Care dependency: testing the German version of the care dependency scale in nursing homes and on geriatric wards

Christa Lohrmann¹ RN MA PhD candidate, Ate Dijkstra² RN MEd PhD and Theo Dassen¹ RN Dr Professor FEANS

¹PhD candidate, Department of Nursing Science, Centre for the Humanities and Health Sciences, Humboldt University of Berlin, Berlin, Germany and ²Northern Centre for Healthcare Research, University of Groningen, Groningen, the Netherlands

Scand J Caring Sci; 2003; 17; 51–56

Care dependency: testing the German version of the Care Dependency Scale in nursing homes and on geriatric wards

The purpose of this study was the psychometric evaluation of the German version of the dependency scale in nursing homes and on geriatric wards. The 15-item scale was originally developed in the Netherlands for assessing the care dependency of demented and mentally handicapped patients. Data of 81 nursing home residents and of 115 geriatric patients were collected. Residents and patients were assessed several times by professionals and nonprofessionals. Reliability was determined by Cronbach’s α, showing very good results with values of 0.94 and 0.98. Inter-rater and intrarater reliability show moderate to substantial Kappa values. Criterion validity was examined by comparing the data of the scale with the German nursing personal regulation and the German statutory insurance. The results show that the scores of the Care Dependency Scale correlate to the scores of the two classifications. In general, the German version of the scale can be recommended for use in nursing homes and on geriatric wards.

Keywords: care dependency, geriatric patient, nursing home, psychometric study, reliability, validity.

Submitted 5 November 2001, Accepted 12 September 2002

Introduction

One of the greatest problems of old age is dependency. Chronic illnesses, sensory deficits, deterioration of the physical and psychological status may cause dependency (1). Care dependency is a condition which anyone can contract through illness or disability. Care dependency can be a temporary, long-term or permanent state. However, care dependency is particularly associated with the care of older people. At present, it is estimated that 3% of the total population or approximately nine million people in Europe are totally care-dependent (2), and this is expected to increase in the future.

Dependency has many faces: physical, mental, emotional, cognitive, social, economic or environmental. For nursing the following theoretical definition of care dependency is offered by Dijkstra et al. (3): ‘nursing care dependency is a process in which the professional offers support to a patient whose self-care abilities have decreased and whose care demands make him/her to a certain degree dependent, with the aim of restoring this patient’s independence in performing self-care’.

If dependency manifests itself in financial, emotional, or physical terms then it frequently leads to life in a nursing home. The most powerful predictors for admission to a nursing home are older age and poorer function (4), such as impaired physical mobility. One of the greatest fears of the elderly is the prospect of having to live in a nursing home and be dependent on others (1).

Perceived or actual dependency can even lead to some people wishing for premature death (5). Qualitatively good care based on patient needs requires institutions and nursing professionals who promote independence and thereby improve the quality of life of home residents or patients in hospitals.

Ignoring independence means promoting dependency which possibly leads to a decline in the use of the abilities of home inhabitants and to subsequent resignation or depression (1).

Studies have shown that dependent behaviour in patients and nursing home residents is supported and promoted by nurses; and on the other hand independent behaviour is often ignored and is not supported (6–8).
Adequate and professional care must start with the correct assessment of patients at the beginning of the nursing process. As Hogston (9) mentioned, the essence of nursing care is underpinned by the individual assessment of the patient’s needs and therefore the quality of care is determined by the knowledge and skills of the nurse’s assessment.

‘...increased emphasis needs to be placed on valid and reliable instruments for clinical use. Measurement is an intrinsic part of the clinical decision making process. Especially important is the availability of precise assessment tools that provide the data needed for making diagnoses, determining the appropriateness of interventions, and evaluating outcomes (10, p. 121). A valid and reliable instrument for the assessment of care dependency was developed in the Netherlands in 1996 for demented and mentally handicapped people and psychometrically tested in various European countries (3). Therefore, testing a German version is an obvious extension of this work.

The purpose of this study is the psychometric evaluation of the Care Dependency Scale in nursing homes and geriatric wards in Germany. The research question is: Is the German version of the Care Dependency Scale a reliable and valid instrument to assess the degree of care dependency of residents in nursing homes as well as patients on geriatric wards in general hospitals?

