Changes in Health Related Quality of Life, Symptom Experience and Functional Status in ICU Survivors

Younjung Son¹, Hye Yon Yu¹, Ji Hun Ahn²,
¹Department of Nursing, Soonchunhyang University, Cheonan, South Korea
²Department of Cardiology, Soonchunhyang University Gumi Hospital, Gumi, South Korea

*This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korean government (MSIP) (22010-0025461)
INTRODUCTION
Backgrounds (1)

- Survival rates after discharge from the ICU.

(Cabral et al., 2009; Jackson, Mitchell, & Hopkins, 2009)
ICU survivors experience various symptoms after hospital discharge.

(Campbell et al., 2008; Kelly et al., 2010)
Backgrounds (3)

- ICU survivor's physiological, psychological, and functional status factors affect the HRQoL and survival rate of ICU survivors.

(Stein-Parbury et al., 2000; Baldwin et al., 2009; van der Schaaf et al., 2009)
It is necessary to understand how ICU survivors experience symptoms, functional status and HRQoL after discharge.

However, the scientific literature have provided limited data, furthermore, health care providers caring patients focus on treatment during ICU stay.

Therefore, health care providers in ICU should be aware of recovery patterns for ICU survivors after hospital discharge.
This longitudinal follow-up study was aimed to

1. Describe change in symptom experiences, functional status and health-related quality of life (HRQoL) after discharge from adult ICU

2. Identify the role of symptom experiences and functional status on HRQoL of intensive care units (ICU) survivors after discharge from adult ICU
Conceptual Framework

- General characteristics
  - Demographics
  - Medical history
- Physical factors
  - APACHE II
- Psychological factors
  - Anxiety
  - Depression
  - Cognitive function
- Situational factors
  - Social support

Symptom experience
- Frequency
- Intensity
- Distress

Functional status
- Activities of Daily Living

HRQoL
METHODS
Study Design and Participants

Study design

Longitudinal prospective study design with repeated measurements of the symptom experiences, functional status, and HRQoL of ICU survivors at the time of discharge and at 1, 3, and 6 months after discharge from the ICU.

Inclusion Criteria
- Adult men or women 18 years old
- More than 24 hours stay in ICU

Exclusion Criteria
- Patients with a history of dementia as well as other mental diseases
- Malignant tumors on other major organs
Flow Chart of Participants

- 213 Included
  - 24 Excluded
    - 3 Died after hospital discharge
    - 13 Transferred to nursing home
    - 8 Refused to participate
  - 189 alive 1 month after discharge
  - 5 Excluded
    - 3 Died after hospital discharge
    - 1 Transferred to nursing home
    - 1 Lost touch with
  - 184 alive 3 months after discharge
  - 26 Excluded
    - 3 Died after hospital discharge
    - 1 Transferred to nursing home
    - 1 Refused to participate
    - 21 Lost touch with
  - 158 alive 6 months after discharge were studied
## Instruments

<table>
<thead>
<tr>
<th>Factors</th>
<th>Instruments</th>
<th>Developer</th>
<th>Cronbach’s α (original / this study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical factors</td>
<td>APACHE II score</td>
<td>Knaus et al., (1991)</td>
<td></td>
</tr>
<tr>
<td>Cognitive function</td>
<td>Mini-Mental State Examination (MMSE-K)</td>
<td>Modified by Park et al., (1989)</td>
<td>0.79 / 0.87</td>
</tr>
<tr>
<td>Social support</td>
<td>Multidimensional Scale of Perceived Social Support (MSPSS)</td>
<td>Zimet et al., (1988)</td>
<td>0.89 / 0.93</td>
</tr>
<tr>
<td>Anxiety/ Depression</td>
<td>The Hospital Anxiety-Depression Scale (HAD)</td>
<td>Zigmond et al., (1983) Translated by Oh et al., (1999)</td>
<td>0.89-0.86 / 0.76-0.81</td>
</tr>
<tr>
<td>Symptom experience</td>
<td>Developed by this researchers through a literature review (15 symptoms)</td>
<td>This researcher</td>
<td>0.95</td>
</tr>
<tr>
<td>Functional status</td>
<td>Korean Version of Modified Barthel Index (K-MBI)</td>
<td>Mahoney and Barthel (1965), translated by Jung et al., (2007)</td>
<td>0.94 / 0.93</td>
</tr>
<tr>
<td>HRQoL</td>
<td>Korean Euroqol-5 Dimensions (KEQ-5D)</td>
<td>EuroQol group (1987), Adapted by Jo et al., (2010)</td>
<td>0.86 / 0.80</td>
</tr>
</tbody>
</table>
Data Collection & Statistical Analysis

- Data were collected from July 2011, to May 2012 by four trained research assistants.
- Ethical approval was done by the Soonchunhyang University Hospital of Choeonan Institutional Review Boards on the June 2011 (IRB No. 2011061601).
- PASW (Predictive Analytics Soft Ware) 18.0.

