BNJ BELITUNG NURSING JOURNAL

ORIGINAL RESEARCH:
RESEARCH METHODOLOGY PAPER

VALIDATION OF NURSING OUTCOMES' INDICATORS OF NURSING OUTCOMES CLASSIFICATION OF SELF-CARE FOR PATIENTS WITH STROKE

Sri Mulyani, Intansari Nurjannah*

Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

***Corresponding author:**
Intansari Nurjannah, S.Kp., MN. Sc., Ph.D
Department of Mental Health and Community Nursing, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada Gedung Ismangoen, Sekip Bulaksumur Yogyakarta, Indonesia
Phone : +62 274 545674
Fax: +62 274 631204
Email: intansarin@ugm.ac.id

Abstract

Background: Evaluation of nursing outcome based Nursing Outcome Classification (NOC) is very important. However, there is dearth of information regarding its validation in Indonesian language.

Objective: To validate four nursing outcomes' indicators of the Nursing Outcome Classification (NOC) for stroke patients with self-care deficit problems.

Methods: This was a descriptive quantitative study with cross sectional design. Outcomes indicators of self-care: bathing, dressing, eating, and toileting were developed for measuring its relevance, clarity, simplicity and ambiguity. Content validity index was used for analysis, which involved three nursing experts.

Results: Out of the 59 outcome indicators, 49 (83.05%) were considered as passing indicators and 10 (16.95%) were eliminated.

Conclusion: The passing indicators can be applied in caring for stroke patients. The NOC indicators can be implemented in clinical setting, particularly for stroke patient with self -are deficit problems.

KEYWORDS
content validity; nursing outcome classification; self-care; stroke

INTRODUCTION

Measuring patients' outcome is a very important step after conducting some interventions, and Nursing Outcomes Classification (NOC) has been widely used to measure the outcome (Head et al., 2004). Most of patients with stroke are experiencing self-care deficits. Thus, NOC can be used to measure patient's ability in doing self-care. NOC is a measurement of a patient's status before and after nursing interventions. Standard criteria in NOC are developed to measure the outcomes of nursing actions used in all areas of nursing, individual, family, caregiver, and community (Moorhead et al., 2013). NOC has been used extensively throughout the world. However, its use in every country requires certain adjustments, especially in terms of language. Thus, NOC should be translated into the target language in the

particular country. The translation results require further tests to ascertain if they differ or not from the original concepts. One method to measure whether the translated NOC is reliable for use is to test its validity. This study examined the content validity of the NOC of self-care deficits, which have been translated into Indonesian language (or called *bahasa Indonesia*), and its indicators have been operationalized according to stroke patients and hospital settings.

As an instrument, the NOC checklist should be valid and reliable. Validity and reliability are indicated by the high accuracy and precision of the measurement results (Scholtes et al., 2011). Content validity reflects every item of instrument, and describes domain concept that will be measured (Noor,

2013). Content validity can be measured through rational analysis by competent panel or expert judgment toward advisability or content relevance of an instrument (Scholtes et al., 2011). This study aimed to measure the content validity of NOC of self-care: bathing, dressing, eating, and toileting in *bahasa Indonesia* among stroke patients in a hospital setting in Yogyakarta, Indonesia.

METHODS

Study Design
This was a descriptive quantitative research with cross sectional design. It was conducted in one hospital in Yogyakarta on November 2017.

Validation of Instrument by Expert Panels
There were three experts in nursing for instrument validation. Two experts were academics and one expert was a clinician. Expert were chosen based on their experience in caring stroke patients and their education background in basic nursing (Polit et al., 2012). The educational background of the experts were two masters and one doctor in nursing science with 3.5- 27 years of experience in their fields. Researchers listed the name of lecturers from School of Nursing, Faculty of Medicine, Universitas Gadjah Mada. There were five lecturers who are experts in basic nursing. From those five, two experts were willing to participate in this study. One was a clinician chosen due to the highest degree and longest experience in the field, and the other was a nurse at the biggest public hospital in Yogyakarta.

