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Determinants of Quality of Life in Women with Breast Cancer: A Systematic Review

By Ammu Elizabeth Alexander,¹ Elsa Lumia Da Costa,² and Rema M.K³

Abstract

The morbidity and mortality rates associated with breast cancer are a major public health concern globally. The resulting impairment in the patients' quality of life (QOL) affects their health, symptoms, and well-being in physical, social, psychological, environmental, and sexual functioning. The aim of this study was to systematically review the literature addressing the determinants of QOL in breast cancer patients. A search of 6 electronic medical databases was undertaken. Employing a rigorous systematic protocol, eligible articles were analyzed and a total of 22 studies that met all eligibility criteria were included in the systematic review. The total sample size was 7,041 women ranging from 30 to 66 years. The determinants of QOL were found to cluster into 10 areas. These include the degree of pain, type and stage of cancer treatment, medical health, cognitive and behavioural factors, emotional health, physical activity and appearance, social factors, age and menopausal status, education and employment status, and ethnicity and religion. The types of breast cancer treatment and psychological parameters were the most common determinants of QOL in breast cancer patients. These insights can help formulate proactive interventions that can be used by patients, caregivers, and healthcare professionals to build protective capacities and alleviate challenges to ensure superior quality of life in women with breast cancer.

Keywords: Breast Cancer, Quality of Life, Breast Cancer Treatment and Management

Background

In the year 2020, breast cancer became one of the most common cancer diagnosis in the world (Ferlay et al., 2020). With the exponential increase in the incidence of cancer, the need for further research on novel approaches for helping individuals with cancer has become imperative. Studies suggest that breast cancer is the most common cancer in urban settings of India (Agarwal & Ramakant, 2008). Studies also indicate that as western influence increases in India, the incidence rate of breast cancer also increases. A 2005 study conducted by the International Association of Cancer Research, based in France, reported that there would be 250,000 cases of breast cancer in India by 2015, a 3% increase per year (Bagachi, 2008).

This alarming rate of increase in the incidence of breast cancer leads one to ponder different management strategies that could efficiently help towards making the affected individuals' lives better. The occurrence of a malignant mass present with breast pain occurs in

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5% cases with breast cancer. Other symptoms such as immobility, skin changes, or nipple abnormalities may also be present at the same time (Sharma et al., 2010). Eighty percent of breast cancer cases in India are fatal not only due to the severity of the disease but also due to the patients' poor resilience to the disease (Kakulapati et al., 2019). Therefore, it is important to probe the factors that lead to a better quality of life for these women with breast cancer.

"Quality of Life" is defined as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns (Group, 1998). QOL covers the subjective perceptions of the positive and negative aspects of cancer patients' symptoms, including physical, emotional, social, and cognitive functions along with symptoms of the disease and side effects of treatment (Leplège & Hunt, 1997). A diagnosis of cancer essentially causes patients to question their perception of many of these elements. Previous studies prove that individuals with cancer have poorer QOL when compared to individuals without cancer (De Haes & Van Knippenberg, 1985). Considering the direct influence of QOL on cancer treatment effectiveness, learning more about these domains becomes important.

Emotional aspects such as emotional clarity and mood repair have proved to have a direct influence on resilience levels in breast cancer patients (Guil et al. 2020). Studies show that there are significant negative correlations between emotional intelligence and anxiety in women with breast cancer (Shalini & Archana, 2019). Combining emotional domain with the social domain, studies show that high social constraints and low emotional intelligence is associated with greater distress. Evidence also suggests high emotional intelligence could be a buffer against the negative impact of a toxic social environment (Schmidt & Andrykowski, 2004). Emotional attention has proved to influence vulnerability, decreasing mood repair, and resilience (Guil et al. 2020). Psychological distress was the variable most frequently linked to reductions in resilience, finding a bi-directional relationship between them (Aizpurua-Perez & Perez-Tejada, 2020). Therefore, QOL and its domains have important psychological effects on the individual with cancer and influence the effectiveness of treatment.

Previous literature shows that many factors can determine the QOL of a patient with cancer. Studies show that being divorced, or widowed, or unmarried had a negative association with the psychological health and social relationship dimensions, whereas higher income was positively associated with better QOL parameters of psychological, social, and environmental factors. Self-efficacy has been proven to be positively associated with all the domains of QOL (Gangane et al., 2017). Younger women (below 45 years), women with unmarried children, nodal and/or metastatic disease, and those currently undergoing active treatment show poor QOL. However, religion, stage, pain, spousal education, nodal status, and distance travelled to reach the treatment centre are all factors that prove to influence a patient's QOL (Pandey et al., 2005).

