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## Review

# The prevalence of long-term symptoms of depression and anxiety after breast cancer treatment: A systematic review

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### ABSTRACT

**Objectives:** It is unclear whether breast cancer survivors have a higher risk of long-term symptoms of depression or anxiety. The aim of this study was to systematically review the evidence about long-term symptoms of depression and anxiety in breast cancer survivors.

**Study design:** Systematic review.

**Main outcome measures:** PubMed, Embase, Cochrane and PsycINFO were searched for studies with at least 100 survivors  $\geq 1$  year after diagnosis, and which used common questionnaires measuring symptoms of depression or anxiety, by two independent reviewers. The quality was assessed with the NIH 'Quality Assessment Tool' checklist. Prevalence of symptoms of depression and anxiety was compared to time since diagnosis, available control groups and a general female population.

**Results:** Seventeen articles were included in this review with an average quality score of 57% (range 38–86%). The prevalence of symptoms of depression varied from 9.4% to 66.1% and of anxiety from 17.9% to 33.3%. The results on the depression scale suggested an increase in risk of symptoms of depression for breast cancer survivors at one year after diagnosis, which decreases over the ensuing years. Symptoms of anxiety were not more prevalent among the women with early stage breast cancer.

**Conclusions:** This review suggests a higher prevalence of symptoms of depression among breast cancer survivors than among the general female population, persistent over more than 5 years after diagnosis. Health care providers should be aware of this. There was no indication for an increased prevalence of symptoms of anxiety among breast cancer survivors.

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### Contents

1.	Introduction .....	00
1.1.	Introduction .....	00
1.2.	Illustrative case .....	00
1.3.	Objectives .....	00
2.	Methods .....	00
2.1.	Article selection .....	00
2.2.	Measures .....	00
2.2.1.	Center for Epidemiological Studies Depression Scale (CES-D) .....	00
2.2.2.	Beck Depression Inventory (BDI) .....	00
2.2.3.	Hospital Anxiety and Depression Scale (HADS) .....	00
2.2.4.	State-Trait Anxiety Inventory (STAI) .....	00
2.3.	Methodological quality .....	00
2.4.	Data analysis .....	00

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3.	Results .....	00
3.1.	Participant and study characteristics .....	00
3.2.	Methodological quality .....	00
3.3.	Symptoms of depression .....	00
3.3.1.	Prevalence .....	00
3.3.2.	Mean scores on the depression scales .....	00
3.3.3.	Proportions of women with symptoms of depression .....	00
3.4.	Symptoms of anxiety .....	00
3.4.1.	Prevalence .....	00
3.4.2.	Mean scores on the anxiety scales .....	00
3.4.3.	Proportions of women with symptoms of anxiety .....	00
4.	Discussion .....	00
4.1.	Summary .....	00
4.2.	Results in relation to other results .....	00
4.3.	Limitations and strengths .....	00
4.4.	Conclusion and clinical perspective .....	00
	Contributors .....	00
	Competing interest .....	00
	Funding information .....	00
	Provenance and peer review .....	00
	Appendix 1 .....	00
	References .....	00

**1. Introduction**

*1.1. Introduction*

Breast cancer is the most common cancer in women worldwide [1]. In the Netherlands, the incidence of breast cancer was 198 per 100,000 women in 2014 [2]. In recent years there has been an increase in the incidence of breast cancer because of an aging population [2]. On the other hand, the 5-year-survival for breast cancer has improved [3]. These changes are due to earlier detection and improvements in treatment [4]. Consequently, these developments have resulted in more and more women surviving breast cancer.

This growing group of women is experiencing the late sequelae of breast cancer and its treatment [5]. Among these possible effects are symptoms of depression and anxiety [6]. It is known that symptoms of depression and anxiety impair quality of life. This suffering can be eliminated by treatment, which has been shown to be highly effective [7,8]. However, often a patient may present vague complaints, so the depression or anxiety remains undetected.

*1.2. Illustrative case*

Ms. A. is a 65-year-old married woman with no family history of cancer. Four years ago she was diagnosed with ductal breast cancer after participating in a breast cancer screening program. She was treated with breast conserving therapy, including lumpectomy and adjuvant radiotherapy. She is known to have hypercholesterolemia, cardiac angina and palpitations. She has been a smoker for 50 years. She now visits her new general practitioner, for the first time, with persistent complaints of discomfort. Ms. A. states that in general she can relax and enjoy her life, however, she feels like her enjoyment is less than before. She also worries a lot, but she cannot really say why. These feelings are starting to impair her life and relationship, and she is seeking help. After the consultation the general practitioner thinks she might have a depressive disorder.

*1.3. Objectives*

Little is known about the prevalence of long-term symptoms of depression and anxiety as late effects after breast cancer and its treatment. Studies reporting on these symptoms are often

performed during, or right after, treatment [9,10]. The aim of this systematic review was to review systematically the evidence about long-term symptoms of depression and anxiety in breast cancer survivors.

**2. Methods**

*2.1. Article selection*

We systematically searched PubMed, Embase, Cochrane and PsycINFO for combinations of the following search terms: breast cancer, depression or anxiety, survivors and prevalence (See Appendix 1). Articles were included when published before January 10th 2015. Duplicates were removed. To assess the prevalence of symptoms of depression or anxiety in an unselected cohort, only observational studies were included. Further inclusion criteria were original data, adult patients (age ≥ 18), and a study group which comprised at least 100 women treated for breast cancer with curative intent, diagnosed more than one year previously. Only studies with at least one of the four most frequently used questionnaires (see Section 2.2) for symptoms of depression or anxiety were included. Excluded were studies which comprised patients with breast cancer recurrence, mixed cancer studies with no separate breast cancer data, and selected (e.g. only elderly) patient groups. Two investigators (SM and CR) independently reviewed each article. Discrepancies were discussed by the two researchers, and when necessary, with a third reviewer (PV).

*2.2. Measures*

*2.2.1. Center for Epidemiological Studies Depression Scale (CES-D)*

This scale is a 20-item, self-report measure for depressive symptomatology [11]. The total score range is 0–60. A score of 10 or greater indicates symptoms of depression; 16 or higher indicates severe symptoms of depression. For the 10-item CES-D, a score higher than 10 indicates severe symptoms of depression [12]. According to Ochs-Balcom et al. the mean score in an American, general female population is 7.5; the percentages for symptoms of depression and severe symptoms of depression were 24.2% and 13.8%, respectively [13].

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