The Validity of the Abbey Pain Scale for Assessing Pain in Stroke Patient

by Hilda Hilda

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ABSTRACT

Background: Apasia and dementia are two of the post-symptoms of stroke disease that cause patients to experience verbal communication disorders, thus requiring nurses to be more sensitive in assessing pain that is felt.

Objective: The purpose of this research is to test the validity of the *Abbey Pain Scale* in assessing pain in stroke patients who are unable to express pain verbally.

Methods: This research is a quantitative study using analytic observational research methods. This study used a consecutive sampling technique with the calculation of sample size based on population proportions. Research on one subject was repeated three times at rest and during pain procedures using the *Abbey Pain Scale*. Data were analyzed using the *Pearson* and *Spearman* test.

Results: There was a significant correlation ($p = 0.001$) with a positive and strong correlation coefficient between the *Abbey* score and the pulse rate (correlation $r = 0.699$). Then there was a significant correlation ($p < 0.001$) with a positive and strong correlation coefficient between *Abbey* scores and mean arterial pressure (correlation $r = 0.911$). In addition, the *Abbey Pain Scale* score showed a significant change between the *Abbey* score at rest and during the pain procedure, both in the morning, afternoon and evening team nurses ($p < 0.05$).

Conclusion: The *Abbey Pain Scale* is a valid measurement tool in assessing pain in stroke patients.

Keywords: Abbey, Assessment, Pain, Predictor, Stroke.

BACKGROUND

Stroke is one of the diseases that are included in critical illness so that a person experiences a stroke mostly in special stroke care rooms such as critical care rooms. In a study, it has been explained that pain is one of the most common symptoms in patients who experience critical and chronic illness in a variety of unique ways (Puntillo, Smith, Arai, & Stotts, 2008). It is estimated that 71% of patients will still experience the experiences they had during their treatment. Research conducted by Klein, Dumpe, Katz, & Bena (2010) stated that from the results of interviews with 24 post-treatment patients in intensive care, 63% of these patients stated that during treatment in the intensive care unit they felt moderate to severe pain but the pain management given to them is still not satisfying.

Aphasia and dementia are the results of a stroke, these conditions cause post-stroke patients to have difficulty in communicating. Thus, it will automatically help patients to verbally communicate about how they feel (Smith, Bottemiller, Flemming, Michael Cutrer, & Strand, 2013). This also causes errors in making errors in the patient's pain scale which has an impact on errors in administering pain medication (Kehayia et al., 1997).

Various obstacles from assessing pain in stroke patients are not the reasons that they are not entitled to an accurate assessment. A behavior-based pain measurement scale is an option that can be used to assess pain in patients who are unable to express the pain they feel (Pasero & McCaffery, 2005).

One of the scales that has been through psychometric testing and can be used to assess pain in stroke patients with limited verbal communication is the *Abbey* Pain Scale (Abbey et al., 2004). *Abbey Pain Scale* is a measuring tool developed in Australia which was initially only used to assess the level of pain during end-stage of dementia. But nowadays it has been developed to measure the pain in stroke patients (Nesbitt, Moxham, ramadurai, & Williams, 2015). The *Abbey Pain Scale* consists of six parts, namely vocalizations, facial expressions, changes in body language, changes in behavior, physiological changes, and physical changes which only take approximately one minute to assess the level of pain (Abbey et al., 2004).

OBJECTIVE

The purpose of this study was to test the validity of the *Abbey Pain Scale* in assessing pain in patients with stroke.

METHODS

This research is quantitative research using the analytical observational research method. The study on one subject was repeated three times at rest and during pain procedures using the *Abbey Pain Scale*. The population in this study was the number of stroke patients at A. W. Sjahranie Hospital Samarinda during 2017 which was 607 people with an average population of 51 people per month and the average number of stroke patients who experienced verbal communication deficits amounted to 16 people. This study used a consecutive sampling technique with the calculation of the sample size based on the proportion of the population so that the number of people obtained was 18 people.

Data collection was carried out on October 11 – November 18 2018 at the Stroke Center of the Abdul Wahab Sjahranie Hospital, Samarinda. The researcher chose data collectors (enumerators) from the implementing nurses at the Stroke Center who were willing to help collecting the respondents' daily observation data, then train and do perception equations in the use of observation sheets and provide instructions based on their duties in this study.

