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Review

A critical review of women's sleep–wake patterns in the context of neo-/adjuvant chemotherapy for early-stage breast cancer

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ABSTRACT

Complaints of poor nocturnal sleep and daytime dysfunction may be frequent among women receiving chemotherapy for breast cancer. A critical review of the literature was conducted, which aimed at summarising and critically analysing findings regarding sleep in women with early-stage breast cancer across neo-/adjuvant chemotherapy treatment. A systematic search of three electronic databases (Medline, CINAHL, EMBASE) was conducted from January 1980 to July 2011. Twenty-one articles reporting on 12 studies were included for analysis based on pre-specified selection criteria. Varying deficits in sleep parameters may be evident in a significant part of this population. Yet, research data are not equally distributed among the different sleep components, or across all major time points throughout chemotherapy. More systematic investigation of the experience of disrupted sleep in this population with longitudinal mixed-methods studies is warranted to ensure that person-tailored and clinically meaningful care is delivered.

Introduction

Empirical data suggest that sleep constitutes an area of functioning that is frequently impaired in women who go through the lived experience of breast cancer.[1–4] The magnitude of the problem has led to an impressive number of studies undertaken to explore in varying methodological ways alterations in sleep patterns of women with breast cancer as a result of both the disease itself and the treatment.[1,3,5–13] Given the improved screening techniques and earlier diagnosis,[14] a significant part of sleep research has been conducted in the context of early-stage breast cancer. Given also the increased frequency of women for whom chemotherapy is recommended to reduce the risk of breast cancer recurrence,[15] much of this research has been focused especially on the impact of adjuvant/neo-adjuvant chemotherapy on sleep.

It can be argued that research in this area has been legitimised as highly significant due to the increased vulnerability of this specific population[4]: the cumulative effect of toxic agents on bodily functions, the physical impact of concurrent, frequent, severe and/or distressing symptoms, the emotional burden of daily disruptions in life, as well as a host of anxieties and depressed mood, may contribute to a spectrum of experienced sleep disruptions even before, but mainly during and following chemotherapy. Moreover, such body and life changes may become especially important for women already susceptible to sleep alterations given the unseen or evidenced impact of breast cancer diagnosis and of primary breast surgery.

Disordered sleep can strongly influence clinical and care-related outcomes,[16] including fatigue,[17–19] performance status,[20] mood,[21] immune function,[22] quality of life,[7,23] and survival.[24–26] In addition, the subjective importance women with breast cancer attribute to sleep problems may have potential consequences for behaviours associated with self-care, help-seeking strategies and reporting of disturbances to the health care team, as well as acceptance and compliance with recommended therapeutic interventions.[27,28] Collectively seen, this reported significance warrants clinical awareness and ongoing assessment, while dictates the need for continuing intervention by the health care team. The aim of this review was to summarise and critically analyse current evidence regarding the sleep patterns of women before, during and after neo-/adjuvant chemotherapy for breast cancer, as well as to discuss in detail methodologic and research gaps in this body of evidence.

Methods

A systematic search was carried out to identify original research studies conducted in the context of early-stage breast cancer, specifically focussing on examination of women's sleep patterns in the context of chemotherapy treatment.

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An electronic search of three research and evidence databases (Medline, CINAHL, EMBASE) was conducted. A defined search strategy was devised using a wide range of key terms and synonyms including the following: *insomnia*, *sleep disturbance*, *sleeplessness*, *sleepiness*, *circadian rhythms*, *sleep efficiency*, *sleep quality*, *daytime disturbance*, *awakenings*, *sleep latency*, *drowsiness*, *wakefulness* and *breast cancer*. The reference lists of retrieved papers were also examined for any studies that may have been overlooked. Reference lists of key topical literature reviews[4,16,29–38] also were examined. Additional literature was sought through use of the search engine Google Scholar.

Studies were eligible in this review if they were written in the English language; were conducted with adult (> 18 years of age) women diagnosed with early-stage (I–IIIA) breast cancer[39]; examined sleep prior to, during and after adjuvant/neo-adjuvant chemotherapy treatment in chemotherapy naïve patients; did not report on patients pre-selected for insomnia or impaired sleep; implemented an exploratory design, although intervention studies were also included if they provided baseline and/or control arm sleep data; examined sleep as a primary or secondary variable via use of sleep-specific measures; and were published as original articles in peer-reviewed journals from January 1980 to July 2011 representing the period in which sleep-specific instruments were developed, and studies of sleep within different clinical populations emerged. Studies using generic quality of life measures or single item tools to elicit information about sleep patterns, unpublished studies, dissertation studies, and conference presentations were excluded.