The existing literature gives one a scattered view of several components that contribute to a better quality of life for women with breast cancer. The present study is a concerted effort to give a composite review of the different determinants of Quality of Life for women with breast cancer. The study will increase understanding of these affected individuals better and thereby allow medical providers to devise effective treatment programs that help in improving their Quality of Life.

Methodology

Search Strategy

A search for relevant studies was carried out on Ebsco, Proquest, PubMed, MEDLINE, science direct and Google Scholar. Indian studies that explained the determinants of Quality of Life in women with breast cancer were selected for the present review. The search was done

using the following subject headings and free-text terms: breast cancer, quality of life in breast cancer, predictors of quality of life in breast cancer, determinants of breast cancer, and psychological determinants of breast cancer, QOL and breast cancer. This search strategy was primarily used on Google Scholar and then adapted for use in other databases. The author completed the literature search within one year (2021).

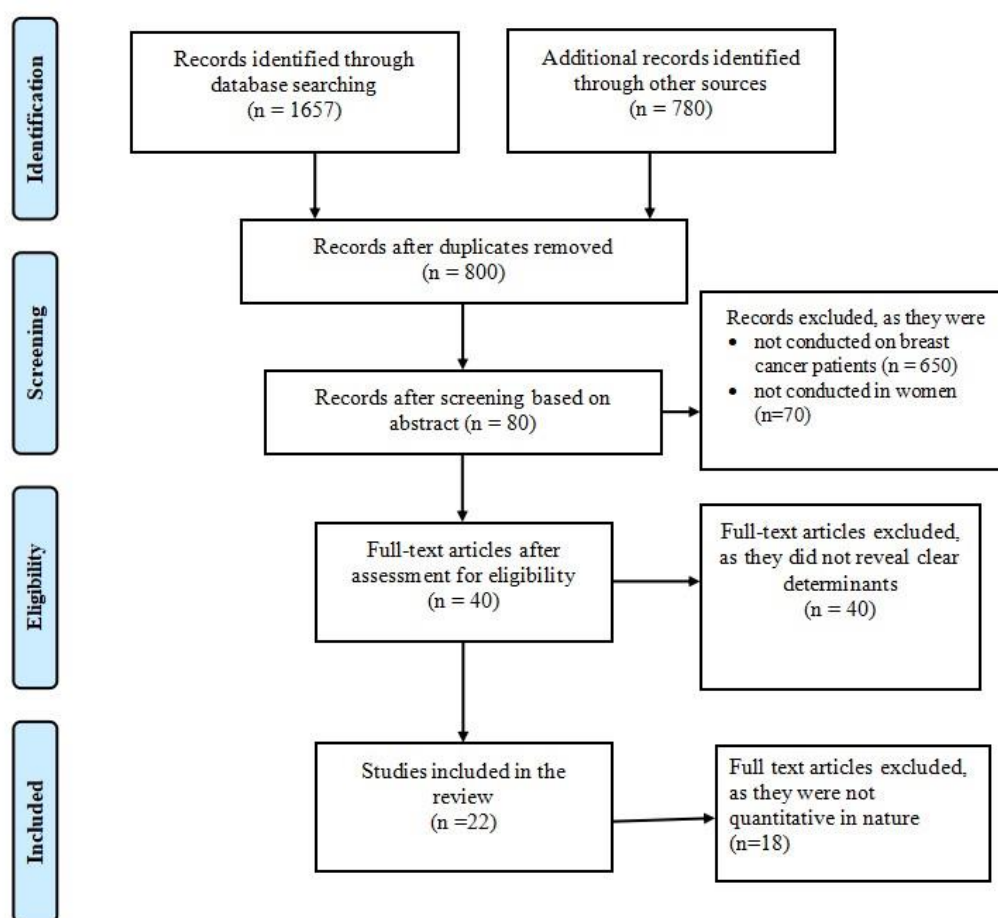
Study Selection

All the studies exploring the determinants of quality of life in patients with breast cancer were selected for the study. The quantitative studies published between 2000 and 2021 were selected for the study. The studies conducted on women with breast cancer were selected for the study. Published literature reviews and meta-analyses were excluded from the study. The PRISMA flowchart is shown in figure 1. Twenty-two studies exploring one or more of the determinants on quality of life in women with breast cancer were selected for the review.

