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# THE NURSING DIAGNOSIS 'IMPAIRED WALKING' IN ELDERLY: SYSTEMATIC LITERATURE REVIEW

*Cristina Maria Alves Marques-Vieira[1], Luís Manuel Mota de Sousa[2], Lisete Maria Ribeiro de Sousa[3], Sílvia Maria Alves Caldeira Berenger[4]*

[1] Ph.D. student in Advanced Nursing. Professor, *Curso de Licenciatura em Enfermagem, Universidade Católica Portuguesa* (UCP). Lisboa, Portugal. E-mail: cristina_marques@ics.lisboa.ucp.pt
[2] PhD student in Advanced Nursing. Professor, *Pós licenciatura de Especialização em Enfermagem de Reabilitação*, *Universidade Atlântica*. Lisboa, Portugal. E-mail: luismmsousa@gmail.com
[3] Ph.D. in Probabilities and Statistics. Professor, *Departamento de Estatística e Investigação da Faculdade de Ciências, Universidade de Lisboa*. Lisboa, Portugal. E-mail: lmsousa@fc.ul.pt
[4] Ph.D. in Advanced Nursing. Professor, *Licenciatura em Enfermagem,* UCP. Lisboa, Portugal. E-mail: scaldeira@ics.lisboa.ucp.pt

**ABSTRACT:** Walk is an activity that requires different skills and can be highly complex particularly for the elderly. The aim was to identify the defined characteristics and related factors of the nursing diagnosis impaired walking in elderly. A Systematic literature review, based on a search done between January and March 2014, in the electronic platforms EBSCO Host®, SCOPUS and ISI, and using the search strategy walk* OR gait AND Nurs*. A sample of 36 studies was obtained. A total of 17 defined characteristics and 34 related factors were identified. Among all, nine defined characteristics and 20 related factors are not listed in the diagnosis of NANDA International. This research identified new defined characteristics and related factors not listed in NANDA International. This study is a contribution to the development of the taxonomy of NANDA International, which should represent nursing knowledge, and this highlights some implications for clinical practice, education and further research.

**DESCRIPTORS:** Walking. Gait. Nursing diagnosis. Aged.

# O DIAGNÓSTICO DE ENFERMAGEM 'ANDAR COMPROMETIDO' NOS IDOSOS: REVISÃO SISTEMÁTICA DA LITERATURA

**RESUMO:** Andar é uma função que pressupõe competências diversas e pode ser altamente complexa particularmente para os idosos. O objetivo foi identificar as características definidoras e os fatores relacionados do diagnóstico de enfermagem andar comprometido no idoso. Foi feita revisão sistemática da literatura, com pesquisa entre janeiro e março de 2014, nas plataformas eletrónicas EBSCO Host®, SCOPUS e ISI, através da estratégia de pesquisa walk* OR gait AND Nurs*. Obteve-se uma amostra de 36 estudos. Identificou-se 17 características definidoras e 34 fatores relacionados. Constatou-se que nove caraterísticas definidoras e 20 fatores relacionados não estão listados no diagnóstico da NANDA Internacional. Esta pesquisa permitiu identificar indicadores clínicos e fatores relacionados para além dos que estão classificados na NANDA Internacional. Este estudo constitui um contributo ao desenvolvimento da taxonomia da NANDA Internacional, que deve representar o conhecimento da disciplina de Enfermagem, e que tem implicações na prática clínica, na educação e em novas pesquisas.

**DESCRITORES:** Caminhada. Marcha. Diagnóstico de enfermagem. Idoso.

# O DIAGNÓSTICO DE ENFERMERÍA 'DETERIORO DE LA DEAMBULACIÓN' EN ANCIANOS: REVISIÓN SISTEMÁTICA DE LA LITERATURA

**RESUMEN:** Caminar es una función que requiere diferentes habilidades y puede ser muy complejo sobre todo para las personas mayores. Lo objetivo fue identificar las características definitorias y factores relacionados de diagnósticos de enfermería marcha comprometida en los ancianos. Revisión sistemática de la literatura, con búsqueda entre enero y marzo de 2014, en las plataformas electrónicas EBSCO Host®, SCOPUS e ISI, a través de la estrategia de búsqueda walk* OR gait AND Nurs*. Se obtuvo una muestra de 36 estudios. Se identificó 17 y 34 características que definen los factores relacionados. Se encontró que los factores 9 y 20 características definitorias relacionados no se enumeran en el diagnóstico de la NANDA Internacional. Mediante esta Revisión fueron identificados nuevos indicadores clínicos y factores relacionados, en relación a los clasificados hasta la fecha por la NANDA Internacional. Este estudio constituye una contribución para el desarrollo de la taxonomía NANDA Internacional, que representa el conocimiento en Enfermería, con implicaciones para la práctica clínica, la educación y las investigaciones futuras.

