

ORIGINAL RESEARCH

The pain assessment checklist for seniors with limited ability to communicate-II (PACSLAC-II): Translation, cultural-functional adaptation, and psychometric testing in an Austrian population

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ABSTRACT

Objective: This study aimed to translate, culturally-functionally adapt, and test the psychometric properties of the German Pain Assessment Checklist for Seniors with Limited Ability to Communicate-II (PACSLAC-II-G).

Methods: The scale was translated and adapted according to the ISPOR principles. PACSLAC-II-G was tested for its psychometric properties in 107 cognitively and verbally impaired geriatric nursing hospital residents.

Results: Internal consistency of PACSLAC-II-G was acceptable (Cronbach's $\alpha = .752$). Inter-rater reliability showed high observed percentage agreement (Po = 72% – 100%). Content validity could not be established. Convergent validity of PACSLAC-II-G rated high with the total scores of BESD (= PAINAD) ($\rho = .743, p < .001$) and with Doloplus-2 ($\rho = .816, p < .001$).

Conclusions: PACSLAC-II-G was in part reliable and valid in this population sample.

Key Words: Dementia, PACSLAC-II, Pain assessment, Psychometric testing, Translation, Validation

1. INTRODUCTION

Around 55 million people are living with dementia worldwide.^[1] For Europe, the number of people affected by dementia is estimated at 8 885 101. Women (n = 6 063 458) are more affected by dementia than men (n = 2 821 643).^[2] This trend of people living with dementia in Europe will continue and almost double by 2050. In 2018, 1.66% of the Austrian population (n = 146 801) were affected by dementia. The

gender difference can also be seen there, with women having dementia more frequently (n = 100 263) than men (n = 46 537).^[2]

Worldwide, more than half of the people living with dementia experience frequent pain symptoms.^[3] In long-term care facilities, 60% to 80% of people with dementia suffer from pain. Despite a lower wellbeing this may also impair the residents' functional independence and social participation.^[4] In

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addition, verbal expression may be limited due to moderate to high cognitive impairment.^[5] Optimal pain management and treatment requires that the affected person can communicate pain. This is because individuals who can articulate pain receive about three times more pain medication than impaired older people with cognitive and verbal limitations.^[4,6] The latter usually cannot adequately communicate pain.^[7,8] As a result, the loss of communication skills leads to the risk of inadequate pain recognition, assessment, and treatment, and may have a negative effect on the quality of life and activities of daily living of those affected.^[9] Hence, standardized pain assessment needs to be an integral part in long-term care facilities to ensure sufficient pain therapy in residents with cognitive and verbal limitations.^[4,5,9]

1.1 Background and conceptual framework

Nurses play a key role in recognizing pain in people with cognitive and verbal limitations through their regular assessment and continuity of resident care.^[10] This primarily involves the use of pain assessment instruments based on self-report in residents with low-grade dementia, such as verbal rating scales (VRS), numeric rating scales (NRS), and visual analogue scales (VAS).^[5,11] For people with moderate to advanced dementia, nurses need to observe and assess; in particular, nonverbal communication signals such as spoken utterances, facial expressions such as grimacing or frowning, and behavioral changes such as interpersonal interactions.^[5] Therefore, pain assessment instruments ideally need to consider multiple dimensions of pain rather than just the location and intensity.^[9] Several assessment instruments are available for pain assessment in cognitively and verbally impaired older persons with dementia.^[12,13] The observational pain assessment instruments relevant and utilized in the present study, are introduced in the next paragraphs.

