ORIGINAL ARTICLE

Pain intensity among institutionalized elderly: a comparison between numerical scales and verbal descriptors

Intensidade da dor em idosos institucionalizados: comparação entre as escalas numérica e de descritores verbais

Intensidad del dolor en ancianos institucionalizados: comparación entre la escala numérica y los descriptores verbales

Lílian Varanda Pereira[1], Gilberto de Araújo Pereira[2], Louise Amália de Moura[3], Rayanne Rodrigues Fernandes[3]

[1] Universidade Federal de Goiás, Faculdade de Enfermagem, Goiânia, GO, Brazil.

[2] Universidade Federal do Triângulo Mineiro, Uberaba, MG, Brazil.

[3] Universidade Federal de Goiás, Goiânia, GO, Brazil.

ABSTRACT

Objective: Correlating two unidimensional scales for measurement of self-reported pain intensity for elderly and identifying a preference for one of the scales. **Method:** A study conducted with 101 elderly people living in Nursing Home who reported any pain and reached ≥ 13 the scores on the Mini-Mental State Examination. A Numeric Rating Scale – (NRS) of 11 points and a Verbal Descriptor Scale (VDS) of five points were compared in three evaluations: overall, at rest and during movement. **Results:** Women were more representative (61.4%) and the average age was 77.0±9.1 years. NRS was completed by 94.8% of the elderly while VDS by 100%. The association between the mean scores of NRS with the categories of VDS was significant, indicating convergent validity and a similar metric between the scales. **Conclusion:** Pain measurements among institutionalized elderly can be made by NRS and VDS; however, the preferred scale for the elderly was the VDS, regardless of gender.

DESCRIPTORS

Aged; Scales; Pain Measurement; Health of Institutionalized Elderly.

Corresponding author:
Lílian Varanda Pereira
Rua 227 Qd 68, S/N – Setor Leste Universitário
CEP 74605-080 – Goiânia, GO, Brazil
lilianvaranda7@gmail.com

INTRODUCTION

The measurement of pain in the elderly is a challenge for researchers and medical staff[1]. In populations where the prevalence of cognitive impairment is high, as in the case of Nursing Home residents[2-5], the complexity of this process can take even greater proportions, even when measurement instruments are the simplest, given their difficulty to abstract, judge and understand the meaning and value of numbers, drawings or words. Thus, it is important to select the most appropriate instrument according to the population being evaluated.

Among the instruments available, some unidimensional scales initially designed to measure the intensity of pain in younger individuals have contributed to obtain accurate data about painful experiences in the elderly, such as the Verbal Descriptor Scale (VDS) and the Numeric Rating Scale (NRS) of pain.

VDS quantifies subjective painful sensations through words representing different intensities of pain such as: none, mild, moderate, strong and worst pain possible[6]. The limitation is in fact that the words used in the categories do not have the same meaning for all people[7-8]. Despite the possibility of some patients having difficulty using it for lack of cognitive ability or insight to understand the words, this scale has been preferred by the elderly, even by those with mild and moderate cognitive impairment[9].

NRS quantifies pain by numbers. It has typically 11 points (0 to 10), with point 0 (zero) representing no pain and point ten (10) the worst possible pain. The remaining numbers represent intermediate intensities of pain[10]. The validity of 0-10 scales for pain intensity measurement is well documented by its significant correlation with other scales[7-8,11-13] and the possibility to identify the effects expected upon analgesic treatment[12]. It can be cited as a limitation the fact that the numerical scores assigned to different categories are not always uniform, meaning that for the mild category the scores of 1-4 are often used, still some researchers include the score five or exclude the score four, and similarly for the severe category which includes scores 7-10 or 8-10[7-8].

VDS and NRS are valid and reliable for measuring the intensity of pain in elderly adults, including those with moderate and mild and light levels of cognitive impairment[14-15]. More recently, the psychometric properties of these scales were reinforced in a study of pain measurement in post-operative elderly with mild cognitive impairment, being considered the most appropriate scales to measure the intensity of that experience in this group[16]. Studies[6,15] comparing different unidimensional scales showed that even seniors with cognitive impairment were able to judge pain through these two scales, with the VDS[6] being the preferred scale.