**DESCRIPTORES:** Caminata. Marcha. Diagnóstico de enfermaria. Anciano.

## INTRODUCTION

People are bipedal beings, who use walking to travel from one place to another and thus ensure their independence. Walking is a highly complex and challenging activity that is controlled by superior brain structures.[1] Changes in walking may occur in humans throughout their life cycle and when unexpected, can put you in vulnerable circumstances. The vulnerability is accentuated even further when referring to the elderly. The sooner the elderly regain the ability to walk, the faster they become independent in other activities of life.[2]

The World Health Organization defines elderly according to the socioeconomic status of their country. Thus, every person aged over 60 in developing countries are considered elderly and in developed countries this age is increased to 65 years of age.[3]

Rehabilitation nurses have an approach which is focused on the development of patient skills that are needed to return in order to perform this complex task. Planning should be negotiated with the patient, which desirably should be shared with their family or community. With the largest number of elderly in the population, observations were made including an increase in the incidence of chronic-degenerative diseases, which are often accompanied by sequelae, limiting the functional performance and generate dependence.[4] The continuing inability to walk can lead to social isolation and the need for a family caregiver. Through analysis of the literature, an idea emerges that the existence of compromised walking in the elderly is highly relevant.[5]

Due to the importance of walking as a human response and due to the possibility of nursing evaluation and interventions, impaired walking as a nursing diagnosis was proposed by Brenda Emick-Herring to the North American Nursing Diagnosis Association. It was published in 1998 when taxonomy I was in use, and organized according to the Gordon functional health patterns, listed in pattern 6 (Movement).[6] In 2006, taxonomy II was revised and organized in 13 domains, and the diagnosis was coded as 00088, and listed in the domain 4 (Activity/Rest) and class 2 (Activity/Exercise).[7] A proposal for taxonomy III was recently disclosed, whose suggestion for this diagnosis is to integrate the domain 4 (Functional) and class 2 (physical ability).[8]

Impaired walking is defined by NANDA International (NANDA-I) as 'Limitation of independent movement within the environment on foot'.[8] The defined characteristics (signs/symptoms observed and reported, which the nurse receives after the data collection, in the most varied sources) are: "impaired ability to climb stairs, impaired ability to overcome curbs, impaired capacity to descend an inclined plane, impaired ability to climb slopes, impaired ability to walk on uneven surfaces, and impaired ability to walk the distance required. Related factors (etiology and causes) are: changes in cognitive function, change in mood, decreased resistance, environmental barriers (eg.: stairs, slopes, uneven surfaces, unsafe obstacles, distances, lack of devices or individual assistance, restrictions), fear of falling, impaired balance, impaired vision, insufficient knowledge of mobility strategies, insufficient muscle strength, impaired musculoskeletal system, compromised neuromuscular system, obesity, pain and decreased physical condition".[8:222]

Also, in the International Classification for Nursing Practice (ICNP®) it is possible to identify the definition for the diagnosis 'impaired walking' (10001046): ability to walk. There are two areas of focus described in this classification: one walking (10020886), defined as, "to mobilize: body movement from one place to another by moving the legs step by step, ability to sustain body weight and walk with effective ambulation, with speed ranging from slow to moderate or fast. Walking up and down stairs and ramps"; the other focus is 'walking with walking aid' (10020903), defined as walking, "body movement from one place to another by moving the legs step by step; ability to sustain body weight and walk with an effective march, using one or more walking with a support such as corrective shoes, artificial limb, cane, brace, crutches or walker, with speeds ranging from slow to moderate and fast; up and down stairs and ramps".[9:39]

The NANDA- I is a classification of nursing diagnoses which is subjected to the greater amount of research studies.[10] It is characterized by objectivity and compared to ICNP®, which is a classification of terms, and is considered more suitable for the clinical reasoning of nurses and to define diagnosis.[7]

The fact that a diagnosis is included in a classification does not mean it cannot be subjected to research. The development of science and patients' repsonses to health/disease transitions are dynamic and differ culturally. Therefore, research on the concepts of diagnoses and clinical validation is desirable to sustain the evidence-based practice concerning the clinical practice of nurses to what, in fact, are the results of scientific research.[11]

The aim of this study is to identify the defined characteristics and related factors of the nursing diagnosis impaired walking in the elderly. It is intended to verify the existence of other defined char-

acteristics and related factors beyond those which are described in NANDA-I and thus contribute to updating the taxonomy.