The instrument

The development of the original scale started with the operationalization of the concept of care dependency. Henderson’s framework provides the basis to specifying the variable aspects of the concept of nursing care dependency. Henderson’s human needs were translated into nursing care dependency items (3). Content validity was established by experts in a Delphi survey. By this survey it was determined whether the items, the item descriptions, and item criteria represent the content of nursing care dependency in an adequate way (3). Various studies have focused on the aspects of psychometric properties: reliability, construct validity, criterion-related validity as well as international psychometric testing of the scale. The basis of the instrument is Virginia Henderson’s 14 human needs with the item ‘communication’ added. The 15-item scale measures the care dependency of the following needs: eating and drinking, continence, body posture, mobility, day and night pattern, getting dressed and undressed, body temperature, hygiene, avoidance of danger, communication, contact with others, sense of rules and values, daily activities, recreational activities and learning ability. Each item has a description and five criteria. Nurses have to select one of the criteria out of the five (see Fig. 1).

Essentially, this means that an assessment of care dependency is carried out from the viewpoint of the professionals.

Accordingly, values between 15 and 75 points can be obtained, i.e. the smaller the value the more care-dependent is the patient.

The scale was tested in various European countries (i.e. Canada, Italy, Norway, and Finland, Spain are in process) according to this scheme in order to allow the status of care dependency of patients to be compared internationally in the same settings. The scale also guarantees standard use of the instrument in Europe and thus contributes to a uniform nursing language.

Method

The Dutch version (original version) was translated into German by several independent persons and then compared. A back translation followed (11). Differences were discussed with the developer of the original scale.

<table>
<thead>
<tr>
<th>Eating and drinking</th>
<th>The extent to which the resident is able to satisfy his/her need for food and drink unaided</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Resident is unable to take food and drink unaided</td>
</tr>
<tr>
<td>2</td>
<td>Resident is unable to prepare food and drink unaided; resident is able to put food and drink into his/her mouth unaided</td>
</tr>
<tr>
<td>3</td>
<td>Resident is able to prepare and put food and drink into his/her mouth</td>
</tr>
<tr>
<td>4</td>
<td>Resident is able to eat and drink unaided with some supervision</td>
</tr>
<tr>
<td>5</td>
<td>Resident is able to prepare meals and to satisfy his/her need for food and drink unaided</td>
</tr>
</tbody>
</table>

Figure 1: Example of one item of the Care Dependency Scale: eating and drinking.

© 2003 Nordic College of Caring Sciences, Scand J Caring Sci
Sample

Data collection took place on various wards in different nursing homes which had agreed to participate in the study after an arbitrary personal establishment of contact. In addition, patients in geriatric wards in one hospital in Berlin, Germany, were assessed using the instrument. In the nursing homes, professional nurses and nonprofessionals who were involved in the daily care of the patients obtained the data. In the hospital only professional nurses assessed the patients. A prerequisite for the assessment was that the nurses had cared for the patients for at least 1 day. Thus, it should be guaranteed that the nurses had attained sufficient knowledge in order to be able to assess the patients.

Prior to the data collection, a meeting was held to inform the nurses about the study and the use of the instrument. The informed residents of the nursing homes were assessed three times. Each resident was assessed by two different raters simultaneously. Therefore, it was possible to determine the agreement of the two raters (inter-rater reliability). After 10–14 days of this assessment, the third measurement was carried out with the same pair of resident/nurses to determine the agreement of one nurse at two different points in time (intrarater reliability).

Inter-rater reliability was examined for the informed patients of the geriatric wards.

Analysis

Statistic data analysis was carried out, using the software of SPSS version 9.0.

Demographic variables were analysed using descriptive statistics. The mean sum score was calculated to determine the care dependency. Various reliability aspects were examined:

1. Homogeneity, the degree to which the subparts of an instrument are internally consistent or whether they measure the same attribute (12) by means of Cronbach’s $\alpha$.
2. Equivalence: this approach determines the consistency or equivalence of an instrument by different observers (12). Therefore, inter-rater and intrarater reliability procedures were used and analysed by Kappa statistic (13, 11).

Criterion-related validity is the degree to which scores of an instrument correlate with another external criterion (14). This was examined by comparing the data of the Care Dependency Scale of the residents with the data of the classification by the German statutory care insurance. This classification divides the patients into three levels of care needs.