However, in Brazil there have been no studies found comparing pain measurement results by VDS and NRS among elderly residing in Nursing Home. Studying psychometric properties of measuring instruments as well as the preference of seniors for one of them can help identify the most adequate pain intensity measurement for this population, enabling the comparison of results in clinical settings; an important contribution given the high prevalence of this experience (60% to 70%) in this group, which can reach 90% when chronic[3-4,17]. Pain understatement causes many elderly people to receive inadequate relief[4,18] and/or it compromises the identification of improvement or worsening factors of their pain[19], resulting in losses which affect the quality of life[18,20].

The present study aimed at correlating two unidimensional scales of self-reported pain intensity measurement for institutionalized elderly and identifying a preference for one of them.

METHOD

101 elderly people (aged 60 or more, according to Brazilian Law No. 8.842 of January 4, 1994) participated in the study who were living in one of the nine Nursing Home registered in the Elderly Council of Goiânia, Goiás, Brazil, that achieved ≥ 13 scores in the Mini-Mental State Examination[21-22] and reported feeling any pain. All participants were unaware of the use of measurement scales.

The elderly were instructed to measure the intensity of the main/primary pain experienced, meaning the one pain that bothered them the most, for three times: a measure of overall pain intensity, and two measures of pain intensity at rest and during movement.

For the task of measuring the intensity of pain in the elderly, two unidimensional scales (NRS and VDS) were used, both described as suitable psychometric properties and commonly used even when participants have some degree of cognitive impairment[14-15,23-24].

1) Numeric Rating Scale (NRS), 11 points (0 to 10), with point 0 (zero) representing no pain and point ten (10) the worst possible pain. The remaining numbers represent intermediate intensities of pain (1, 2, 3 and 4 = mild[25]; 5 and 6 = moderate; 7, 8 and 9 = strong.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

2) Verbal Descriptor Scale (VDS), of five points, with descriptors representing different growing intensities of pain (none, mild, moderate, strong and worst pain possible).

| None | Mild | Moderate | Strong | Worst pain |
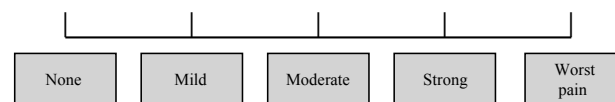
Seniors scored their pain using both scales and the observer noted the scores and paired verbal descriptors to the intensity of primary pain in printed drawings of the scale in the data collection instrument.

After measuring the intensity of the primary pain, the elderly were asked about their preference for one of the two scales, through the question: *Which scale did you prefer to measure the intensity of your pain?*

Participants were also questioned about the frequency of pain episodes, how long they have been living with this

experience, the situations in which pain occurred, location/ sites of pain, and the occurrence of pain in the seven days preceding the interview. These data were used to characterize the primary pain.

DATA ANALYSIS

Categorical variables were analyzed from the calculation of absolute and percentage frequencies, and the numerical variables from the descriptive measures of centrality and dispersion. The comparison of NRS between overall, rest and movement evaluations was done from ANOVA – repeated measures and comparison of VDS between the same evaluations was made from Chi-square test. The association between the two scales (NRS and VDS) was analyzed from the linear correlation coefficient and from ANOVA, considering the categories of VDS as a group factor and a NRS as the dependent variable. A 5% significance level was adopted for implementation of statistical tests. We used the software Statistics V6.0.

ETHICAL ASPECTS

This study was approved by the Ethics Committee of the Universidade Federal de Goiás – UFG (398/11), in accordance with the ethical principles of the Resolution CNS 196/96. After being informed about the research objectives and voluntary participation, all seniors signed (or left a digital print) the Informed Consent Form.