NOC has been previously translated in *Bahasa Indonesia* by Nurjannah and Tumanggor (2013). Back translation has been performed to gain semantic equivalent of the instrument (Polit et al., 2012) by language translator agent in August 2017. The English translator was Indonesian and has been qualified and sworn as a translator. Back translation was then reviewed by three people who were fluent in English in 14-26 September 2017. The results of back translation indicated that the instrument of NOC of self-care: bathing, dressing, eating, and toileting in *Bahasa Indonesia* has the similar substance with the English version.

The total of indicators being assessed was 59 (NOC *self-care: bathing* has 14 indicators, *self-care: dressing* has 14 indicators, *self-care: eating* has 16 indicators, and *self-care: toileting* has

15 indicators). The underlying setting of the instrument in this research was the stroke patients in hospital settings in Yogyakarta, Indonesia.

In this study, Five-Likert scale ranged from one to five (1 = Severely compromised, 2= Substantially compromised, 3= Moderately compromised, 4= Mildly compromised, and 5= Not compromised) was used to give score for its indicator. Each indicator score was operationalized in order to be relevant with the object. In addition, the experts evaluated the relevance, clarity, simplicity, and ambiguity of the indicators using Likert Scale one to four (scale 1 for not relevant to scale 4 for highly relevant). Four point scale was preferable to avoid having a neutral and ambivalent midpoint (Lynn, 1986). They were also asked to give their comments and advices regarding the indicators. If agreement were achieved among experts, the next step is making decision toward the items whether it will be retained, revised, or eliminated (Polit et al., 2012).

Data Analysis
I-CVI and S-CVI were used for data analysis. Data were analyzed using Microsoft Excel. I-CVI score more than 0.78 was considered having a good content validity (Lynn, 1986; Polit et al., 2007). S-CVI (Scale-Content Validity Index) of ≥0.80 is an acceptable agreement (Bellido-Vallejo & Pancorbo-Hidalgo, 2017; Lynn, 1986; Polit et al., 2007). The content validity is excellence if I-CVI is >0.78 and S-CVI is ≥0.90 (Polit et al., 2012).

Ethical Consideration
Ethical approval was obtained from the Ethics Committee of the Faculty of Medicine, Universitas Gadjah Mada. The number of ethical approval was Ref: KE / FK / 1121 / EC / 2017.

RESULTS

The results showed that self-care indicators mostly have a good score in I-CVI and S-CVI. However, some indicators were dropped due to low score in relevance, clarity, simplicity and ambiguity for *self-care: dressing, bathing and eating*, but not for *self-care: toileting*. Therefore, *self-care: bathing* has 5 eliminated indicators, *self-care: dressing* has 3 eliminated indicators, *self-care: eating* has 2 eliminated indicators, and *self-care: toileting* has no eliminated indicators (see **Table 1**). The results of the I-CVI and S-CVI assessment of each indicator can be seen in **Table 2**.

Table 1 Distribution of NOC Indicators for Stroke Patients with Self-Care Deficit Problem in *Bahasa Indonesia*

NOC Outcome	NOC Indicators (n=59)	Passing Indicators	Eliminated Indicators
Self-Care: Bathing	14	9 (64.29%)	5 (35.71%)
Self-Care: Dressing	14	11 (78.57%)	3 (21.43%)
Self-Care: Eating	16	14 (87.50%)	2 (12.50%)
Self-Care: Toileting	15	15 (100%)	0

Table 2 The Results of Content Validity of NOC of Self-Care: Bathing, Dressing, Eating and Toileting in *Bahasa Indonesia* on Stroke Patients with Self-Care Deficit Problems

