.*⁴⁷ in studies about access Post-Mastectomy Breast Reconstruction (PMBE) information and consultation with a reconstruction surgery, found that Patients with lower SE preferred passive absorption of PMBE information and women who had higher SE preferred a more active role in gathering processing information.

Namkoong *et al.*⁴² found a moderating role of health self-efficacy for the relationship between exchanging treatment information and emotional well-being.

Discussion

This review is synthesizing the published literature of self-efficacy in women with breast cancer. The aims of this review article were to determine the important factors affecting the breast cancer-related self-efficacy and to investigate the outcome of perceived self-efficacy in women with breast cancer. The result of this review revealed that demographic variables (age, education, socioeconomic status, and marital statuses),



breast cancer diagnosis and type of treatment, psychosocial and physical status, and physician-patient relationship affect cancer specific SE.

Findings showed that older women had enough SE for coping with breast cancer. It may be because they had a prior successful experience for handling difficult situations during their life; therefore, they had greater feeling of self-confidence for controlling the procedures of breast cancer diagnosis and treatment. Accordingly, to increase SE in young women with breast cancer, vicarious experiences should be used.⁹ Watching women with breast cancer in a similar situation, and comparing their own ability with other individuals' competence may increase SE in young women. Moreover, studies showed that women who had college education and were employed had higher SE. It may be because these are important factors of independent life style for women who seek medical information and obtain social support.⁴⁰ One of the studies reported that women living in rural communities have higher levels of emotional SE; one possible reason is that women who live in rural communities have learned how to fight with problems due to their difficult lives.³⁰ However, further comparing studies on cancer self-efficacy between urban and rural women are needed.

Last demographic variable that was determined to have an effect on SE is marital status. Marital status did not have a significant relation with SE. It was also shown that husbands (partners) had only a trivial role in supporting women with breast cancer; however, studies found that the husband of a woman with breast cancer is the most critical supporting source in confronting with a chronic illness.^{14,40}

Another factor affecting SE is the procedure of a cancer diagnosis and a treatment. Studies found that a delay in the diagnosis of breast cancer has an effect on SE. SE in non-delayers increased regularly from the first physician visit to after the surgery, but increasing trends in SE among women with delay were erratic. The time of diagnosis was also a predictor of SE in women with breast cancer. Women who were diagnosed recently had a lower SE. Likely, patients who experienced the side effects of a breast cancer treatment had challenges in coping competences.¹⁰ Therefore, having a successful experience and a suitable social support may increase SE, especially in survivors.

Studies found that a chemotherapy protocol and a loss of radiation therapy predicted SE. Common physical side effects of chemotherapy (e.g. nausea, loss hair, weight gain, and fatigue)⁵⁷ and psychological symptoms (anxiety and depression)⁵⁸ are the most prevalent symptoms in patients with breast cancer. Patients coping with cancer also experienced a number of short- and long-term practical and emotional issues that increased their distress.¹³

We did not find any study regarding the stage of the breast cancer; the type of breast cancer surgery was a significant factor in the level of SE.⁴⁶ Studies showed that mastectomy, as a type of surgery, has negative effect on woman's body image,^{59, 60, 61} and research indicated that one of the factor which affects SE is body image.^{62, 63} Women who have higher level of body image have better perceived SE compared with others.⁶² Thus, it seems that mastectomy surgery, compared to conserving surgery, has a negative effect on cancer related SE, by means of body image of women with breast cancer. Therefore, it would be better if this subject would be examined in a separate study. On the other hand, studies have reported that patients with cancer who receive treatment, decreased self-care SE over time⁶⁴ In such patients, SE changes over time in dealing with life stressor.⁶⁵ Accordingly, it seems patients who are in the advanced breast cancer stage have lower level SE; thus, we recommend that studying SE in patients be at different stages of breast cancer.

In this review, we found that physical status affects the breast cancer SE. BMI was a significant factor of physical health related to SE. Studies reported that health related to SE was not correlated with a higher BMI.⁶⁶ Because it may influence a body image of a woman with breast cancer. Regarding the psychological status, this synthesis showed that acquiring problem solving skills, communication skills, emotional management,⁴¹ attention to spirituality, and positive thinking (hopeful) affect breast cancer self-efficacy.⁵⁰