RESULTS

Among the 101 seniors who participated in the study, the average age was 77.6 years (SD = 9.11), with greater representation of women (61.4%) and by seniors with low education levels (average= 2.7 years of study; SD = 4.29). Those aged 80 and older accounted for 42.6% of the sample and 60.4% had some cognitive impairment, as assessed by the Mini-Mental State Examination.

CHARACTERISTICS OF THE PAIN

It was found that 77.6% of the elderly have been experiencing pain for six months or more, 41.0% reported feeling the primary pain during movement, 37.9% had *continuous* pain and 82.2% had pain in the last seven days.

ABILITY TO MEASURE PAIN INTENSITY

As for the ability to judge intensity of the pain (for example, by selecting only one of the categories displayed, and not using categories not contained in scale) using both scales, it was found that 94.8% of elderly people were able to make judgments with NRS and 100% of them by VDS.

Descriptive measures of the intensity of the primary pain (in the overall assessment of pain, in rest and during movement).

The average pain intensity scores during rest (measured by NRS) were significantly lower than the scores attributed in the overall assessment and during movement (Table 1).

In judging the intensity of primary pain through VDS, 48.5% of seniors reported to feeling no pain at rest, while

during movement assessment strong pain was the highest frequency (35.4%). In the overall assessment, the intensity of primary pain was judged as moderate (40.6%). There was a significant association between pain intensity scores in the three assessments (Table 2).

Table 1 – Descriptive measures of primary intensity pain scores for the overall assessment, at rest and during movement obtained by NRS – Goiania, GO, Brazil, 2012.

			NRS-Pain			
ASSESSMENT	n*	Average	Median	Minimum	Maximum	SD
Overall	92	6.4	5.0	0.0	10.0	2.8
At rest	95	2.7	0.0	0.0	10.0	3.4
During movement	90	5.7	6.0	0.0	10.0	3.5

SD: standard deviation; (p<0.0001); *six, nine and eleven elderly did not respond to overall, rest and movement assessments respectively.

Table 2 – Intensity of the primary pain by VDS scale in the overall assessment of pain, rest and movement – Goiania, GO, Brazil, 2012.

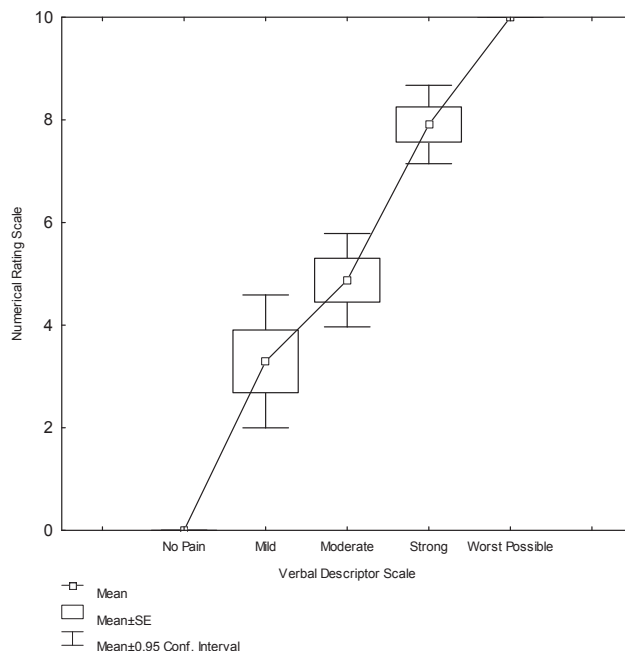|	Overall		Rest		Movement	
VDS-Pain	No.	%	No.	%	No.	%
None	1	1.0	48	48.5	16	16.2
Mild	11	10.9	17	17.2	10	10.1
Moderate	41	40.6	17	17.2	23	23.2
Strong	29	28.7	13	13.1	35	35.4
Worst possible	19	18.8	4	4.0	15	15.2
Total	**101**	**100**	**99***	**100**	**99***	**100**

*: Two elderly did not respond; p<0.0001.

