Requirements of nursing classification systems for a useful application in electronic data records

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Overview

Requirements of nursing classification systems for a useful application in electronic data records

Accuracy and abstraction level of various nursing classifications

Potential impact of granularity on accuracy and explanatory power of nursing classification systems in relation to the nursing care process
Requirements for nursing classifications

"A precise and unambiguous illustration of the patient’s situation and nursing intervention is a requirement”

- Representation of the current nursing knowledge in the form of practice guidelines to support decision making (Gordon 1998)
"Whether nursing classification systems provide sufficient granularity to adequately capture nursing practice is controversial."
(vgl. Moss et al. 2005)

„Presence of terms that represent a fairly coarse—and hence somewhat ambiguous and inconsistent—level of data abstraction that often blurs many of the clinical details essential to accurately capturing nursing practice in a “data-reuse-friendly” form;"
(vgl. Henry & Mead 1997)
Authors claim for example:

- Complete and comprehensive depth and level of detail with sufficient granularity to illustrate the clinical process; clinical benefit (Bakken Henry et al. 1998, Zielstorff 1998, Gordon 1998, Von Krogh et al. 2012)

- Unambiguity of the concepts without redundancy, avoidance of overlaps, management of synonyms, definitions (Bakken Henry et al. 1998, Zielstorff 1998)

- Hierarchies and inheritance with clear references to parent-child relationships (Bakken Henry et al. 1998, Zielstorff 1998)

- Attributes such as modifiers to illustrate eg severity (Bakken Henry et al. 1998, Zielstorff 1998)

- Context-free terms/concepts (Bakken Henry et al. 1998, Zielstorff 1998)

- Each term of the classification has a unique identifier (Zielstorff 1998)

- Reliability and validity of the concepts (Gordon 1998)
Accuracy of nursing data

Citation: Lunney, 2008

“Accuracy of nurses’ data interpretations (diagnoses) should be a serious concern of nurses in both practice and education because interpretations of patient data serve as the basis for selecting the nursing interventions that will achieve positive patient outcomes. Accuracy of nurses’ diagnoses is defined as a rater’s judgment of the match between a diagnostic statement and patient data“.
Authors claim for example:

- Complete and comprehensive depth and level of detail with sufficient granularity to illustrate the clinical process; clinical benefit (Bakken Henry et al. 1998, Zielstorff 1998, Gordon 1998, Von Krogh et al. 2012)

- Unambiguity of the concepts without redundancy, avoidance of overlaps, management of synonyms, definitions (Bakken Henry et al. 1998, Zielstorff 1998)

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- Each term of the classification has a unique identifier (Zielstorff 1998)

- Reliability and validity of the concepts (Gordon 1998)
What exactly is meant by that?

Comprehensive depth and level of detail with sufficient granularity to illustrate the clinical process and to ensure a clinical benefit
Granularity of nursing classifications and its meaning

**Definition:** Semantic clarity/accuracy of a linguistic expression (linguistics) degree of aggregation of data (computer science)

**Broad granularity:** Is the statement "France is hexagonal"?
Fine granularity:
In a detailed and fine description of France in regard to the form, the statement France has the shape of a hexagon would be false.
Attempt at definition: fine versus broad granularity

The **granularity** (Latin 'granum', grain) of a linguistic expression provides information on its (semantic) clarity (expressiveness, unambiguity of terms).

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**fine**

Self-care deficit washing in a patient after stroke

The patient is **unable to carry out personal hygiene independently** due to a **hemiplegia/hemiparesis**

**Characteristics:**
- Is unable to wash/dry certain parts of the body
- Flaccid paralysis of the affected side
- Ignores the affected side
- Disturbed balance when sitting

**Etiology:**
- Cerebral vascular accident

**Bathing self-care deficit**

**Defining characteristics:**
- Inability to dry body
- Inability to get bath supplies
- Inability to obtain water source

**Related factor:**
- Neuromuscular impairment

**Wash the entire body**
- Severely impaired

**Dry the entire body**
- Severely impaired

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**broad**
Granularity of nursing classifications and its meaning

Fine granularity versus broad granularity
Specific formulation versus abstract formulation

