Validity and Reliability of Dementia Knowledge Assessment Scale and Dementia Attitude Scale in the Indonesian Language among Nursing Students

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Abstract

BACKGROUND: The population of persons with dementia (PwD) in Indonesia is increasing. As future nurses, it is important to evaluate the knowledge and attitudes of nursing students because they can affect the quality of health services for PwD. However, no instrument is available in the Indonesian language through a good, valid, and reliable translation process.

AIM: The aim is to report the translational process and determine the validity and reliability of the Indonesian dementia knowledge assessment scale (DKAS) and dementia attitude scale (DAS) questionnaires in nursing students.

METHODS: A quantitative cross-sectional study was conducted involving 486 nursing students from two universities in Yogyakarta, Indonesia. The Brislin method was used to translate DKAS and DAS, then continued with content (involved four experts using items-content validity index [I-CVI]), face, and construct validity tests, as well as reliability tests using Cronbach’s alpha.

RESULTS: The I-CVI results were 1.00 for DKAS and 0.98 for DAS, demonstrating a good construct validity index. In addition, the reliability testing had good results, whereas Cronbach’s alpha of the DKAS was 0.713, while DAS was 0.779.

CONCLUSION: DKAS and DAS in the Indonesian language are considered valid and reliable to measure nursing student’s knowledge and attitudes toward PwD.

Introduction

Following the trend of the increasing aging population in the world, the number of people with dementia is continually increasing every year. Based on data from the World Health Organization [1], the increase in cases reached more than 50 million people, and it is estimated that this number will continue to increase by more than 9 million cases every year. Most persons with dementia (PwD) are in low- and middle-income countries [2]. As one of the developing countries, the number of PwD in Indonesia has reached more than 1 million persons in 2015 [3]. This is in line with a recent report [1] indicating that most PwD live in low- and middle-income countries, where these cases are predicted to increase in the future.

Yogyakarta is a province with the highest proportion of elderly population in Indonesia [4]. Furthermore, based on survey research, almost 2 out of 10 people aged over 65 years in Yogyakarta have dementia [5]. Although this is in line with global trends, PwD can become increasingly vulnerable, not only because of having dementia but also because of the stigma toward PwD and their caregivers.

Dementia is a syndrome characterized by decreased memory and cognitive function. This cognitive disorder results in disturbances in the patient’s quality of life, such as obstacles in daily activities, work, and social interactions. Limitations in carrying out daily activities result in patients requiring assistance from caregivers. This poses a challenge to caregivers and families of PwD so sufficient knowledge and attitudes are needed in providing care to these patients.

Increased knowledge and positive attitudes concerning PwD will improve their quality of life and patient comfort. Several studies have reported that...
many factors and community characteristics influence knowledge and attitudes toward patients with dementia. Although these factors are not entirely clear, they are generally influenced by cultural uniqueness. However, a person may not have sufficient knowledge and a good attitude to properly treat patients with dementia.

Nurses are the health care professional who has a significant role in caring for PwD. Nurses spent more time with PwD than any other health-care provider. Thus, it is very important for nurses to be knowledgeable about dementia because the information is very effective in improving nursing care and interventions. Knowledge and attitudes towards PwD are interesting aspects to research, especially in order to develop programs to increase knowledge and attitudes for nursing students. Nursing students are the future nurse in communities and hospitals.

Research on health science students' knowledge and attitudes toward PwD has been conducted in various countries, namely the United Kingdom [6], the United States [7], and India [8]. To measure attitudes, a validated measuring scale is needed. As far as the research literature is concerned, Indonesian researchers do not yet have a validated questionnaire for use in measuring the knowledge and attitudes in caring for PwD. The dementia knowledge assessment scale (DKAS) [9] and the Dementia Attitudes Scale (DAS) [10] are instruments that can be used to measure knowledge and attitudes in caring for patients with dementia. They are widely used, relatively valid, and reliable and can measure knowledge and attitudes toward dementia in general. In addition to DKAS, there are other questionnaires, such as the Alzheimer’s disease knowledge scale (ADKS) [11], Dementia Knowledge-20 (DK-20) [12], The UJA Alzheimer’s Care Scale [13], Dementia Assessment Knowledge Tool Version One (DKAT1) [14], Dementia Assessment Knowledge Tool Version Two (DKAT2) [14], but DKAS has a Cronbach’s Alpha which is higher than the others. In addition, the DKAS questionnaire is also suitable for measuring medical and health science students’ knowledge of dementia in general. The research team has obtained permission to use the DKAS questionnaire from the developers of the instrument.