By evaluating the correlation between the scores of NRS and VDS, there were moderate to strong, positive and statistically significant associations: overall assessment (r = 0.75), the rest (r = 0.92) and movement (r = 0.87).
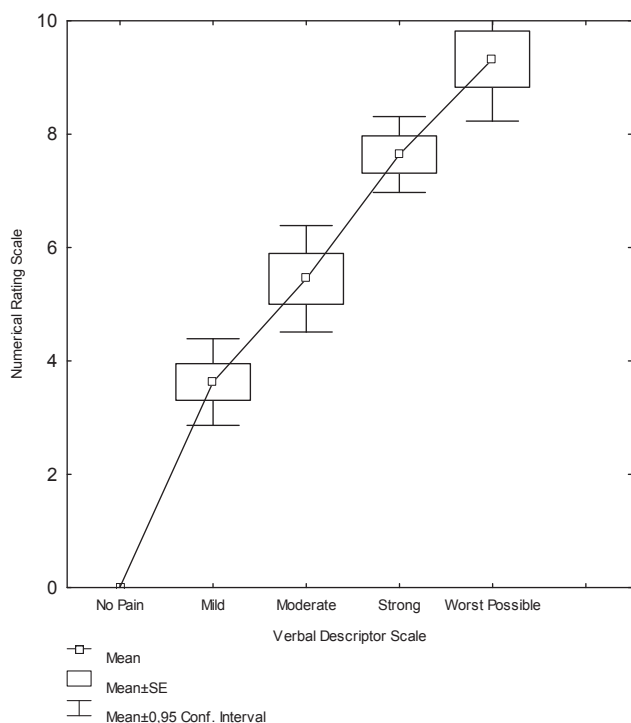
The average analysis of pain intensity scores measured by NRS in relation to the categories of VDS intensity in the overall assessment, at rest and during movement showed positive and significant correlation, meaning higher mean scores were associated in NRS to higher categories of pain intensity in VDS (Figures 1-3).
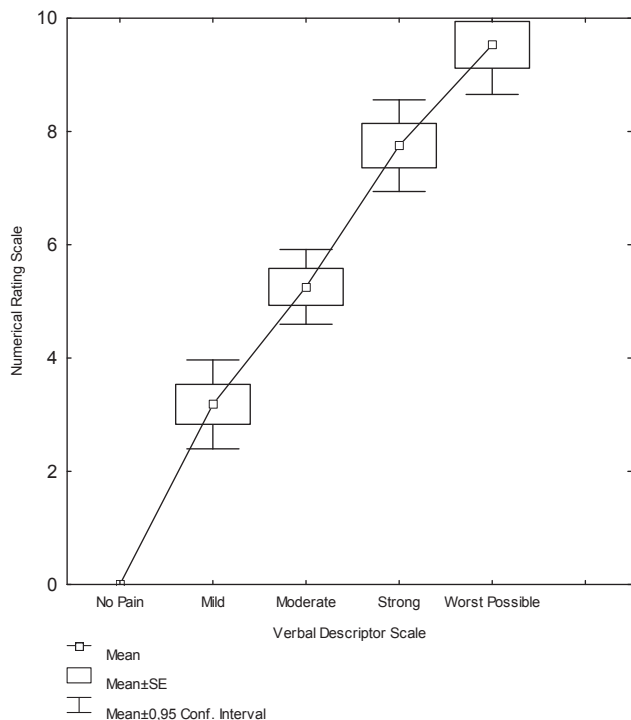
Figure 1 – Mean scores assigned to the intensity of pain by NRS according to the categories of VDS, in the overall assessment of this experience (F (4, 87) = 30.0, p <0.0001) – Goiania, GO, Brazil, 2012.

Figure 3 – Mean scores assigned to the intensity of primary pain during movement by NRS according to the categories of VDS (F (4, 85) = 75.5, p <0.0001) – Goiania, GO, Brazil 2012.

PREFERENCE FOR ONE OF THE SCALES

Among the 101 seniors, 93.1% selected one of the two scales as their preference for measuring the intensity of pain. Of these, 58.5% preferred VDS and 41.5% NRS. There was no significant association between the preference for one of the scales and gender.