We found that lower levels of stress predicted SE for coping with cancer, but anxiety and neuroticism negatively correlated with higher levels of SE. As was mentioned, emotional arousal is one of the sources of SE. People judged about the ability based on emotional state which experienced at a completion of an action. Fear about a recurrence of breast cancer may be the reason of emotional arousal. Fear of recurrence correlated with a higher level of anxiety and depression.⁵⁸ Based on Bandura's social cognitive perspective, forethought and anticipation of the recurrence influence patients' confidence in coping with cancer.⁵ Also, fears about their competency was an important reason that people perceived lower self-efficacy.⁶ It seems that one of the resources of emotional arousal in patients with breast cancer is a method of treatment. For example, studies showed that examples of the side effects of the used Tamoxifen in a hormone therapy could be psychological distress, anxiety, and depression.^{67, 68} As was previously discussed, general SE was negatively related to anxiety²² and low levels of SE were associated with high levels of anxiety and depressive symptoms.⁶⁹ Therefore, the effect of this method should be examined in the next studies.

According to the literature of cancer related to the self-efficacy in women with breast cancer, social



support is another factor. Higher levels of partner social constrains (avoidance and criticism) reduces breast cancer SE. Such women feel that they cannot inform others about cancer related thoughts and feelings because they are confronted by avoidance and criticism; therefore, they perceive low level of SE.³⁵ A physician-patient relationship also affects breast cancer SE. A team of physicians, who pay attention to patients' thought and feeling, improves the self-confidence for symptom cancer management. Conversely, criticism and avoidance in a dialog of a healthcare provider decreases SE.⁷⁰ On the other hand, hope at the first clinician visit is a key factor that predicts the change of self-efficacy.⁴⁸ Therefore, through decreasing criticisms and increasing hope in the dialog with women, cancer self-efficacy would be improved.

Second part of this synthesis examined the outcomes of breast cancer SE on the patient's life. SE affects mental and physical health, pain management, quality of life, body image, and health information seeking behavior.

SE is a psychological source that decreases the negative physical symptom.³⁹ Self-confidence and trust to the capability prepare female patients for dominance over physical symptoms of breast cancer.³⁵ By this synthesis, we found that breast cancer SE impacts on the self-caring and increases the self-rated health. Rohrer *et al.*⁷¹ believed that patient with high self-confidence had a better health. They have suggested a good communication and have provided self-care tools which increase healthy behaviors in their patients. Patient-center in health setting may increase self-confidence of patients with breast cancer.⁷²

Symptom-management SE had a mediation effect on relationship between a patient's symptom distress and quality of life. A high SE perception increased cancer patient's adaption to the disease, improved quality of life, and decreased psychological problems.⁴⁶ Women with high levels of SE who received the medical information were reported to have lower level barriers to pain management.³⁷ Overall, perceived self-efficacy did not associate with intensity of pain in daily life among patients with cancer.¹⁷

In this synthesis, studies showed that SE affects the mental health of patients with breast cancer. SE is associated with an adjustment⁷³ by increasing an fighting spirit and decreasing anxious preconceptions and helplessness-hopelessness in women and makes them have fewer difficulties in communications with a health care team. Therefore, SE predicts emotional well-being. Another outcome of SE is improving a self-image.⁴⁷ Patients, who have high SE, underestimate surgical impact and have high self-image.

Finally, this review showed that health self-efficacy had a moderating role in the relationship between

treatment information received and emotional well-being. Because patients with low self-efficacy were informed by treatment information, emotional well-being could be damaged. Positive medical information influences emotional well-being for women with higher health self-efficacy, but negatively influences patients who have lower health efficacy.⁴²

Regarding the points which mentioned in the study, this review has some limitations. One limitation is that the major findings of this review article are based on the cross sectional studies (16 articles). Cross sectional data limit the interpretation of the evidences. Thus, we recommend that studies should perform and evaluate the breast cancer self-efficacy from the diagnosis of cancer to treatment in different group of survivor and end stage patients by longitudinal method. This synthesis showed that the findings, which were related to interventions for cancer-specific self-efficacy, are limited, as only 1 study examined an intervention in the literature review. Therefore, we recommend to evaluate the intervention strategies to enhance self-efficacy in patients with breast cancer by experimental studies method.

Another limitation related to this synthesis is the variation in assessment tools used to assess self-efficacy; a number of studies used a general self-efficacy scale and others used a specific cancer-related self-efficacy scale.

