

Validity and reliability testing of home care stroke quality indicators

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ABSTRACT

It is disconcerting that until today there are no agencies or research to recommend the appropriate indicators of home nursing care of stroke patients according to Indonesian conditions. Hence, this research aimed to verify the validity and reliability of quality indicators of home nursing care for stroke patient that resulted from Delphi process. Confirmatory factor analysis was carried out for validity and reliability testing with data collected from 350 respondents. Based on the value of loading factors, 62 indicators were declared valid and five indicators were invalid. This study successfully proved the validity of 62 indicators of quality home care for stroke patients. Further research is needed to pilot project this indicator in a larger area.

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1. INTRODUCTION

Stroke is a serious global threat [1]. Almost 60% of all stroke prevalence happened on population under 70 years old and mostly are woman [2]. Meanwhile, the prevalence of stroke in Indonesia is 0.02 until eight people for each 1,000 population with the highest risk factor is tobacco smoking. However information about the incidence rate of stroke in Indonesia is less available [3]. Another study in Sleman, one of special district in Yogyakarta, Indonesia reported a high prevalence of stroke was associated significantly with increasing of age, history of past hypertension and diabetes mellitus [4]. Beside those factors, irregular medical check up and obesity also as key factors for increasing recurrent stroke incidence in Indonesia [5]. During the first period of in-hospital care, one hemorrhage stroke patient need approximately 13.8 billion rupiah and totally around 622 billion rupiah for 45 period of care [6], [7].

In the past decade, there had been a shifting focus of rehabilitation of stroke patients from hospital-based into community-based rehabilitation, because of less cost [8]. The most commonly adopted community-based rehabilitation form in Indonesia is home care. This type of rehabilitation is considered cheaper and more applicable since it allows many treatments to be continued at home. Unfortunately, implementation of home care services in Indonesia are not well documented [9].

On this basis, quality of home care organizations is a necessity [10]. To evaluate the effectiveness of interventions by home care officers, we need to have a standard assessment [11]. Quality of home care monitoring is not possible without any quality indicators [12]. Thus, it is important to explore the status of

home care-based services with valid quality indicators [13], [14]. Quality indicator of home care that available now were conducted into all type of diseases and the validity of those indicator did not tested in Indonesia yet. Therefore, this study aimed to test the validity of content and reliability of constructs of quality indicators of home care in stroke patients in Indonesia.

2. RESEARCH METHOD

This research was a cohort study. Testing for validity, we conducted on content and construct validity. While reliability we tested for construct validity. For content validity, data was analysed using Microsoft Excel. This process involved four experts: community nurse, gerontology nurse, management nurses, and scientists. Experts were asked to rank the indicators with a Likert scale from 1 to 5. The score of 1 means very inappropriate, 2 are inappropriate, 3 are uncertain, 4 are appropriate and 5 are very appropriate. Then, the Aiken index value was calculated.

Construct validity and reliability were tested using confirmatory factor analysis by Lisrel Software. This test involved 350 health care professionals from seven health care centres, two hospitals, and five educational institutions in Yogyakarta, Indonesia. The data collection started in July 2018 until December 2018. Selected participants received a questionnaire by email, or given straight away face to face. After two weeks, all questionnaires were sent back to investigator. All process is described in Figure 1.

