

Development of a tool to estimate nursing diagnoses accuracy

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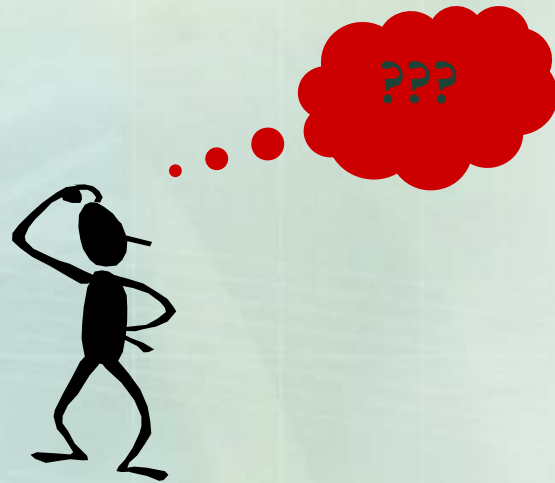
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Introduction

How accurate are nursing diagnoses?



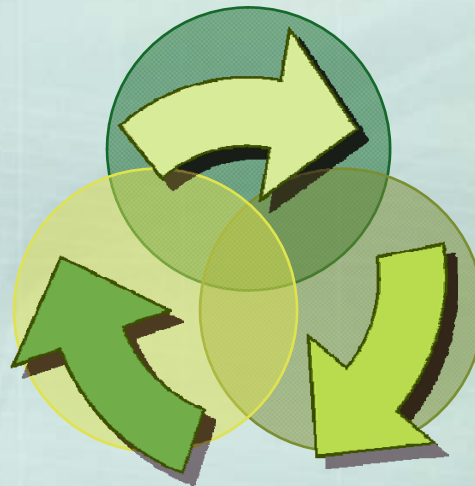
Introduction

Nursing diagnoses is a link between:

Human
responses

Nursing interventions

Nursing sensitive
outcomes



Introduction

Reasons to be concerned about the accuracy of the interpretations of human responses:

1. human responses are complex, which favours a low degree of accuracy;
2. the selection of the most adequate interventions depends on a high level of accuracy; and
3. the responsibility for reaching a high level of accuracy reflects professionalism.

(LUNNEY, 2004)

Introduction

- Scarcity of studies on the accuracy of nursing diagnoses
- Little value given to the accuracy of nursing diagnoses in the clinical practice

Nurses are continuously interpreting individual responses, but in general they do not take the accuracy of such interpretations into consideration (LUNNEY, 2004)

Introduction



LUNNEY: 1990's
method to estimate
the accuracy of ND



7-level scale ranging from -
1 to +5

Scale developed for situations in
which the nurse who applies the scale
also evaluates the patient



Introduction

Study by Cruz et al. (2004)

- Objective: adapt and test Lunney's scale for written data
- The results of this study showed that the adaptation does not apply to written data, but they supplied subsidies to make changes in the scale of accuracy proposed by Lunney

Objective

- **Develop an instrument to evaluate the accuracy of nursing diagnoses from written data**



Method

A quantitative study of methodological development has been carried out, in 3 phases:

1) Theoretical



2) Empirical



3) Analytical

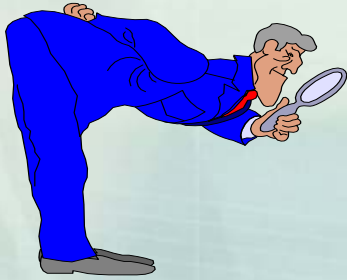


(PASQUALI, 1998)

Method (Theoretical Phase)

- Definition of accuracy of nursing diagnosis
- Items development
- Content validation of items
- Pilot Test

Method (Theoretical Phase)



Definition of accuracy of nursing diagnosis:

“Judgement of a rater about the degree of relevance, especificity and coherence of the existing cues for the diagnosis”

Method (Theoretical Phase)

➤ Items development

- Presence of cues:

Patients manifestations that represent evidence, vestiges, signs, indications or characteristics of a nursing diagnosis

- [Number of cues]:

Quantity of cues for a nursing diagnosis

- Relevance of the cue:

Property of a cue being important as an indicator of a nursing diagnosis

Method (Theoretical Phase)

➤ Items development

- Specificity of the cue:

Property of a cue being proper e distinctive of a nursing diagnosis

- [Consistency] Coherence of the cue:

Property of a cue being consistent with the amount of information available

Method (Theoretical Phase)

➤ Content validation

3 raters

- Deletion of the item “Number of clues”
- Change in the way how items were measured

➤ Pilot test

DIREnf – 2 sessions

- “Consistency” changed for “coherence” (item and definition of accuracy)
- Insertion of the question “would you state this ND?”

