Prevalence, Evolution and Risk Factors of Insomnia Comorbid with Cancer Over a 10-Month Period

Josée Savard, Ph.D.
Professor
School of Psychology, Université Laval
and
Laval University Cancer Research Center
Acknowledgments

• Co-investigator: Charles M. Morin, Ph.D.
• Biostatistician: Hans Ivers, Ph.D
• Research coordinators:
  • Julie Villa, M.Ps.
  • Aude Caplette-Gingras, B.A.
• Research assistants
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Prior Studies

- Prevalence of insomnia symptoms: 30% to 50%
  Savard & Morin (2001), JCO

- Prevalence of insomnia syndrome: 18% to 19%
  - Sleep onset latency (SOL) > 30 min or wake after sleep onset (WASO) > 30 min
  - At least 3 nights/week
  - Sleep efficiency < 85%
  - Causes marked distress or impaired daytime functioning
  - Duration > 1 month
  Savard et al. (2001), Sleep
  Savard et al. (2005), Psycho-Oncology
Limitations of Previous Studies

- Heterogeneous definitions and measures of insomnia
  - Difficult to compare prevalence rates across studies
- Convenient samples
  - Generalization?
- Prevalence rates across cancer sites, stages, and treatments understudied
- Cross-sectional design:
  - Incidence and remission (i.e., natural course) and risk factors during cancer care unknown
Study Goals

• Assess the prevalence, incidence and natural course of cancer-related insomnia in a large sample of patients with mixed cancer sites
• Identify risk factors of cancer-related insomnia
Participants’ Recruitment

• All patients (18 to 80 years of age) scheduled to undergo surgery after a first dx of non-metastatic cancer at L’Hôtel-Dieu de Québec were approached at their pre-operative visit

• Exclusion criteria:
  • Life expectancy < 1 year
  • To have received neoadjuvant cancer treatments
  • Severe cognitive impairments or psychiatric disorder
Surgery: 81%
Radiation tx: 19%
25%
29%
16%
Chemotx: 3%
34%
27%
33%
Hormone tx: 1%
10%
4%
39%

Study Design

T1
2 months

T2
4 months

T3
4 months

T4
4 months

T5
4 months

T6
4 months

Surgery: 81%
Recruitment Statistics

3196 patients approached

1690 patients eligible
1506 patients excluded

975 patients recruited (58.0%)
715 patients refused

924 patients classified

62 dropped out at T2 (6.7%)
39 dropped out at T3 (4.5%)
46 dropped out at T4 (5.6%)
## Demographic Characteristics at Baseline

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>57.2 yrs (21 to 79)</td>
</tr>
<tr>
<td><strong>Variable</strong></td>
<td><strong>$M$</strong></td>
</tr>
<tr>
<td>Female gender</td>
<td>64.1</td>
</tr>
<tr>
<td>Married or cohabitating</td>
<td>67.3</td>
</tr>
<tr>
<td>Education completed</td>
<td></td>
</tr>
<tr>
<td>College or higher</td>
<td>50.8</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
</tr>
<tr>
<td>Work (full or part-time)</td>
<td>39.2</td>
</tr>
</tbody>
</table>
Distribution of Cancer Sites

- Breast: 469 (48%)
- Prostate: 269 (27%)
- Gyn: 118 (12%)
- Head & Neck: 23 (2%)
- Urinary & GI: 81 (8%)
- Other: 34 (3%)

Chart shows the distribution of cancer sites with percentages and counts.
Dependent Variables

• Insomnia Interview Schedule (Morin, 1993)
  • 3 groups:

<table>
<thead>
<tr>
<th>No symptoms</th>
<th>Insomnia symptoms</th>
<th>Insomnia syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No subjective complaint of sleep difficulties OR Use of hypnotic medication &lt; 1 night/week</td>
<td>• Subjective complaint of sleep difficulties but not meeting criteria for an insomnia syndrome OR Use of hypnotic medication &lt; 3 and $\geq$ 1 nights/week</td>
<td>• Subjective complaint of sleep difficulties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• SOL or WASO $&gt; 30$ min.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $\geq$ 3 nights/week</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $\geq$ 1 month</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Functioning impaired or psychological distress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use of hypnotic medication $\geq$ 3 nights/week</td>
</tr>
</tbody>
</table>
Independent Variables (precipitating factors)

• Medical variables (e.g., cancer treatments)
• Adaptation of the Memorial Symptom Assessment Scale (Portenoy et al., 1994)
• Inventory of Recent Life Experiences for Cancer Patients (Fillion, 2001)
• List of Threatening Experiences (Brugha et al., 1985)
• Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983)
• Fear of Cancer Recurrence Inventory (Simard, Savard et al., 2009)
• Coping with Health Injuries and Problems (Endler et al., 1998)
• Multidimensional Fatigue Inventory (Smets et al., 1995)
Overall Prevalence (%) of Insomnia Across Time