There was also diversity in the stage of breast cancer, method of treatment, and type of surgery among participants of these studies. These limitations cause the restriction for the better understanding of the cancer related self-efficacy in women with breast cancer. Therefore, additional research for exploring the important factors affecting SE is needed; for example, investigating the effects of the stage of breast cancer on the breast cancer SE, the difference between self-efficacy of women with a different surgery (mastectomy and conserving), the different treatment (chemotherapy, radiotherapy, and hormone therapy), the influences of clinician and partner characteristics on the SE in women, the difference of the breast cancer SE in women based on physician-patient communication style, and further empirical studies on interventions, such as examining the effect of vicarious experience (women who have effective coping strategies for breast cancer) on increasing the self-efficacy or the effect of patients education on this field.

This review revealed that younger women with newly diagnosed breast cancer, who did not have higher education, were not employed, and had delay in seeking breast cancer examination, were a particularly high-risk group regarding coping with breast cancer due to lower levels of self-efficacy. As was previously discussed, women who have low level of SE are further exposed in anxiety and depression syndromes. Therefore, they need especial attentions for the reinforcement of their confidence for coping with



breast cancer from health care providers and family members.

In the oncology setting, it seems that communication between clinicians and patients is very important for perceived cancer SE in women with breast cancer. Therefore, communication skills and medical ethics should be considered in a medical research. In this field, empowering patients by means of education and giving appropriate health information, and preparing them for a treatment may increase the confidence to cope with a cancer. Women with breast cancer who have conflicts with their family members require family therapy interventions to decrease the social constrain and obtain social supports.

As was stated, self-efficacy is a personality construct that prepares individuals to cope with difficult situations. In this study, we tried to explore the important factors affecting breast cancer SE and to determine the effects of SE on the process of breast cancer.

At the end, it is necessary to point out that SE affects the environment of the patient and environmental factors can effect to modify patient's self-efficacy. Therefore, if health care professionals and family members prepare supportive environment (such as social persuasion and vicarious experiences), fighting spirit in women with breast cancer will improve. On the other hand, as was previously mentioned, patients with high levels of SE have cooperation with a medical team and get themselves independent. Consequently, a great attention should be paid to studies and clinical implications.

References

1. Bandura A. Health promotion by social cognitive means. *Health Educ Behav.* 2004;31(2):143-64.
2. Koopman C, Butler LD, Classen C, Giese-Davis J, Morrow GR, Westendorf J, et al. Traumatic stress symptoms among women with recently diagnosed primary breast cancer. *Journal of traumatic stress.* 2002;15(4):277-87.
3. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev.* 1977;84(2):191-215.
4. Bandura A. Social cognitive theory: an agentic perspective. *Annu Rev Psychol.* 2001;52(1):1-26.
5. Bandura A. Social cognitive theory of self-regulation. *Organizational behavior and human decision processes.* 1991;50(2):248-87.
6. Bandura A. Human agency in social cognitive theory. *Am Psychol.* 1989;44(9):1175-84
7. Champion V, Skinner CS, Menon U. Development of a self-efficacy scale for mammography. *Res Nurs Health.* 2005;28(4):329-36.
8. Wolf MS, Chang CH, Davis T, Makoul G. Development and validation of the Communication and Attitudinal Self-Efficacy scale for cancer (CASE-cancer). *Patient Educ Couns.* 2005;57(3):333-41.
9. Bandura A. Perceived self-efficacy in cognitive development and functioning. *Educ Psychol.* 1993;28(2):117-48.
10. Heitzmann CA, Merluzzi TV, Jean-Pierre P, Roscoe JA, Kirsh KL, Passik SD. Assessing self-efficacy for coping with cancer: development and psychometric analysis of the brief version of the Cancer Behavior Inventory (CBI-B). *Psycho-Oncology.* 2011;20(3):302-12.
11. Karademas EC. Self-efficacy, social support and well-being: The mediating role of optimism. *Pers Individ Dif.* 2006;40(6):1281-90.
12. Kuijer RG, De Ridder DT. Discrepancy in illness-related goals and quality of life in chronically ill patients: the role of self-efficacy. *Psychol Health.* 2003;18(3):313-30.
13. Manne SL, Ostroff JS, Norton TR, Fox K, Grana G, Goldstein L. Cancer-specific self-efficacy and psychosocial and functional adaptation to early stage breast cancer. *Ann Behav Med.* 2006;31(2):145-54.
14. Han WT, Collie K, Koopman C, Azarow J, Classen C, Morrow GR, et al. Breast cancer and problems with medical interactions: relationships with traumatic stress, emotional self-efficacy, and social support. *psycho-oncology.* 2005;14(4):318-30.
15. Ziner KW, Sledge GW, Bell CJ, Johns S, Miller KD, Champion VL, editors. Predicting fear of breast cancer recurrence and self-efficacy in survivors by age at diagnosis. *Oncol Nurs Forum,* 2012, 1;39(3):287-95.
16. Lev EL, Daley KM, Conner NE, Reith M, Fernandez C, Owen SV. An intervention to increase quality of life and self-care self-efficacy and decrease symptoms in breast cancer patients. *Sch Inq Nurs Pract.* 2001;15(3):277-94.
17. Lin CC. Comparison of the effects of perceived self-efficacy on coping with chronic cancer pain and coping with chronic low back pain. *Clin J Pain.* 1998;14(4):303-10.
18. Rottmann N, Dalton SO, Christensen J, Frederiksen K, Johansen C. Self-efficacy, adjustment style and well-being in breast cancer patients: a longitudinal study. *Qual Life Res.* 2010;19(6):827-36.
19. Graves, K.D., Social cognitive theory and cancer patients' quality of life: a meta-analysis of psychosocial intervention components. *Health Psychol.* 2003, 22(2):210-9.
20. Broome BA. The impact of urinary incontinence on self-efficacy and quality of life. *Health Qual Life Outcomes.* 2003;1(1):35.
21. Allen JD, Shelton RC, Harden E, Goldman RE. Follow-up of abnormal screening mammograms among low-income ethnically diverse women: findings from a qualitative study. *Patient Educ Couns.* 2008;72(2):283-92.