Similarly, the DAS is comparable with questionnaires to measure attitudes toward dementia such as The approaches to dementia questionnaire (ADQ) [15], The General Practitioner Attitudes and Confidence Scale for Dementia (GPACS-D) [16], and Adolescent Attitudes toward Dementia Scale (A-ADS) [17]. Research on the validity of DKAS and DAS instruments has been done in several countries, such as China, Japan, Spain, Croatia, and Greece. In these various studies, DKAS and DAS remained valid and reliable, with Cronbach’s Alpha for the DKAS in the range of 0.7–0.9; whereas Cronbach’s alpha for DAS in the range of 0.7–0.8 [18], [19].

Measurements of knowledge and attitudes of nursing students towards PwD are needed to determine how the knowledge and attitude scores of nursing students towards PwD. Accordingly, the availability of a valid and reliable questionnaire to measure both is important. Based on the summary above, the DKAS and DAS questionnaires have good potential to be processed for translation and tested for validity and reliability in the Indonesian version. Moreover, there is no valid and reliable questionnaire on knowledge and attitudes toward dementia in Indonesia, which is the main reason for this research. This study aimed to translate and identify the validity and reliability of the Indonesian DKAS and DAS questionnaires in the Indonesian nursing student population.

Methods

This study used a cross-sectional design to examine the validity and reliability of the Indonesian version of DKAS and DAS instruments. This research started with the process of translating the questionnaire using the Brislin method [20]. The forward translation processes were done by two different sworn translators (T1 and T2) who worked independently. After that, three members of the research team have a meeting to reach a consensus and get 1 version of the translated Indonesian version (T1,2). The back translation process was conducted similarly to the first translation. Two independent translators translate back the instrument from Indonesian to English (T1,2 to BT1, BT2). The process of reaching a consensus was done by three members of the research team after backward translation to compare the results of back translation with the original instrument. This was conducted to make sure that the translated Indonesian version has the equivalent content with the original English version.

The validity of the two questionnaires was identified with content validity and face validity. The content validity test was conducted by four experts in geriatric nursing with a minimum qualification of a master's degree using item-content validity index (I-CVI) and scale-content validity index (S-CVI). Moreover, face validity testing was conducted on 10 students at two academic institutions. Meanwhile, the reliability of the questionnaires was identified with Cronbach’s Alpha score. In addition, the reliability of DKAS and DAS was measured using Cronbach’s Alpha.

This research was conducted on nursing students at two institutions in Yogyakarta, Indonesia. This study involved 486 respondents with the inclusion criteria of students in the academic stage of nursing science studies and willing to become research respondents voluntarily. Meanwhile, the exclusion criteria were students who were unable to attend the data collection process, which was done using the paper and pencil method.
The DKAS instrument was developed by Michael J. Annear, Christine M. Toye, Claire E. Eccleston, Frances J. McInerney, Kate-Ellen J. Elliott, Bruce K. Tranter, Thomas Hartley, and Andrew L. Robinson in 2015 [9]. The DKAS has 25 question items with four sub-scales. The four sub-scales, namely: (1) Causes and Characteristics, (2) Communication and Behavior, (3) Care Considerations, and (4) Risks and Health Promotion. The original DKAS has a Cronbach’s Alpha of 0.85, indicating an acceptable internal consistency subscale. In addition, the DKAS is very suitable to be used to measure knowledge about dementia in students [9]. The DAS was used to measure student attitudes toward PwD. The DAS was developed by Melissa L. O’Connor and Susan H. McFadden in 2010 [10]. The DAS was developed by testing caregivers, professionals, and students. The DAS has 20 items using a 5-point Likert scale ranging from “Strongly Agree = 1” to “Strongly Disagree = 5”. The DAS instrument has two factors which are labeled with “dementia knowledge” and “social comfort,” and can be used to measure dementia attitudes in students. The original DAS has a Cronbach’s Alpha range of 0.83–0.85 [10].

Data collection was done by respondents who filled out the informed consent form to indicate their consent to become research respondents. Respondents who were willing to participate in this study were given sufficient time to fill out the questionnaire package. The average time required by respondents to fill out the questionnaires was <30 min. Then, the researchers conducted a discussion and agreed to make changes to the instrument easier to understand. The respondents stated that they understood the appearance of the instrument. The results showed that the respondents stated that they understood the sentences in the instrument. On the instrument display, some respondents suggested improvements to make the instrument easier to understand in its operation. Responding to this input, the researchers conducted a discussion and agreed to make changes to the appearance of the instrument to make it easier for respondents to fill out the questionnaire.