Study characteristics were extracted using a systematic scheme. Due to heterogeneity of the studies retrieved, findings were only integrated in a narrative synthesis. In order to summarise findings with regard to specific sleep parameters, weighted grand means ($\overline{X}$) and weighted standard deviations were calculated adjusting for different study sample sizes. Moreover, the evidence categories employed by the Department of Health in the National Service Frameworks (DOHNSF, 2001) (cited in Anderson et al., 2004[40]) were used for levelling evidence, and aiding appraisal of quality of the papers reviewed. However, no studies were excluded on the grounds of quality.

Search results and study characteristics

Three thousand three hundred forty-five articles were identified through the searches (Fig. 1), of which twenty-one reported on twelve studies conducted in the context of chemotherapy for early-stage breast cancer (Table 1). In cases of multiple articles in the context of one study, relevant information from all articles was included. Nine of the 21 papers reported on secondary analyses[41–46] from, or were part[47–49] of, two of the twelve studies identified.

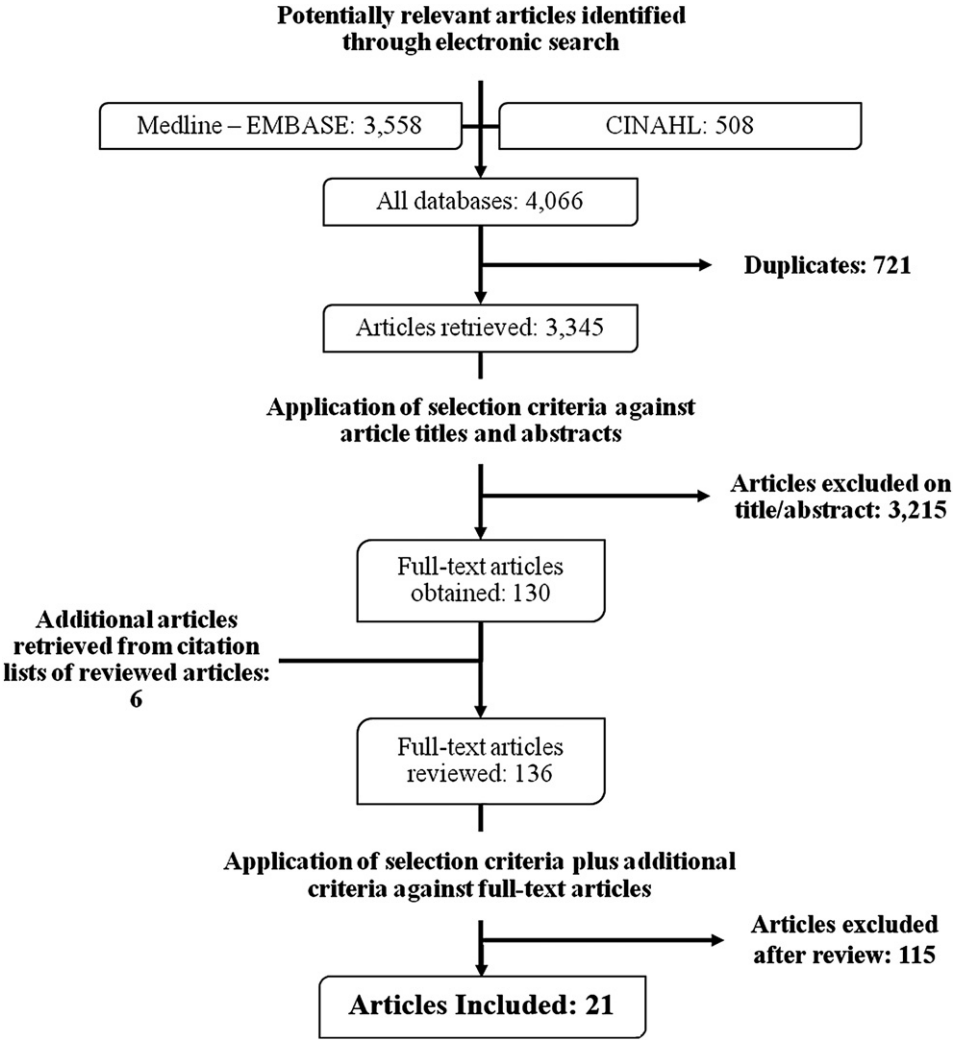

Fig. 1. Flow diagram of the article selection process.