## METHOD

The authors conducted a systematic literature review (SLR) which is based on scientific rigor through specific strategies that limit the biases selection of items, critically evaluating the articles and summarize the results of relevant studies in a given area, by predetermined criteria and a specific research question. The SLR is methodical, explicit and liable to be reproduced.[12-14]

The research question was: what are the defined characteristics and related factors of impaired walking in the elderly?. The question was defined by PEO, considering Cochrane guidelines (Population=elderly, Exposure=impaired walking, Outcome=defined characteristics and related factors). The survey was independently conducted by two reviewers on the electronic platforms EBSCO Host®, SCOPUS and ISI. The inclusion criteria weer as following: date of publication (January 2006 to December 2013); Language Portuguese, English or Spanish; full text availability (for EBSCO Host®, including CINAHL Complete, MEDLINE Complete, Nursing & Allied Health Collection, Database of Abstracts of Reviews of Effects, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Cochrane Methodology Register, Library, Information Science & Technology Abstracts, MedicLatina, Health Technology Assessments and NHS Economic Evaluation Database); origin (national and international studies).

Exclusion criteria were defined as: opinion articles related to Population= children, obstetrics and adult, Exposure=robotics and Outcome=gait resulting from amputation of at least one of the lower limbs. The search strategy resulted walk* OR gait AND Nurs*.

Data collection took place from January to March 2014. The selection of studies was conducted step by step by two reviewers and, in case of disagreement between reviewers the decision was for the study to proceed to the next step of analysis. The PRISMA protocol was used for the process of identification, selection, eligibility and inclusion of studies (Figure 1).

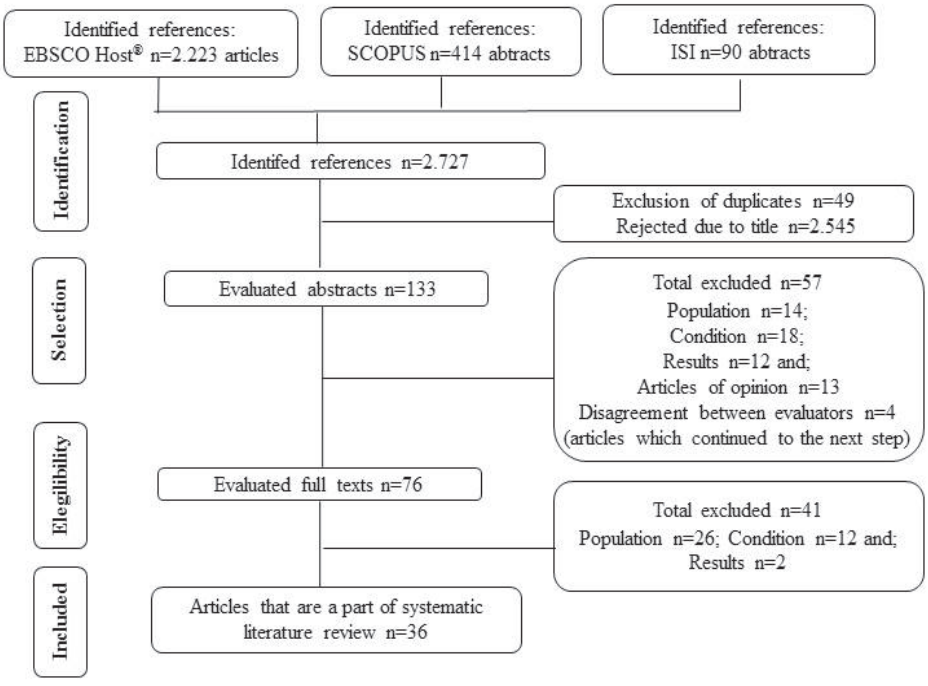


**Figure 1 - Mapping of selection of items to include in the review. Lisbon, Portugal, 2014**

The next phase was the full text reading of the selected studies and, simultaneously, filling in a summary table for each article in order to systematize the relevant information.