No.	Indicators	I-CVI Score			
		Relevance	**Clarity**	**Simplicity**	**Ambiguity**
NOC Self-Care: Bathing					
1.	Gets in and out of bathroom	1	1	1	1
2.	Gets bath supplies	1	1	1	1
3.	Obtains bath water*	0.67	1	0.93	0.67
4.	Turns on water	1	1	0.87	0.87
5.	Regulates water temperature*	0.33	0.67	0.87	1
6.	Regulates water flow*	0.67	0.80	1	0.93
7.	Bathes at sink*	0.33	1	1	1
8.	Bathes in tub*	0.33	1	1	1
9.	Bathes in shower	1	1	1	0.73
10.	Washes face	0.73	0.93	1	1
11.	Washes upper body	1	1	1	0.73
12.	Washes lower body	1	1	0.80	1
13.	Cleans perineal area	1	0.93	1	1
14.	Dries body	1	1	1	1
	S-CVI	0.79	0.95	0.96	0.92
	S-CVI after indicators eliminated	0.97	0.98	0.96	0.93
NOC Self-Care: Dressing					
1.	Selects clothing	1	1	1	1
2.	Gets clothing from drawer	1	0.93	1	1
3.	Gets clothing from closet*	0.27	0.80	0.93	0.67
4.	Picks up clothing	0.80	1	1	0.80
5.	Puts clothing on upper body	1	1	1	1
6.	Puts clothing on lower body	1	1	1	1
7.	Buttons clothing	1	1	1	1
8.	Uses fasteners	1	1	1	1
9.	Uses zippers	1	1	1	1
10.	Puts on socks	1	1	1	1
11.	Puts on shoes*	0.47	0.80	0.80	0.87
12.	Ties shoes*	0.33	0.67	0.67	0.67
13.	Removes clothes from upper body	1	1	0.87	1
14.	Removes clothes from lower body	1	1	1	1
	S-CVI	0.85	0.94	0.95	0.93
	S-CVI after indicators eliminated	0.98	0.98	0.99	0.98
NOC Self-Care: Eating					
1.	Prepares food for ingestion	1	0.93	1	0.87
2.	Opens containers	1	0.93	1	0.87
3.	Cuts up food	1	0.93	1	0.93
4.	Uses utensils	1	0.93	1	0.93
5.	Gets food onto the utensil	1	0.93	1	0.93
6.	Picks up cup or glass	1	0.93	1	0.93
7.	Brings food to mouth with fingers	0.67	0.60	0.67	0.60
8.	Brings food to mouth with container	1	0.93	1	0.93
9.	Brings food to mouth with utensil*	0.67	0.60	0.67	0.60
10.	Drinks from a cup or glass	1	0.93	1	0.93
11.	Places food in mouth	0.80	0.67	0.67	0.67
12.	Manipulates food in mouth*	0.60	0.60	0.67	0.67
13.	Chews food	1	1	1	1
14.	Swallows food	1	1	1	1
15.	Swallows fluid	1	1	1	1
16.	Completes a meal	1	0.87	1	0.93
	S-CVI	0.92	0.85	0.90	0.86
	S-CVI after indicators eliminated	0.96	0.90	0.95	0.89

Table 2 *Continued*

NOC Self-Care: Toileting

1.	Responds to full bladder in timely manner	1	1	1	1
2.	Responds to urge to have a bowel movement in timely manner	1	1	1	1
3.	Gets in and out of bathroom	1	1	1	1
4.	Removes clothing	1	1	1	1
5.	Positions self on toilet or commode	1	1	1	1
6.	Gets to toilet between urge and passage of urine	1	1	1	0.80
7.	Gets to toilet between urge and evacuation of stool	1	1	1	1
8.	Empties bladder	1	1	1	1
9.	Empties bowel	0.67	0.67	0.67	0.67
10a.	Wipes self after urinating	1	1	1	1
10b.	Clean self after urinating with water	1	1	1	1
11a.	Wipes self after bowel movement	1	1	1	1
11b.	Clean self after bowel movement with water	1	0.93	1	1
12.	Gets up from toilet or commode	1	1	1	1
13.	Adjusts clothing after toileting	1	1	1	1
	S-CVI	0.98	0.97	0.98	0.96
	S-CVI after indicators eliminated	0.98	0.97	0.98	0.96

Note: *= eliminated indicator

The outcomes *Self-care: Bathing* is defined as personal actions to perform the most basic physical tasks and personal care activities independently with or without assistive device, contains 14 indicators (Moorhead et al., 2013). Among those, the experts considered that *gets in and out of bathroom* (I-CVI score for relevance= 1), *gets bath supplies* (1), *turns on water* (1), *bathes in shower* (1), *washes face* (0.73), *washes upper body* (1), *washes lower body* (1), *cleans perineal area* (1), and *dries body* (1) as passing indicators. The indicators of *obtains bath water* (0.67), *regulates water temperature* (0.33), *regulates water flow* (0.67), *bathes at sink* (0.33), and *bathes in tub* (0.33) were eliminated. The S-CVI score of relevance, clarity, simplicity and ambiguity in the NOC *self-care: bathing* instrument after eliminated indicators respectively were 0.97, 0.98, 0.96 and 0.93.