Data Extraction and Analysis

The information extracted from the articles included the author, year of study, sample size, the age range of the sample, determinants explored, domains of quality of life explored, and key findings. A detailed list of all the studies included in the present study is given in the Appendix. The data extracted were analyzed systematically. The results of a given intervention are matched with its methodology and objectives and analyzed objectively. The study has followed PRISMA guidelines in the reporting of the review.

Figure 1: PRISMA Flowchart of the Present Study



Results

The present study reviewed twenty-two studies that indicated determinants for the quality of life of women with breast cancer. The total sample would include 7,041 participants. The sample age ranges from 30 years to 66 years. Ten components have been identified as determinants for QOL in women with breast cancer. These include degree of pain, type and stage of breast cancer treatment, medical health, cognitive and behavioural factors, emotional health, physical activity and appearance, social factors, age and menopausal status, education and employment status, and ethnicity and religion.

Degree of Pain

Higher QOL was associated with less bodily pain and more vitality (Lavdaniti et al., 2018). Level of pain and level of arm symptoms predict global QOL (Jafari et al., 2012). The role of palliative care and pain management had an important role in improving the quality of life of advanced cancer patients (Bisht et al., 2010).

Type and Stage of Cancer Treatment

Hormone therapy in addition to surgery and chemotherapy showed better QOL (Lavdaniti et al., 2018). Certain therapy methods like radiotherapy were associated with lower QOL in breast cancer patients (Lu et al., 2007). Breast cancer patients who have undergone breast reconstruction with mastectomy maintain better health-related quality of life (Fanakidou et al., 2018). Breast conserving surgery was a positive determinant of QOL (Ganesh, Lye & Lau, 2016). The global health status was higher in individuals who underwent mastectomy. Overall QOL increased by 0.16 times for each subsequent year of surgery (Kovacevic et al., 2020). The sexual functional scores and sexual enjoyment scores are found to be better in this group. The sexual symptoms appeared to be higher in the patients who had ovary ablation when compared to the patients who had their ovary preserved (Dubashi et al., 2010). Patients under follow-up compared to the treatment phase reported better QOL. Completion of treatment was also found to be a significant predictor of QOL (Ramadas et al., 2015). Not delaying more than 12 weeks to seek medical help is also found to contribute positively to better QOL (Gangane et al., 2017).

Medical health

Systemic inflammatory responses in patients with advanced cancer were found to be independently associated with poorer summary QOL scores and with poorer physical function, fatigue, and appetite loss (Daly et al., 2020). An increased number of chronic diseases was another factor that led to poorer QOL (Lu, et al., 2007). QOL of psychological and social domains were negatively affected with the existence of comorbidities (Kovačević et al., 2020).

Cognitive and Behavioural Factors

Superior cognitive functioning was reported in those patients with better overall functioning (Ganesh, Lye & Lau, 2016). A sense of coherence was found to be a mediator of health-related quality of life (Rohani et al., 2015). Self-efficacy, which is an important concept connected to self-image and emotional intelligence, was associated with better QOL in all domains (physical, psychological, social, and environmental) (Gangane et al., 2017). A significant relationship was observed between self-efficacy and quality of life on the physical domain of QOL (Hashim & Khalil, 2021). Negative illness perception was associated with poor quality of life (Fanakidou et al., 2017). Self-care and recreation are revealed to be the most important parameters influencing the QOL in breast cancer patients (Pandey et al., 2000). Immediacy in seeking medical help was found to contribute positively to better QOL (Gangane et al., 2017).

Emotional Health

The trait of emotional intelligence is found to be a reliable predictor of quality of life (Chen et al., 2022). Emotional Intelligence (EI) and personality traits are found to determine QOL in patients with breast cancer. EI positively correlates with emotion roles, vitality, social functioning and mental health components (Rey et al., 2013). Personality traits such as sociability and affability positively correlated with vitality, physical functioning, and social functioning, whereas self-consciousness and neuroticism were negatively correlated with emotional functioning, physical roles, social functioning, vitality and mental health components (Rey et al., 2013).

