Sleep disruption in breast cancer: a prospective observational study

Leanne Fleming Ph.D.
Acknowledgements

• Co-investigators
  Prof. Colin Espie, Dr. David Morrison, James Paul

• Researchers:
  Kate Randell, Elaine Stewart

• Recruitment:
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• Funders:
  Breast Cancer Now
Sleep disturbance in cancer

- Prevalence of insomnia in cancer patients 30-60%
- Rates highest in breast cancer populations
- Insomnia compromises QoL and other health-related outcomes
- CBT-I results in clinically and statistically significant improvements to sleep in patients with cancer
- Majority of cancer patients receive sleep medication or no treatment for sleep disturbance
Service delivery dilemma

**Needs**
- High demand for CBT-I
- Short supply of CBT-I

**Perceptions**
- CBT-I is complex
- CBT-I is time-consuming
- CBT-I is expensive

**Service dilemma**
- CBT-I service would be impossible to develop/deliver
- CBT-I service would quickly become overwhelmed
- CBT-I would have to be highly selective, for the few
Study Aims

• Explore and describe the prevalence and evolution of insomnia in a large sample of newly diagnosed breast cancer patients

• Identify potential risk factors that predict susceptibility to developing persistent insomnia

• Inform the implementation of sleep management strategies for insomnia within cancer care settings
Recruitment

- 173 women with current diagnosis of non-metastatic breast cancer (diagnosed within previous 3 months)
- Patients recruited at scheduled clinic appointments
- Exclusion criteria:
  - Prognosis < 6 months
  - Sleep disorder other than insomnia
  - Severe cognitive impairment /untreated or unstable psychiatric disorder
Study Design

Assessment of current sleep status & general wellbeing

Assessment of current sleep status
## Baseline Data

<table>
<thead>
<tr>
<th></th>
<th>0 (n=80)</th>
<th>3 (n=93)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong> (mean and SD)</td>
<td>58 (10)</td>
<td>58 (9)</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>16 (18.8%)</td>
<td>20 (20.4%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>4 (3.8%)</td>
<td>7 (7.5%)</td>
</tr>
<tr>
<td>Sick Leave</td>
<td>27 (33.8%)</td>
<td>37 (38.7%)</td>
</tr>
<tr>
<td>Retired</td>
<td>32 (40.0%)</td>
<td>30 (32.3%)</td>
</tr>
<tr>
<td><strong>Tumour Staging</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X1</td>
<td>47 (58.8%)</td>
<td>37 (39.8%)</td>
</tr>
<tr>
<td>X2</td>
<td>22 (44.1%)</td>
<td>41 (44.1%)</td>
</tr>
<tr>
<td>X3</td>
<td>1 (1.3%)</td>
<td>5 (3.5%)</td>
</tr>
<tr>
<td>X4</td>
<td>1 (1.3%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>DCIS</td>
<td>8 (10.0%)</td>
<td>10 (10.8%)</td>
</tr>
<tr>
<td><strong>Chemotherapy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>33 (41.3%)</td>
<td>47 (50.5%)</td>
</tr>
<tr>
<td>No</td>
<td>47 (58.8%)</td>
<td>46 (49.5%)</td>
</tr>
<tr>
<td><strong>Radiotherapy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>77 (41.3%)</td>
<td>85 (91.4%)</td>
</tr>
<tr>
<td>No</td>
<td>3 (3.8%)</td>
<td>8 (8.6%)</td>
</tr>
<tr>
<td><strong>Hormone</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>71 (88.8%)</td>
<td>75 (80.6%)</td>
</tr>
<tr>
<td>No</td>
<td>6 (7.5%)</td>
<td>14 (15.1%)</td>
</tr>
</tbody>
</table>
Prevalence of Insomnia Over Time