The Pain Assessment in Advanced Dementia – PAINAID^[14] scale, in German BESD (Beurteilung von Schmerzen bei Demenz),^[15,16] is considered a sensitive pain assessment scale for people with advanced dementia. It includes five items (1) breathing, (2) negative vocalizations, (3) facial expressions, (4) body language, and (5) consolability with scores ranging from 0 to 2 points allowing for a total range of 0 to 10 points. A total score of six or above requires treatment.^[14,15] The instrument can be used with more mobile individuals to assess acute and chronic pain.^[16] A systematic review^[17] reported good internal consistency (Cronbach's alpha [α] \geq .70, strong inter-rater reliability (kappa [k] = .87, Intraclass correlation [ICC] \geq .87) during movement situations, and good construct validity with PACSLAC at rest and during exercise (Pearson correlation [r] \leq .62).^[17] Another review^[18] reported moderate internal consistency (Cronbach's α = .50

– .60), low to high inter-rater reliability (k = .32 – .97) during different assessment situations, and high concurrent validity with VAS (r = .82 – .95).^[18]

The Doloplus-2 represents a further development of the Douleur Enfant Gustave Roussy (DEGR) scale, which is used for pain assessment in children.^[19] The instrument was adapted for older persons to detect observable pain behaviors and includes three dimensions (somatic, psychomotor, psychosocial). The scale includes ten items used to observe pain-associated behaviors related to protective body postures at rest, protection of painful body regions, facial expressions, and expressions of somatic complaints as well as sleep patterns, washing/dressing, mobility, communication, social life, and behavioral problems. Each item is scored with 0 to 3 points with a maximum of 30 points.^[12] The total score represents the course of perceived pain over a period of time, but not the pain at a particular moment.^[19] A score of five points or above represents pain.^[20] The Doloplus-2 presented high internal consistency (Cronbach's α = .85 – .86), good inter-rater reliability (k = .73 – .81), and high test-retest reliability (ICC = .96).^[18,20] However, the convergent validity of the scale showed low correlations with PAINAD, VAS, and VRS (Spearman correlation [ρ] = .26 – .29).^[20] These values may result in people with dementia due to possible decreased verbal and non-verbal expressions of pain.^[20] A systematic study by Hadjistavropoulos et al.,^[11] reported satisfactory internal consistency and reliability of the Doloplus-2. The Doloplus-2 had reported content validity of 78%, 53% construct validity, 56% reliability, and clinical utility of 73%.^[21] To evaluate behavioral changes, the resident must be well known to the nurse. Furthermore, some items are described as not very comprehensible and difficult to interpret.^[19]

The Pain Assessment Checklist for Seniors With Limited Ability to Communicate (PACSLAC)^[22] consists of 60 items and is a checklist to assess observable pain behaviors divided into separate subcategories (i.e., facial expressions; activity, body movement; social, personality, mood indicators; physiological indicators, eating, sleeping change, and vocal behaviors), which also correspond to the key domains of nonverbal behaviors deemed important for pain assessment in this population by the American Geriatric Society (AGS).^[23,24] Each presented item receives one point for a maximum total score of 60 points. There is no cut-off score for PACSLAC available, but the assessment should be compared with previous results to detect changes over time. Even though PACSLAC is the longest behavioral pain assessment instrument, it can be completed in five minutes.^[25] The PACSLAC has been extensively tested for its psychometric properties since its development in 2004 and is considered a valid and reliable instrument for pain assessment in older adults with limited

ability to communicate verbally^[17,22,26] and was found to be the most clinically relevant instrument^[19] compared to PAINAD^[26] its German equivalent BESD^[16] or Doloplus-2.^[24]

Since 2013, the PACSLAC-II,^[8] a 31-item abbreviated version, has been available and was also translated into Persian.^[27]

1.2 Description, administration, and scoring of PACSLAC-II

The PACSLAC-II contains six subscales (i.e., facial expressions, verbalizations and vocalizations, body movements, changes in interpersonal interactions, changes in activity patterns or routines, mental status changes) which correspond to the six domains of nonverbal behaviors deemed important for pain assessment in this population by the AGS.^[23] Each presented item (i.e., pain expression) receives one point for a maximum total score of 31 points. The checklist should be administered when residents are admitted to a long-term care facility and at each quarterly care planning evaluation. In addition, it should be used in older adults who have pain triggers or pain problems, as well as on an ongoing basis when a change in behavior is reported.^[8] Since many underlying pain problems are easier to identify during physical activity, the checklist is completed based on an observation during activity or movement (e.g., transferring out of bed or walking).^[8] Following the assessment, the scores are added up and compared to the previous score. An increased total score indicates that an increase in pain is likely.^[8] The average time required to complete and score the PACSLAC-II is 96 (± 2) seconds.^[28] The internal consistency (Cronbach's $\alpha \geq .77$)^[8,29] and the inter-rater reliability ($k = .63$)^[8] were satisfactory. The established convergent validity was moderate to high with PACSLAC ($r = .61, p < .001$) and PAINAD ($r = .65, p < .001$).^[28]