The patient’s data was compared with the data of the nursing personnel regulation (PPR). It is a regulation for determining the care requirement of the patients, likewise in three levels. Level one means the lowest requirement; level three corresponds to the highest requirement.

For further data analysis parametric and nonparametric tests were conducted according to the type and distribution of the collected data.

Results

Sample

The nursing home residents ($n = 81$) ranged in age from 45 to 99 years, their mean age being 82.8 years (SD 10.3). The mean age of the geriatric patients ($n = 115$) was 83.4 and ranged from 28 to 102 years. The majority of both groups were female [75% ($n = 61$); 78% (90)], respectively. In both groups a broad spectrum of diagnoses was found, including coronary diseases, dementia, Parkinson’s disease, Alzheimer’s disease and others.

The mean care dependency of the residents and the geriatric patients was comparable with the Dutch results (see Table 1).

The results show that the majority of the residents (73%) and the patients (68%) are totally or, to a substantial extent, care-dependent and no one or, only a few of the geriatric patients, are almost care-independent. To be totally care-dependent means, for example using the item eating and drinking, that the resident/patient is unable to eat or drink unaided (see Fig. 1). The distribution of the dependency levels is represented in detail in Table 2.

There were no statistically significant differences between female and male nursing home residents and care dependency, no differences between the nursing homes and care dependency or between age and the mean care dependency.

Table 1 Mean care dependency

<table>
<thead>
<tr>
<th>Sample</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing home residents</td>
<td>38.1</td>
<td>15.2</td>
</tr>
<tr>
<td>Geriatric patients</td>
<td>39.3</td>
<td>19.8</td>
</tr>
<tr>
<td>Nursing home residents (NL)</td>
<td>37.0</td>
<td>16.5</td>
</tr>
</tbody>
</table>

Table 2 Distribution of the care dependency levels of the two samples

<table>
<thead>
<tr>
<th>Nursing home residents ($n$)</th>
<th>Geriatric patients ($n$)</th>
<th>Level of care dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>55</td>
<td>Totally care dependent</td>
</tr>
<tr>
<td>23</td>
<td>23</td>
<td>Substantial extent care dependent</td>
</tr>
<tr>
<td>12</td>
<td>11</td>
<td>Partly care dependent</td>
</tr>
<tr>
<td>8</td>
<td>18</td>
<td>Slightly care dependent</td>
</tr>
<tr>
<td>0</td>
<td>7</td>
<td>Nearly care independent</td>
</tr>
<tr>
<td>79</td>
<td>114</td>
<td></td>
</tr>
</tbody>
</table>
Differences were found between nursing home residents and geriatric patients by the items body posture and mobility (see Table 3).

Observer agreement

The results show moderate to substantial agreement (15) among the two observers and the agreement of one observer at different points in time. (Table 4) The results of this study are comparable with those of other studies and are even partially better (Table 4).

Homogeneity

Cronbach’s $\alpha$ coefficient for the scale were 0.94 and 0.98. These high values constitute a high degree of internal consistency and fare well in comparison with other studies. The reliability coefficient should be 0.90 or better, if measures are to be used for individuals (12).

Validity

The comparison of the data of the Care Dependency Scale with the data of the classification of the care insurance as well as with the data of the PPR shows that a higher classification score is associated with an increase of dependency. (Table 5).

Conclusion and discussion

The internal consistency of the Care Dependency Scale was determined by Cornbach’s $\alpha$ and shows a very good result.

Other reliability aspects were examined by observer agreements rendering moderate to substantial results. These overall satisfying results show good concurrent inter-rater agreement on the measurement of care dependency as well as good agreement of one rater at two different points in time. This means, the guidance for handling the instrument was successful. Furthermore, it can be concluded that the evaluation criteria of the particular items were clear for the nurses in practice in order to be able to make an assessment of the patients and residents.

The results of this study show again that Henderson’s theory of human needs is empirically testable. With the scale Henderson’s components of basic care are measurable and can be used to determine the degree of care dependency from the nurses’ perspective.

The scale can therefore be considered a useful clinical instrument for the assessment of patients’ or nursing home residents’ care dependency.

An instrument is valid if its score correlates with other criteria (12). In this study the scores of the Care Dependency Scale correlates with the scores of the categorization of the care insurance and to the scores of the PPR as expected.