Maintenance of hope has proved to be essential to QOL in women with breast cancer (Nia et al., 2021). Anxiety and depression had detrimental effects on the overall QOL of these women with breast cancer (So et al., 2010). Fear of cancer recurrence in breast cancer patients is an important factor that impairs their quality of life (Chen et al., 2022). Fear of Progression (FOP) negatively correlated with QOL (Ribeiro et al., 2019). Higher depression was associated with low overall HRQoL through 12 months after chemotherapy (Park et al., 2019). Loneliness was associated with poor quality of life (Fanakidou et al., 2017).

Physical Activity and Appearance

Greater physical activity is associated with small but clinically meaningful increases in QOL during active breast cancer care therapy (Mandelblatt et al., 2011). Better QOL was seen in the upper quartile of moderate and vigorous activity, compared to the lowest quartile. Increasing body mass index (BMI) independently and inversely correlated with overall quality of life of breast cancer patients (Mandelblatt et al., 2011). Water exercise intervention was revealed as an effective method for improving emotional well-being and decreasing negative symptoms associated with breast cancer treatment compared with Pilates and yoga interventions (Odynets et al., 2019). However, yoga was more effective in improving social/family well-being (Odynets et al., 2019). Considering body image is an important determinant of self-image, it is important to mention that weight loss is an important factor that has proved to be detrimental to QOL of women with breast cancer (Daly, et al., 2020; Lu, et al., 2007).

Age and Menopausal status

Quality of life is also found to be affected by age. Age at the diagnosis inversely correlated with physical wellbeing and positively correlated with material domain (Lu, et al., 2007). One study indicated that older age was associated with better quality of life (Ganesh et al., 2016). On the contrary, other studies suggest that the overall QOL in younger patients with breast cancer was good (Dubashi et al., 2010). Some studies specifically suggest that patients between ages between 51 to 60 years had better QOL in all domains (physical, psychological, social and environmental). While some studies suggest that post-menopause is a predictor of global health status (Ganesh et al., 2016), other studies indicate that higher age and menopause leads to poorer QOL (Lavdaniti et al., 2018).

Education and Employment status

Higher education and higher income were associated with better QOL in all domains (physical, psychological, social and environmental) (Gangane et al., 2017). Positive employment status was associated with better quality of life (Ganesh et al., 2016). Overall QOL increased by 0.34 times for each subsequent higher education level (Kovačević et al., 2020). An education level of primary school and lower was associated with poorer QOL while (Ganesh et al., 2016). However, housewives and casual workers were associated with better social relationships (Gangane et al., 2017). Having a perceived severe economic burden was associated

with low overall HRQoL through 12 months after chemotherapy (Park et al., 2019). Financial difficulties were associated with higher symptoms (Ganesh et al., 2016).

Social Factors

Social functioning was particularly highlighted as important in QOL (Jafari et al., 2012). Living with family was also found to be a significant predictor of QOL (Ramadas et al., 2015). Single, divorced or widowed women compared to married women were found to have poorer QOL (Ganesh et al., 2016). Being unmarried was found to be detrimental to physical, psychological, health, and environmental domains of QOL (Gangane et al., 2017). Being unmarried was found to have a lower association with social relationships (Gangane et al., 2017). Loneliness was associated with poor quality of life (Fanakidou et al., 2017). Having social support is positively correlated with QOL, which mediates the relationship between fear of progression (FOP) and QOL (Ribeiro et al., 2019).

Ethnicity and Religion

Being in a minority group was found to have a negative effect on QOL in women with breast cancer. Greater physical activity was found to predict better QOL among Caucasians, but this effect is not seen for minority women (Mandelblatt et al., 2011). Religious and existential domains of subjective well-being (SWB) were found to be important for better QOL (Nia et al., 2021). Spiritual well-being and social functioning were also found to be important determinants of QOL (Jafari et al., 2012). Similarly, some religions are also found to be associated with QOL. Women other than Hindus were found to have higher QOL, and better physical and psychological health (Gangane et al., 2017).

Discussion

The results have revealed clear determinants that influence the quality of life of women with breast cancer. Identifying early predictors of poor QOL may allow the identification of patients who may benefit from early referral to palliative and supportive care (Daly et al., 2020). Some determinants clearly contribute positively towards enhancing QOL in women with breast cancer, whereas some affect QOL negatively. Some determinants do not give a conclusive picture of their influence on QOL in this population.