The attribution of the level of evidence (LE) of the studies was based on the classification of the Joanna Briggs Institute.[15] All studies were accepted without making the quality appraisal, in view of

the goal of revision.

The process of translation, linguistic and cultural adaptation of the original 'impaired walking diagnosis' (00088), from the original version (American English) to European Portuguese was performed, as it differs from the Portuguese of Brazil, which is one of the official translations of NANDA-I, in particular its statement, definition, defined characteristics and related factors.

## RESULTS

A total of 36 papers was obtained. In relation to the year of publication, one was from 2006,[16] three from 2008,[17-19] four from 2009,[20-23] two from 2010,[24-25] seven from 2011,[26-32] ten from 2012,[33-42] and nine from 2013[43-51]. With regard to the language, 34 were published in English,[16-41,43-45,47-51] one in Portuguese[42] and one in Spanish,[46] as for the country of origin we highlighted 14 in the United States of America,[17,19,23,25-26,28,35-37,39,41,47-49] three in Italy,[29,33,44] with two Holland,[16.32] Canada,[18,30] Switzerland,[20,24] Australia,[22,45] Japão,[27,50] Sweden,[34,43], Alemanha[38,40] and with one the Republic of China,[21] Spain,[31] Brazil,[42] to Argentina[46] and Finland.[51]

With regard to the LE, the analyzed studies are: Three experimental studies (LE 1)[23-24.32] a quasi-experimental studies (LE 2),[21] 17 observational studies: analytical (NE 3),[16-17,27,29,31,33-35,39-41,43-47] 13 observational studies: descriptive (LE 4)[18-20,22,25-26,30,36-38,42,50-51] and two systematic review of expert opinion (LE 5).[28,49]

Specifically, the selected studies are three randomized clinical studies,[23-24,32] one prospective quasi-experimental controlled study,[21] 12 cohort studies with control group,[16,28,29,31,33-34,40-41,44-47] three case-control studies,[27,35,39] two observational studies with no control group,[17,43] two systematic reviews of descriptive studies,[22,38] ten longitudinal studies[18-20,25-26,30,37,42,50-51] one study of series of cases[36] and two systematic expert opinion reviews.[28,49]

The sample of the study population ranges from nine[38,49] and 2.269[19] participants.

The translation process of 'impaired walking' (00088) was agreed, with the exception of the binomial statement that had several suggestions, such as impaired gait, difficulty walking, changes in walking and inability to walk. A meeting with three experts resulted in a consensus for impaired gait, also corresponding to the English version of ICNP®.

A total of 17 defined characteristics of the diagnosis were identified and comprises the results (Table 1). All defined characteristics listed in NANDA-I have been identified in the results of the SLR, with the exception of 'impaired ability to climb slope'. A total of 11 other defined characteristics emerged in this study that are not listed in the classification, including: 'impaired gait speed' (n=22), 'impaired ability to walk certain distances in given time' (n=20), 'posture change' (n=9), 'engaged walking in rough terrain (evaluation abroad on asphalted and paved floor)' (n=6), 'impaired ability to change the speed of gait' (n=5), 'impaired capacity descending stairs' (n=4), 'impaired walking with other challenges (verbal response to auditory and visual stimuli)' (n=4), 'impaired walking while changing posture (turn your head, lean)' (n=4), 'impaired ability to walk for the required time' (n=3), 'impaired ability to walk forward on flat surface' (n=3) and 'intermittent claudication' (n=2).