Figure 2 – Mean scores assigned to the intensity of pain by NRS according to the categories of VDS in the evaluation of this experience at rest (F (4, 90) = 133.1, p <0.0001) – Goiania, GO, Brazil, 2012.

DISCUSSION

Elderly living in Nursing Home reported continuous pain, being more intense during movement, and episodes in the seven days preceding the date of the interview. And although there was a high frequency to some degree of cognitive impairment and low or no schooling among them, the vast majority was able to judge the intensity of primary pain by NRS and VDS, similar to the findings of other studies[6-7,14-16,22-24,26]. This strengthens the possibility of using these instruments to measure pain intensity in this population, a desired contribution to the evaluation process of painful experiences and respecting the elderly as an active agent in this process.

Elderly participation in the pain assessment process helps to eliminate obstacles that still prevent the proper management of this experience in this population, such as misconceptions about pain being part of the aging process and is therefore inevitable[3-4]; or the fact that seniors are no longer able to actively inform those around them about their pain due to their inability to measure it, given the difficulty assigned to this task[1]. Another further contribution is reducing the underestimation of the negative impact that painful experiences have on this population[4].

Furthermore, the use of pain assessment tools as a routine service from the beginning of their institutionalization can help refine the communication between those who feel and who treat pain, enlightening nurses/doctors, caregivers and researchers of the actual situation of pain complaints. Reducing judgments based on their own assumptions about other's pain can influence the decision making process in choosing the most appropriate analgesic therapy. Nurses may erroneously restrict the intensity of pain described by

elderly patients with mild to moderate cognitive impairment by judging them unable to report the intensity of their own pain[27].

We point to permanent, effective and innovative education as a strategy for improvement in pain management among institutionalized elderly, a need recognized by caregivers[28] and fundamental to gain professional experience for routine assessment of chronic pain[29]. A pilot test for the implementation of an integrated program of painful experience management for caregivers and residents indicated improved knowledge and attitudes of nursing professionals in the treatment of pain and increased satisfaction of the elderly[30].

The scores resulting from the pain intensity rating through both scales were significantly associated, indicating similarity in ratings of pain intensity in both scales and the possibility of using them for pain assessment among institutionalized elderly, leaving the choice for one of them being dependent on the discretion of the observer and the elderly. This finding corroborates with other studies[6,8] that have found positive and significant correlation between pain intensity scores of NRS and VDS (r= 0.74 and 0.87).

Although the psychometric properties of a measuring instrument are key indicators for the best instrument selection for the task, using the preferred scale of the people who will be evaluated adds quality to the process. In this study, most seniors made a choice and VDS was the preferred scale, corroborating the findings of other studies[8,23-24]. The words used should be familiar to the subjects and be used on a daily basis, which helps to achieve more satisfactory results when these scales are used in groups with low education[23].

Added to this, VDS was considered to be the scale that best discriminates increasing intensities of pain induced by thermal stimulation[6]. When compared to NRS, there was a relationship between the categories of both scales[2], however the authors point out that other aspects must be evaluated when comparing assessment tools before stating that a scale is superior to the other, as to the number of dimensions assessed. Although the unidimensional scales are valid and reliable, multidimensional scales which allow for more accurate evaluations of pain are desired.

Another finding of this study was that men and women preferred VDS to measure their pain. There are controversial views on the preference for a scale according to gender. Some studies[6,31] found no significant association between these variables, while others[9] showed that female seniors preferred VDS more frequently (p=0.041). Male elderly were significantly more likely to prefer NRS to VDS (p=0.02)[7].

An experimental study conducted with Portuguese students of both genders who received painful stimuli (Cold Pressure Test) at different intensities reinforced the validity and sensitivity of VDS and NRS. The NRS was the scale that allowed detecting differences in judgments made by men and women[12]. Investigations on the sensitivity of these scales for clinical pain in the Brazilian elderly population are required.