Determinants Enhancing QOL in Women with Breast Cancer

Type and stage of breast cancer have proved to be crucial factors that determine the QOL of women with breast cancer. While hormone therapy led to better QOL, radiotherapy was associated with lower QOL (Lavdaniti et al., 2018; Lu et al., 2007). Hormone therapy has been found to have different rates of success with respect to treatment efficacy, if the patient is hormone-receptor-positive (Drăgănescu & Carmocan, 2017; Rastelli & Crispino, 2008). Chemotherapy, on the other hand, has a high rate of effectiveness, with response to cancer treatment; however, the resultant physical side effects and cognitive dysfunction significantly affects their quality of life (Kayl & Meyers, 2006). The role of hormone therapy on QOL in patients with breast cancer is often connected to the patient's positive menopausal status (Hwang & Yi, 2014). However, patients with consistent adherence to hormone therapy were found to have better QOL than others with poor adherence to this therapy, which is consistent with the results of the present study (Stahlschmidt et al., 2019).

Similarly, patients who underwent breast reconstruction, breast conservation, ovary preservation and mastectomy prove to have better QOL, when compared to others who did not undergo these (Kovacevic et al., 2020; Fanakidou et al., 2018; Ganesh, Lye & Lau, 2016; Dubashi et al., 2010). Studies suggest that the impact these surgeries have on body image is high. This is in tune with previous studies that suggest that breast reconstruction and breast

conservation led to enhanced body image and social and emotional well-being, which thereby leads to better QOL (Teo et al., 2016). It has been proven that women who undergo mastectomy are able to regain their psychosocial health much better than others (Roth et al., 2005). Ovary preservation has been studied in connection to fertility preservation. Studies suggest that apart from body image, fertility preservation is an important aspect of quality of life (La Rosa et al., 2020)

Similarly, the present study shows that patients who completed cancer treatment indicated better QOL. Related literature, though a little contradictory to this result, indicates the importance of prompt reduction and management of disease and treatment related symptoms (Janz et al., 2007). Evidence suggests good emotional functioning post treatment cessation; however, physical functioning may need further care and support (Ganz et al., 2004). Physical activity is also found to lead to a better QOL (Mandelblatt et al., 2011). Studies suggest that fatigue is one of the major factors that affect QOL, and physical exercise is one key element that can improve QOL in this population (Mock et al., 2001).

A sense of coherence and maintenance of hope have been found to have abundant influence in this context (Nia et al., 2021; Rohani et al., 2015). Related literature has always highlighted the significance of hope in improving QOL (Afrooz et al., 2014). A sense of coherence has proved to indicate health, which in turn is highly correlated with QOL, proving its relevance for this population (Wiesmann, Niehörster & Hannich, 2009; Flensburg-Madsen, Ventegodt & Merrick, 2005).

Subjective well-being was found to be another prominent determinant enhancing QOL in this population. Religious, existential, spiritual, and social well-being are found to be important domains of well-being that contribute to better QOL (Nia et al., 2021; Jafari et al., 2012; Pandey et al., 2000). The importance of subjective well-being was also highlighted in previous research. Spiritual and religious well-being has been repeatedly proven to be an essential component for better QOL (Cotton et al., 1999; Dapuetto et al., 2005). Previous literature suggests that distorted self-image due to altered levels of productivity can itself lead to poor social well-being (Klein, 1971) Previous literature indicates that social and psychological well-being are essential components determining QOL in patients with breast cancer (Ferrel et al., 1998). Psychological well-being is also found to be highly correlated with emotional health (Guerra-Bustamante et al., 2019; James, Bore & Zito, 2012)

Emotional health was analyzed in a different manner in different studies reviewed in this study. One study found that emotional intelligence directly determines QOL in this population and that certain personality traits contribute to better QOL (Chen et al., 2022; Rey et al., 2013). This is in tune with previous studies that highlight the importance of emotional intelligence and its domains towards QOL (Mirzaei et al., 2019; Guil et al., 2020). Emotional intelligence is also found to have an inverse relationship with depression and anxiety (Amirifard et al., 2017). In one study, anxiety and depression was found to have detrimental effects on QOL (So et al., 2010). Fear of cancer recurrence and fear of progression (FOP) have been revealed to be detrimental to QOL in this population (Chen et al., 2022; Ribeiro et al., 2019). Previous studies have also revealed similar results and highlighted the importance of resilience and realistic evaluation on recurring symptoms of cancer (Cunningham et al., 2021; Rogers et al., 2017; Sarkar et al., 2014). Some studies also reveal several factors that can negatively influence one's emotions; these include perceived economic burden, financial difficulties, inappropriate body image and inadequate self-efficacy (Hashim & Khalil, 2021; Daly et al., 2020; Park et al., 2019; Ganesh, Lye & Lau, 2016; Lu et al., 2007). Financial difficulties arise due to the huge expenditure involved in cancer treatment, which thereby reduces their economic freedom towards many activities that lead to better QOL (Koskinen et al., 2019; Fenn et al., 2014). Inappropriate body image arises from severe weight loss, hair fall, and other related side effects of different cancer treatments (Helms, O'Hea & Corso, 2008). These may affect the self-image

