RELATION BASED CARE

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Nursing Diagnoses and Length of Stay in Orthopedic Surgery

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Research Group in Nursing Diagnostics Intro.

Research topics:

• Communication, Critical Reasoning, Patient Involvement, Documentation and Handover

• Digital Health

• Family Care / Relation Based Care

Research seen from a holistic, systemic point of view
Research Question

What is the predictive power of nursing diagnosis documentation in the patient record on Length Of Hospital Stay (LOS)?

Hip prostheses patients; age of ≥ 65, admitted in hospitals for surgery.
Knee prostheses patients; age of ≥ 65, admitted in hospitals for surgery,
Method

Review of 300 records in hip protheses patients.
Review of 604 records in knee protheses patients.

Two orthopedic units, one Dutch hospital

Review: September 2014 - February 2016

Reference:
NANDA-I nursing diagnoses
Sample

Review of 300 patient records in *hip protheses patients*: mean (SD) age: 76 (11) 220 female, 80 male.

Review of 604 patient records in *knee protheses patients*: mean (SD) age: 69 (8) 413 female, 191 male.
Data collection & instrument

- **Measurement:**
  first day Post-Surgery (PS)

- **Instrument:**
  D-Catch instrument developed for the analysis of the accuracy in nursing documentation.

Reference: NANDA-I, NIC, NOC

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<table>
<thead>
<tr>
<th>Nursing diagnosis</th>
<th>% (n)</th>
<th>Mean (SD) L.O.S.</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Diagnosed</td>
<td>Not diagnosed</td>
</tr>
<tr>
<td>Pain</td>
<td>70 (210)</td>
<td>10,92 (6,589)</td>
<td>7,35 (3,207)</td>
</tr>
<tr>
<td>Disordered / Distressed</td>
<td>42 (126)</td>
<td>11,42 (7,564)</td>
<td>9,07 (4,382)</td>
</tr>
<tr>
<td>Pressure ulcer</td>
<td>18 (55)</td>
<td>14,72 (8,833)</td>
<td>8,96 (4,594)</td>
</tr>
<tr>
<td>Obstipation</td>
<td>20 (60)</td>
<td>12,73 (7,958)</td>
<td>9,46 (5,428)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>15 (45)</td>
<td>12,23 (7,585)</td>
<td>9,77 (5,828)</td>
</tr>
<tr>
<td>Imbalanced Nutrition /less than body requirements</td>
<td>14 (42)</td>
<td>14,23 (9,615)</td>
<td>9,46 (5,074)</td>
</tr>
<tr>
<td>Imbalanced fluid volume /deficient fluid volume</td>
<td>12 (37)</td>
<td>15,57 (10,265)</td>
<td>9,32 (4,779)</td>
</tr>
<tr>
<td>Impaired tissue perfusion</td>
<td>13 (38)</td>
<td>15,34 (9,382)</td>
<td>8,99 (4,451)</td>
</tr>
</tbody>
</table>

Total NDx N= 613 /300 rec.

Median discharge on 9th day including day of admission/discharge

^ Independent Samples T-test
^ L.O.S
* P = < 0,05
Pain measurements and L.O.S. In *Knee patients*

<table>
<thead>
<tr>
<th>Pain scores</th>
<th>% (n)</th>
<th>Mean (SD)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VNRS / VAS</td>
<td>60,89 (369)</td>
<td>4,76 (3,38)</td>
<td>0,030*</td>
</tr>
<tr>
<td>(n = 604 records)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-3</td>
<td>21,12 (128)</td>
<td>5,27 (3,09)</td>
<td></td>
</tr>
<tr>
<td>4-7</td>
<td>2,31 (14)</td>
<td>5,71 (2,55)</td>
<td></td>
</tr>
<tr>
<td>Missing Values</td>
<td>15,68 (93)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*A Kruskal-Wallis H test*  
*B L.O.S.*  
*P = < 0,05*
## Medical treatment & L.O.S. Knee Patients