**Table 1 - Distribution of the defined characteristics of the sample. Lisbon, Portugal, 2014**

| **Defined characteristics listed in NANDA-I (2015-2017)** | **N** |
|---|---|
| Impaired ability to climb stairs[18,26,30,37,40,47,50] | 7 |
| Impaired ability to bypass curbs (around obstacles)[17-18,26,32,45-46] | 6 |
| Impaired ability to descend an inclined terrain[18] | 1 |
| Impaired ability to climb slopes | 0 |
| Impaired ability to walk on irregular surfaces[18,40] | 2 |
| Impaired ability to walk for the required distance[16,20,26,28,30,38,41-42,45-47,50-51] | 13 |
| **Defined characteristics not listed in NANDA-I (2015-2017)** | **N** |
| Impaired ability to descend stairs[26,30,37,50] | 4 |
| Impaired ability to walk for determined distances and times (cadence, cycle time, gait cycle, support time, stride distance)[16-17,20,23-25,32,34-36,40,42-43,45,47-50] | 20 |
| Impaired ability to walk during the requested time[21,45,48] | 3 |
| Impaired ability in the gait speed[16-17,19-20,23-26,34,36,38-41,43,45-51] | 22 |
| Impaired ability to change speed of gait[17,26,32,35,37] | 5 |

| | |
|---|---|
| Impaired ability to walk forward on a flat terrain[18,47,50] | 3 |
| Impaired ability to walk on a hilly terrain (assessment outside on tarmac and paved floor)[17,20,24,35,45,50] | 6 |
| Altered posture[17,20,24,26,35-36,40,49-50] | 9 |
| Intermittent claudication[23,42] | 2 |
| Impaired walking due to other challenges (verbal response to aural and visual stimuli)[17,26,35,51] | 4 |
| Impaired ability to walk while changing posture ( turning head, leaning)[26,35,47,50] | 4 |

With regard to related factors of the nursing diagnosis, a total of 34 were identified (Table 2). The most common were 'decreased physical condition' (n=23), 'impaired balance' (n=19) and 'fear of falling' (n=17). All related factors described in NANDA-I emerged in this SLR. Other etiological factors have emerged in this study beyond that described in this classification, a total of 20, which are: 'neurological impairment' (n=13), 'walking with aids (walker with twin wheels, cane, walker, crutches)' (n=12), 'aging (age ≥65 years)' (n=12), 'fatigue' (n=10), 'cardiorespiratory impairment (angina, congestive heart failure, pulmonary disease)' (n=9) 'medication (antidepressants, antihypertensive, antipsychotics, benzodiazepines, diuretics, sedatives, and hypnotics)' (n=8), 'number of activities or tasks to be performed simultaneously' (n=6), 'atrophy of muscle mass' (n=4), 'beliefs (education and religion, sedentary behavior)' (n=3), 'management problems of the feet and footwear (aesthetics, comfort and safety)' (n=3), 'mental health change' (n=3), 'orthostatic hypotension (postural management)' (n=2), 'hard of hearing' (n=2), 'females' (n=2), 'sleep problems' (n=2), 'institutionalization' (n=2), 'lack of social support (social-family devaluation)' (n=2), 'perception on security compromised ability to walk' (n=1), 'walking with assistance (third party)' (n=1) and 'post-surgery recovery period' (n=1).

**Table 2 - Distribution of related factors in the sample. Lisbon, Portugal, 2014**

| **Related Factors listed in NANDA-I (2014-2017)** | **N** |
|---|---|
| Alteration in cognitive function[16-18,20,26,29,31-33,36,41,43,46-47] | 14 |
| Change in mood[17-18,26,32,41,46,51] | 7 |
| Reduction in resistance[18,20,25,30,32,43] | 6 |
| Environmental barriers (stairs, ramps, irregular surfaces, unsecured obstacles, distances, lack of support devices or care assistant, restrictions)[16,18,28,50-51] | 5 |
| Fear of falling[16-20,24,26,28,34,37,40,43,45-49] | 17 |
| Impaired balance[16-19,24-26,28,30,32,35-37,40,42-43,45,47,49] | 19 |
| Impaired vision[16-17,24,28,31,35,43] | 7 |
| Impaired knowledge about mobility strategies[20,30,32,37,45-46,48-49] | 8 |
| Insufficient muscular strength[16,20,24,26-28,30,41,43,45-46,49] | 12 |
| Impaired musculoskeletal system[17,20,26,32,45] | 5 |
| Impaired neuromuscular system[16,20,30] | 3 |
| Obesity[20,25,32-33,35,39,41,43,45-46,48-49] | 12 |
| Pain[17-18,23,32-33,42,45-46,48] | 9 |
| Decreased physical condition [16-20,22,24-26,29-30,32-34,37-38,40-41,45-46,48,50-51] | 23 |
| **Related factors not listed in NANDA-I (2014-2017)** | **N** |
| Fatigue[25-26,32-33,35-38,44,46] | 10 |
| Walking with a support (walker with two wheels, cane, walker with four legs)[16,18,24,32-33,35-36,39,46,48-49,51] | 12 |
| Walking with help (from others)[50] | 1 |
| Impaired neurologically[16-17,20,24,35,39-43,47-49] | 13 |
| Impaired cardio respiratory system (angina, congestive heart failure, lung disease)[17,22,24,31,33,40-43] | 9 |
| Orthostatic hypotension (postural management)[24,28] | 2 |
| Sleep problems[17,32] | 2 |
| Perception of ability to walk in impaired safety[18] | 1 |
| Numerous activities or tasks to be performed simultaneously[18,26,34,37,41,51] | 6 |
| Aging (≥65 yeas of age)[20,24-29,32-34,41,43] | 12 |
| Beliefs (education and religion, sedentary behavior)[21,25,45] | 3 |