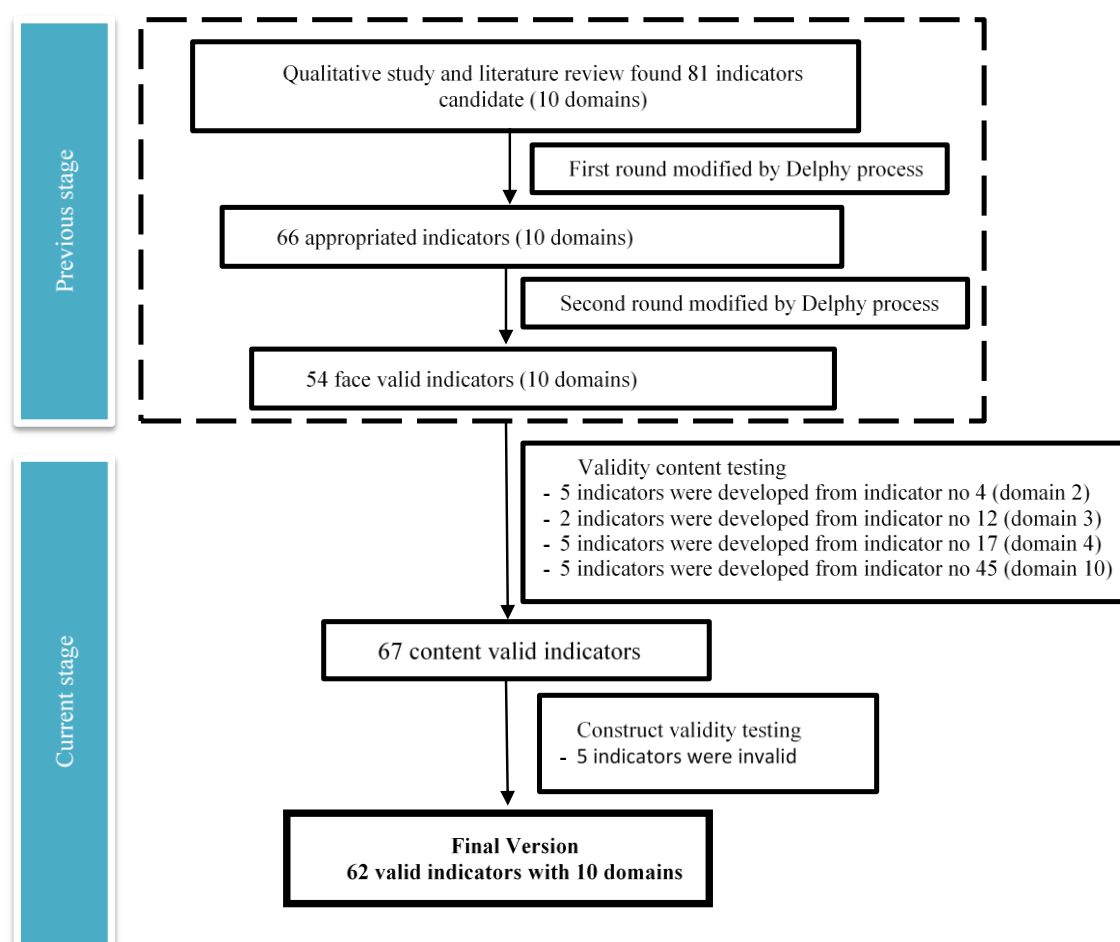


Figure 1. The process of determining quality indicators for home care in stroke patients

The research has received the feasibility letter of ethical consideration from the Research Ethics Committee of the Faculty of Medicine, Gadjah Mada University Number KE/FK/0314/EC/2017. Date of continuing review approval was on February 15, 2018. Informed has been delivered to participants, and also consent have been signed by all participant before conduct data collection.

3. RESULTS AND DISCUSSION

3.1. Content validity index

It was revealed that 142 items were developed from 67 indicators, two items were stated to have high validity, Aiken index 0.61-0.80 (points no 17 and 30), and the rest (140 items) had very high validity with Aiken Index 0.81-1.00. This means that all items are well understood by respondents or well validated.

3.2. The index of construct validity and reliability

The results of the Confirmatory Factor Analysis (CFA) for 10 domains and 67 indicators are presented in Table 1 and detailed for each indicator is showed in Figure 2.

Table 1. Loading factor scores on confirmatory factor analysis test

Indicator number	Loading factor Domains									
	1	2	3	4	5	6	7	8	9	10
1	0.98	0.76	0.75	0.73	0.50	0.69	0.98	0.99	0.82	0.42
2	0.55	0.77	0.81	0.07*	0.80	0.78	0.58		0.56	0.83
3		0.89	0.73	0.63	0.55	0.38			-0.02*	0.80
4		0.82		0.73	0.80	0.51			0.96	0.86
5		0.87		0.61		0.44			0.66	0.77
6		0.35		0.62		0.85				0.82
7		0.55		0.51		0.46				0.83
8		0.48		0.54		0.50				0.13*
9		0.73				0.45				0.76
10		0.69				0.26*				0.49
11		-0.00*				0.71				0.79
12		0.31				0.82				0.73
13		0.31				0.84				0.59
14						0.82				0.52
15						0.87				
CR	0.87	0.88	0.91	0.94	0.91	0.97	0.88	0.99	0.92	0.97
Chi-square	1.68	72.73	0.00	15.83	1.42	99.08	1.93	1.52	5.79	77.24
df	1	56	0	10	1	78	1	1	4	61
RMSEA	0.075	0.05	0.000	0.078	0.046	0.037	0.221	0.042	0.042	0.032
P value	0.195	0.066	1.00	0.105	0.234	0.05391	0.165	0.314	0.216	0.078

Domains 1) personal; 2) document; 3) professional development; 4) supporting facilities; 5) administration activities; 6) health staff, patient and family interaction; 7) physical well being; 8) self actualization; 9) psychological state; 10) family self-independence and coping.