<table>
<thead>
<tr>
<th>Treatment</th>
<th>% (n)</th>
<th>Mean (SD) L.O.S.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Recovery</td>
<td>45,00 (270)</td>
<td>4,80 (1,93)</td>
<td>0,000*</td>
</tr>
<tr>
<td>Joint Care</td>
<td>24,00 (116)</td>
<td>6,33 (2,41)</td>
<td></td>
</tr>
<tr>
<td>Regular treatment</td>
<td>31,00 (180)</td>
<td>7,90 (5,20)</td>
<td></td>
</tr>
</tbody>
</table>

Missing values n=38

\[\text{A Kruskal-Wallis H test}\]
\[\text{B L.O.S}\]

\[* P = < 0,05\]
### Medical treatment & L.O.S. *Hip Patients*

<table>
<thead>
<tr>
<th>Medical treatment</th>
<th>% (n)</th>
<th>Mean (SD) L.O.S</th>
<th>P-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic hip screw (DHS)</td>
<td>18 (47)</td>
<td>11,11 (7,403)</td>
<td>0,051</td>
</tr>
<tr>
<td>Cannula hip screws</td>
<td>11 (29)</td>
<td>8,59 (3,647)</td>
<td></td>
</tr>
<tr>
<td>Gamma nail</td>
<td>49 (128)</td>
<td>10,39 (6,786)</td>
<td></td>
</tr>
<tr>
<td>Hemi arthroplasty (hip prosthesis)</td>
<td>12 (32)</td>
<td>9,22 (4,680)</td>
<td></td>
</tr>
<tr>
<td>Other treatments</td>
<td>10 (26)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Missing values n= 38</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A Kruskal-Wallis H test
B L.O.S
* P = < 0,05
Difference in Length of Stay (LOS) *hip patients* and medical diagnoses

^ Independent samples T-test  
^ Dependent variable: LOS, p<.05.

<table>
<thead>
<tr>
<th>Medical diagnoses (Cases: n= 300)</th>
<th>% (n)</th>
<th>Mean (SD) L.O.S.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Diagnosed</td>
<td>Not diagnosed</td>
</tr>
<tr>
<td>Lung disease</td>
<td>18 (55)</td>
<td>11,31 (7,643)</td>
<td>9,90 (5,778)</td>
</tr>
<tr>
<td>Cadiac disease</td>
<td>41 (123)</td>
<td>11,00 (7,152)</td>
<td>9,11 (4,475)</td>
</tr>
<tr>
<td>CVA (Stroke)</td>
<td>7 (21)</td>
<td>14,20 (8,170)</td>
<td>9,88 (5,948)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>16 (47)</td>
<td>12,03(8,241)</td>
<td>9,80 (5,635)</td>
</tr>
<tr>
<td>Co morbidity Medical Dx</td>
<td>N= 275 / 300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results from modeling days hospitalized by Poisson regression in terms of the estimated parameters, their standard errors (SE), t-value, significance measured by p-value, the rate ratio and their 95% Confidence interval.

**Hip sample**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>SE</th>
<th>t.value</th>
<th>P-value</th>
<th>Estimate</th>
<th>CLL</th>
<th>CLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>1.2688</td>
<td>0.3657</td>
<td>3.47</td>
<td>0.0000</td>
<td>3.5567</td>
<td>1.7312</td>
<td>7.2595</td>
</tr>
<tr>
<td>Age</td>
<td>0.0103</td>
<td>0.0043</td>
<td>2.3788</td>
<td>0.0181</td>
<td>1.0104</td>
<td>1.0018</td>
<td>1.019</td>
</tr>
<tr>
<td>Impaired tissue perfusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(surgical wound area)</td>
<td>0.3423</td>
<td>0.0768</td>
<td>4.46</td>
<td>0.0000</td>
<td>1.4082</td>
<td>1.2091</td>
<td>1.6338</td>
</tr>
<tr>
<td>Pressure ulcer</td>
<td>0.2607</td>
<td>0.0808</td>
<td>3.2261</td>
<td>0.0014</td>
<td>1.2979</td>
<td>1.1059</td>
<td>1.5183</td>
</tr>
<tr>
<td>Deficient fluid volume</td>
<td>0.3464</td>
<td>0.0899</td>
<td>3.8546</td>
<td>0.0000</td>
<td>1.414</td>
<td>1.1828</td>
<td>1.6826</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.214</td>
<td>0.0672</td>
<td>3.1848</td>
<td>0.0016</td>
<td>1.2386</td>
<td>1.0843</td>
<td>1.4111</td>
</tr>
</tbody>
</table>
Comparing diagnostics in the hip & knee sample