Self-care: Dressing is defined as personal actions to dress self independently with or without assistive device, contains 14 indicators (Moorhead et al., 2013). The experts considered *selects clothing* (I-CVI score for relevance= 1), *gets clothing from drawer* (1), *picks up clothing* (0.80), *puts clothing on upper body* (1), *puts clothing on lower body* (1), *buttons clothing* (1), *uses fasteners* (1), *uses zippers* (1), *puts on socks* (1), *removes clothes from upper body* (1), and *removes clothes from lower body* (1) as passing indicators. The indicators that eliminated were *gets clothing from closet* (0.33), *puts on shoes* (0.47), and *ties shoes* (0.33). The S-CVI score of relevance, clarity, simplicity and ambiguity in the NOC *self-care: dressing* instrument after eliminated indicators respectively were 0.98, 0.98, 0.99 and 0.98.

The outcomes of *self-care: eating* is defined as personal actions to prepare and ingest food and fluid independently with or without assistive device, contains 16 indicators (Moorhead et al., 2013). Among these, the experts considered *prepares food for ingestion* (I-CVI score for relevance= 1), *opens containers*

(1), *cuts up food* (1), *uses utensils* (1), *gets food onto the utensil* (1), *picks up cup or glass* (1), *brings food to mouth with fingers* (0.67), *brings food to mouth with container* (1), *drinks from a cup or glass* (1), *places food in mouth* (0.80), *chews food* (1), *swallows food* (1), *swallows fluid* (1), and *completes a meal* (1) as passing indicators. The indicators of *manipulates food in mouth* (0.60) and *brings food to mouth with utensil* (0.67) were eliminated. The S-CVI score of relevance, clarity, simplicity and ambiguity in the NOC *self-care: eating* instrument after eliminated indicators respectively were 0.96, 0.90, 0.95 and 0.89.

Self-care: toileting is defined as personal actions to toilet self independently with or without assistive device, contains 13 indicators (Moorhead et al., 2013). There were 13 indicators and 2 additional indicators in this NOC *self-care: toileting*, which were on indicators 10b and 11b. The addition of 2 indicators was carried out based on considerations related to the prevailing culture in Indonesia. In Indonesia, using water is used for cleaning after urinating and defecating instead of using tissue or cloth. There was no indicator eliminated in this outcome. Passing indicators were *responds to full bladder in timely manner* (I-CVI score for relevance= 1), *responds to urge to have a bowel movement in timely manner* (1), *gets in and out of bathroom* (1), *removes clothing* (1), *positions self on toilet or commode* (1), *gets to toilet between urge and passage of urine* (1), *gets to toilet between urge and evacuation of stool* (1), *empties bladder* (1), *empties bowel* (0.67), *wipes self after urinating* (1), *clean self after urinating with water* (1), *wipes self after bowel movement* (1), *clean self after bowel movement with water* (1), *gets up from toilet or commode* (1), and *adjusts clothing after toileting* (1). The S-CVI score of relevance, clarity, simplicity and ambiguity in the NOC of *self-care: toileting* instrument after eliminated indicators respectively were 0.98, 0.97, 0.98 and 0.96.

DISCUSSION

The reason why some indicators in *self-care: bathing* were decided to be eliminated was that *obtains bath water, regulates water temperature, regulates water flow, bathes at sink*, and *bathes in tub* could not be observed at clinical condition in Stroke Unit and Anggrek 2 Ward of RSUP Dr. Sardjito hospital. For hospital conditions in Indonesia, especially in Dr. Sardjito hospital Yogyakarta, did not have a bathtub and patients were not used to bathing in the sink. Most of the patients at Stroke Unit and Anggrek 2 Ward were advised to bed rest and the activity was only limited to the bed. A shower was provided by nurses in both patients' bed or bathroom.

In the *self-care: dressing,* the indicator of *gets clothing from closet*, based on expert considerations, was that the operational definition and explanation of each indicator were similar to the indicator of *gets clothing from drawer,* and there was no wall cabinet in the hospital. The indicators of *puts on shoes* and *ties shoes* were excluded because stroke patients in hospitals rarely used shoes based on community culture. And the indicator of *picks up clothing* was not eliminated because the operational definition and explanation of each indicator only needs to be corrected so that the differences in each indicator were clear.