This study used the *Abbey Pain Scale* which consists of 6 parts, namely vocalizations, facial expressions, changes in body language, physiological changes and physical changes. The total score obtained is 0-18. The assessment is carried out 3 times a day at rest and during pain procedures including age, gender, how many strokes, length of treatment days during the initial assessment, medical diagnosis, heart rate, blood pressure, Mean Arterial Pressure (MAP), and *Abbey Pain Scale* score.

Researchers identified patients who participate as respondents by taking into account the specified sample criteria. Then explain the objectives and procedures of the study, possible risks and inconveniences, benefits, the right to refuse to participate without affecting the treatment that will be obtained and the guarantee of confidentiality, before giving informed consent. The data that has been collected was analyzed by looking at the frequency distribution, including age, gender, medical diagnosis, ethnicity, time of attack, length of treatment, physiological indicator values, and *Abbey* scores. Bivariate analysis used *Pearson* and *Spearman* tests to determine the correlation of *Abbey* score with pulse rate and mean arterial pressure. While changes in *Abbey* scores at rest and during pain procedures using the *Wilcoxon* and *Paired T-Test*.

RESULTS

Respondents who became the sample amounted to 18 people. There was no respondent who dropped out from this study. Tables 1 and 2 show the frequency distribution of the respondents' characteristics.

Table 1. Frequency Distribution of Respondents by Age, Attacks, and Length of Treatment

Variable	Mean	St Dev
Age	61,78	9,309
Attack to	1,67	1,029
Days of treatment	3,44	3,014

Based on table 1, the average respondent in this study was > 60 years old with an average attack of more than 1 attack and a length of treatment of more than 3 days.

Table 2. Frequency Distribution of Respondents by Gender, Medical Diagnosis, and Ethnicity

Variable	Frequency	Percentage (%)
Gender		
Man	10	55,6
Woman	8	44,4
Medical Diagnosis		
Bleeding stroke	7	38,9
Non-bleeding stroke	11	61,1

Table 2 shows that the sexes of male and female respondents are almost the same, namely 55.6% and 44.44%, with medical diagnoses mostly non-hemorrhagic stroke, which is 61.1%.

Table 3. Distribution of Respondents Physiological Indicator Values *(n = 18)*

Variable	Rest	Painful Procedure
Pulse rate	$105,68 \pm 17,99$	$115,42 \pm 18,14$
MAP	$105,97 \pm 17,71$	$109,84 \pm 16,54$

In table 3, it can be seen that after being given pain stimulation the average pulse rate increased from 105.68 to 115.42 while the MAP value increased from 105.97 to 109.84.

Table 4. Distribution of *Abbey* Scores *(n = 18)*

Time	Rest	Painful Procedure
Morning shift	5,11 ± 3,341	5,44 ± 3,258
Afternoon shift	5,89 ± 2,805	6,39 ± 2,682
Night shift	4,78 ± 2,102	5,33 ± 2,425

Then table 4 shows that after being given pain stimulation, *Abbey's* average score increased from 4.78 - 5.89 at rest to 5.33 - 6.39 during painful procedures.

From the results of the *Pearson* test, *p-value* = 0.001 and correlation coefficient *r* = 0.699. Thus there is a significant correlation with a positive and strong correlation coefficient between *Abbey*'s score and pulse rate. Then from the *Spearman* test results obtained *p-value* <0.001 and correlation coefficient *r* = 0.911. Thus there is a significant correlation with a positive and strong correlation coefficient between *Abbey*'s score and mean arterial pressure.

Table 5. *Abbey* Scores at Rest and During Painful Procedures *(n = 18)*

Time	Rest	Painful Procedure	*p-value*
Morning shift	5,11 ± 3,341	5,44 ± 3,258	< 0,001*
Afternoon shift	5,89 ± 2,805	6,39 ± 2,682	0,001*
Night shift	4,78 ± 2,102	5,33 ± 2,425	0,046**

*Wilcoxon Test **Paired T-Test*

In table 5, changes in *Abbey* scores show a significant difference between *Abbey* scores at rest and during painful procedures, both nurses on the morning, afternoon, and evening shifts.

DISCUSSION

Most of the respondents in this study were male. This is because men are less likely to control their blood pressure by going to the Integrated Healthcare Center or the Public Health Center regularly. As a result, they are more likely to have a stroke than women. Men also have a smoking habit which is one of the risk factors for stroke. This is following Burhanuddin (2012) where men have a 1.29 times greater risk of having a stroke than women. This is because most men have the habit of smoking. The nicotine contained in cigarettes causes the elasticity of blood vessels to decrease, resulting in blood vessel stiffness. In addition, nicotine also causes the thickening of blood vessels so that the blood vessels become narrow and stiff. Furthermore, this will trigger a stroke (Farida & Amalia, 2009).