### Prevalence of Insomnia by Assessment Time-Point

<table>
<thead>
<tr>
<th>Assessment Time</th>
<th>Prevalence</th>
<th>Syndrome</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-diagnosis</td>
<td>17.9%</td>
<td>10.3%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Month 0</td>
<td>17.9%</td>
<td>10.3%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Month 1</td>
<td>17.9%</td>
<td>10.3%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Month 2</td>
<td>21.0%</td>
<td>20.5%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Month 3</td>
<td>24.0%</td>
<td>28.1%</td>
<td>26.1%</td>
</tr>
<tr>
<td>Month 4</td>
<td>22.3%</td>
<td>20.3%</td>
<td>20.3%</td>
</tr>
<tr>
<td>Month 5</td>
<td>21.2%</td>
<td>20.7%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Month 6</td>
<td>25.8%</td>
<td>20.8%</td>
<td>20.8%</td>
</tr>
<tr>
<td>Month 7</td>
<td>20.7%</td>
<td>20.7%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Month 8</td>
<td>10.2%</td>
<td>22.2%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Month 9</td>
<td>12.2%</td>
<td>22.2%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Month 10</td>
<td>14.6%</td>
<td>22.2%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Month 11</td>
<td>18.5%</td>
<td>26.4%</td>
<td>26.4%</td>
</tr>
<tr>
<td>Month 12</td>
<td>18.5%</td>
<td>26.4%</td>
<td>26.4%</td>
</tr>
</tbody>
</table>
Evolution of Insomnia

- How does insomnia develop in breast cancer patients over time?

- In order to observe the evolution of insomnia throughout the cancer care trajectory, we explored the following aspects:
  - Persisting with insomnia
  - Insomnia remission
  - Insomnia incidence
  - Persisting with good sleep

Savard et al (2011) JCO
Sleep Status Transitions

Persistant Insomnia

Persistent Insomnia

Persistant Good Sleep

Savard et al (2011) JCO
Sleep Status Transitions

- Prediagnosis to month 0 (n=78)
- Month 0 to 1 (n=75)
- Month 1 to 2 (n=76)
- Month 2 to 3 (n=79)
- Month 3 to 4 (n=166)
- Month 4 to 5 (n=156)
- Month 5 to 6 (n=152)
- Month 6 to 7 (n=162)
- Month 7 to 8 (n=161)
- Month 8 to 9 (n=162)
- Month 9 to 10 (n=165)
- Month 10 to 11 (n=160)
- Month 11 to 12 (n=157)

<table>
<thead>
<tr>
<th>Sleep Status Transitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remission of insomnia</td>
</tr>
<tr>
<td>Persistence of insomnia</td>
</tr>
<tr>
<td>Incidence of insomnia</td>
</tr>
<tr>
<td>Remained good sleeper</td>
</tr>
</tbody>
</table>
Cancer Care Journey

Diagnosis
Cancer Care Journey

Active treatment phase

Diagnosis
Cancer Care Journey

Active treatment phase

Follow-up phase

Diagnosis

Discharge
Persistent Insomnia Syndrome

- Persistent Insomnia Syndrome post-cancer treatment - IS present on at least 3 separate occasions post cancer treatment (over months 8-12)
Potential Risk Factors?

- Key parameters included in Regression Analysis –
  
  Age
  Pain
  Pre-diagnosis ISI score
  Tumour stage (X0-X4)
  Treatment response (disease free/
  partial response/disease progressed)
  Treatment type (chemo/radio/hormone therapy)
Potential Risk Factors

- **Chemotherapy**
  \[(\text{odds ratio}=0.08, \text{95\% ci 0.02-0.29, p<0.001})\]

- **Higher pre-diagnosis sleep score**
  \[(\text{odds ratio}=1.13/\text{unit increase in pre-diagnosis sleep score, 95\% ci 1.05-1.21, p=0.001})\]
Conclusions

• These data highlight the importance of offering effective sleep interventions to patients with cancer

• Possible windows of opportunity for intervention are:
  > Diagnosis
  > Discharge to follow-up

• Patients with a history of insomnia or who receive chemotherapy should be closely monitored
Thank you

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