* invalid (minimum loading factor is 0.3)

CR: construct reliability. RMSEA: root mean square error of approximation

Based on Table 1, there are five invalid indicators because the loading factor value is < 0.3. These five invalid indicators are: i) Availability of an adverse event reporting form; ii) Availability of discussion room; iii) Regular doctor reviews of the patient medication; iv) Realistic motivation of patients; v) Family preparedness for patients' dietary restrictions.

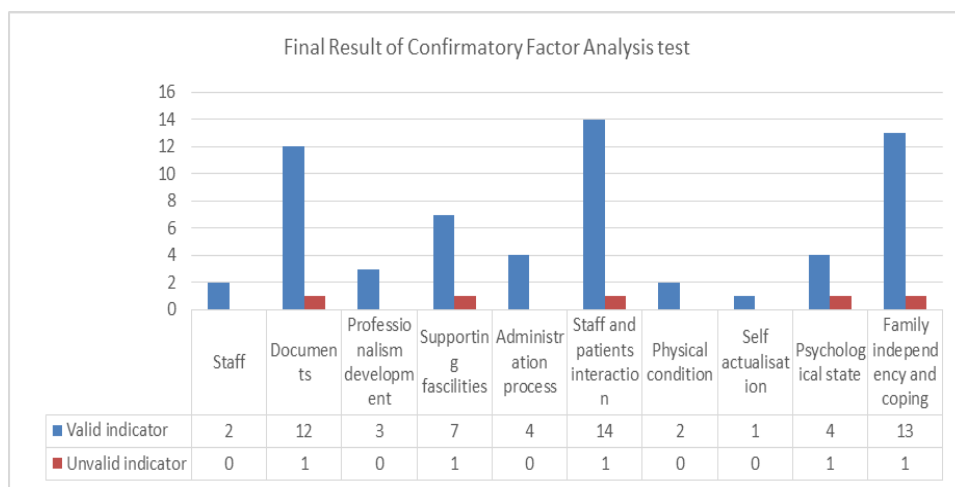


Figure 2. Final result of confirmatory factor analysis test

3.3. Discussions

Based on the construct validity and reliability score, the final form of the indicator of the quality of home care in stroke patients is shown.

3.3.1. Personal domain

The results in this study are in line with the guidelines of the National Institute of Neurological Disorders and Stroke that post-stroke rehabilitation programs must involve health workers consisting of doctors, rehabilitation nurses, physical therapists, occupational therapists, recreational therapists, speech therapists, vocational therapists and psychologists according to each of their roles respectively [15]. Specialists do not really have to be involved in home care services. The neurologist is more appropriate to be the leader of the acute stroke care team at the hospital. but can also be involved as a long-term rehabilitation team [15]. Collaboration in caring stroke patient with interdisciplinary approach is key element for improving quality stroke services [16].

3.3.2. Document domain

The indicators of availability of adverse event reporting forms of treatments performed are declared invalid. This finding contrasts with a retrospective cohort study in Canada that aims to detect adverse events in home care settings with The Resident Assessment Instrument for Home care (RAI-HC) [17]. Doran study showed that the instrument for assessing home care quality should contain indicators that are able to detect adverse events in home care services.

3.3.3. Domain of professional development

Home care officers must be skill full at preparing themselves to become professional officers through training. Research by Kosteniuk *et al.* stated that most of the home care officers in charge who full fill the daily needs of patients, are mostly untrained [18]. Thus the provision of education in the form of workshops, case presentations, seminars and lectures (face to face) is highly demanded by home care service providers [18].

3.3.4 Domain of supporting facilities

Weight scales and discussion rooms are important supporting facilities. But the limitation of space and time to gather teams makes the discussion be done at any time and in any ways possible for examples through social media and WhatsApp group. Weight scales are included as one of the heavy equipment to carry and their use was difficult especially for patients who were bedridden. The results of this study contrast with the other research that include weight loss as one indicator of home care [11], [18], [19]. Weight loss data would be obtained for nutritional assessment for stroke patient.