The researchers conducted content validity by asking four geriatric experts to review the relevance of the items on the questionnaire. The researchers also asked for input related to technical errors in the preparation of items, word order (grammar), and the presence or absence of bias. Each item of the questionnaire was assessed for relevance on an ordinal scale of 1–4. A scale of 1 means “Irrelevant”; 2 means “Slightly relevant and requires very significant changes”; 3 means “Relevant but requires minor changes or modifications”; and 4 means “Very relevant”. Scales 1 and 2 are worth 0 while scales 3 and 4 are worth 1.

I-CVI is obtained by adding up the value of the level of relevance then divided by the number of experts on each item. Meanwhile, the value of the S-CVI is the average value of the I-CVI sum of all questionnaire items. The I-CVI and S-CVI scores of the Indonesian version of the DKAS were 1.00. While the I-CVI value of the DAS was in the range of 0.75–1.00 and the S-CVI of the DAS was 0.9875. The content validity test revealed that the Indonesian DKAS and DAS in the Indonesian version is valid.

Face validity testing was conducted on 10 respondents, which aimed to see the readability and appearance of the instrument. The results showed that the respondents stated that they understood the sentences in the instrument. On the instrument display, some respondents suggested improvements to make the instrument easier to understand in its operation. Responding to this input, the researchers conducted a discussion and agreed to make changes to the appearance of the instrument to make it easier for respondents to fill out the questionnaire.

The reliability of the instrument in this study was measured using Cronbach’s alpha formula. The DKAS questionnaire has Cronbach’s alpha of 0.713 and DAS had 0.779. In addition, each item in the DKAS and DAS questionnaires also has a Cronbach’s Alpha in the range of 0.691–0.715 for DKAS and 0.756–0.790 for DAS (Tables 2 and 3).

Results

This study was conducted on 486 nursing students at X and Y Universities in Yogyakarta, Indonesia. Most of the respondents (270 respondents or 55.6%) were aged 20–22 years old. Moreover, 149 (30.7%) respondents were in the 4th year batch. The description of the characteristics of the respondents is shown in Table 1.

Discussion

The instruments used in this research are DKAS and DAS. Several methods are used to ensure
that these two tools are valid and reliable in measuring knowledge and attitudes toward patients with Alzheimer’s. These two measurement tools also use the process of translation and adaptation into Indonesian. Several instruments are used to measure knowledge related to dementia, namely Alzheimer’s disease knowledge test for health care professionals [22], The ADKS [11], and knowledge in dementia [23].

In addition to knowledge, student attitudes are a measurable variable in this study. There are several instruments used to measure attitudes toward people with dementia, namely the Approach to Alzheimer’s disease questionnaire (ADQ) [24], Bryan DAS [22], attitudes to aggression scale [25], approaches to dementia questionnaire, Chinese dementia attitude scale (DAS) [26]. Attitudes toward people with dementia are measured using different instruments, but not all of them are validated.

Several aspects of the use of this instrument can be used by students, health workers, and the community. DKAS is a new dementia-related knowledge tool with good validity and reliability and has undergone translation and back-translation processes in previous studies. In addition, this instrument proved to be more sensitive than previous instruments [27].

The DAS contains 20 items on a Likert scale ranging from “strongly agree” to “strongly disagree” [10]. This instrument was used in this study because the content is appropriate and is a standard instrument with good psychometric properties. and go through the structure mapping process.
## Table 3: The results of the validity and reliability testing of items on the Indonesian DAS instrument (n = 486)

