Do Dysfunctional Beliefs and Attitudes about Sleep Predispose or Maintain Insomnia in Cancer Patients: Results from a Longitudinal Study

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INTRODUCTION

- Insomnia affects up to 60% of cancer patients.
- Dysfunctional beliefs about sleep have been found to be associated with insomnia in the general population and in the context of cancer.
- Dysfunctional beliefs about sleep have been generally considered to be a predictor of insomnia persistence rather than a predictor of insomnia incidence.
- No study has yet examined the associations between baseline dysfunctional beliefs and attitudes about sleep and the evolution of sleep impairments from a longitudinal perspective in cancer.

OBJECTIVES

- To assess to what extent dysfunctional beliefs and attitudes about sleep contribute to predisposing rather than perpetuating insomnia over time in cancer patients.
- To explore the associations between dysfunctional beliefs and attitudes about sleep at baseline and sleep variations throughout the cancer treatment trajectory.

METHODS

Participants

Inclusion criteria were:

- to have received a confirmation for a first diagnosis of non-metastatic cancer;
- to be scheduled to receive a curative surgery;
- to be aged between 18 and 80 years old;

Exclusion criteria were:

- to have received a neoadjuvant treatment for cancer;
- to have severe cognitive impairments (e.g., Alzheimer's disease) or a severe psychiatric disorder (e.g., psychosis, bipolar disorder) as noted in the medical chart, observed at recruitment, or reported by the patient;
- to have received a diagnosis for a sleep disorder other than insomnia (e.g., obstructive sleep apnea, periodic limb movements);
- to have severe visual, hearing or language defects impairing their capacity to complete the measures.

3196 patients were solicited to take part in this study

- 1677 patients were eligible (52.5% of solicited patients)
- 962 of them agreed to participate (57.4% of eligible patients)

Participants' demographic and clinical characteristics at baseline (*N* = 962)

Variables	*M (SD)*	%
Age (years; range = 23-79)	57.0 (9.9)	
Gender		
Male		36.4
Female		63.6
Cancer Site		
Breast		48.3
Prostate		27.2
Gynaecological		11.5
Urinary and gastro-intestinal		7.2
Head and neck		2.3
Other		3.4
Time since cancer diagnosis (months; range = 0-17)	2.2 (1.9)	
Sleep status		
Good sleepers		40.6
Insomnia symptoms		31.2
Insomnia syndrome		28.3
Dysfunctional Beliefs and Attitudes about Sleep scale (range = 0-9.9)	3.7 (1.7)	
Good sleepers	3.1 (1.6)	
Insomnia symptoms	3.6 (1.5)	
Insomnia syndrome	4.6 (1.7)	

Procedure

As part of a larger longitudinal study:

- Potential participants were recruited at L'Hôtel-Dieu de Québec and l'Hôpital du St-Sacrement, Québec, Canada
- A research assistant met patients and explained the study goals and procedures
- Patients agreeing to participate were asked to provide their written consent
- Patients received a battery of self-report scales and were asked to complete it within two weeks and return it by mail at six time points:
  - Baseline (peri-operative period; T1);
  - 2 months (T2);
  - 6 months (T3);
  - 10 months (T4);
  - 14 months (T5);
  - 18 months (T6).

Measures

The battery included :

- the *brief version of the Dysfunctional Beliefs and Attitudes about Sleep scale* (DBAS-16; Morin, Vallières, & Ivers, 2007), assessing:
  - misconceptions about the causes of insomnia
  - misattribution or amplification of its consequences
  - unrealistic sleep expectations
  - diminished perception of control and predictability of sleep
  - faulty beliefs about sleep-promoting practices
- the *Insomnia Interview Schedule* (IIS; Morin, 1993), a semi-structured interview evaluating :
  - current presence and duration of the insomnia syndrome and symptoms
  - utilization of prescribed medications and of other substances as sleep aids

At T1, participants were categorized into one of these three groups based on the IIS:

Good sleepers

- No subjective complaint of sleep difficulties
- No hypnotic use

Insomnia symptoms

- Complaint of sleep difficulties without meeting the criteria for an insomnia syndrome

OR

- Hypnotic medication 1 or 2 nights/week

Insomnia syndrome

- Subjective complaint of sleep difficulties
- Sleep onset latency or wake after sleep onset ≥ 30 minutes
- ≥ 3 nights per week
- Duration ≥ 1 month
- Associated with impaired daytime functioning or marked distress

OR

- Hypnotic medication ≥ 3 nights per week for ≥ 1 month

The natural course of insomnia was studied by allocating participants into the following four sleep trajectories at each time point:

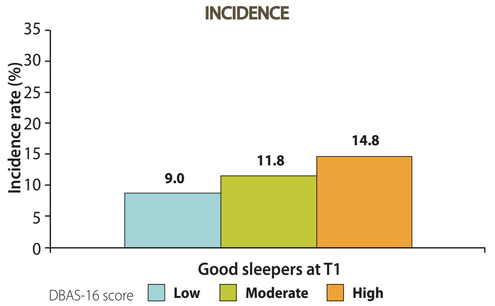
Incidence	Persistent insomnia	Remission	Relapse
Good sleepers at one time point but with insomnia symptoms or syndrome at the subsequent time point	Insomnia symptoms or syndrome at two consecutive time points	Change from an insomnia symptoms or syndrome status at one time point to a no-symptoms (good sleepers) status at the subsequent time point	Resurgence of insomnia symptoms or syndrome after a patient went into a remission
Good sleeper ↓ Insomnia	Insomnia ↓ Insomnia	Insomnia ↓ Good sleeper	Insomnia ↓ Good sleeper ↓ Insomnia

Statistical Analyses

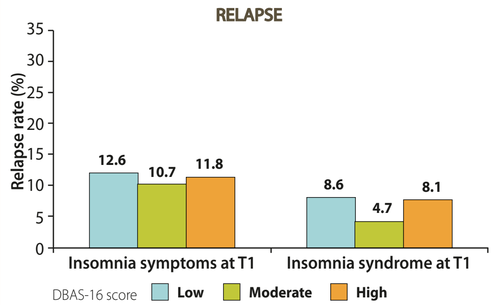
- All participants were categorized into three balanced groups, based on baseline DBAS-16 scores (low = 1st to 33rd percentile, moderate = 34th to 66th percentile, and high = 67th to 100th percentile).
- Incidence, persistence, remission and relapse rates were compared across these three groups for each insomnia status at baseline (good sleepers, insomnia symptoms or insomnia syndrome) using chi-square tests.

RESULTS

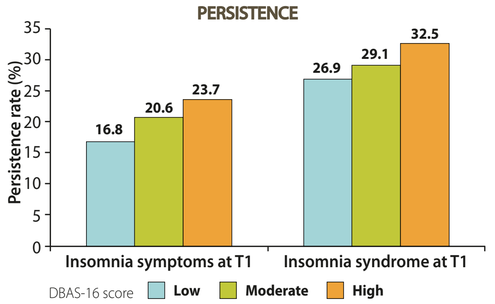
Associations between dysfunctional beliefs and attitudes about sleep (DBAS-16) scores at T1 and sleep trajectories during the 18-month follow-up



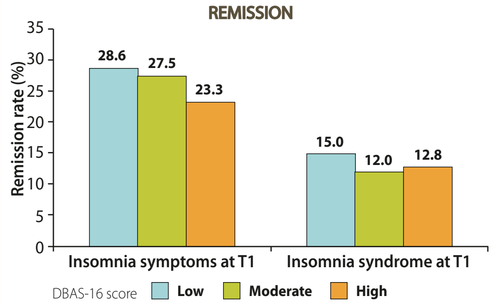
Chi-square analyses revealed that in **good sleepers** a higher level of dysfunctional beliefs about sleep at T1 was significantly associated with an increased **incidence** of insomnia, X^2 (2) = 8.33, p = .02



Chi-square analyses revealed no significant association between baseline DBAS-16 scores and relapse rates both in participants with insomnia symptoms, X^2 (2) = 3.54, p = .17, and insomnia syndrome at T1, X^2 (2) = 0.67, p = .71



Chi-square analyses revealed that in participants with **insomnia symptoms**, X^2 (2) =8.93, p = .01, and **insomnia syndrome**, X^2 (2) = 6.68, p = .04, at T1, greater baseline DBAS-16 scores were significantly associated with a higher **persistence** of insomnia between two time assessments



Chi-square analyses revealed that:

- Lower baseline DBAS-16 scores were significantly associated with higher **remission** rates in participants with **insomnia symptoms** at T1, X^2 (2) = 5.91, p = .05;
- There was no significant association between baseline DBAS-16 scores and remission rates in participants with insomnia syndrome at T1, X^2 (2) = 1.58, p = .45

CONCLUSION

- Results found in this longitudinal study are consistent with those of previous studies in showing significant associations between dysfunctional beliefs and attitudes about sleep and insomnia in cancer patients.
- Moreover, these findings suggest a predictive role of baseline dysfunctional beliefs in determining sleep trajectories.
- Dysfunctional beliefs about sleep appear to be involved both in the development and maintenance of insomnia in the context of cancer, while lower levels of dysfunctional beliefs about sleep appear to facilitate insomnia remission.
- These results highlight the relevance of integrating cognitive therapy in the treatment of insomnia.
- They also suggest that prevention of sleep difficulties could be relevant in good sleepers presenting high levels of dysfunctional beliefs and attitudes about sleep.