How accurate must nursing diagnoses describe the patient's condition or reflect what we observe/perceive/diagnose?
### Nursing care plan with ICF

**International Classification of Functioning, Disability and Health**

<table>
<thead>
<tr>
<th>Nursing diagnosis</th>
<th>Defining characteristic:</th>
<th>Related factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral swallowing</td>
<td>-</td>
<td>-</td>
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<tr>
<td>• <em>Problem moderate</em></td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

*Mr. Schuster*
# Nursing care plan with NANDA-I

**Mr. Schuster**

<table>
<thead>
<tr>
<th>Nursing diagnosis</th>
<th>Defining characteristic:</th>
<th>Related factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired swallowing</td>
<td>• Choking</td>
<td>Cerebral palsy</td>
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<tr>
<td></td>
<td>• Cough</td>
<td></td>
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</tbody>
</table>
### Nursing diagnosis

<table>
<thead>
<tr>
<th>The patient <strong>only chokes when drinking</strong>, swallowing is <strong>impaired in the oral transport/pharyngeal stage</strong></th>
</tr>
</thead>
</table>

### Characteristics

- Expresses fear of drinking
- Cough/throat cleaning during/after swallowing fluids
- Refuses the food/fluid intake
- Wet/gurgling voice quality after swallowing

### Etiologies

- Bolus slides predeglutitive (before the actual swallowing) into the throat
- Dementia

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**Mr. Schuster**
As a result of a progressive dementia, Mr. Schuster chokes when drinking. He often coughs after drinking or clears his throat. He often refuses drinking and prefers eating soups with a creamy consistency.

Because of the increase of the nursing problem and concerns about pneumonia as a result from microaspiration, you carry out a case review. In addition, there are signs of fluid deficit of Mr. Schuster due to avoidance attitude.
### Nursing care plan with ICF

*International Classification of Functioning, Disability and Health*

<table>
<thead>
<tr>
<th>Nursing diagnosis</th>
<th>Defining characteristic:</th>
<th>Related factor</th>
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<tbody>
<tr>
<td>Urinary continence</td>
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<tr>
<td><em>Problem moderate</em></td>
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</table>

Mrs. Meier

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*Pia Wieteck 2014*
Nursing care plan with NANDA-I

Mrs. Meier

<table>
<thead>
<tr>
<th>Nursing diagnosis</th>
<th>Defining characteristic:</th>
<th>Related factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional urinary incontinence</td>
<td>• Senses need to void</td>
<td>Impaired cognition</td>
</tr>
</tbody>
</table>
# Nursing care plan with ENP

## Nursing diagnosis

The resident is **unable to avoid urine loss** with an intact urogenital tract (functional urinary incontinence)

## Characteristics

- Is unable to find the way to the toilet
- Is unable to undress for elimination independently
- Repeatedly wet bed-clothes/bed
- Is able to sense urgency

## Etiologies

- Limited cognitive abilities
- Dementia with disorientation to place

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*Mrs. Meier*
As a result of a progressive dementia, Mrs. Meier increasingly wets herself. When asked if she feels an urge to urinate, she is able to respond adequately. But she is unable to find the toilet alone and has a need for support in carrying out the elimination. Thus she is unable, for example, to undress prior to elimination independently.
How accurate must nursing diagnoses describe the patient's condition or reflect what we observe/perceive/diagnose to plan adequate nursing interventions?
Extract of a validation study of ENP

„Mapping, or linking like terms that represent the same concept, is a research method increasingly used for testing the reliability and validity of standardized taxonomies“
(Burkhart et al. 2005, S. 220).

This statement is confirmed by the results of previously carried out cross-mapping studies.

- Hyun und Park 2002
- Berekoven et al. 2002
- Burkhart und Androwich 2004
- Hübner und Giehoff 2003
- ...
**RESEARCH DESIGN**
Non experimental, descriptive, comparative cross-sectional study

**RESEARCH METHOD**

Bi-directional cross-mapping of NANDA-I and ENP nursing diagnoses

![Diagram](image)

Expert rating of the cross mappings in terms of completeness, expressiveness and unambiguity
Research Questions

Q1  Can the content of NANDA-I nursing diagnoses be mapped against ENP nursing diagnoses?