| | |
|---|---|
| Medication (antidepressants, antihypertensive, antipsychotics, benzodiazepines, diuretics, sedatives and hypnotics)[24,28,32-33,40-41,48-49] | 8 |
| Muscle mass atrophy[27,41,43,46] | 4 |
| Management problems of the feet and footwear (esthetics, comfort and safety)[28,49,51] | 3 |
| Hearing problems[31,43] | 2 |
| Being female[33,43] | 2 |
| Changes in mental health[34-35,45] | 3 |
| Institutionalization[43,46] | 2 |
| Lack of social support (social familial devaluation)[45-46] | 2 |
| Recovering period post-surgery[33] | 1 |

## DISCUSSION

Walking can be understood as a bipedal locomotion, incorporating the reciprocating motion of lower limbs and maintaining the dynamic balance.[18]

Gait gradually changes during life and, to a large extent, determines daily life activities.[16] Walking at home or outside, involves additional challenges, particularly in terms of maintaining the security and independence of the elderly person.[16] Other authors reinforce the idea that the elderly have the ability to adapt to expected and unexpected disturbances in gait.[18] Thus, the main objective is that the elderly have the ability to walk independently, with lower possible risks.[18] Independence is one of the results of gait,which can be highly impaired in some disease situations, and can be considered as a central aspect, for example, the performance of people with multiple sclerosis, which becomes a key role in their capability to perform activities of daily life.[38]

Walking is essential for daily life and depends on balance, joint mobility, endurance and muscular strength.[43] Going out for walks is considered the most common physical activity among older people, and is one that is practiced more regularly compared to other more vigorous activities.[43] Another study confirms that walking ability is fundamental to life independence.[25] The decrease in gait speed is a strong and independent predictor in regards to the need to resort to health care, admission to nursing homes and elderly mortality.[25] Fatigue is often the cause of disability in the elderly gait, without it feeling that it may threaten the maintenance of other activities that are considered vital.[25] These authors recommend longitudinal studies that have the prognostic value of the speed of gate, as their central theme.[25] Gait velocity decreases with age and it is an important predictor of morbidity and mortality.[41]

In this continuity, another study also states that gait is one of the necessary components for the elderly who have had stroke, who are residents in the community, in order for them to have an independent life, specifically in relation to the speed, balance and resistance of the gait.[30] Other authors stress the idea that independent walking should represent one of the most important challenges of care, because the immobility or difficulty in walking is one of the biggest predictors of institutionalization in the elderly with dementia.[29]

In the rehabilitation of an elderly person who has undergone hip replacement surgery, the baseline as regards to the previous gait before the fracture, is frequently unachievable, which can lead to permanent changes, with a consequent decline in their quality of life. One of the predictors for the elderly to walk independently once again, is the recovery that they can achieve until the time of discharge.[33]

A study in elderly patients undergoing thoracic and pelvic surgery revealed that their quality of life is more determined by their functional capacity, than by the personal background they have. The best predictor of functional capacity in the postoperative period is the previous baseline.[46] In another study that addresses the increase in walking, the creation of walking programs, telephone contacts, walking groups and the establishment of a pedometer referral programs, are several suggested strategies for the improvement in physical function in elderly Chinese immigrants residing in the United States of America.[20] Impaired gait causes restrictions in daily life, and is a phenomenon of interest to nurses in intervention planning.[34]