1.3 Objectives of study

Even though the PACSLAC-II has proven to be a valid and reliable instrument for assessing pain in older adults with limited ability to communicate verbally,^[8,28-30] no German translation (PACSLAC-II-G) is available yet. Therefore, the overall aim was to translate and culturally-functionally adapt the PACSLAC-II into German. In addition, the PACSLAC-II-G was tested for its internal consistency, inter-rater reliability, content, and convergent validity with BESD and Doloplus-2.

2. METHODS

In a two-stage process, PACSLAC-II was first translated and culturally-functionally adapted. This was followed by testing the psychometric properties of the PACSLAC-II-G.

2.1 Translation and cultural-functional adaptation process

The original English PACSLAC-II^[8] was translated into the target language German according to the ten principles of the International Society for Pharmacoeconomics and Outcome Research (ISPOR) Task Force for Translation.^[31] In the first step, permission to translate the scale was obtained from the authors.^[8] In the second step, the forward translation into the target language German took place. The independent translation team consisted of a professional interpreter and two nursing scientists with German as their native language. After reconciling the different versions and reaching consensus in the third step, the fourth step involved backwards translation by a bilingual nursing scientist.^[31] In the subsequent fifth step, the back-translation was compared with the original version and submitted to the developers of the PACSLAC-II^[8] for review to discuss and, if necessary, adapt problematic items. The sixth step involved the harmonization and alignment of the English PACSLAC-II with the PACSLAC-II-G. In the seventh step, cognitive debriefing was conducted.^[31] For this purpose, the PACSLAC-II-G was given to nine registered nurses (RN) with excellent German skills and at least one year of working experience with cognitively impaired patients. Subsequently, the results of the cognitive debriefing were reviewed, and the PACSLAC-II-G was finalized (steps 8-10).

2.2 Evaluation of psychometric properties of PACSLAC-II-G

To evaluate the psychometric properties of the PACSLAC-II-G, a prospective, monocentric, cross-sectional study was conducted from September to December 2019. For this purpose, the internal consistency and inter-rater reliability as well as the content and convergent validity of the scale were tested. For the last-named psychometric property, PACSLAC-II-G was compared with BESD^[15] as well as the Doloplus-2.^[19]

2.3 Ethical approval

This study was approved by the Ethics Committee of the Medical University of Vienna (EK 18098) and was performed according to the Declaration of Helsinki. Written informed consent was obtained from all residents or their legal representative and participating RNs.

2.4 Setting and participants

For testing the psychometric properties of the PACSLAC-II-G, residents were recruited by convenience sampling at a geriatric long-term care hospital with around 350 residents in Vienna, Austria. The residents' sample size was estimated with the calculation formula by Gwet.^[32] Assuming an error rate of 30% and a random probability of 0.4 (relative error

30%), a sample size of 123 geriatric hospital residents was targeted.

The study included older adults with limited ability to communicate verbally due to cognitive impairment which was established by either a moderate to severe dementia diagnosed by a neurologist or psychiatrist or where either a Mini-Mental State Exam (MMSE) was not feasible to assess or its score was ≤ 26 .^[33] Individuals who were able to self-assess and communicate their pain status as well as individuals in the end-of-life phase or those whose consent to participate in the study was not available were excluded (see Figure 1). The participating RNs had at least one year of working experience caring for cognitively impaired residents.

