Application of qualitative multi-attribute decision model for patient’s status evaluation

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Nursing process
COMPREHENSIVE EVALUATION
Evaluation of all basic living activities

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PHYSICAL BLA
BLA concerning physical patient’s condition

├─ OEBt
Oxygenation, Elimination, Body temp.

├─ OXYGENATION
Mechanical inhalation and exhalation of air, circulation

├─ ELIMINATION
Movement & elimination of waste

└─ BODY TEMPERATURE
The temperature of the body

├─ NPaaS
Nutrition and hydration, Physical activity, Sleep, Rest

├─ NUTRITION
Nutrition and hydration

├─ PHYSICAL ACTIV.
Ability of body movement

└─ SLEEP
Sleep, restoration and rest

└─ AdHD
Avoidance of danger, hygiene and tidiness, dressing

└─ AVOIDANCE of DAMG.
Physical, psychology and social security

└─ HYGIENE
Tidiness and hygiene of body

└─ DRESSING
Dressing and undressing

└─ Purposeful activities, Leisure time and Health educ.

└─ RRb
Relationship with people, communication, relig. beliefs

└─ PURPOSEFUL ACTIV.
Harmonisation of work and recreation

└─ LEISURE TIME
Useful use of time

└─ EDUCATION
Health education
Oxygenation

Respiration
- Ventilation
  - Freq. of ventilation
    - Hypo-ventilation
    - Hyper-ventilation
  - Way of breathing
    - Hypo-breathing
    - Hyper-breathing
- Gas exchange
- Airway clearance
- Cardiac function
- Vascular function

Circulation

Ventilation
- Freq. of ventilation
- Way of breathing
- Hypo-ventilation
- Hyper-ventilation

Airway clearance
- Expectoration
- Cough
- Burden
- Aspiration

Cardiac function
- Brady-cardia
- Tachy-cardia
- Arrhythmia

Vascular function
- Blood pressure
- Tissue perfusion
- Bleeding

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<tr>
<th>Value</th>
<th>Description</th>
<th>Class</th>
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<tbody>
<tr>
<td>1.</td>
<td>vhd to a very high degree</td>
<td>BAD</td>
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<tr>
<td>2.</td>
<td>hd to a high degree</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>sd to some degree</td>
<td></td>
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<tr>
<td>4.</td>
<td>ld to a lesser degree</td>
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<tr>
<td>5.</td>
<td>no no problem</td>
<td>GOOD</td>
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Comprehensive Evaluation

Multi-attribute utility function
Multi-attribute utility function

Multi-attribute utility function
Multi-attribute utility function

<table>
<thead>
<tr>
<th>Assessment</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
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<tr>
<td>Oxygenation</td>
<td>vhd</td>
<td>hd</td>
<td>sd</td>
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<td>Respiration</td>
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<tr>
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<td>hd</td>
<td>sd</td>
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<td>vhd</td>
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<td>sd</td>
</tr>
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<td>vhd</td>
<td>hd</td>
<td>sd</td>
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<td>hd</td>
<td>sd</td>
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<tr>
<td>Way of breathing</td>
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<td>1d</td>
<td>1d</td>
</tr>
<tr>
<td>Gas exchange</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Airway clearance</td>
<td>sd</td>
<td>1d</td>
<td>1d</td>
</tr>
<tr>
<td>Expectoration</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Cough</td>
<td>sd</td>
<td>1d</td>
<td>1d</td>
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<tr>
<td>Suffocation</td>
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<td>1d</td>
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<tr>
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</tr>
<tr>
<td>Arrhythmia</td>
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<td>1d</td>
<td>1d</td>
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<tr>
<td>Vascular funct.</td>
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<td>Blood pressure</td>
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<td>1d</td>
<td>no</td>
</tr>
<tr>
<td>Hypertension</td>
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<td>no</td>
<td>no</td>
</tr>
<tr>
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<td>sd</td>
<td>1d</td>
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</tr>
<tr>
<td>Tissue perfusion</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Bleeding</td>
<td>no</td>
<td>no</td>
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</tbody>
</table>
### Oxygenation
- 1st Assessment: vhd ▲ hd ▲ sd
- 2nd Assessment: vhd ▲ hd ▲ sd
- 3rd Assessment: vhd ▲ hd ▲ sd

### Respiration
- 1st Assessment: vhd ▲ hd ▲ sd
- 2nd Assessment: vhd ▲ hd ▲ sd
- 3rd Assessment: vhd ▲ hd ▲ sd

### Ventilation
- 1st Assessment: vhd ▲ hd ▲ sd
- 2nd Assessment: vhd ▲ hd ▲ sd
- 3rd Assessment: vhd ▲ hd ▲ sd

### Hyperventilation
- 1st Assessment: vhd ▲ hd ▲ sd
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Hypoventilation
- 1st Assessment: no ● no ● no
- 2nd Assessment: 1d ● 1d ● 1d
- 3rd Assessment: 1d ● 1d ● 1d

### Gas exchange
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Airway clearance
- 1st Assessment: sd ▲ 1d ● 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Expectoration
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Cough
- 1st Assessment: sd ▲ 1d ● 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Suffocation
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Aspiration
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Circulation
- 1st Assessment: hd ▲ sd ▲ 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Cardiac funct.
- 1st Assessment: sd ▲ 1d ● 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Bradycardia
- 1st Assessment: sd ▲ 1d ● 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Tachycardia
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Arrhythmia
- 1st Assessment: 1d ▲ 1d ● 1d
- 2nd Assessment: 1d ▲ 1d ● 1d
- 3rd Assessment: 1d ▲ 1d ● 1d

### Vascular funct.
- 1st Assessment: sd ▲ 1d ● 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Blood pressure
- 1st Assessment: sd ▲ 1d ● 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Hypertension
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Hypotension
- 1st Assessment: sd ▲ 1d ● 1d
- 2nd Assessment: sd ▲ 1d ● 1d
- 3rd Assessment: sd ▲ 1d ● 1d

### Tissue perfusion
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Bleeding
- 1st Assessment: no ● no ● no
- 2nd Assessment: no ● no ● no
- 3rd Assessment: no ● no ● no

### Comparison of two assessments

### Diagram

- Hygiene
- Intraoral hygiene
- Nose, pharynx
- Ears, nose
- Extremities
- Hygiene of upper extremities
- Hygiene of lower extremities
- Head (2 × 1)
- Hygiene of mouth
- Hygiene of face
- Hygiene of scalp (2 × 1)
- Hygiene of other head parts
- Trunk (2 × 1)
- Hygiene of back
- Hygiene of chest
- Hygiene of abdomen
- Hygiene of other parts of trunk (2 × 1)
- Personal care
- Hygiene of environment
- Dressing
- Personal social care

**Note:** The comparison shows the changes and differences between the two assessments.
Explanation of overall assessment

- **Oxygenation**
  - Vent. Frequency
  - Airway clearance
- **Circulation**
  - Bradycardia
- **Blood pressure**

![Diagram showing relationships between different assessments and medical terms.](image)

**Legend:**
- 1st asses.
- 2nd asses.
- 3rd asses.