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Symptoms</th>
<th>No symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.6%</td>
<td>23.0%</td>
<td>51.0%</td>
</tr>
<tr>
<td>26.1%</td>
<td>21.1%</td>
<td>54.2%</td>
</tr>
<tr>
<td>24.7%</td>
<td>18.4%</td>
<td>59.3%</td>
</tr>
</tbody>
</table>

Time effect
F(3,2315) = 6.30, p < .01

Time effect
F(3,2315) = 18.06, p < .001

Savard et al. (unpublished)
Prevalence of Insomnia (%) Syndrome Across Cancer Sites and Time

* n < 20
Prevalence of Insomnia (%; syndrome and sx) Across Cancer Sites and Time

- Breast: 69 (Baseline), 60 (2 months), 55 (6 months), 47 (10 months)
- Prostate: 38 (Baseline), 29 (2 months), 28 (6 months), 27 (10 months)
- Gyn: 69 (Baseline), 57 (2 months), 57 (6 months), 56 (10 months)
- Head & Neck*: 60 (Baseline), 50 (2 months), 50 (6 months), 31 (10 months)
- Urinary and GI: 68 (Baseline), 50 (2 months), 47 (6 months), 40 (10 months)
- Other*: 42 (Baseline), 38 (2 months), 50 (6 months), 50 (10 months)

* n < 20
Definitions

Persistent insomnia

Syndrome

Remission

Symptoms

Incidence

No sx

Time

Persistent good sleep

Time +1
Incidence, Persistence, and Remission Rates

Good Sleepers

**Incidence**
- 18.4%
- 19.3%
- 15.5%

**Persistent good sleep**
- 81.6%
- 80.7%
- 84.5%

Insomniacs

**Persistent insomnia**
- 67.9%
- 75.1%
- 70.7%

**Remission**
- 32.1%
- 24.9%
- 29.3%
Most Frequent Sleep Trajectories

SY = Syndrome
Sx = Symptoms
GS = Good Sleepers

32.3% developed SX
8.5% developed SY
at some time point

Good Sleepers

<table>
<thead>
<tr>
<th>SY</th>
<th>Sx</th>
<th>SY</th>
<th>Sx</th>
<th>SY</th>
<th>Sx</th>
<th>SY</th>
<th>Sx</th>
<th>SY</th>
<th>Sx</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1%</td>
<td>6.1%</td>
<td>5.2%</td>
<td>5.2%</td>
<td>6.4%</td>
<td>6.4%</td>
<td>67.7%</td>
<td>67.7%</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Time (Months)

www.ulaval.ca
Most Frequent Sleep Trajectories

Patients with Insomnia Symptoms

- SY = Syndrome
- Sx = Symptoms
- GS = Good Sleepers

25.4% developed SY
73.5% became GS
at some time point

Severity of Insomnia

Time (Months)

0 2 6 10

GS

Sx

SY

5.7% 12.1% 7.2% 11.4% 29.6%
Most Frequent Sleep Trajectories

Patients with Insomnia Syndrome

SY = Syndrome
Sx = Symptoms
GS = Good Sleepers

30.1% became SX
35.8% became GS at some time point

50.9%
4.9%
4.4%
8.0%

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Precipitating Factors for Insomnia Incidence

- Increases of physical symptoms severity, nocturnal hot flashes, anxiety and depressive symptoms, fatigue and administration of adjuvant cancer treatments were all significantly associated with insomnia incidence (main effects).
Conclusion

- The prevalence of insomnia is very high in cancer patients during the peri-operative period and then progressively decreases over the next 10 months.
- Breast and gynecological cancer patients are particularly at risk of developing insomnia, while patients with prostate cancer are less at risk.
- In spite of this general decrease in the prevalence of insomnia over time, the incidence, persistence and remission rates remained fairly stable.
Conclusion (continued)

• The study revealed various sleep trajectories:
  • Most good sleepers at T1 remained good sleepers throughout the study (68%)
  • 25% of the patients with insomnia symptoms at T1 developed an insomnia syndrome at some point; 6% developed a persistent insomnia syndrome
  • In most patients with an insomnia syndrome, the syndrome persisted throughout the study (51%)
• These findings suggest the importance of offering effective sleep management strategies soon following the surgery
Conclusion (continued)

• This study identified several significant risk factors for insomnia incidence (e.g., physical and psychological symptoms, hot flashes, administration of adjuvant treatments).
• The influence of hot flashes, anxiety and radiotherapy varied as a function of time.