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

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Disclosures

- The authors have no financial gains
- 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)

What we will discuss & learn?

- 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

Translational Research/EBP

- 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)

Translational Research

- *“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

- “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)

Symptom of Nausea & Vomiting

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

Problem

- 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

Telling the Story

- 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

Why nursing needs a NV scale?

- 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 w/ 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

Experimental Groups

- Patients at risk were placed in 3 groups selected in the study N=153

Groups	Admission Baseline	Pre-Rx NV	Rx-anti NV	Post-test NV
Gp I: With NV n=51	↑	↑	Yes	↓
GpII: Chemo Pts n=50	0	↑ chemo	Yes	↓
GpIII: Control n=52	0	0	0	0

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.

Comparability of the groups

- 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!

Concurrent Validity

- 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 ($r = -.281$, $p = .019$, $n = 69$) with Morrow ratings of drug effectiveness.
  - The Halpin vomiting change scores varied in the expected direction, but the correlation was not significant ($r = -.201$, $p = .097$, $n = 69$).

Concurrent Validity

- 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 -.852 to -.619, and were significant at the .001 level.

HNausea 0-5

	Measure	Descriptions
0	**None**	No nausea
1	**Anticipated**	Nausea is *anticipated* and prophylaxis medications may be given.
2	**Mild**	Nausea reported. Able to tolerate food or medications by mouth.
3	**Moderate**	Nausea persisting. Lacks appetite. Able to eat small meals occasionally.
4	**Great**	Nausea ongoing. No appetite. Unable to tolerate food/medications by mouth.
5	**Severe**	Nausea with Dry Heaves reported

HVomiting 0-5

	Measure	Descriptions
0	**None**	No vomiting
1	**Anticipated**	Vomiting is *anticipated* and prophylaxis medications may be given.
2	**Mild**	1 -2 episodes in 12 hours, small amount of emesis.
3	**Moderate**	3-5 episodes in 12 hours. Vomiting persist.
4	**Great**	6 episodes in 12 hours.
5	**Severe**	≥ 7 episodes in 12 hours, intractable, incessant, retching with emesis.