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-test or One-way ANOVA</td>
<td>To analyze the difference of demographics, Disease related factors, physical and psychological factors</td>
</tr>
<tr>
<td>Repeated measure ANOVA</td>
<td>To measure subjects’ longitudinal changes in symptom experience, functional status, and HRQoL after discharge.</td>
</tr>
<tr>
<td>Hierarchical multiple regression analysis</td>
<td>To analyze factors influencing subjects HRQoL after ICU discharge</td>
</tr>
</tbody>
</table>
RESULTS
Socio-demographic Characteristics

Sex
- Male: 57%
- Female: 43%

Age (yr)
- 65-74: 31%
- ≥75: 31%
- >65: 53%
Disease-related Characteristics

Diseases
- Cardiologic dis. 39%
- Gastro-intestinal dis. 21%
- Neurologic dis. 10%
- Endocrine dis. 5%
- Nephrology dis. 5%
- Respiratory dis. 3%
- Others 10%

Comorbidities
- No 29%
- Yes 71%

Having caregiver
- No 30%
- Yes 70%

The length of stay in ICU (days)
- 1~2 54%
- 3~4 32%
- ≥5 days 14%
Health-related Characteristics

APACHE II

- ≥10, 20%
- 5~9, 49%
- 0~4, 31%

Anxiety

- ≥8, 28%
- <8, 72%

Depression

- <8, 22%
- ≥8, 77%

Cognitive Function

- < 20, 7%
- 20~23, 15%
- ≥24, 78%
Changes of **Symptom Experience** after ICU discharge

![Graph showing the changes of symptom experience over time after ICU discharge.](image)
Changes of **Functional Status** after ICU discharge
Changes of **HRQoL** after ICU discharge

![Graph showing changes of HRQoL over time after ICU discharge](image)

- Discharge: 0.69
- After 1 M: 0.77 (p<.001)
- After 3 M: 0.80 (p=.044)
- After 6 M: 0.82
## Predictors of **HRQoL** after ICU discharge

<table>
<thead>
<tr>
<th>Time</th>
<th>Predictors</th>
<th>$\beta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discharge</strong></td>
<td>LOC at admission</td>
<td>-.163</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>ADL when transferred from ICU to unit</td>
<td>.133</td>
<td>.033</td>
</tr>
<tr>
<td></td>
<td>The length of stay in ICU</td>
<td>.151</td>
<td>.006</td>
</tr>
<tr>
<td></td>
<td>HAD-D</td>
<td>-.280</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Functional status</td>
<td>.576</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>After 1 Month</strong></td>
<td>Having spouse</td>
<td>.093</td>
<td>.020</td>
</tr>
<tr>
<td></td>
<td>ADL when discharged</td>
<td>.147</td>
<td>.009</td>
</tr>
<tr>
<td></td>
<td>Symptom experience</td>
<td>-.508</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Functional status</td>
<td>.430</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>After 3 Months</strong></td>
<td>The length of stay in ICU</td>
<td>.165</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Cognitive function</td>
<td>.183</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td>Symptom experience</td>
<td>-.607</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Functional status</td>
<td>.448</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>After 6 Months</strong></td>
<td>Employed</td>
<td>-.101</td>
<td>.042</td>
</tr>
<tr>
<td></td>
<td>Symptom experience</td>
<td>-.555</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Functional status</td>
<td>.318</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

**Adjusted for General characteristics**

**LOC; Loss of Consciousness, ICU; Intensive care unit, ADL; Activities of Daily Living, APACHE II; Acute Physiology and Chronic Health Evaluation II, HAD-A; Hospital Anxiety and Depression-Anxiety, HAD-D; Hospital Anxiety and Depression-Depression**
CONCLUSIONS
Summary and Limitations

Summary

Symptom experiences and functional status were significantly associated with HRQoL in ICU survivors after discharge.

Limitation

First, it might also have been due to the limitation brought about by a 6-month follow-up duration instead of a 1-year or longer on cognitive function would be necessary.

Second, clear definition of symptom experience and a longitudinal study on HRQoL-related factors are still needed.
Implications

- **Firstly**, we used combined theoretical framework with unpleasant symptom theory and HRQoL model to develop nursing knowledge for this area.

- **Secondly**, we expect this study to promote better understanding of ICU patients recovery patterns’ following critical illness. Further studies are needed to develop nursing intervention like rehabilitation strategies.

** Recognizing ICU patients needing further help is the first step in returning patients to a normal life.
Thank You!!

Questions