Synthesis – Theoretical Phase

Item	Measurement	
	Proposal	Confirmed (post content validation)
Presence of cues	Yes / No	Yes / No
Number of cues	Many, Few, None	—
Relevance of the cue	Very, Little, Nothing	High/Moderate, Low
Specificity of the cue	Very, Little, Nothing	High/Moderate, Low/None
[Consistency] Coherence of the cue	Very, Little, Nothing	High/Moderate, Low/None

Method – Empirical Phase

The ANDS was performed by 12 nurses specialized in nursing diagnosis in order to test the items of the instrument.

The choice of the specialists was experience-oriented in nursing diagnoses, which corresponds to the target of which EADE was developed.

The material sent to the experts had:

1. Information about the research
2. Informed consent
3. Expert characterization form
4. Set of “written data” *;
5. Tool elaborated (ANDS)*.

Method (Empirical Phase)

Set of “written data” * :

- 5 patients (interview, physical examination and consultation of the medical record).
- Adapted form elaborated by Cruz (1989)
- “Golden-standard” – list of highly accurate diagnoses in accordance with the “written data”

Theoretical Phase / Empirical Phase

Tool elaborated (ANDS - part 1) *

Diagnoses	Item 1		Item 2		Item 3		Item 4		Would you state this ND?	
	Any cues?		Relevance (cue x diagnosis)		Specificity (cue x diagnosis)		Coherence (cue x set of data)			
	Yes	No	H / M	L	H / M	L / N	H / M	L / N	Yes	No
1 Acute Pain	x		x		x		x		x	
2 Anxiety		x	n/a	n/a	n/a	n/a	n/a	n/a		x
3 Deficit for self-care	x			x		x		x		x

Index: Y: Yes;
 N: No;
 H/M: High/Moderate;
 L: Low;
 L/N: Low/None
 N/A: Not applicable.

Method (Empirical Phase)

Ethical aspects

The research followed the devices of the 196/96 resolution from the National Health Council for researches on human beings.

The following were consulted and signed the Informed Consent Term:

- Judges – skimming validation (theoretical pole)
- Members of the DIREnf – pilot test – theoretical pole
- Evaluated patients – empirical pole
- Experts – performed the ANDS– empirical pole

The project was submitted o appreciation of:

- Ethical in Research Committee from EEUSP
- Ethical in Research Committee from HU-USP
- Research Committee from EEUSP

Method (Analytical Phase)

The elaborated instrument was performed by expert nurses in nursing diagnoses in order to create values in ordinal scale to identify the items and estimate the validity and reliability of the instrument.

➤ Reliability:

Agreement among the evaluators (Kappa)

➤ Validity :

Logistic regression univariate and multivariate (General Estimation Equation)

- (Ability of the items to predict accurate diagnoses)
- $\alpha \leq 0,05$

Results and Discussion

- Nurse experts characteristics
 - N = 12
 - Female = 100%
 - Average Age = 43.8 ± 9.7
 - Time being graduate = 21.8 ± 9.5 years
 - Holding a doctoral degree = 83.3%
 - Present occupation - Teaching/Research = 75.0%
 - Hability to diagnose (self-evaluation)
 - 85 to 100% accurate = 41.6%
 - 70 a 84% accurate = 41.6%
 - 55 a 69% accurate = 16.6%

Results and Discussion

The GEE - General Estimate Equations, were performed to estimate the validity of the EADE

For this purpose, the hypothesis that the items of the instrument (existence of cues, relevancy, specificity and coherency) predict accurate diagnoses (correct diagnoses, according to the defined “golden standard”) was tested.