22. Boehmer S, Luszczynska A, Schwarzer R. Coping and quality of life after tumor surgery: personal and social resources promote different domains of quality of life. *Anxiety Stress Coping*. 2007;20(1):61-75.
23. Duggleby W, Cooper D, Penz K. Hope, self-efficacy, spiritual well-being and job satisfaction. *J Adv Nurs*. 2009;65(11):2376-85.
24. Lev EL, Eller LS, Kolassa J, Gejerman G, Colella J, Lane P, et al. Exploratory factor analysis: strategies used by patients to promote health. *World J Urol*. 2007;25(1):87-93.
25. Kreitler S, Peleg D, Ehrenfeld M. Stress, self-efficacy and quality of life in cancer patients. *Psycho-Oncology*. 2007;16(4):329-41.
26. Porter LS, Keefe FJ, Garst J, McBride CM, Baucom D. Self-efficacy for managing pain, symptoms, and function in patients with lung cancer and their informal caregivers: associations with symptoms and distress. *Pain*. 2008;137(2):306-15.
27. Porter LS, Keefe FJ, McBride CM, Pollak K, Fish L, Garst J. Perceptions of patients' self-efficacy for managing pain and lung cancer symptoms: correspondence between patients and family caregivers. *Pain*. 2002;98(1):169-78.
28. Jazayeri SB, Saadat S, Ramezani R, Kaviani A. Incidence of primary breast cancer in Iran: Ten-year national cancer registry data report. *Cancer Epidemiol*. 2015;39(4):519-27.
29. Zhang Y, Kwekkeboom K, Petrini M. Uncertainty, Self-efficacy, and Self-care Behavior in Patients With Breast Cancer Undergoing Chemotherapy in China. *Cancer Nurs*. 2015;38(3):19-26.
30. Palesh OG, Shaffer T, Larson J, Edsall S, Chen XH, Koopman C, et al. Emotional Self-Efficacy, Stressful Life Events, and Satisfaction with Social Support in Relation to Mood Disturbance among Women Living with Breast Cancer in Rural Communities. *Breast J*. 2006;12(2):123-9.
31. Bandura A. Regulation of cognitive processes through perceived self-efficacy. *Dev Psychol*. 1989;25(5):729.
32. Mohajjel Aghdam A, Sanaat Z, Hassankhani H, Kochaki Nejad Z. Self-efficacy in breast cancer patients: A systematic review. *IRJABS*; 2013;4(5):1007-13.
33. Liang SY, Wu WW, Kuo CY, Lu YY. Development and Preliminary Evaluation of Psychometric Properties of Symptom-Management Self-Efficacy Scale for Breast Cancer Related to Chemotherapy. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2015;9(4):312-7.
34. Loprinzi PD, Cardinal BJ. Self-efficacy mediates the relationship between behavioral processes of change and physical activity in older breast cancer survivors. *Breast Cancer*. 2013;20(1):47-52.
35. Adams RN, Mosher CE, Cohee AA, Stump TE, Monahan PO, Sledge GW, et al. Avoidant coping and self-efficacy mediate relationships between perceived social constraints and symptoms among long-term breast cancer survivors. *Psycho-Oncology*. 2017;26(7):982-90.
36. Collie K, Wong P, Tilston J, Butler L, Turner-Cobb J, Kreshka M, et al. Self-efficacy, coping, and difficulties interacting with health care professionals among women living with breast cancer in rural communities. *Psycho-Oncology*. 2005;14(10):901-12.
37. Mosher CE, Duhamel KN, Egert J, Smith MY. Self-efficacy for coping with cancer in a multiethnic sample of breast cancer patients: associations with barriers to pain management and distress. *Clin J Pain*. 2010;26(3):227-34.
38. Liang S-Y, Chao T-C, Tseng L-M, Tsay S-L, Lin K-C, Tung H-H. Symptom-Management Self-efficacy Mediates the Effects of Symptom Distress on the Quality of Life Among Taiwanese Oncology Outpatients With Breast Cancer. *Cancer Nurs*. 2016;39(1):67-73.
39. Shelby RA, Edmond SN, Wren AA, Keefe FJ, Peppercorn JM, Marcom PK, et al. Self-efficacy for coping with symptoms moderates the relationship between physical symptoms and well-being in breast cancer survivors taking adjuvant endocrine therapy. *Support Care Cancer*. 2014;22(10):2851-9.
40. Nejad ZK, Aghdam AM, Hassankhani H, Jafarabadi MA, Sanaat Z. Cancer-Related Self-Efficacy in Iranian Women With Breast Cancer. *Women Health Bull*. 2015;2(2):e23248.
41. Champion VL, Ziner KW, Monahan PO, Stump TE, Cella D, Smith LG, et al., editors. Development and psychometric testing of a breast cancer survivor self-efficacy scale. *Oncol Nurs Forum*, 2013; 40(6): 403-10.
42. Namkoong K, Shah DV, Han JY, Kim SC, Yoo W, Fan D, et al. Expression and reception of treatment information in breast cancer support groups: How health self-efficacy moderates effects on emotional well-being. *Patient Educ Couns*. 2010;81:41-7.
43. Melchior H, Buscher C, Thorenz A, Grochocka A, Koch U, Watzke B. Self-efficacy and fear of cancer progression during the year following diagnosis of breast cancer. *Psycho-Oncology*. 2013;22(1):39-45.
44. Griggs JJ, Liu Y, Sorbero ME, Jagielski CH, Maly RC. Adjuvant chemotherapy dosing in low-income women: the impact of Hispanic ethnicity and patient self-efficacy. *Breast Cancer Res Treat*. 2014;144(3):665-72.
45. García-Jimenez M, Santoyo-Olsson J, Ortiz C, Lahiff M, Sokal-Gutierrez K, Nápoles AM. Acculturation, inner peace, cancer self-efficacy, and self-rated health among Latina breast cancer survivors. *J Health Care Poor Underserved*.