<table>
<thead>
<tr>
<th>Item number</th>
<th>Questions items</th>
<th>Cronbach’s alpha</th>
<th>Interpretation of validity</th>
<th>Interpretation of reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Working with people with Alzheimer’s disease and other dementias is rewarding.</td>
<td>0.307</td>
<td>Valid</td>
<td>Cronbach’s alpha</td>
</tr>
<tr>
<td>2</td>
<td>I fear people with Alzheimer’s disease and other dementias.</td>
<td>0.442</td>
<td>Valid</td>
<td>Reliable</td>
</tr>
<tr>
<td>3</td>
<td>People with Alzheimer’s disease and other dementias can be creative.</td>
<td>0.480</td>
<td>Valid</td>
<td>Reliable</td>
</tr>
<tr>
<td>4</td>
<td>I feel confident around people with Alzheimer’s disease and other dementias.</td>
<td>0.495</td>
<td>Valid</td>
<td>Reliable</td>
</tr>
<tr>
<td>5</td>
<td>I feel comfortable touching people with Alzheimer’s disease and other dementias.</td>
<td>0.627</td>
<td>Valid</td>
<td>Reliable</td>
</tr>
<tr>
<td>6</td>
<td>Everyone with Alzheimer’s disease and other dementias has different needs.</td>
<td>0.464</td>
<td>Valid</td>
<td>0.778</td>
</tr>
<tr>
<td>7</td>
<td>I’m not very familiar with Alzheimer’s disease and other dementias.</td>
<td>0.522</td>
<td>Valid</td>
<td>0.788</td>
</tr>
<tr>
<td>8</td>
<td>I would avoid people with Alzheimer’s disease and other dementias who are anxious.</td>
<td>0.459</td>
<td>Valid</td>
<td>0.769</td>
</tr>
<tr>
<td>9</td>
<td>I would avoid people with Alzheimer’s disease and other dementias in close contact with them.</td>
<td>0.558</td>
<td>Valid</td>
<td>0.765</td>
</tr>
<tr>
<td>10</td>
<td>Knowing the history of people with Alzheimer’s disease and other dementias is very important.</td>
<td>0.498</td>
<td>Valid</td>
<td>0.767</td>
</tr>
<tr>
<td>11</td>
<td>It is possible to enjoy interacting with people with Alzheimer’s disease and other dementias.</td>
<td>0.643</td>
<td>Valid</td>
<td>0.761</td>
</tr>
<tr>
<td>12</td>
<td>I feel frustrated because I don’t know how to help people with Alzheimer’s disease and other dementias.</td>
<td>0.673</td>
<td>Valid</td>
<td>0.780</td>
</tr>
<tr>
<td>13</td>
<td>I can’t imagine having to take care of people with Alzheimer’s disease and other dementias.</td>
<td>0.670</td>
<td>Valid</td>
<td>0.775</td>
</tr>
<tr>
<td>14</td>
<td>I am amazed at the ability of people with Alzheimer’s disease and other dementias to cope.</td>
<td>0.420</td>
<td>Valid</td>
<td>0.772</td>
</tr>
<tr>
<td>15</td>
<td>We can do a lot to improve the lives of people with Alzheimer’s disease and other dementias.</td>
<td>0.534</td>
<td>Valid</td>
<td>0.764</td>
</tr>
<tr>
<td>16</td>
<td>Difficult behavior, perhaps a form of communication in people with Alzheimer’s disease and other dementias.</td>
<td>0.577</td>
<td>Valid</td>
<td>0.790</td>
</tr>
</tbody>
</table>

The Indonesian DKAS and DAS instruments have good validity and reliability values. The DKAS instrument also has good validity when translated into Chinese, Japanese, and Spanish. The DAS instrument in Chinese has a Cronbach alpha of 0.93 [28]; in Japanese, it has a Cronbach’s alpha of 0.79 [27] and in Spanish, it has a Cronbach’s alpha of 0.89 [27].

The reliability of the Indonesian DKAS and DAS were conducted using Cronbach’s Alpha. The DKAS questionnaire has a Cronbach’s Alpha of 0.713, while the DAS questionnaire has a Cronbach’s Alpha of 0.779, which means it has an acceptable Cronbach’s Alpha value if the results is >0.60 [29].

Meanwhile, the DAS instrument was also translated into several languages, such as Croatian, Turkish, and Greek. The reliability test value using Cronbach Alpha showed a good score of 0.847 in Croatian [19], 0.84 in Turkish [30], and 0.74 in Greek [18].

This suggests that the DKAS and DAS are research tools with well-proven internal consistency and are suitable for measuring knowledge and attitudes to assess understanding of dementia and developing effective educational programs in the care of dementia patients.

**Conclusion**

DKAS Indonesia is valid and reliable. In addition, all items in the DKAS questionnaire indicate...
that this questionnaire can be considered reliable and valid. The Indonesian DKAS and DAS can be used to assess nursing students’ knowledge and attitudes toward PwD.

References

PMid:22902979
PMid:23182308
PMid:28569960
PMid:26503020
PMid:19363018
PMid:23947900
PMid:30832618
PMid:24339059
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PMid:29851166
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PMid:19175823
PMid:29241520
PMid:34666713

PMid:33971836

PMid:33971836