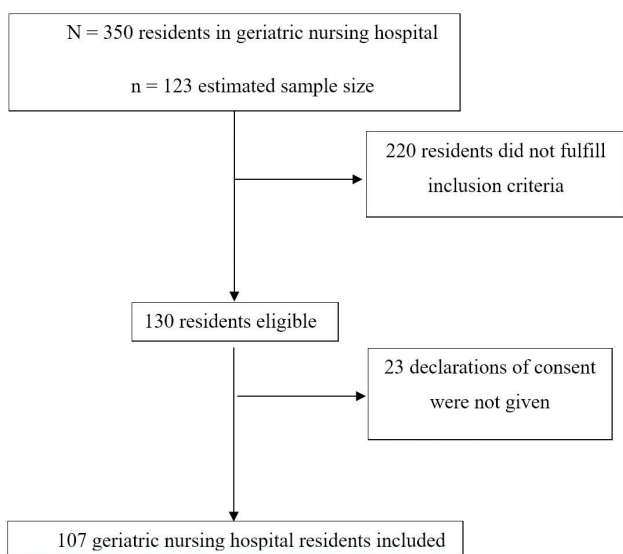


Figure 1. Sampling of Geriatric Hospital Residents

2.5 Procedures and measurements

The sociodemographic characteristics of the nursing sample (i.e., gender, age, working experience) was collected simultaneously with their informed consent. Content validity was determined by the participating RNs using an online questionnaire (SoSci Survey software), with a sample size oriented on Beckstead.^[34] For each of the 31 items, RNs assessed whether the item (e.g., item 1 = pain expression) is clearly and understandably phrased (categories = no, yes) and whether the item is relevant to pain assessment in elderly non-communicating persons with/without dementia (categories = not at all, a little, fairly, very).

Sociodemographic characteristics of participating residents (i.e., age, gender, MMSE total score, care dependency scale (PAS) total score, medical and nursing diagnoses) were taken from the medical records. Pain assessment of all included residents was performed once during a mobilization using BESD and Doloplus-2 and twice with PACSLAC-II-G for

inter-rater reliability. The RNs received a two-hour training on the application and scoring of PACSLAC-II-G and the entire data collection process. For the inter-rater reliability testing, the rater pairs were instructed to conduct their pain assessment at the same activity within 30 minutes of each other and to not communicate their ratings to one another. The use of BESD and Doloplus-2 was not part of the training since those scales were regularly used for pain assessment in this setting.

2.6 Statistical Analysis

The analysis of the collected data was done with the statistical program SPSS, version 26.0 (IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp) and Microsoft Excel 365 (Microsoft Corporation, 2018). The data was interpreted descriptively on an exploratory level, depending on the level of measurement, and presented in tables and graphs. Absolute and percentage frequencies, and measures of central tendency were calculated. The test of normal distribution for metric variables was performed with the Kolmogorov-Smirnov test. For data interpretation the level of significance was set at 5% ($\alpha \leq .05$, two-sided).

Internal consistency was calculated using Cronbach’s alpha (α) and were interpreted as described in the literature (i.e., $< .5$ unacceptable, $> .5$ poor/low, $> .6$ questionable, $> .7$ acceptable, $> .8$ good/high, $> .9$ excellent).^[35] To test inter-rater reliability, we used observed percentage agreement (Po), probability of chance agreement (Pe), and on item level, Cohen’s kappa (k) as well as the unadjusted, single factor intraclass correlation coefficient (ICC1.1).^[32,36] In addition, the 95% confidence interval (95%CI) was calculated. In general, Cohen’s k is evaluated using the Landis Koch interpretation scheme and defined as follows: $< .00$ no agreement, $.00 - .20$ poor agreement, $.21 - .40$ fair agreement, $.41 - .60$ moderate agreement, $.61 - .80$ substantial agreement, $.81 - 1.00$ almost perfect agreement.^[37]

To assess content validity, the data of the questionnaire was analyzed, and the content validity index calculated at item level (I-CVI), and for the entire scale (S-CVI).^[38] An I-CVI of $.78$ or above and S-CVI above $.90$ are considered good content validity.^[34,39] Because of the non-normal distribution of the total scores of the three scales, the convergent validity between PACSLAC-II-G and BESD or PACSLAC-II-G and Doloplus-2 was tested with Spearman-Rho (ρ).