- 2014;25(4):1586.
46. Akin S, Can G, Durna Z, Aydiner A. The quality of life and self-efficacy of Turkish breast cancer patients undergoing chemotherapy. *Eur J Oncol Nurs*. 2008; 12(5): 449-56.
 47. Lam WWT, Fielding R. Is self-efficacy a predictor of short-term post-surgical adjustment among Chinese women with breast cancer? *Psycho-Oncology*. 2007;16(7):651-9.
 48. Chang H-J, Chen W-X, Lin EC-L, Tung Y-Y, Fetzer S, Lin M-F. Delay in seeking medical evaluations and predictors of self-efficacy among women with newly diagnosed breast cancer: A longitudinal study. *Int J Nurs Stud*. 2014;51(7):1036-47.
 49. Lam A, Secord S, Butler K, Hofer SO, Liu E, Metcalfe KA, et al. A breast reconstruction needs assessment: How does self-efficacy affect information access and preferences? *Can J Plast Surg*. 2012;20(1):37.
 50. Antle B, Collins WL. The impact of a spirituality-based support group on self-efficacy and well-being of African American breast cancer survivors: a mixed methods design. *Social Work and Christianity*. 2009;36(3):286.
 51. Zachariae R, Pedersen CG, Jensen AB, Ehrnrooth E, Rossen PB, von der Maase H. Association of perceived physician communication style with patient satisfaction, distress, cancer-related self-efficacy, and perceived control over the disease. *Br J Cancer*. 2003;88(5):658-65.
 52. Huang C-H, Ho M-Y, Tsai JC-R. A Study of Physical Activity, Uncertainty and Health Self-efficacy in the Patients After Percutaneous Coronary Intervention. *Tzu Chi Nursing Journal*. 2012;11(3):66-76.
 53. Porter LS, Keefe FJ, Garst J, McBride CM, Baucom D. Self-efficacy for managing pain, symptoms, and function in patients with lung cancer and their informal caregivers: associations with symptoms and distress. *PAIN*. 2008;137(2):306-15.
 54. Yeung N, Lu Q. Affect as a mediator between self-efficacy and quality of life among Chinese cancer survivors in China. *Eur J Cancer Care*. 2014;23(1):149-55.
 55. Paterson CL, Lengacher CA, Donovan KA, Kip KE, Tofthagen CS. Body Image in Younger Breast Cancer Survivors: A Systematic Review. *Cancer Nurs*. 2016;39(1):E39-58.
 56. Kim SC, Shah DV, Namkoong K, McTavish FM, Gustafson DH. Predictors of online health information seeking among women with breast cancer: The role of social support perception and emotional well-being. *J Comput Mediat Commun*. 2013;18(2):98-118.
 57. Schofield P, Jefford M, Carey M, Thomson K, Evans M, Baravelli C, et al. Preparing patients for threatening medical treatments: effects of a chemotherapy educational DVD on anxiety, unmet needs, and self-efficacy. *Support Care Cancer*. 2008;16(1):37-45.
 58. So WK, Marsh G, Ling W, Leung F, Lo JC, Yeung M, et al. Anxiety, depression and quality of life among Chinese breast cancer patients during adjuvant therapy. *Eur J Oncol Nurs*. 2010;14(1):17-22.