The results of this study indicate that the age average of the respondents is > 60 years. This is following Maas (2011) which stated that in the elderly patients, blood vessels can be disrupted due to some conditions that obstruct the lumen of the blood vessels, causing vasoconstriction and increasing mechanical pressure. The obstruction of arterial blood flow is often caused by atherosclerosis, which is characterized by plaque buildup, which reduces blood flow to the brain. Furthermore, this will trigger a stroke.

In this study, the average stroke attack in respondents was more than 1 time. According to Fryer, Luker, Mcdonnell, & Hillier (2013), stroke recurrence can occur due to unhealthy lifestyle factors. In addition, other risk factors that also influence are history of hypertension, Diabetes Mellitus, heart disorders, and medication irregularities.

Days of care for stroke patients in this study showed an average of > 3 days. The length of stay in stroke patients can be influenced by several factors such as age, gender, degree of hypertension, hypercholesterolemia, high blood sugar, awareness when arriving at the hospital during the treatment period (Darmapadmi, 2017).

The number of stroke patients who became respondents at the Stroke Center was mostly came from non-hemorrhagic stroke patients, namely 11 people (61.1%) while the rest came from bleeding strokes consisted of 7 people (38.9%). This is in line with research conducted at the Solok Selatan District Hospital that stated the number of non-hemorrhagic stroke cases was higher (61.46%) than bleeding stroke cases (38.54%).

Stroke patients can suffer from pain from a variety of sources including post-central stroke pain, headaches, shoulder pain due to subluxation, as well as muscle contractures. Stroke patients may also experience hypertonia and spasticity and contractures of muscles and joints, all of which can cause pain. When stroke patients with communication difficulties are unable to express their pain, this can cause their pain to be unmeasured and properly recorded, so that they do not receive adequate pain medication.

The results showed that the *Abbey Pain Scale* is a measuring tool with a good validity value when used in stroke patients. This validity is indicated by the existence of a significant correlation with a positive and strong correlation coefficient between *Abbey* score and pulse rate with Pearson's test obtained *p-value* = 0.001 and correlation coefficient r = 0.699. Then from the Spearman test results obtained *p-value* < 0.001 and correlation coefficient r = 0.911 which indicates a significant correlation with a positive and strong correlation coefficient between *Abbey* score and mean arterial pressure.

The *Abbey Pain Scale* is the scale that is best used as part of an overall pain management plan (Collett, O'Mahoney, Schofield, Closs, & Potter, 2007). This scale is designed to aid in pain assessment in patients who are unable to articulate their needs clearly.

The results of Suindrayasa (2017) on "Conformity Between Pain Scale Assessment Using Numeric Rating Scale and *Abbey Pain Scale* in Surgical Patients at Surgical IRD Sanglah Hospital Denpasar" showed that there was no congruence between pain scales using the Numeric Rating Scale subjective pain scale and *Abbey*'s objective pain scale. Pain Scale is caused by various factors including the level of understanding of nurses about objectivity in each individual at the time of examination of the pain scale, differences in pain thresholds possessed by each individual, and differences in pain characteristics.

Researchers assume this is because the *Abbey Pain Scale* has 6 assessment components, including vocalizations, facial expressions, changes in body language, changes in behavior, physiological changes, and physical changes, most of which are not found on other observational pain scales.

Research by Nesbitt et al. (2015) stated that by applying observational pain measurements such as the *Abbey Pain Scale*, pain in patients with communication difficulties can be assessed and recorded adequately. Initially, 30% of patients in the acute stroke ward were noted to have no pain and 15% of patients received inadequate pain medication. After using the *Abbey Pain Scale*, improvement was demonstrated in such a way that only 5% of the patients recorded had no pain and all patients received adequate pain medication.

CONCLUSION
Based on the results of the study, it can be concluded that the *Abbey Pain Scale* is a valid measuring tool for assessing pain in stroke patients.

It is recommended for the health workers, both nurses, and doctors to use the *Abbey Pain Scale* for assessing pain in stroke patients. Further research is needed to compare the validity of the *Abbey Pain Scale* from other observational pain measurement scales.

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