3. RESULTS

The following chapters first summarize the results of the translation and cultural-functional adaption process following the ISPOR principles and second the results of the evaluation of the psychometric properties of PACSLAC-II-G.

3.1 Translation and cultural-functional adaptation process

After back-translation and reconciliation with the original English version, the English back-translation of PACSLAC-II was submitted to the developers for their review, during which four proposed changes were discussed and adapted, as shown in Table 1.

For the seventh step of the ISPOR principles,^[31] the Cogni-

tive Debriefing, PACSLAC-II-G was presented to nine RNs (i.e., 7 women, 2 men). They evaluated the layout, design, and name of the checklist as well as the items' comprehensibility. Due to the small sample size, no further sociodemographic characteristics were collected from those RNs. This was followed by harmonization and alignment of the PACSLAC-II-G. The finalized PACSLAC-II-G is available upon request.

Table 1. Reconciliation and Harmonization of Translation Discrepancies

PACSLAC-II	Forward Translation (en – de)	Back Translation (de – en)	PACSLAC-II-G
Check if present	Ankreuzen, falls vorhanden	Tick, if applicable	Zutreffendes ankreuzen
*Verbalizations and Vocalizations	Verbalisierungen und Ausdrucksweise	Verbalizations and Expressions	Verbalisierungen und vokale Ausdrucksweisen
†Clenched fist	Ballt die Faust	Makes a fist	Presst Faust zusammen
*Changes in Interpersonal Interactions	Veränderungen in zwischenmenschlichen Beziehungen	Changes in interpersonal relationships	Veränderungen in zwischenmenschlichen Interaktionen

*Subscale name on PACSLAC-II represent the pain assessment domains^[23]; †Item 24; †en – de = English – German (= *Deutsch*)

3.2 Evaluation of psychometric properties of PACSLAC-II-G

Of the 107 residents that were included in the study, 74 (69.2%) were female and 33 (30.8%) male. Overall, 85 (79.4%) residents had a dementia diagnosis and 22 (20.6%)

did not have a dementia diagnosis. Seventy-six (71%) residents had high care dependency, 28 (26.2%) had medium, and three (2.8%) residents had low care dependency. Further sociodemographic data of the study population, including age and MMSE total score, are presented in Table 2.

Table 2. Sociodemographic Characteristics of Residents

n = 107	Gender	n (%)	Min	Max	MD	M	SD
Age in Years	Female	74 (69.2)	55	105	88.5	84.92	12.03
	Male	33 (30.8)	55	97	85	83.33	9.37
MMSE	Female	39 (52.7)	0	26	14	13.05	6.07
	Male	18 (54.5)	0	22	7.50	9.22	7.09

Note. N = number, % = percent, Min = minimum, Max = maximum, MD = Median, MMSE = Mini Mental State Exam, M = mean, SD = standard deviation.

Eleven RNs completed the online content validity questionnaire. The I-CVI ranged from .272 (item 10, wrinkled nose and raised upper lip) to .909 (item 2, tighter face) for the 31 items of PACSLAC-II-G. Only two items (item 2 tighter face and item 7 creasing forehead) achieved an I-CVI above .780. The S-CVI was below the recommended value of .90 at .604 for the entire checklist.

The 15 RNs assessing the residents were on average 42.5 (± 10.7) years old, 14 (93.3%) were female and one (6.7%) was male. Three (20%) RNs had zero to five years of working experience as a RN, two (13.3%) RNs each had between six and ten years and between eleven and 15 years of nursing experience, three (20%) had 16 to 20 years, four (26.7%) had 21 to 25 years, and one (6.7%) RN had between 26 and 30

years of experience.