In *self-care: eating*, the validity test results showed that there were 4 indicators with low score of I-CVI 0.67 (<0.78), namely the indicator 7, indicator 9, indicator 11 and indicator 12. The indicators were corrected for the indicator 7 from *brings food to mouth with fingers* to *brings food to mouth with fingers (hand)*; the indicator 11 *places food in mouth* was corrected by clarifying the operational definition of items that were quantitative followed by qualitative information such as <75% (most), 25-75% (some) and> 25% (little). The eliminated indicator was the indicator 9 *brings food to mouth with utensil* because it has the same operational definition with the indicator 8 *brings food to mouth with container*, thus it was combined. And the indicator 12 *manipulates food in mouth* was decided to be eliminated because the score of I-CVI was <0.78 and the explanation of the indicator assessment made by the researcher was still considered difficult if observed to the patients.

In *self-care: toileting*, the indicators were decided to be revised, rather than to be eliminated. Items revised include changing the word *unable to carry out 1 of 4 indicators* on the operational definition indicators number 3, 4, 10a, 10b, 11a, 11b to be *unable to carry out all indicators*.

Given the specific reasons to eliminate and revise the indicators in each outcome, the instrument was then valid for use, with S-CVI (Scale-Content Validity Index) score was ≥0.80 that is acceptable (Bellido-Vallejo & Pancorbo-Hidalgo, 2017; Polit et al., 2012)

CONCLUSION

The four nursing outcomes' indicators of the Nursing Outcome Classification (NOC) demonstrate a valid results. Therefore, the indicators can be used for caring stroke patients who has self-care deficit problems (bathing, dressing, eating, and toileting). It is recommended to do further research for reliability test for this Nursing Outcome Classification.

Authors Contributions
SM and IN prepared for research proposal and process in data collection and ethical permission, contributed in creating the article and revising the content and discussion section, and provided final approval on the publication manuscript.

ORCID
Sri Mulyani http://orcid.org/0000-0002-1280-1564
Intansari Nurjannah http://orcid.org/0000-0002-5406-8727

References

Bellido-Vallejo, J. C., & Pancorbo-Hidalgo, P. L. (2017). Cultural adaptation and psychometric evaluation of the spanish version of the nursing outcome "pain control" in primary care patients with chronic pain. *Pain Management Nursing, 18*(5), 337-350. https://doi.org/10.1016/j.pmn.2017.04.001

Head, B. J., Aquilino, M. L., Johnson, M., Reed, D., Maas, M., & Moorhead, S. (2004). Content validity and nursing sensitivity of community-level outcomes from the Nursing Outcomes Classification (NOC). *Journal of Nursing Scholarship, 36*(3), 251-259. https://doi.org/10.1111/j.1547-5069.2004.04046.x

Lynn, M. R. (1986). Determination and quantification of content validity. *Nursing Research, 35*(6), 382–286. https://doi.org/10.1097/00006199-198611000-00017

Moorhead, S., Johnson, M., Maas, M. L., & Swanson, E. (2013). *Nursing outcomes classification (NOC)*. Yogyakarta: Elsevier Mosby.

Noor, J. (2013). *Metodologi penelitian: Skripsi, tesis, disertasi, dan karya ilmiah [Research methodology: mini thesis, thesis, dissertation, and scientific work]*. Jakarta: Kendana Prenada Media Group.

Nurjannah, I., & Tumanggor, R., D. (2013). *Nursing outcome classification (NOC): Pengukuran outcomes kesehatan [Measurement of health outcomes]*. Yogyakarta: Mocomedia.

Polit, D., Beck, T., & Owen, S. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in Nursing Health, 30*, 459-467. https://doi.org/10.1002/nur.20199

Polit, D. F., Beck, & Cheryl, T. (2012). *Nursing research: Generating and assessing evidence for nursing practice*. Australia: J.B. Lippincott Company.

Scholtes, V. A., Terwee, C. B., & Poolman, R. W. (2011). What makes a measurement instrument valid and reliable? *Injury, 42*(3), 236-240. https://doi.org/10.1016/j.injury.2010.11.042