3.3.5. Administrative process domain

Administrative activities focus on documenting the patient's condition or an action. Another study revealed the importance of the documentation process which mentions the importance of documenting patients when transferred to sub-acute care [20]. Officers who were negligent in documenting the condition of patients at discharge and negligent in following up on the condition of patients were very strongly associated with the incidence of rehospitalization and/or death of stroke patients within 30 days after discharge (OR: 1.51. 95% CI 1.07-2.12) [20]. This shows that the indicator of administrative activities is indeed worthy of being one of the indicators for assessing the quality of home care.

3.3.6. Domain of health staff interaction with patients and families

Health professionals and patient and family interaction is important because officers in primary services and community health services can provide access to services in the community, facilitate transfer to specialists when new problems arise, provide training, and identify and provide health needs to caregivers [21]. This interaction is needed to foster a trusting relationship as well as a form of patient and family involvement in home care (patient and family centred care), in order to avoid the occurrence of marginalization [21], [22]. Marginalization is the feeling of being marginalized by stroke patients and caregivers because they feel unfulfilled promises and frustrated by limitations or late access and a lack of proactive follow-up from health workers after a stroke.

3.3.7. Domain of physical condition

Activities of daily living (ADL) ability and complications free are as an indicator of home care services [11], [18]. The importance of the ADL independence indicator can be seen from the expert's rating

and the high score of loading factors. This condition is in accordance with Maslow's theory that physiological needs as the human basic needs are a top priority that must be met [23].

Besides attributed to human nature, the significance of the ADL independence indicators is also influenced by culture; especially Javanese culture (Indonesia). In terms of Javanese culture, which influences this finding, the Javanese consider health based on someone's ability to work [24]. Thus, the Javanese interpret the stroke patients as disabled people because of their physical weakness and extreme paralysis making them unable to work independently. Hence, recovery of the physical condition from disability becomes the most prioritized goal health care of the patients [25].

3.3.8. Self-actualization domain

The domain of self-actualization is closely related to the meaning of family for patients. Family for the Javanese people and Indonesians is perceived as a place to foster a sense of mutual assistance spontaneously. Therefore family members must trust each other and should never leave each other [26]. This perception has implications on health aspect. Thus if a family member is sick other family members and the community will help each other to ease the burden of the sick person. Self-actualization is the highest need in humans [23]. Thus when patients can get together with children and grandchildren, it is expected that they will revive their life spirit and restore the role of patients in the household. To achieve this goal, health workers can give advice to family members to spend as much time as possible to accompany the patients.

3.3.9. Psychological state domain

The domain of psychological conditions is very important aspect in stroke patients because stroke patients often experience depression, mood disorders and social isolation [19], [27]–[29]. This is supported by another studies that include negative moods as an indicator of the quality of home care [11], [18], [19]. In addition, it is clearly explained that depression, anxiety and sadness are part of psychological indicators in the minimum data set-home care (MDS-HC) instrument.

3.3.10. Family independence and coping domain

The domain of family independence and coping implies that family duties when caring for patients are too heavy. Hence, they must balance between efforts/coping strategies to reduce the burden of the task. Research on 205 caregivers confirmed that the family's heavy duty often causes family distress due to physical fatigue because of insufficient care and sleep time [30]. Psychologically, the family often complains about the condition of patients who do not recover immediately that leads to pessimism and despair. Socially, the family's task to take care of the patient results in a lack of time to gather with friends or neighbours. Making them unable to get involved in social activities, and leads to economic problems.

One form of family coping to reduce family distress is by telling stories or counselling with health workers about their problems [31]. Families of home care patients really need health education from officers [32]. Health education would reduce family stress [33] because it could improve self-control and family competency/knowledge in home care and control depression [34].

4. CONCLUSION

Home care as a form of advanced health services for stroke patients requires indicators to ascertain the quality of services provided. Indicators of good health must be examined for validity. This study successfully proved the validity of 62 indicators of quality home care for stroke a patient who is divided into 10 domains, namely personal, document, professional development, supporting facilities, administrative process, health staff interaction with patients and families, physical condition, self-actualization, psychological state and family independence and coping.

The indicators of the quality of home care which are developed include the physical and psychological aspects of patients and their families, the management of home care providers involving the officers also the completeness of administrative services. The achievement of these indicators is expected to contribute for improving the quality of home care services for stroke patients. Further research is needed to pilot project this indicator in a larger area of home care services.

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