The internal consistency of PACSLAC-II-G was acceptable (Cronbach's $\alpha = .752$). To determine inter-rater reliability, the PACSLAC-II-G showed overall high to very high observed percentage agreement (Po = 72.9% – 100%) and moderate to very high probability of chance agreement (Pe = 60.8% – 100%) on item level. The calculated kappa coefficients ranged from -.013 to .713. There was no chance-adjusted agreement for seven of 31 items (k = -.013 – 0). Poor agreement was found for 13 of 31 items (k = .119 – .392), moderate agreement for seven of 31 items (k = .415 – .594), and substantial chance-adjusted agreement was shown by four of 31 items (k = .647 – .713). For the PACSLAC-II-G total score, the observed percentage agreement was 40.9%

($Pe = 19.5\%$), and these correlated strongly with each other ($\rho = .784$; $p < .001$). The calculated kappa coefficient was .269 (95%CI .171 to .367) and the ICC1.1 value was .784 (95%CI .699 to .847).

The convergent validity of PACSLAC-II-G, BESD, and Doloplus-2 was determined by correlations using the total pain scores. The descriptive details of the total scores of the three scales are presented in Table 3.

Table 3. Presentation of the Total Pain Scores of PACSLAC-II-G, BESD, Doloplus-2

Scale (n = 107)	Min	Max	MD	M	SD
*PACSLAC-II-G	0	13	1.00	2.23	2.64
†BESD	0	7	0.00	1.03	1.63
‡Doloplus-2	0	17	1.00	3.15	4.35

Note. Min = minimum, Max = maximum, MD = median, M = mean, SD = standard deviation; *0 – 31 points; †0 – 10 points; ‡0 – 30 points.

The convergent validity of PACSLAC-II-G and BESD were $\rho = .743$ ($p < .001$), between PACSLAC-II-G and Doloplus-2 were $\rho = .816$ ($p < .001$).

4. DISCUSSION

This is the first study to translate and culturally-functionally adapt as well as psychometrically evaluate PACSLAC-II for the German language. In the process of translating and culturally-functionally adapting the original PACSLAC-II into German, four items were adjusted and harmonized in the back-translation process after consultation with the developers of the PACSLAC-II.^[8] In addition, unclear items were identified in the cognitive debriefing by nine RNs. The suggested changes regarding the layout of the checklist were implemented as well as the original third item “pain expression” was ranked first among the facial expressions. In another study^[27] PACSLAC II was also translated and cross-culturally adapted into the Persian language utilizing the World Health Organization (WHO) protocol.^[40]

PACSLAC-II-G’s content validity was assessed by eleven RNs completing an online questionnaire. Only two items (i.e., item 2 tighter face and item 7 creasing forehead) achieved an acceptable I-CVI of above .78.^[34,39] Those results differ from the Persian version of the PACSLAC-II, where 14 experts were interviewed.^[27] Both content validity index (CVI = .72 – 1.00) and content validity ratio (CVR = .58 – 1.00) showed acceptable to excellent values for individual values. For the entire Persian PACSLAC-II, the CVI was .93 and the CVR was .87.^[27]

In the next step, PACSLAC-II-G was tested for its psychometric properties with geriatric hospital residents with limited ability to communicate verbally. With the acceptable

Cronbach’s α value (= .752), the internal consistency of PACSLAC-II-G is given and comparable to other studies’ results. The Persian version of the PACSLAC-II presented acceptable to high Cronbach’s alpha values (n = 138) for three of six subscales: facial expressions (Cronbach’s $\alpha = .82$), verbalizations and vocalizations (Cronbach’s $\alpha = .72$), and body movements (Cronbach’s $\alpha = .84$).^[27] In another study, acceptable Cronbach’s alpha values were also reported (Cronbach’s $\alpha = .74 - .77$) (n = 124) during different pain situations, such as needle injection or mobilizations.^[8] A lower acceptable Cronbach’s alpha value of .69 (n = 130) was reported in a study using 12 validated videos for pain assessment.^[30]