Q2  Which nursing diagnoses are not covered by ENP?

Q3  Which of ENP's nursing diagnoses have no equivalent in NANDA-I?

Q4  How do ENP nursing diagnoses represent NANDA-I nursing diagnoses statements?

**Same**  
source vocabulary is identical in wording

**Similar**  
source vocabulary is comparable, or alike in substance to the term in the target vocabulary

**Broader**  
source vocabulary is larger in scope, or less specific

**Narrower**  
source vocabulary is smaller in scope, or more specific

**Not Mapped**  
(Extension of the Evaluation Categories according to Zielstorff 1998)
RESULTS: ENP → NANDA-I mapping

**ENP**
The patient is at risk of hyperglycemia/hypoglycemia

n = 108
21%

n = 0
0%
n = 28
5%
n = 16
3%
n = 363
71%

**ENP**
The patient is at risk of an allergic reaction

**NANDA-I**
Danger of an allergic reaction caused by latex

- similar
- broader
- narrower

**ENP**
The patient is unable to carry out personal hygiene independently due to a hemiplegia/hemiparesis

**NANDA-I**
Self care deficit: personal hygiene

**ENP**
The patient has a spontaneous release of urine at regular intervals at a given bladder volume (reflex incontinence)

**NANDA-I**
Reflex urine incontinence
## Evaluation Table:

<table>
<thead>
<tr>
<th>NANDA 1</th>
<th>ENP gesamt</th>
<th>ENP a</th>
<th>ENP b</th>
<th>ENP c</th>
<th>ENP d</th>
<th>ENP e</th>
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<tbody>
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### Evaluation Categories: Accuracy, expressiveness, completeness
NANDA→ENP mapping using related factors/characteristics und related factors/etiologies

F4_1 How **completely** can the ENP nursing diagnoses (set of nursing diagnoses with characteristics/etiologies) illustrate the statement of NANDA nursing diagnoses (Defining characteristics/Related Factors)?

<table>
<thead>
<tr>
<th>Complete</th>
<th>Incomplete</th>
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<tbody>
<tr>
<td>⬜️⬜️⬜️⬜️⬜️⬜️⬜️⬜️⬜️⬜️</td>
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</tr>
<tr>
<td>100%-01%</td>
<td>00%-91%</td>
</tr>
</tbody>
</table>

F4_2 How do you judge the completeness of the ENP nursing diagnoses set (with characteristics/etiologies) in comparison with the expressiveness of the NANDA nursing diagnoses (with Defining characteristics/Related Factors)?

F4_3 How do you judge the clarity of the ENP nursing diagnoses set (with characteristics/etiologies) in comparison with the NANDA nursing diagnoses (with Defining characteristics/Related Factors)?

<table>
<thead>
<tr>
<th>Higher</th>
<th>Same</th>
<th>Lower</th>
</tr>
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<tbody>
<tr>
<td>⬜️⬜️⬜️⬜️⬜️⬜️⬜️⬜️⬜️⬜️</td>
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Evaluation categories for the evaluation by the experts
Results: Expert Evaluation – Clarity/unambiguity

Bar chart: allocation of the rater judgment in percent

- Higher unambiguity of ENP: 43.2%
- Same/similar unambiguity of ENP: 42.9%
- Lower unambiguity of ENP: 14.0%

Compared to NANDA-I
RESULTS: expert evaluation - expressiveness

Bar chart: allocation of the rater judgment in percent

- Higher expressiveness of ENP: 53.10%
- Same/similar expressiveness of ENP: 31.01%
- Lower unambiguity expressiveness of ENP: 15.89%

Compared to NANDA-I
Summary of partial results of the study

It was shown in the study that a finer granularity contributes to an increase in expressiveness and clarity/accuracy.

**NANDA-I:**
Dysfunctional ventilatory weaning response

**ENP:**
The patient is ventilated, there is a risk of complications

**NANDA-I:**
Ineffective therapeutic regimen management

**ENP:**
The patient is at risk of not achieving health related aims due to a lack of information/skills associated with diabetes
Do you have any questions?
Thank you for your attention!

A really good idea can be recognised because its realization appears to be ruled out from the outset.

Albert Einstein


References