The pain scores in the three evaluations were significantly associated, indicating an influence of movement on the magnitude of the pain intensity experienced by the elderly. Other studies have also shown an increase in the average scores of pain intensity during movement among institutionalized elderly with[33] and without cognitive impairment[32-33], and also positive and significant correlation between pain with mobility and daily activities performed by elderly residents in Nursing Home[17]. Higher pain intensity during movement can limit the participation of the elderly in rehabilitation activities offered by long-term care facilities and result in social isolation[20]. Furthermore, it indicates that an assessment of pain in only a static position can lead to underestimation of the experience/episodes[33].

Recent studies conducted with the community[34] and with institutionalized elderly[19] have revealed that chronic pain is most often reported in the legs, which can compromise the performance of activities that require travel/mobility. This finding highlights the need for adequate training of staff working in Nursing Home with regard to the implementation of strategies that ensure pain assessment is performed at rest and during movement at the beginning of the institutionalization, in order to prevent damage and suffering by mis/undertreatment[35] of the experiences, especially of elderly who do not have pain assessment records in institutions and for those with dementia, because they are significantly less likely to receive painkillers[5].

In this sense, the inclusion of pain intensity measurements when assessing functional capacity is an expected conduct of health professionals, especially by nurses and their team.

The study results are valid, and point to the need for further investigations with more heterogeneous samples (i.e. general and geriatric hospitals and *home care*) in order to confirm psychometric properties of the scales.

CONCLUSION

Seniors with some degree of cognitive impairment and low or no schooling can report the intensity of their pain by unidimensional scales such as VDS and NRS. The correlation between the scales was positive, significant and moderate to strong in the three assessment stages, indicating convergent validity. Regardless of gender, VDS was the elderly's preferred scale.

Measuring pain intensity by valid and reliable scales is a crucial step for the evaluation of painful experiences, and this process should be performed at rest and during movement, and although more comprehensive assessments are desired, making pain visible through the measurement of its intensity contributes to adequate relief.

RESUMO

Objetivo: Correlacionar duas escalas unidimensionais de mensuração da intensidade da dor autorreferida por idosos e identificar a preferência por uma das escalas. **Método:** Estudo conduzido com 101 idosos residentes em Instituições de Longa Permanência para Idosos que referiram algum tipo de dor e alcançaram escores ≥ 13 no Miniexame do Estado Mental. A Escala Numérica (EN) de 11 pontos e a Escala de Descritores Verbais (EDV), de cinco pontos foram comparadas em três avaliações: global, ao repouso e ao movimento. **Resultados:** As mulheres foram as mais representadas (61,4%) e a média de idade igual a 77,0±9,1 anos. A EN foi preenchida por 94,8% dos idosos e a EDV por 100%. A associação entre os escores médios da EN com as categorias da EDV foi significativa, apontando validade convergente e métrica semelhante entre as escalas. **Conclusão:** A mensuração da dor em idosos institucionalizados pode ser feita por meio da EN e da EDV, no entanto, a escala preferida pelos idosos foi a EDV, independentemente do sexo.

DESCRITORES

Idoso; Escalas; Medição da Dor; Saúde do Idoso Institucionalizado.

RESUMEN

Objetivo: Correlacionar dos escalas unidimensionales de mensuración de la intensidad del dolor autorreferido por ancianos e identificar la preferencia por una de las escalas. **Método:** Estudio conducido con 101 ancianos residentes en Instituciones de Larga Estancia para Ancianos que relataron algún tipo de dolor y alcanzaron puntajes 13 en la Mini Prueba del Estado Mental. La Escala Numérica (EN) de 11 puntos y la Escala de Descriptores Verbales (EDV), de cinco puntos, fueron comparadas en tres evaluaciones: global, al reposo y al movimiento. **Resultados:** Las mujeres fueron las más representadas (61,4%) y el promedio de edad igual que 77,0±9,1 años. La EN fue rellenada por el 94,8% de las personas mayores y la EDV por el 100%. La asociación entre los puntajes medios de la EN y las categorías de la EDV fue significativa, señalando validez convergente y métrica semejante entre las escalas. **Conclusión:** La medición del dolor en personas mayores institucionalizadas puede hacerse mediante la EN y la EDV. Sin embargo, la escala preferida por los ancianos fue la EDV, independientemente del sexo.