Inter-rater reliability in assessing pain with PACSLAC-II-G was evident with the high to very high percent agreement at item level. ICC1.1 value was high (ICC = .784), yet the calculated kappa coefficients indicated no reliable agreement for many items. In contrast, Chan et al. found satisfactory inter-rater reliability (k = .63).^[8] In addition, high correlations between two independent observers were reported by Ammaturo et al.^[30] (ICC = .94) and Haghi et al.^[27] (ICC3,1 = .76). As our study has shown, the calculation of Cohen’s kappa may lead to unexpected results – high percent agreement while observing low kappa coefficients. Thus, the present results suggest a non-existent rater agreement and are referred to in the literature as Kappa Paradox.^[41,42] PACSLAC-II-G has only one response option (behavior present or not) to choose from increasing the possibility of chance agreement.^[41] This limitation was moderate to high in our study ($Pe = 60.8\% - 100\%$). Besides, a homogeneous population can also lead to low Cohen’s kappa values because the phenomenon of interest has less variability, increasing the chance of chance agreement.^[41]

The correlations of the total scores between PACSLAC-II-G and BESD as well as Doloplus-2 were strong and positive. Convergent validity was established between PACSLAC-II-G, Doloplus-2 and BESD. Here the Persian version differs too, as the concurrent validity was determined with the Faces Pain Scale and a significant moderate correlation was found between these two scales immediately after activities causing or worsening pain ($\rho = .33$; $p < .02$).^[27]

Limitations

Several possible biases may have influenced the results. A selection bias might influence the results because of the convenience sampling strategy. The target sample size of 123 residents was not fully achieved, as only 107 residents with a higher percentage of females met the inclusion criteria in the selected setting. This is probably because more women than men live in long-term care facilities in Austria.^[43] Content

validity could only be established for two items with the RNs questioned in the present study, although they had been working with cognitively impaired residents for many years. In contrast to the health care system in the Anglo-Saxon and the Scandinavian nations, there are no special nursing experts for the pain assessment of cognitively impaired patients in Austria. Possible reasons for the low CVI might be the workload of nurses, nurses being fatigued or less motivated to participate in the study. Similarly, the RNs were already familiar with the BESD and Dolopius-2 scales from their daily nursing practice and this might have influenced their responses on the content validity questionnaire. Another limitation that might influence the results are the overall low total pain scores of all three scales. This can be justified by the established interdisciplinary guideline for pain management in the geriatric long-term care hospital. Residents are assessed by RNs within the first 72 hours of inpatient admission and at least once a month or as needed. Therefore, we assume that a well-established pain management system is already in place.

5. CONCLUSION

PACSLAC-II-G is a culturally-functionally adapted version of the original PACSLAC-II and can be used in clinical practice to support nurses in recognizing and managing pain behaviors in cognitively and verbally impaired older persons, preferably at admission and for follow-up. Even though the optimal tool has not been developed yet, as is apparent with the many pain assessment scales to choose from, it has turned out that as soon as any attempt of systematic pain assessment was implemented in clinical practice, pain management improved.^[44] Thus, it will be important to convince the end-users in the clinical practice to apply such scales and help to further improve their usability.

Overall, this study supports the reliability and validity of PACSLAC-II-G in seniors with cognitive impairments and limited ability to communicate. PACSALC-II-G shows acceptable internal consistency as well as inter-rater reliability in terms of the high percent agreement. However, in this study, the Kappa Paradox was apparent. The checklist also showed high convergent validity with Dolopus-2 and BESD, two widely accepted scales for pain assessment. The content validity could only be established for two items and should again be focused on in future studies.

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AUTHORS CONTRIBUTIONS

GM, PS, CF, & CG were responsible for study concept and design. GM, PS, & CF were responsible for acquisition of the data. GM & PS were responsible for analysis and interpretation of the data. PS, MS, BW, & GM drafted the manuscript. GM, MS, BW, CF, & PS were responsible for critical revision of the manuscript for important intellectual content. GM & PS were responsible for statistical Expertise and GM, CG, & PS were responsible for acquisition of funding. All authors read and approved the final manuscript.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Obtained.

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DATA SHARING STATEMENT

No additional data are available.

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