The Relationships between Exercise Behavior and Sleep Quality and Their Related Factors Among COPD Patients

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• Sleep disturbance is prevalent among patients with chronic obstructive pulmonary disease (COPD).

• Exercise is one kind of the pulmonary rehabilitation, not only increase the exercise ability, stronger the muscle power but also be an important role to improve the sleep quality.

• There is seldom to discuss the relationships between exercise behavior and sleep quality among recent studies.
• The purpose of this study investigate the relationships between exercise behavior and sleep quality and their related factors among COPD patients.
Conceptual Framework

Demographics

Depression

Exercise

Sleep quality
Methods
Study Design

• The cross-sectional and descriptive designed was used in this study.
A total of 114 of patients with chronic pulmonary obstruction disease were recruited from chest outpatient department in two teaching hospitals in Taipei City.

- Inclusion criteria:
  1. Patients with chronic pulmonary obstruction disease.
  2. Were willing to participate in the study.
Instruments

- Demographics characteristics.
- Disease characteristics.
- Exercise behavior.
- Chinese Pittsburgh Sleep Quality Index (CPSQI)
- Beck Depression Inventory- Second Edition (BDI-Ⅱ)
Statistical Analysis

- SPSS 18.0 software was used for accounting.

- The descriptive and inferential statistics including frequency, percentage, mean and standard deviation, chi-square were used to analyze the data.
Results
Demographic Characteristics

- There were 101 males (88.6%) and 13 females (11.4%).
- The mean age of subjects was 76.82 years (SD-10.136).
- Of these patients, most were in COPD stage II (n-53, 46.5%) and stage III was the second (n-26, 22.8%).
- Fifty-five participants (48.3%) exercise.
- Among these, walking was the most common (n-39, 70.9%).
Sleep Quality and Chinese Pittsburgh Sleep Quality Index (CPSQI)

• The mean CPSQI score of the subjects was 6.49 (SD=3.77) with a range from 1.00 to 16.00.
• 26.3% (n=30) of the subjects were identified as poor sleepers.
• 29.7% (n=23) took more than 31 minutes to fall asleep.
• 14.9% (n=17) subjects stated that their sleep duration less than 5 hours nocturnal sleep every day.
• 18.4% (n=21) subjects had sleep efficiencies of less than 65%.
• 20.2% (n=23) subjects had used of sleep medication.
The mean score of the BDI-II in the study was 2.41 with a range of 0.00 to 14.00.

Using the BDI-II cut off score of 14 and above for depression based on BDI-II’s guideline:

- 113 (99.12%) subjects were non-depression.
- 1 (0.88%) subjects was mildly to depressed by scoring 14 to 19.
Table 1. Differences in age, sex, serious of COPD between CPSQI score

<table>
<thead>
<tr>
<th></th>
<th>CPSQI</th>
<th>X²/t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≤5(N=52)</td>
<td>≥6(N=62)</td>
<td></td>
</tr>
<tr>
<td>Age (year)</td>
<td>75.27±10.55</td>
<td>78.11±9.67</td>
<td>-1.500</td>
</tr>
<tr>
<td>SEX</td>
<td>0.401</td>
<td>0.527</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45(86.5)</td>
<td>56(90.3)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>7(13.5)</td>
<td>6(9.7)</td>
<td></td>
</tr>
<tr>
<td>Severity of COPD</td>
<td>1.536</td>
<td>0.464</td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>11(21.57)</td>
<td>10(16.67)</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>26(50.98)</td>
<td>27(45)</td>
<td></td>
</tr>
<tr>
<td>Severe/very severe</td>
<td>14(27.45)</td>
<td>23(38.33)</td>
<td></td>
</tr>
</tbody>
</table>

These results revealed no significant difference among age, sex, severs of COPD in CPSQI scores.
### Table 2. Differences BDI-II score between CPSQI score

<table>
<thead>
<tr>
<th>BDI-II score</th>
<th>CPSQI</th>
<th>(X^2/t)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N(0~13)</td>
<td>52(100)</td>
<td>-</td>
<td>1.000&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>D((\geq 14))</td>
<td>0(0)</td>
<td>1(1.61)</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Fisher’s exact test

Analysis of BDI-II score identified no significant difference between the CPSQI scores.

### Table 3. Relationships between exercise behavior and sleep quality

<table>
<thead>
<tr>
<th>exercise</th>
<th>CPSQI</th>
<th>(X^2/t)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y(N=55)</td>
<td>(\leq 5)(N=52)</td>
<td>0.118</td>
<td>0.731</td>
</tr>
<tr>
<td>N(N=59)</td>
<td>(\leq 5)(N=52)</td>
<td>0.118</td>
<td>0.731</td>
</tr>
</tbody>
</table>

Exercise behavior was no statistically significant with the CPSQI scores.
Conclusion

- The findings will help the clinical staffs to be aware of the problem on sleep disturbance with COPD.

- The optimal goal will use the findings as the reference to develop the guideline with non-pharmacy therapy to improve sleep quality for COPD patients to improve sleep quality.
Thanks for your attention!

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