Psychometrics of Halpin Nausea and Vomiting (HNV) Scales for Use in Clinical Practice

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Acknowledge:
Loucine Huckabay PhD, RN, F.A.A.N Co-investigator
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The authors are publishing the results
Contributors to study
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Translational Research

“Knowing is not enough; we must apply. Willing is not enough; we must do.”

-Goethe

Reference: (Olsen, Saunders & McGinnis, 2011)
Define translational research
State key points of translational research at the bedside in a methodology study.
Describe enhancement of RN knowledge with involvement in research application.
Identify how “knowledge” is enhanced when RNs at the bedside participate in EBP and research projects.
Describe the 0-5 Halpin Nausea Vomiting Scale (HNV) methodology research as an example of translational research.
Isn’t it one and the same?

The history – more prevalent in past decade…the terms popularized in 2002 AMA

Found to be essential in moving science forward for better outcomes (Fontanarosa & De Angelis, 2002)
“Nursing research—and its translation into evidence-based practice and policy—stands as a keystone for improving the health and welfare of people around the world, and at NINR we see CTS and implementation research as essential components of our core mission.” (Grady, 2013)
Translational research transforms scientific findings or discoveries from basic laboratory, clinical, or population studies into new clinical tools, processes, or applications.

**Improves:**
- patient care
- promotes public health.

Intention-build “bench to bedside.”

Application of scientific findings to clinical practice is the function of translational research.

(Grady, 2010)
Symptoms of NV most uncomfortable according to patient reports (Rhodes, 2005; NCCN, 2013)
Pathophysiology of Nausea and Vomiting

- CTZ – A zone in the cerebral area of the hypothalamus
- Sensors
  - Nervous system connection
    - In gut (stomach)
    - Brain pathway
    - Sympathetic & parasympathetic systems
- Experience – psychosocial influences
Nurses in oncology were unable to measure intensity and severity of the NV symptoms with current scales.

Therefore nurses wanted a 0-5 scale with descriptors to:
- better understand the patients perceptions of the NV symptoms
- better treat the symptoms
- include the patient at the center of the decisions for both
Review of the literature

- Multiple scales were available
- Most were used in outpatient settings
- Ease of use for inpatient settings remained questionable

Pilot test was the first step in 2008

- Evaluated nurses
  - satisfaction with the HNV scales
  - application feasibility

Methodology study
Inconsistencies existed in communications between patients and health care providers on:

- Severity
- Degree
- Intensity
PLANNING FOR IMPLEMENTATION

Physician-nurse champions with nursing collaboration

Department approvals
(Organization, Nursing Administration, Quality, Research and Information Technology)

Study design and IRB approvals

Hospitals – two hospitals

Data collectors identified and trained

Education of staff on rationale across departments

Screen for eligibility and if eligible consent participants
Methodology Study Design

- Methodological
  - Psychometrics of HNV tool compared the use of HNV with the existing Morrow Scale for NV
  - Sample N=153
- Consent vs. No consent
- Institutional Review Board (IRB) approved:
  - Waiver of consent
  - IRB Decision Rationale: distress of symptoms & treatment must not be interrupted
Patients at risk were placed in 3 groups selected in the study N=153

<table>
<thead>
<tr>
<th>Groups</th>
<th>Admission Baseline</th>
<th>Pre-Rx NV</th>
<th>Rx-anti NV</th>
<th>Post-test NV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gp I: With NV n=51</td>
<td>↑</td>
<td>↑</td>
<td>Yes</td>
<td>↓</td>
</tr>
<tr>
<td>GpII: Chemo Pts n=50</td>
<td>0</td>
<td>↑ chemo</td>
<td>Yes</td>
<td>↓</td>
</tr>
<tr>
<td>GpIII: Control n=52</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Figure 1: Design of the study**

↑ =Nausea /vomiting expected to be elevated

↓ =Nausea /vomiting expected to decrease

Pts= Patients

0 =Nausea /vomiting expected to be low
Findings

- HNV tool had high inter-rater accuracy of responses (Kappa test = .851, p < .001).
- Concurrent validity between the HNV tool & Morrow’s worst nausea ratings were significant at Time 1 (r = .318, p = .03).
- HNV was found to measure fine differences between and within groups, establishing sensitivity.
Demographic and medical background data were cross tabulated with the groups’ numbers to assess the comparability of the three groups.