 59. den Heijer M, Seynaeve C, Timman R, Duivenvoorden HJ, Vanheusden K, Tilanus-Linthorst M, et al. Body image and psychological distress after prophylactic mastectomy and breast reconstruction in genetically predisposed women: a prospective long-term follow-up study. *Eur J Cancer*. 2012;48(9):1263-8.
 60. McGaughey A. Body image after bilateral prophylactic mastectomy: an integrative literature review. *J Midwifery Womens Health*. 2006;51(6):e45-9.
 61. Kocan S, Gursoy A. Body Image of Women with Breast Cancer After Mastectomy: A Qualitative Research. *J Breast Health* (2013). 2016;12(4):145-50.
 62. Pikler V, Winterowd C. Racial and body image differences in coping for women diagnosed with breast cancer. *Health Psychol*. 2003;22(6):632-7.
 63. Williams PA, Cash TF. Effects of a circuit weight training program on the body images of college students. *Int J Eat Disord*. 2001;30(1):75-82.
 64. Lev EL, Paul D, Owen SV. Age, self-efficacy, and change in patients' adjustment to cancer. *Cancer Pract*. 1999;7(4):170-6.
 65. Kang SY, Deren S, Andia J, Colon HM, Robles R. Effects of changes in perceived self-efficacy on HIV risk behaviors over time. *Addict Behav*. 2004;29(3):567-74.
 66. Ovaskainen ML, Tapanainen H, Laatikainen T, Mannisto S, Heinonen H, Vartiainen E. Perceived health-related self-efficacy associated with BMI in adults in a population-based survey. *Scand J Public Health*. 2015;43(2):197-203.
 67. Bober SL, Hoke LA, Duda RB, Regan MM, Tung NM. Decision-making about tamoxifen in women at high risk for breast cancer: clinical and psychological factors. *J Clin Oncol*. 2004;22(24):4951-7.
 68. Demissie S, Silliman RA, Lash TL. Adjuvant tamoxifen: predictors of use, side effects, and discontinuation in older women. *J Clin Oncol*. 2001;19(2):322-8.
 69. Muris P. Relationships between self-efficacy and symptoms of anxiety disorders and depression in a normal adolescent sample. *Pers Individ Dif*. 2002;32(2):337-48.
 70. Rollnick S, Miller WR, Butler CC, Aloia MS. Motivational interviewing in health care: helping patients change behavior. Taylor &



Francis; 2008.

71. Rohrer JE, Young R, Sicola V, Houston M. Overall self-rated health: a new quality indicator for primary care. *J Eval Clin Pract.* 2007;13(1):150-3.
72. Flocke SA, Miller WL, Crabtree B. Relationships between physician practice style, patient satisfaction, and attributes of primary care.(Original Research). *J Fam Pract.* 2002;51(10):835-41.
73. Curtis R, Groarke A, Sullivan F. Stress and self-efficacy predict psychological adjustment at diagnosis of prostate cancer. *Scientific reports.* 2014;4:5569.