DESCRIPTORES

Anciano; Escalas; Dimensión del Dolor; Salud del Anciano Institucionalizado.

REFERENCES

1. Takai Y, Yamamoto-Mitani N, Okamoto Y, Koyama K, Honda A. Literature review of pain prevalence among older residents of nursing homes. Pain Manag Nurs. 2010;11(4):209-23.

2. Edelen MO, Saliba D. Correspondence of verbal descriptor and numeric rating scales for pain intensity: an item response theory calibration. J Gerontol A Biol Sci Med Sci. 2010;65(7):778-85.

3. van Herk R, Boerlage AA, van Dijk M, Baar FP, Tibboel D, Wit R. Pain management in Dutch nursing homes leaves much to be desired. Pain Manag Nurs. 2009;10(1):32-9.

4. Boerlage AA, van Dijk M, Stronks DL, Wit R, van der Rijt CC. Pain prevalence and characteristics in three Dutch residential homes. Eur J Pain. 2008;12(7):910-6.

5. Barreto PS, Lapeyre-Mestre M, Vellas B, Rolland Y. Potential underuse of analgesics for recognized pain in nursing home residents with dementia: a cross-sectional study. Pain. 2013;154(11):2427-31.

6. Herr KA, Spratt K, Mobily PR, Richardson G. Pain intensity assessment in older adults: use of experimental pain to compare psychometric properties and usability of selected pain scales with younger adults. Clin J Pain. 2004;20(4):207-19.

7. Jones KR, Fink R, Hutt E, Vojir C, Pepper GA, Scott-Cawiezell J, et al. Measuring Pain Intensity in Nursing Home Residents. J Pain Symptom Manage. 2005;30(6):519-27.

8. Jones KR, Vojir CP, Hutt E, Fink R. Determining mild, moderate, and severe pain equivalency across pain-intensity tools in nursing home residents. J Rehabil Res Dev. 2007;44(2):305-14.

9. Peters ML, Patijn J, Lame I. Pain assessment in younger and older pain patients: psychometric properties and patient preference of five commonly used measures of pain intensity. Pain Med. 2007;8(7):601-10.

10. Gallasch CH, Alexandre NMC. The measurement of musculoskeletal pain intensity: a comparison of four methods. Rev Gaúcha Enferm. 2007;28(2):260-5.

11. Douglas ME, Randleman ML, DeLane AM, Palmer GA. Determining pain scale preference in a veteran population experiencing chronic pain. Pain Manag Nurs. 2014;15(3):625-31.

12. Ferreira-Valente MA, Pais-Ribeiro JL, Jensen MP. Validity of four pain intensity rating scales. Pain. 2011;152(10):2399-404.

13. Sayin YY, Akyolcu N. Comparison of pain scale preferences and pain intensity according to pain scales among Turkish Patients: a descriptive study. Pain Manag Nurs. 2014;15(1):156-64.

14. Feldt KS, Ryden MB, Miles S. Treatment of pain in cognitively impaired compared with cognitively intact older patients with hip-fracture. J Am Geriatr Soc.1998;46(9):1079-85.

15. Taylor LJ, Herr K. Pain intensity assessment: a comparison of selected pain intensity scales for use in cognitively intact and cognitively impaired African American older adults. Pain Manag Nurs. 2003;4(2):87-95.

16. Zhou Y, Petpichetchian W, Kitrungrote L. Psychometric properties of pain intensity scales comparing among postoperative adult patients, elderly patients without and with mild cognitive impairment in China. Int J Nurs Stud. 2011;48(4):449-57.

17. Tse MM, Wan VT , Vong SK . Health-related profile and quality of life among nursing home residents: does pain matter? Pain Manag Nurs. 2013;14(4):e173-84.