Chi square tests were non-significant for ethnicity, gender, coronary artery disease, hypertension, diabetes, congestive heart failure, and other medical surgical diagnosis and risk for PONV.

On admission, the groups differed in terms of nausea, as expected!
Calculated between Morrow’s drug efficacy rating and changes in Halpin ratings.

Gain scores were correlated with Morrow ratings of drug usefulness, where 1 meant “very useful” and 4 meant “doesn’t seem to help”.

- The gains in Halpin Nausea ratings had a significant correlation ($r = -0.281$, $p = 0.019$, $n=69$) with Morrow ratings of drug effectiveness.

- The Halpin vomiting change scores varied in the expected direction, but the correlation was not significant ($r = -0.201$, $p = 0.097$, $n=69$).
The highly significant correlations were between the Halpin NV scales and the respective Morrow scales that indicated whether or not the subject was presently experiencing nausea or vomiting.

These six correlations ranged from \(-0.852\) to \(-0.619\), and were significant at the .001 level.
# HNausea 0-5

<table>
<thead>
<tr>
<th>Measure</th>
<th>Descriptions</th>
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<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Anticipated</td>
</tr>
<tr>
<td>2</td>
<td>Mild</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Great</td>
</tr>
<tr>
<td>5</td>
<td>Severe</td>
</tr>
<tr>
<td>Measure</td>
<td>Descriptions</td>
</tr>
<tr>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>0</td>
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</tbody>
</table>
A two-way analysis of variance with repeated measures on nausea scores indicates that there was a significant group effect (F(2,160)=29.131, p=.000), meaning that the groups differed in their feelings of nausea with a:

- significant time effect (F(1,160)=14.465, p= .000) meaning that there were differences between time 1, 2, and 3
- significant time by group interaction effect (F(2,160)=7.306, p=.001) meaning that feelings of nausea is jointly determined by both belonging to a specific group and the time period when nausea was measured
For the **vomiting scale**,

- The group factor was significant
  - $F(2, 160) = 5.933, p = .001$, as was the time factor
  - $F(1, 160) = 6.509, p = .012$
- The group by time interaction was not significant
  - $F(2, 160) = 1.414, p = .246$

As was the case with the nausea scale, belonging to a specific group was a determinant on the feelings of vomiting.
Figure 2: Group means for nausea ratings at three time intervals
Figure 3: Group means for vomiting ratings at three time intervals
Prior to surgery assessment of nausea and vomiting history assist in management of symptoms

- One of the questions that we asked: “Is there a relationship between gender and risk for postoperative nausea and vomiting (PONV)?

A multiple regression was conducted to determine if gender is a predictor variables of PONV:

- History of smoking, motion sickness, nausea on admission

Results were positively related to the gender of the patients (F=8.307, df=2, p=.000).
The findings support the HNV scale with descriptors:
- The scale can be translated into practice
- Used by bedside registered nurses during the care of patients at the time of assessment
- Nausea and vomiting symptoms are managed when assessed using scales to measure the symptom intensity, severity, and duration.
- HNV scale is a valid and a reliable tool that:
  - Benefits operative patients in conjunction with PONV risk
  - Cancer treatment patients
  - All patients experiencing or expected to experience NV
The HNV scales were tested with adult patients.
Sensitive for use with children, or patients from different cultures was not tested.
The practicality of the tool requires a wider audience of nurses and patients use & qualitative researchers documentation.
There was a Low $n$ for the Morrow ratings
Recommend

- Further study on application of the HNV in different age groups responses
- Further study applications of the HNV in specific cultural groups
- Test the tool’s practicality and useful in various populations within clinical applications (e.g. Women’s Health, Emergency Departments)

Thank you! Citosł. Děkuji!


References


References


References