and self-efficacy of the individual, which again has an important role in QOL (Kinsaul et al., 2014; Kreitler et al., 2007).

Education and employment status are the last determinants that have been revealed to have an enhancing role concerning QOL in this population. Patients with a higher educational status and better employment status were found to have better QOL than patients who were otherwise placed (Kovacevic et al., 2020; Gangane et al., 2017; Ganesh, Lye & Lau, 2016; Ganesh, Lye & Lau, 2016). A higher level of education leads to reduced emotional distress and physical distress thereby enhancing QOL (Ross & Van, 1997). Higher education also proves to be a doorway to better social engagements and employment options, which again lead to better QOL (Edgerton, Roberts & Below, 2012; Regidor et al., 1999). However, education and employment status on the lower end of the range would have detrimental effects on QOL.

Determinants Detrimental to QOL in Women with Breast Cancer

Degree of pain was found to be an important determinant negatively affecting the QOL of this population (Lavdaniti et al., 2018; Jafari et al., 2012; Bisht et al., 2010). Studies constantly highlight the astonishing role of physical pain on QOL. The limitations in physical, social, and psychological functioning are often implicated for this effect (Niv & Kreitler, 2001). Endurance-related pain responses are found to give better QOL than avoidance-related pain responses (Scholich et al., 2012). This emphasizes the importance of prompt and efficient pain management mechanisms to improve QOL (Katz, 2002).

Previous medical health and other comorbidities were found to have a detrimental role on QOL in this population (Daly, et al., 2020; Kovacevic et al., 2020; Lu et al., 2006). Comorbidities often lead to several complications and restrictions with respect to treatment and efficacy, which prove to negatively affect QOL (Smith et al., 2008; Gotze et al., 2018; Fu et al., 2015).

Marital status was another factor that revealed itself in several studies to be an important determinant of QOL in this population. Women who were single, divorced or widowed were found to have poorer QOL (Gangane et al., 2017; Ganesh, Lye & Lau, 2016). Studies show that being married proved to be a protective element contributing to better QOL (Gutiérrez-Vega et al., 2018; Han et al., 2014). Loneliness and social support were found to be important elements that influence QOL (Ribeiro, Campos & Anjos, 2019; Fanakidou et al., 2017). Being married has been found to improve social functioning in various ways, which thereby proves to contribute to better QOL (Miller et al., 2010). This is also explanatory of poor QOL in members of minority groups. The present review also shows that being a member of a minority group has also been revealed to be a negative factor affecting QOL of this population (Gangane et al., 2017; Mandelblatt et al., 2011).

Inconclusive Determinants

The present review presents inconclusive results on age and menopausal status. While some studies suggest that being younger is an indicator of a higher QOL, other studies show that being older is a better indicator of a higher QOL (Ganesh, Lye & Lau, 2016; Dubashi et al., 2010; Lu et al., 2006). Many studies suggest that older age has a negative effect on quality of life, since older adults have limitations with their physical functioning, global health, excessive fatigue, and poorer sexual functioning (Schmidt et al., 2005). Other studies that focused on analyzing specific domains of QOL show that psychological and social QOL was not affected by increasing age, whereas environmental quality of life increased with age and physical quality of life decreased. The negative effects of anxiety and depression on QOL were found to be moderated by age (Brown & Roose, 2011). Previous literature suggests that positive orientation, optimistic orientation, and the use of contrast rather than identification comparisons are associated with a better reported quality of life (Beaumont & Kenealy, 2004). Another parallel

development that occurs due to age in a woman is menopause.