Sensitivity

- 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

Sensitivity HVS

- 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

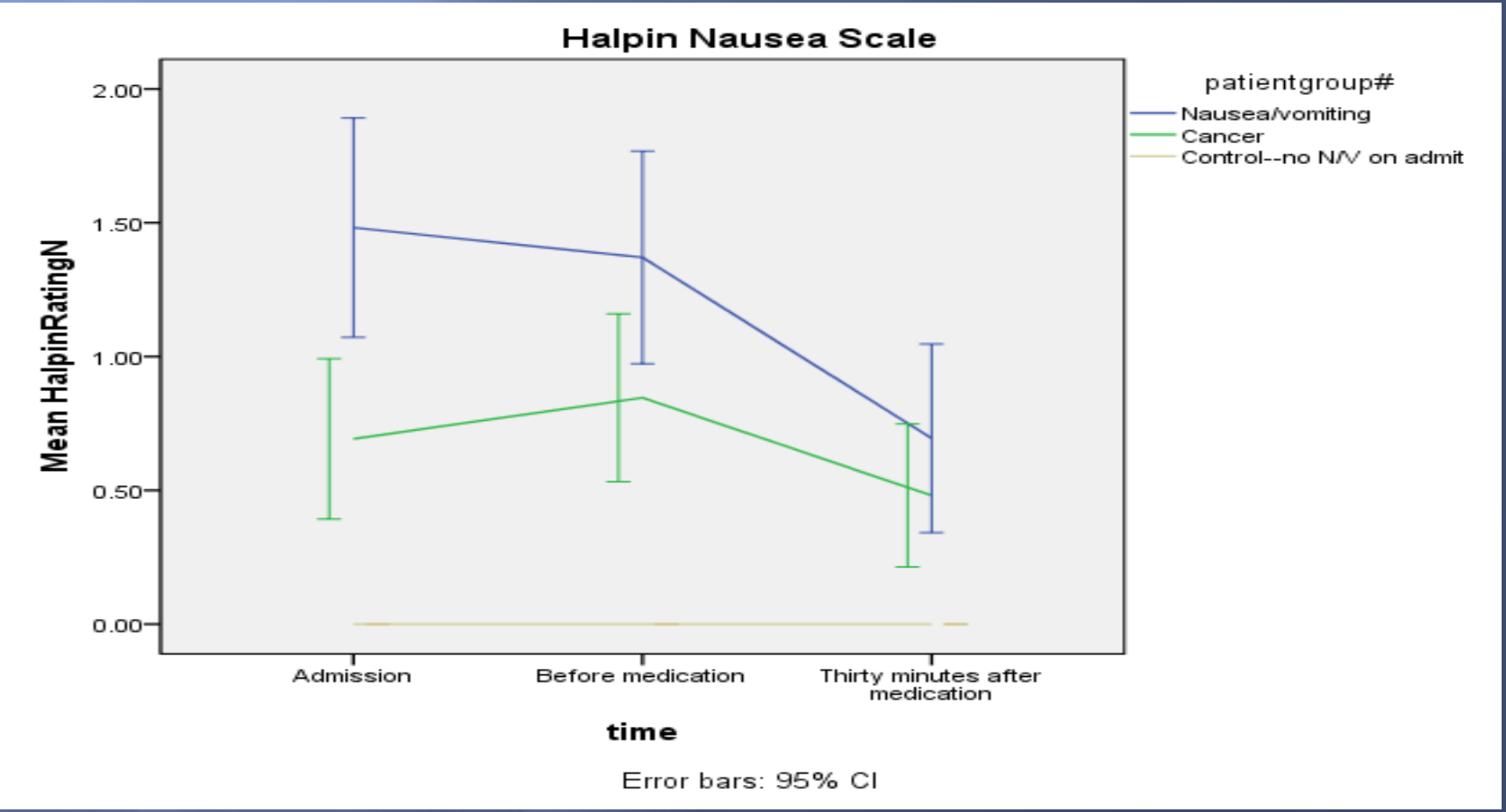
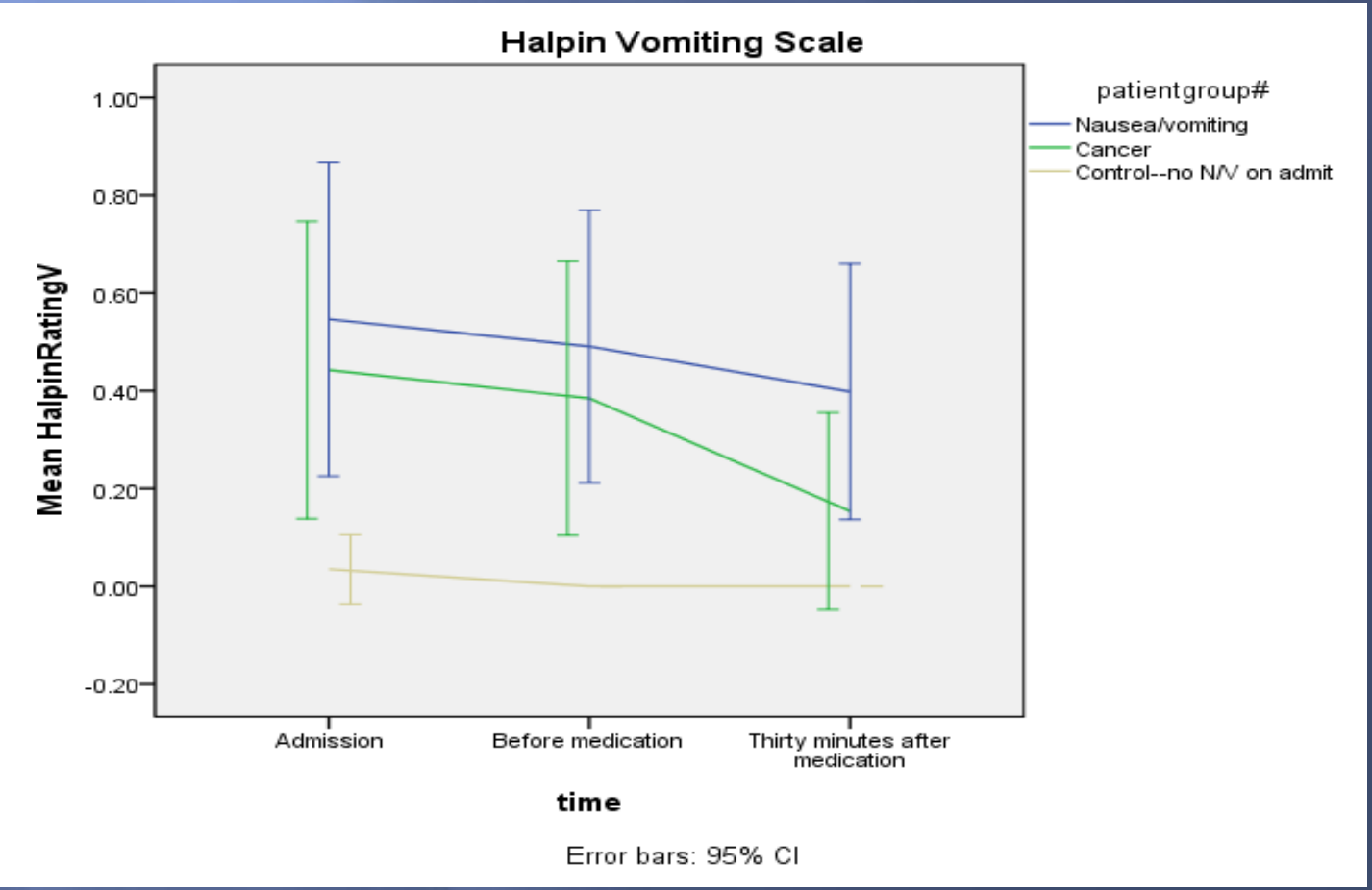


Figure 3: Group means for vomiting ratings at three time intervals



Predictability of scales re: PONV

- 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 ($F=8.307$, $df=2$, $p=.000$).

Discussion

- 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 & 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

Limitations of Study

- 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

Future Research

- 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! Citosl. Děkuji!

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