

# Sleep is a fire with smoke: Time to incorporate sleep as a fundamental component in cancer treatment protocols

Atef H 1,2\*, P. Bargiotas 3, and Rana A. Youness4

1. *Institute of Social and Preventive Medicine, University of Bern, Switzerland.*
2. *Faculty of Physical Therapy, Cairo University, Egypt*
3. *Medical School, University of Cyprus, 2029 Nicosia, Cyprus*
4. *Biology and Biochemistry department, School of Life and Medical Sciences, University of Hertfordshire Hosted by Global Academic Foundation, 11835, Cairo, Egypt*

## Dr. Hady Atef: (corresponding author)

1. *Institute of Social and Preventive Medicine, University of Bern, Switzerland.*
2. *Faculty of Physical Therapy, Cairo University, Egypt*

Email: hady.atef@ispm.unibe.ch

Tel: +201119699110

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Sleep rehabilitation therapies, alone or in combination with pharmacological treatment and as part of a chronotherapy package are of potential use for people with major cardiopulmonary disorders, including cancer, and sleep-wake circadian disturbances (SWCD). However, the evidence base is still conflicting. This editorial aims to advocate for the importance of incorporating sleep as a fundamental component in cancer treatment protocols and guidelines.

Sleep disturbances are common complaints among cancer patients <sup>1</sup>. Possible mechanisms include cancer-induced systemic changes related to endocrine, metabolic, and immune systems but also aggressive treatment protocols. Yet, sleep complaints are usually neglected by the oncological team and the healthcare professionals dealing with cancer patients. However, the question that remained un-tackled is "Does sleep deprivation affect cancer patients' quality of life, response to treatment, or even cancer outcome?". The limited available evidence suggests a positive relationship between sleep quality and cancer prognosis. Suggested mechanisms include a direct impact on the immune system and other fundamental repairing and metabolic processes and indirect effects by affecting mood and pain perception <sup>2</sup>.

The incidence of insomnia among cancer patients is relatively high (30-75%) compared to age-matched population <sup>3</sup>. These statistics raised concerns that the problem might be severe among cancer patients and must be considered by all healthcare team members. There is available evidence that cancer patients suffer from sleep disturbances from very early and even at late stages of cancer <sup>4</sup>. In addition, about 19% of the studied groups suffer from sleep disturbances long prior to the cancer diagnosis <sup>5</sup>.

Generally, sleep-related complaints among cancer patients could be categorized into 3 main categories: 1- Effort in falling asleep (initiation) 2- Struggle in staying asleep (maintenance) 3- Early-awakening insomnia. It is terrifying that upon comparing cancer patients with depressed non-cancer patients, it was reported that 62% of cancer patients involved in the study were suffering from moderate to severe sleep disturbances while among the depressed patients only 53% were suffering from sleep disturbances <sup>6</sup>.

Nonetheless, a large survey was performed among breast and lung cancer patients where it was reported that most of the patients who suffer from sleep disorders did not report it to their oncologist. Yet, it was highly evident that the most common complaint of most cancer patients involved in the study was the frequent awakening episodes and their overall reduced

number of sleep hours compared to the sleep hours they were used to sleeping before cancer diagnosis <sup>7,8</sup>.

It is also worth mentioning that in another study including different types of solid and hematological malignancies, it was reported that lung and breast cancer patients again are on top of the list of patients fitting the insomnia diagnosis criteria <sup>9</sup>. Also, it is important to note that in a study comparing cancer patients with insomniac patients and healthy controls, it was found that the insomniac patients are the shortest total sleep time while lung cancer patients recruited in the study had the most disrupted sleep and also characterized by a general comment from all people which is spending a too long time in bed to be able to sleep <sup>5</sup>.

Concerning the etiology of insomnia or sleep disorders among cancer patients, the list is still expanding as those types of patients are exposed to many risk factors that could lead to their suffering from such aggressive sleep disorders episodes <sup>1</sup>. One of the major risk factors for such insomnia is the unbearable pain and fatigue accompanied by the disease itself <sup>3,6</sup>. Even though upon the diagnosis of such a life-threatening disease, anxiety and stress are another central causes for such sleep disorders reported by cancer patients <sup>10</sup>. Nevertheless, the therapeutic protocols itself that include radiotherapy and chemotherapy would be one of the hidden causes behind such sleep disorders experienced by those patients <sup>3</sup>.

It is important to note that the massive increased number of published and unpublished randomized controlled trials recruiting cancer patients and are using sleep parameters as one of the study outcomes is an alarming indication that the new direction of cancer treatment should include patients' sleep quality to the equation (11). Especially that emerging evidence is highly postulating that sleep disturbances among cancer patients have a direct impact on cancer mortality rates (4).

However, based on our knowledge, there are no structured personalized rehabilitation protocols available embedded within the treatment protocols of cancer patients.

What is only available in the literature is a lot of shouts to incorporate this significantly affective component into consideration. However, the latest reachable guidelines are still considered among the “integrative therapies” for cancer patients (12).

In conclusion, this editorial spot the light onto the clear effects of sleep intensity and quality among cancer patients. It also highlights that such avoidance of its incorporation as a fundamental component in the cancer treatment protocols has to be changed and terminated. We believe that the integration of structured personalized rehabilitation protocols on sleep disturbances among cancer patients would positively affect cancer prognosis, mortality rates and offer our patients a comprehensive multidisciplinary patient-centered approach.

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