The results showed differences between nursing home residents and patients from the geriatric wards in mobility and body posture. Impaired mobility and its consequences are the most common reasons why people move to nursing homes. However, impaired mobility and its consequences can often be corrected or minimized by the right kind of diagnoses and interventions. The problem of impaired physical mobility among old people is one of the main

<table>
<thead>
<tr>
<th>Item</th>
<th>Nursing home $(n = 81)$ Mean (SD)</th>
<th>Geriatric ward $(n = 115)$ Mean (SD)</th>
<th>Mann–Whitney U-test $p &lt; 0.05$ (two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating and drinking</td>
<td>2.6 (1.3)</td>
<td>2.8 (1.4)</td>
<td>ns</td>
</tr>
<tr>
<td>Continenence</td>
<td>2.3 (1.5)</td>
<td>2.7 (1.7)</td>
<td>ns</td>
</tr>
<tr>
<td>Body posture</td>
<td>3.2 (1.4)</td>
<td>2.8 (1.4)</td>
<td>0.03</td>
</tr>
<tr>
<td>Mobility</td>
<td>2.8 (1.5)</td>
<td>2.3 (1.5)</td>
<td>0.02</td>
</tr>
<tr>
<td>Day and night pattern</td>
<td>3.1 (1.4)</td>
<td>3.1 (1.6)</td>
<td>ns</td>
</tr>
<tr>
<td>Getting dressed and undressed</td>
<td>2.2 (1.4)</td>
<td>2.3 (1.6)</td>
<td>ns</td>
</tr>
<tr>
<td>Body temperature</td>
<td>2.9 (1.2)</td>
<td>3.1 (1.4)</td>
<td>ns</td>
</tr>
<tr>
<td>Hygiene</td>
<td>1.9 (1.3)</td>
<td>2.3 (1.5)</td>
<td>ns</td>
</tr>
<tr>
<td>Avoidance of danger</td>
<td>2.1 (1.4)</td>
<td>2.4 (1.6)</td>
<td>ns</td>
</tr>
<tr>
<td>Communication</td>
<td>3.6 (1.5)</td>
<td>3.6 (1.5)</td>
<td>ns</td>
</tr>
<tr>
<td>Contact with others</td>
<td>2.8 (1.6)</td>
<td>2.9 (1.6)</td>
<td>ns</td>
</tr>
<tr>
<td>Sense of rules/values</td>
<td>2.4 (1.5)</td>
<td>2.6 (1.6)</td>
<td>ns</td>
</tr>
<tr>
<td>Daily activities</td>
<td>1.7 (1.1)</td>
<td>2.0 (1.4)</td>
<td>ns</td>
</tr>
<tr>
<td>Recreational activities</td>
<td>1.8 (1.0)</td>
<td>2.1 (1.59)</td>
<td>ns</td>
</tr>
<tr>
<td>Learning ability</td>
<td>2.2 (1.1)</td>
<td>2.4 (1.3)</td>
<td>ns</td>
</tr>
</tbody>
</table>

ns, not significant.
priorities of care (16). A prerequisite for such is a correct assessment using a reliable and valid instrument. In general, the German version of the Care Dependency Scale can be recommended for use in nursing homes and geriatric wards. Nurses now have an instrument which is easy to handle and which is not as time consuming as other instruments, e.g. the Resident Assessment Instrument (17). As Applegate explained, lengthy and complicated instruments may induce resistance or rejection in clinical practice (18).

This instrument offers clinicians a valid and reliable assessment instrument of care dependency. With the right assessment appropriate care can be offered and the independence of patients and home residents can be supported instead of strengthening dependent behaviour found in some studies (6, 7).

Furthermore, the instrument is based on one of the well-known nursing theories which offers a broad nursing perspective and safely promotes the acceptance of the scale.

The use of a common instrument in Europe contributes towards a common nursing language as well as standardization. In Europe there is no uniform definition of care dependency and no general valid standard for measuring care dependency (2). With this instrument it may become possible to measure the same phenomenon in various countries with the same assessment instrument.

**Restriction and recommendation**

This study employed only a small sample and, despite the good results, more studies on reliability and validity employing larger samples are recommended. Further studies are needed to test the use of the instrument in other care settings and with other patient groups, e.g. in medical or oncology nursing or in the home care area. Last but not least, nurses should be asked and should evaluate the applicability and the usefulness of the scale in the daily nursing practice.

**References**