- Nursing diagnoses and comorbidity are more prevalent in hip patients compared to knee patients
- *Pain* is the most prevalent nursing diagnosis in both groups
- Nursing Diagnoses *Impaired Tissue Perfusion* and *Pressure Ulcer* are strong predictors of L.O.S. in both groups
- Medical treatment in knee patients is a strong predictor of L.O.S. (< L.O.S = Rapid Recovery)
- Medical treatment in hip patients is not a significant predictor of L.O.S.
- Nursing Diagnoses: *Pain, Impaired Tissue Perfusion, Disordered / Distressed, Pressure Ulcer, Obstipation and Anxiety* are significantly related to increased L.O.S. in both groups
- Nursing Diagnosis *Nausia* is a strong predictor of L.O.S. in the knee group, and significantly related to medical treatment (rapid recovery v.s. other treatments: P value <0,000)
- The nursing diagnosis *Deficient Fluid Volume* is a strong predictor of L.O.S. in the group of hip patients
- *Thrombosis (med. diagnosis)* can be seen as a risk factor in the knee patient group (prev. 38 / 604, and strong predictive on L.O.S).
Conclusions

Nursing interventions are documented with low accuracy; the effect on outcomes is (still) not measurable.

Relationship between nursing diagnoses and nursing actions / interventions, as well as the effect of nursing interaction is hard to measure as the nature of the documentation is descriptive and not systematically (sometimes diffuse / cryptic, unclear and redundant in nature)
Conclusions

Diagnostic information:

T1 (diagnostic assessment information): poor,

T2 (diagnostic post surgery information): moderate,

T3 (diagnostic discharge / hand over information) poor.
Needs for Big Data Computing

Technical improvements in the EHR are needed, i.e. output calculation possibilities:

- Nursing Process Decision Support Systems (NPDSS) Implementation of the use of definitions and classifications

- Nanda-I, NIC, NOC for accuracy and efficiency in documentation

- Trans-sectorial care cooperation developments

- E-Health / interoperability to foster data exchange

- The use of new technologies (QS).
Recommendations for clinical practice

Nursing Process - Clinical Decision Support Systems (NP-CDSS) are needed.

Nursing Process-Decision Support allows to retrieve Standardized Nursing Data from Electronic Health Records such as nursing diagnoses and hospital duration (LOS).
Measurement links

Linkages of sensor techniques and nursing diagnoses in the PES structure (SSEP-I-O): signs detections by sensor second skin applications as a validation of nurses’ observation)
RELATION BASED CARE

Essentials:

• Involvement of the patient and relatives is essential (info. accuracy)

• Critical reasoning skills are essential

• Communication skills are essential

• Documentation skills are essential

• Classification is essential

• DDSS’ are essential

An holistic approach in relation based nursing is essential
Related publication (free tekst)

**An Internationally Consented Standard for Nursing Process-Clinical Decision Support Systems in Electronic Health Records.**

Müller-Staub M, de Graaf-Waar H, Paans W.


PMID: 27414705

**Similar articles**
To know more about the professorship in Nursing Diagnoses?

Google or You Tube: type in:

Modern Times in Nursing

https://www.youtube.com/watch?v=1TcmOtCBz54
Literature


