The effect of self-efficacy-enhancing-based active cycle of breathing technique on elder lung cancer patients with lung resection

June Zhang, Prof, Ph.d, RN

School of Nursing, Sun Yat-sen University. China.
1. background
2. method
3. results and discussion
4. conclusion
1. Lung cancer has the highest morbidity and mortality of cancers worldwide and is the primary cause of death in male cancer patients.

2. Lung resection can improve the 5-year-survival rate for 68%.
To clear the airway secretion, improve the lung function and prevent the postoperative pulmonary complication, is an issue problem for elderly patients.
Background

Active Cycle of Breathing Technique (ACBT)
a short-term secretion clearance technique
Background

elderly patients’ lower compliance

preliminary finding

pain

weakness

lower confidence

over dependence
1. To establish an intervention program of the self-efficacy-enhancing-based active cycle of breathing technique on elder lung cancer patients with lung resection.

2. To explore the effect of self-efficacy-enhancing-based active cycle of breathing technique on elder lung cancer patients with lung resection.
Method

Study design:

A quasi-experimental trial with a pre-post test design, We allocated patients to the control group or intervention group according to their time of admission.

- **Sep 2016—Dec 2017**
  - Control group
  - Routine breathing exercise

- **Jan 2017—Apr 2018**
  - Intervention group
  - Self-efficacy-enhancing-based active cycle of breathing technique
Method

Fig. 1. Active cycle of breathing technique and directed coughing
Method

![Intervention procedure diagram](image)

**Fig. 2** Intervention procedure

**Hospital admission**

- **Day 1**
  - **T1**: SEE-ACBT intervention
  - **Treatment room**
  - **1st 6MWT, exercise self-efficacy**
- **Day 2**
  - **T2**: Surgery
  - **Bedside**
- **Day 3**
  - **T3**: SEE-ACBT intervention
  - **Treatment room**
  - **2nd 6MWT, exercise self-efficacy**

**Intervention group**

**Control group**

- **Routine breathing exercise**
- **Surgery**
- **Routine breathing exercise**
Method

Self-efficacy

Mastering experience

Vicarious experience

Emotional arousal

Verbal persuasion
Method
### Method

#### Outcome measures

<table>
<thead>
<tr>
<th>1. 24-h wet sputum weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. the peak expiratory flow (PEF)</td>
</tr>
<tr>
<td>3. postoperative pulmonary complications (PPC, Melbourne Group Scale, MGS)</td>
</tr>
<tr>
<td>4. 6-minute walk test (6MWT)</td>
</tr>
<tr>
<td>5. exercise self-efficacy (Self-Efficacy for Exercise Scale, SEE-C)</td>
</tr>
</tbody>
</table>
Method

clear sterile pot

Exhalation peak flow meter
## Results

Table 1  Effect of self-efficacy-enhancing-based active cycle of breathing technique on the postoperative outcomes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Control group (n=35)</th>
<th>Intervention group (n=35)</th>
<th>$z/\chi^2$</th>
<th>$P$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-h wet sputum weight $M(\text{P}<em>{25}, \text{P}</em>{75})$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postoperative day 1 (g)</td>
<td>4.5 (2.2, 7.8)</td>
<td>5.5 (2.6, 13.7)</td>
<td>-1.298$^1$</td>
<td>0.194</td>
</tr>
<tr>
<td>Postoperative day 2 (g)</td>
<td>5.7 (2.2, 11.7)</td>
<td>12.1 (4.9, 24.7)</td>
<td>-2.502$^1$</td>
<td>0.012</td>
</tr>
<tr>
<td>Postoperative day 3 (g)</td>
<td>4.9 (2.8, 10.2)</td>
<td>13.6 (5.5, 31.8)</td>
<td>-3.495$^1$</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Postoperative pulmonary complication $[n%(%)]$</td>
<td>6 (17)</td>
<td>1 (3)</td>
<td>1.510$^2$</td>
<td>1.000</td>
</tr>
<tr>
<td>Hypoxaemia</td>
<td>3 (9)</td>
<td>1 (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atelectasis</td>
<td>1 (3)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td>2 (6)</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results

Table 2  The peak expiratory flow, six-minute walk test and exercise self-efficacy at baseline and after intervention

<table>
<thead>
<tr>
<th>Variables</th>
<th>Baseline</th>
<th>After intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control group</td>
<td>Intervention group</td>
</tr>
<tr>
<td></td>
<td>(n=35)</td>
<td>(n=35)</td>
</tr>
<tr>
<td>the peak expiratory flow (L/min)</td>
<td>355.7±98.2</td>
<td>397.4±122.2</td>
</tr>
<tr>
<td></td>
<td>-1.573</td>
<td>0.120</td>
</tr>
<tr>
<td></td>
<td>-1.129</td>
<td>0.263</td>
</tr>
<tr>
<td>6-minute walk test (m)</td>
<td>534.8±69.3</td>
<td>554.7±78.1</td>
</tr>
<tr>
<td></td>
<td>-0.085</td>
<td>0.932</td>
</tr>
<tr>
<td></td>
<td>-2.141</td>
<td>0.036</td>
</tr>
<tr>
<td>exercise self-efficacy</td>
<td>73.5±18.3</td>
<td>73.9±18.1</td>
</tr>
<tr>
<td></td>
<td>-0.085</td>
<td>0.932</td>
</tr>
</tbody>
</table>

**t** and **P** values indicate the statistical significance of the differences between the control and intervention groups.
Conclusion

- The self-efficacy-enhancing-based active cycle of breathing technique could enhance the cough capacity, clear the airway secretion, improve the exercise capacity, and increase the self-efficacy of pulmonary rehabilitation.
- It is a kind of simple and effective short-term pulmonary rehabilitation method for elder lung cancer patients.
Thank you for your listening

Presenter: June Zhang, School of Nursing, Sun Yat-sen University. Guangzhou, China