Dependent variable was the diagnosis matching the “gold standard”. The accuracy was attributed to the cases in which the expert’s answer matched the “golden standard”. The independent variables were the items of the EADE – relevancy, specificity and coherency.

Results and Discussion

As an indicative of the ANDS **VALIDITY**, the obtained results with the Generalized Equations Estimate (GEE) confirmed the hypothesis that the items of the scale are important to predict the most accurate diagnosis:

Relevance (**OR 1,01** / IC95% [0,23 — 4,35], p = 0,994);

Specificity (**OR 3,41** / IC95% [0,78 — 14,92], p = 0,103);

Coherence (**OR 8,05** / IC 95% [2,10 — 30,93], p = 0,002).

Results and Discussion

The **RELIABILITY** of the ANDS was estimated by the concordance test among the evaluators in accordance with the accuracy rate for the diagnoses)

The Kappa general coefficients have shown that the concordance among the 12 experts was low: they varied from 0,242 (specificity) to 0,329 (presence), which, even though low, is in accordance with the concordance results among the evaluators for clinical diagnoses.

Results and Discussion

The obtained Odds Ratio values by means of the GEE analysis, were used to attribute numeric values to the items of EADE, intending to generate final scores within an ordinal scale which expresses the character of the variable continuity.

These analysis created different values for each item of the ANDS, which corresponds to the predictive power of each item for the accuracy of the evaluated diagnosis.

According to the statistical analysis, the variable coherency showed the greater predictive power (8), followed by specificity (3,5) and relevancy (1).

Results and Discussion

The generated scale of accuracy presented 8 answering-levels from 0 to 12,5.

Based on the obtained rate of accuracy, it was possible to identify the accuracy category in which the diagnosis match (high, moderate or null) which is the objective of our study.

NDAS - Scoring Key

Item		Definition	Category	Score
1	Presence of cues	Presence of patients' manifestations that represent signs, indicators or characteristics of a nursing diagnosis.	Yes	None
			No	None
2	Relevance of cues	Cue property of being important as indicator of a nursing diagnosis	High/Moderate	1
			Low/Null	0
3	Specificity of cues	Cue property of being proper and distinctive of a nursing diagnosis	High/Moderate	3,5
			Low/Null	0
4	Coherence of cues	Cue property of being consistent with the available data set	High/Moderate	8
			Low/Null	0

Apply scoring key to answers for each item, and sum all scores of each nursing diagnosis. Total score is interpreted as following:

Accuracy Total Score	Interpretation	Accuracy category
0	Assessment data presents no cues for the diagnosis OR cue(s) presented is(are) low in relevance, specificity, and coherence	NULL
1 3,5 4,5	Cue(s) present(s) in assessment data is (are) low/null in coherence, although there are either highly relevant cues or highly specific cues for the diagnosis.	MODERATE
8,0 9,0 11,5 12,5	Cue(s) present(s) in assessment data is (are) high in coherence, AND/OR highly in relevance, AND/OR highly in specificity for the diagnosis.	HIGH

Conclusions

This study has made possible the development of an instrument to assess the accuracy of nursing diagnoses from written data.

The scale developed – ANDS encompass 4 items:

1. Presence of cues
2. Relevance of the cue
3. Specificity of the cue
4. Coherence of the cue

Conclusions

- The ANDS was developed to be used by evaluators who have experience in the use of the nursing diagnosis classification.
- Another important requirement for the evaluator is a previous experience and knowledge in the clinic area of the patient whose diagnoses will be evaluated.
- Having the written data from the patient evaluation and the list of diagnoses, the evaluator will judge whether there's any cue for each formulated diagnose.
- If there are cues, a judgment shall be according to the rate of relevancy and specificity related to the evaluated diagnose and according to the rate of coherency related to the set of the available data.

Conclusions

- The answers of each item correspond to a score: 0 / 1 / 3,5 / 8 and the various possibilities of answer result in a value that indicates the rate of accuracy of the evaluated diagnoses: 0 / 1 / 3,5 / 4,5 / 8 / 9 / 11,5 / 12,5.
- Based on the obtained rate of accuracy, it's possible to identify an accuracy category: high, moderate or null.
- The ANDS showed reasonable validity and reliability estimates.
- The study attended the proposed objectives and reached the expected results.

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Thank you !!!!

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