While some studies indicate that post-menopausal women have higher QOL, other studies indicate opposite results, leading to inconclusive information (Lavdaniti, et al., 2018; Ganesh et al., 2016). Previous literature has indicated that the frequency and severity of symptoms associated with menopause affects QOL. The QOL of women with minimal menopausal symptoms may not be as affected as individuals with more severe symptoms (Ayers & Hunter, 2013; Nisar & Sohoo, 2009; Timur & Sahin, 2009; Schneider, 2002).

Limitations

The present study systematically reviewed quantitative data from secondary sources. The total number of articles analysed was only 22. The systematic review included only those studies which were published after the year 2000. The QOL measurement tools varied amongst the studies, but all were self-report measures and had common QOL domains. No other variables besides QOL outcomes have been assessed in this study. Other kinds of cancers were excluded from the study. The population of this study was restricted to cases with active malignant carcinoma of the breast, while breast cancer survivors were not selected for the review. Since breast cancer affects only women, the remaining genders were not represented in this study. Geographical homogeneity was not considered while including studies for review.

Directions for Future Research

With breast cancer being the most prevalent cancer globally, further research concerning its epidemiology, pathophysiology, course, prevention and most importantly treatment and management is an urgent public health need. To understand and address the various psychological factors that affect QOL of women with breast cancer, individualised interventions building emotional, cognitive, behavioural, and psychosocial competencies must be designed and tested. Identification of the determinants of other vital variables in the lives of breast cancer patients will aid in conceptualizing a clearer biopsychosocial health model of this kind of cancer. Conducting longitudinal inquiries on the long-term effects of QOL on disease outcomes will help further our understanding.

Conclusion

A wide range of complex components affect QOL of breast cancer patients. Identifying and providing management for these factors could be a potential protective factor in breast cancer progression. Ensuring the increased frequency or exposure to variables that positively impact QOL, women with breast cancer can have a more comfortable experience during the course of the illness.

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Appendix

The studies included for review are described briefly below:

1. “A path analysis model of spiritual well-being and quality of life in Iranian cancer patients: a mediating role of hope” (Nia et al., 2020) with a sample size of 38 and mean sample age 51.31 years, revealed the determinants subjective well-being (SWB) (Religious and Existential) and Hope. Overall Quality of life (global health status, symptoms and functional areas) was explored. Presence of Hope partially mediated the relationship between QOL and SWB.
2. “Determinants of Quality of Life in Patients with Incurable Cancer” (Daly, et al., 2020) with a sample size of 92 and mean sample age of 66 years, revealed the determinants weight loss and inflammatory markers. Physical function, fatigue, and appetite loss negatively influenced overall QOL.
3. “Associations of physical activity with quality of life and functional ability in breast cancer patients during active adjuvant treatment: the Pathways Study” (Mandelblatt, et al., 2011), with a sample size of 2279 and a mean sample age of 59.7 years, revealed the determinants moderate or vigorous physical activity and BMI. Overall QOL, Functional well-being (FWB), Physical well-being (PWB), Social/family well-being (SWB), and Breast cancer-specific concerns (BCS) were explored.

