Factors Influencing Quality of Life in Elderly Patients Undergoing Total Knee Replacement Surgery

Phichpraorn Youngcharoen1, PhD, RN; Suparb Aree-Ue1, PhD, RN; Nanthikarn Saengthorn2, MNS, RN

1Ramathibodi School of Nursing, 2Department of Surgical Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, BKK, THAILAND.

Correspondence: phichpraorn.you@mahidol.edu

Background
- Total knee replacement is one of the most common treatment for elderly patients with severe knee osteoarthritis.
- It is necessary to begin physical activities, which can then lead to improvement of patients' quality of life.
- Previous studies have focused on comparing in pain intensity level and level of physical activity from pre to post-operation; however, no study examined a relationship among pain intensity level, physical activity level, depression, and quality of life, especially at 6 week after surgery, a short term period to promote rehabilitation.
- The results in this study could provide direction to develop an intervention in order to reduce pain and depressive symptom as well as enhancing physical activities, which can then lead to improvement of patients’ quality of life.

Purpose
- The aim of this study was to examine pain intensity, physical activities, depression in predicting elderly patients quality of life at 6 week after total knee replacement surgery.

Methods
- A non-experimental, associational, cross-sectional design was used in this study.
- 100 elderly patients undergoing total knee replacement surgery at a tertiary care hospital in Bangkok, Thailand.

Inclusion criteria: Patients who were:
- older adults whose age 60 years or older.
- able to understand and communicate in Thai.
- able to understand and communicate in Thai.
- able to understand and communicate in Thai.
- able to understand and communicate in Thai.

Exclusion criteria: Patients who had postoperative complications, including:
- developing deep vein thrombosis.
- loosening total knee arthroplasty.
- no cognitive impairment (determined by the Mini-Cog7, a score higher than 3).
- depression in predicting elderly patients quality of life at 6 week after surgery.
- developing depressive symptom and negatively affected their quality of life.

Sample and Settings
100 elderly patients undergoing total knee replacement surgery at a tertiary care hospital in Bangkok, Thailand.

Measures
- The Numeric Rating Scale (NRS). Patients were asked to select a number from zero (no pain) to ten (pain as much as it could be) that best represents their pain at 6 week after surgery.
- The Modified Barthel Activities of Daily Life-Thai version. The Barthel ADL includes 9 items assessing patients’ activities of daily living. Each item is rated from 0 (unable to perform) to 2 or 3 (able to perform independently). Possible score ranged from 0 to 18. Higher score represents higher level to perform activities of daily living. Construct validity index of this instrument was .79. Cronbach Alpha coefficients was .80 in this study.
- The Thai Geriatric Depression Scale-15 (TGS-15). The GDS included 15 items assessing depressive symptom. Response options were true or false. Possible score range from 0 to 15. If the total score is higher than 5, it indicates depressive symptom. Construct validity of the GDS was confirmed through factor analysis. Cronbach Alpha coefficients was .77 in this study.
- The Osteoarthritis of Knee Hip Quality of life questionnaire-Thai version (OAKHQL-9). The OAKHQL includes 43 items assessing quality of life in osteoarthritis patients, including physical social activities, mental health, pain, social support, and total functioning. Each item is rated from 0 (best quality of life) to 10 (worst quality of life). Possible score ranged from 0 to 430. The score was normalized from 0 to 100. Higher score indicates better quality of life. Construct validity of the OAKHQL was confirmed through factor analysis. Cronbach Alpha coefficients was .93 in this study.

Data Analysis
- Descriptive statistics (Mean, SD, and Frequency) were used to describe study variables.
- Pearson’s correlation coefficients were used to identify relationships among gender, age, body mass index, pain intensity level, physical activity level, depression, and quality of life. However, point biserial correlation coefficients were used to identify relationship among gender and other study factors.
- Multiple linear regression were used to understand predicting factors of quality of life.
- Multiple linear regression were used to understand predicting factors of quality of life.

Results
Table 1 Descriptive statistics of study variables (N = 100)

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent</td>
<td>100</td>
<td>86.96</td>
<td>9.66</td>
<td>53</td>
<td>100</td>
</tr>
<tr>
<td>Pain intensity</td>
<td>100</td>
<td>3.05</td>
<td>2.40</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Physical activity</td>
<td>100</td>
<td>13.43</td>
<td>3.58</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Depression</td>
<td>100</td>
<td>14.43</td>
<td>3.58</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 2 Correlations among study variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Age</th>
<th>Pain intensity</th>
<th>Physical activity</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.00</td>
<td>-0.22</td>
<td>-0.21</td>
<td>-0.19</td>
</tr>
<tr>
<td>Pain intensity</td>
<td>-0.22</td>
<td>1.00</td>
<td>0.10</td>
<td>-0.20</td>
</tr>
<tr>
<td>Physical activity</td>
<td>-0.21</td>
<td>0.10</td>
<td>1.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Depression</td>
<td>-0.19</td>
<td>-0.20</td>
<td>0.01</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 3 Multiple linear regression of selected factors in predicting elderly patients undergoing total knee replacement surgery quality of life (N = 100)

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>Beta (β)</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>0.89</td>
<td>0.38</td>
</tr>
<tr>
<td>Pain intensity</td>
<td>2.09</td>
<td>0.00</td>
<td>2.09</td>
<td>18.26</td>
<td>&lt;0.000</td>
</tr>
<tr>
<td>Physical activity</td>
<td>3.00</td>
<td>0.00</td>
<td>3.00</td>
<td>20.00</td>
<td>&lt;0.000</td>
</tr>
</tbody>
</table>

Conclusion
- Our results were consistent with findings in previous studies in which high pain intensity level and low ability to perform physical activity at 6 week after surgery affected poor quality of life.
- The presence of pain was a significant factor in predicting quality of life, which could be explained by the fact that although patients had mild depressive symptom, good outcome after surgery representing by a high score on patients’ quality of life could eliminate effect of depression.
- Patients’ quality of life were not mediated by gender, age, and body mass index, which consistent with a previous study.1-2 It is possible that most older adults participated in this study were young old. A positive outcome from total knee replacement surgery may maximize pain and improve physical function in both male and female patients who had different level of body mass index.

Implications
- Nurses should assess pain intensity level of pain as well as providing pharmacological and non-pharmacological pain management to the patients undergoing total knee replacement surgery.
- It is necessary to have an intervention program to appropriately manage pain after discharge as well as promoting physical activities for this population. This will then lead to enhancement of patients’ quality of life.
- Longitudinal study should be conducted to continually follow up the effect of pain and physical activities on elderly patients undergoing total knee replacement surgery quality of life.

Acknowledgements
- Thai adults undergoing total knee replacement surgery who participated in this study.
- Funding from Ramathibodi School of Nursing, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, to present results of this study.

References