18. Zanocchi M, Maero B, Nicola E, Martinelli E, Luppino A, Gonella M, et al. Chronic pain in a sample of nursing home residents: prevalence, characteristics, influence on quality of life (QoL). Arch Gerontol Geriatr. 2008;47(1):121-8.

19. Barbosa MH, Bolina AF, Tavares JL, Cordeiro AL, Luiz RB, Oliveira KF. Sociodemographic and health factors associated with chronic pain in institutionalized eldrely. Rev Lat Am Enfermagem. 2014;22(6):1009-16.

20. Stein WM. Pain in the nursing home. Clin Geriatr Med. 2001;17(3):575-94.

21. Bertolucci PHF, Brucki SMD, Campacci SR, Juliano Y. O Mini-Exame do Estado Mental em uma população geral: impacto da escolaridade. Arq Neuro-Psiquiatr. 1994;52(1):1-7.

22. Brucki SMD, Nitrini R, Caramelli P, Bertolucci PHF, Okamoto IH. Sugestões para o uso do mini-exame do estado mental no Brasil. Arq Neuro-Psiquiatr. 2003;61(3-B):777-81.

23. Closs SJ, Barr B, Briggs M, Cash K, Seers K. A comparison of five pain assessment scales for nursing home residents with varying degrees of cognitive impairment. J Pain Symptom Manage. 2004;27(3):196-205.

24. Taylor LJ, Harris J, Epps CD, Herr K. Psychometric evaluation of selected pain intensity scales for use with cognitively impaired and cognitively intact older adults. Rehabil Nurs. 2005;30(2):55-61.

25. Jensen MP, Smith DG, Ehde DM, Robinsin LR. Pain site and the effects of amputation pain: further clarification of the meaning of mild, moderate, and severe pain. Pain. 2001;91(3):317-22.

26. Lukas A, Niederecker T, Günther I, Mayer B, Nikolaus T. Self- and proxy report for the assessment of pain in patients with and without cognitive impairment: experiences gained in a geriatric hospital. Z Gerontol Geriatr. 2013;46(3):214-21.

27. Monroe TB, Misra SK, Habermann RC, Dietrich MS, Cowan RL, Simmons SF. Pain reports and pain medication treatment in nursing home residents with and without dementia. Geriatr Gerontol Int. 2014;14(3):541-8.

28. Tousignant-Laflamme Y, Tousignant M, Lussier D, Lebel P, Savoie M, Lalonde L, et al. Educational needs of health care providers working in long-term care facilities with regard to pain management. Pain Res Manag. 2012;17(5):341-6.

29. Dziechciaz. M, Balicka-Adamik L, Filip R. The problem of pain in old age. Ann Agric Environ Med. 2013;(n.spe 1):35-8.

30. Tse MM, Ho SS. Pain management for older persons living in nursing homes: a pilot study. Pain Manag Nurs. 2013;14(2):e10-21.

31. Ware LJ, Epps CD, Herr K, Packard A. Evaluation of the Revised Faces Pain Scale, VerbalDescriptor Scale, Numeric Rating Scale, and Iowa Pain Thermometer in older minority adults. Pain Manag Nurs. 2006;7(3):117-25.

32. Hager K, Brockopp D. The use of a chronic pain diary in older people. Br J Nurs. 2009;18(8):490, 492-4.

33. Horgas AL, Elliott AF, Marsiske M. Pain assessment in persons with dementia: reationship between self-report and behavioral observation. Am Geriatr Soc. 2009;57(1):126-32.

34. Pereira LV, Vasconcelos PP, Souza LA, Pereira GA, Nakatani AY, Bachion MM. Prevalence and intensity of chronic pain and self-perceived health among elderly people: a population-based study. Rev Lat Am Enfermagem. 2014;22(4):662-9.

35. Lukas A, Mayer B, Fialová D, Topinkova E, Gindin J, Onder G, et al. Treatment of pain in European nursing homes: results from the Services and Health for Elderly in Long TERm Care (SHELTER) study. J Am Med Dir Assoc. 2013;14(11):821-31.