4. "Anxiety, depression and quality of life among Chinese breast cancer patients during adjuvant therapy" (Winnie, et al., 2010), with a sample size of 218 and a mean sample age of 51.7 years, revealed the determinants anxiety and depression. Physical well-being, Emotional well-being, Functional well-being and Breast cancer subscales were explored.
5. "Effects of Different Exercise Interventions on Quality of Life in Breast Cancer Patients: A Randomized Controlled Trial" (Odynets et al., 2019), with a sample size of 115 and a mean sample age of 59 years, revealed the determinants water exercise intervention, pilates exercise and yoga intervention. Physical well-being, Social/family well-being, Emotional well-being, Functional well-being and Breast cancer subscales were explored.
6. "Trait emotional intelligence and quality of life among breast cancer patients: The mediating role of fear of cancer recurrence" (Chen et al., 2022), with a sample size of 215 revealed the determinants trait emotional intelligence and fear of cancer recurrence. Physical well-being, Social/family well-being, Emotional well-being, Functional well-being and Breast cancer subscales were explored.
7. "Exploring the Relationship Between Emotional Intelligence and Health-Related Quality of Life in Patients with Cancer" (Rey, Extremera & Trillo, 2013), with a sample size of 44 and a mean sample age of 50.5 years, revealed the determinants Emotional Intelligence, Extraversion, Agreeableness, Conscientiousness and Neuroticism.
8. "Impact of newly diagnosed breast cancer on quality of life among Chinese women" (Lu et al., 2007), with a sample size of 2,236 and a mean sample age of 53.5 years, revealed that completion of radiotherapy, age, body weight, number of chronic diseases, income, use of tamoxifen, stage of cancer and stage of chemotherapy could be determinants of QOL.
9. "Factors Influencing Quality of Life in Breast Cancer Patients Six Months after the Completion of Chemotherapy" (Lavdaniti et al., 2018), with a sample size of 61 and a mean sample age of 51.52 ± 12.10 years, revealed the determinants effect of age, menopausal status, hormone therapy, surgery and chemotherapy.
10. "Mental health, loneliness, and illness perception outcomes in quality of life among young breast cancer patients after mastectomy: the role of breast reconstruction" (Fanakidou et al., 2017), with a sample size of 81 and a mean sample age of 47.57 years, revealed that Mastectomy with Breast reconstruction, Loneliness, and Negative Illness Perceptions can be determinants of QoL.
11. "Quality of Life among Breast Cancer Patients in Malaysia" (Ganesh, Lye & Lau, 2016), with a sample size of 223 and a mean sample age of 52.4 years, revealed that employment status, cognitive functioning, financial difficulties, age, menopausal status, marital status, education status, employment status, stage of therapy and breast-conserving surgery can be determinants of QoL.
12. "Quality of life among younger women with breast cancer: Study from a tertiary cancer institute in south India" (Dubashi et al., 2010), with a sample size of 51 and a mean sample age of 34 years, revealed that Mastectomy, Breast Conservation surgery (BCS), Ovary ablation, and Ovary preservation can be determinants of QoL.
13. "Quality of life as an outcome variable in the management of advanced cancer" (Bisht et al., 2010), with a sample size of 10 and a mean sample age of 52.57 years, revealed that Post Palliative, Drug therapy, Reduction in pain intensity/severity can be determinants of QoL.
14. "Quality of Life Determinants in Breast Cancer Patients in Central Rural India" (Gangane et al., 2017), with a sample size of 208 revealed that age, education, income, immediacy in seeking medical services, education status, employment status, marital status, Hindu/non-hindu can be determinants of QoL.
15. "Quality of Life Indicators in Patients Operated on for Breast Cancer in Relation to the Type of Surgery—A Retrospective Cohort Study of Women in Serbia" (Kovacevic et al.,

2020), with a sample size of 425 and a mean sample age of 57.83 years, revealed that Education level, Time elapsed since surgery, and Existence of comorbidities can be determinants of QoL.

16. "Quality of life in patients with early and advanced carcinoma of the breast" (Pandey et al., 2000), with a sample size of 50 and a mean sample age of 38.2 years, revealed that Self-care, Recreation, and Stage of cancer can be determinants of QoL.
17. "Self-efficacy, emotional intelligence, and quality of life amongst cancer patients" (Hashim & Khalil, 2021), with a sample size of 55, revealed that self-efficacy can be a determinant of QoL.
18. "Sense of coherence as a mediator of health-related quality of life dimensions in patients with breast cancer: a longitudinal study with prospective design" (Rohani et al., 2015), with a sample size of 162 and a mean sample age of 46 years, revealed that sense of coherence can be a determinant of QoL.
19. "Spiritual well-being and quality of life in Iranian women with breast cancer undergoing radiation therapy" (Jafari et al., 2012), with a sample size of 68 and a mean sample age of 48 years, revealed that Spiritual well-being, Social functioning, Pain and Arm Symptoms can be determinants of QoL.
20. "Socio-Demography and Medical History as Predictors of Health-Related Quality of Life of Breast Cancer Survivors" (Ramadas et al., 2015), with a sample size of 40 and a mean sample age of 57.5 years, revealed that living with family and completion of treatment can be determinants of QoL.
21. "The effect of fear of progression on quality of life among breast cancer patients: the mediating role of social support" (Ribeiro, Campos & Anjos, 2019), with a sample size of 244 and a mean sample age of 54.3 years, revealed that Fear of Progression (FOP) and Social support can be determinants of QoL.
22. "Trajectories of health-related quality of life in breast cancer patients" (Park et al., 2019), with a sample size of 126 and a mean sample age of 43.4 years, revealed that Age, Perceived severe economic burden, higher depression can be determinants of QoL.