Among the 11 new defined characteristics ('impaired ability to walk down stairs', 'impaired ability to walk certain distances at one time', 'impaired ability to walk for the required time', 'impaired capacity in gait speed', 'impaired capacity to change walking speed', 'impaired ability to walk forward on a flat surface', 'impaired walking on rugged terrain, altered posture', 'intermittent claudication', 'impaired walking while doing other challenges' and 'impaired walking while changing posture') that have been identified in this literature,

two of them are among the most common ('impaired ability in walking speed' and 'impaired ability to walk certain distances in certain time'), which stresses the importance of revision as well as systematic methods and updating of knowledge for the development of taxonomy and support to nurses in describing elements that help in clinical practice to prepare the proper diagnosis of the elderly.

With regard to related factors, 20 were identified in this review other than those listed in NANDA-I ('fatigue', 'walking with a support', 'walking with help', 'neurological impairment', 'cardiorespiratory impairment', 'orthostatic hypotension', 'sleep problems', 'perception of walking ability in compromised safety', 'numerous activities or tasks to be performed simultaneously', 'aging (age ≥65 years)', 'belief', 'medication', 'atrophy of muscle mass', 'management problems of the feet and footwear', 'hard of hearing', 'female gender', 'mental health change', 'institutionalization', 'lack of social support' and 'postsurgical recovery period'), however, we verified that the three most common are those enumerated by NANDA-I ('reduced physical condition', 'impaired balance' and 'fear of falling'), and therefore must be etiologies that nurses can be more attentive of when watching the elderly, as well as to direct their questions while interviewing them, and to ask about risk situations at home, among others.

The literature gave many defined characteristics and related factors, specifically 17 clinical indicators and 34 related factors, which may not be conducive to a nursing diagnosis. In this sense, we consider that the clinical validation will bring certain contributions in the identification of the defined characteristics and significant related factors.

## CONCLUSION

Causal factors of certain diagnosis can be constituted as the key in decision-making in relation to nursing interventions, which are to be effective and efficient. When there is no evidence of the defined characteristics and related factors to support clinical reasoning, only the use of the statement may compromise the accuracy of the diagnosis.

This study provides evidence and supports what NANDA-I depicts as the defined characteristics and related factors in diagnosing impaired walking ,but on the other hand, clinical manifestations and other etiological factors of the same diagnosis, particularly in the elderly emerges from the literature.

The results of this study emphasize the need to validate this new information in the clinical setting. By validating all of the defined characteristics and related factors in a sample of elderly people, which are all already listed in NANDA-I and those obtained in this study, which could verify its representation in "impaired walking".

Therefore, contribution to the development of the NANDA-I taxonomy, for the purpose of education and for nursing practice, as this SLR contributed to the development and updating of the defined characteristics and related factors in the elderly in relation to the nursing diagnosis of impaired walking (00088).

Clinical validation studies with representative samples to confirm the sensitivity, specificity and predictive values of these new elements of diagnosis and randomized controlled trials or quasi-experimental studies to evaluate the effectiveness of certain interventions in the diagnostic indicators are recommended in future research.

The fact that the only availability of the full text is on the EBSCO Host® platform as well as the fact of all the studies being admitted without making the selection for the assessment of its quality, are considered limitations.

## REFERÊNCIAS

1. Lord S, Rochester L. Walking in the real world: Concepts related to functional gait. J Physiotherapy [Internet]. 2007 [cited 2015 Fev 15]; 35(3):126-30. Available from: http://physiotherapy.org.nz/assets/Professional-dev/Journal/2007-November/2007Novcommentary.pdf
2. Baixinho C. Capacidade de deambulação após fractura do colo do fémur: Revisão sistemática da literatura. Rev Referência. 2008; II(8):79-86.
3. Organização Mundial da Saúde. Ageing and life course [Internet]. [cited 2015 fev 15]. Available from: http://www.who.int/ageing/en.
4. Marques-Vieira C, Sousa L, Carias J, Caldeira S. Nursing diagnosis "impaired walking" in elderly patients: Integrative literature review. Rev Gaúcha Enferm [Internet]. 2015 Mar [cited 2015 Apr 18]; 36(1):104-11. Available from: http://www.seer.ufrgs.br/RevistaGauchadeEnfermagem/article/viewFile/48602/33598
5. Tavares DMDS, Dias, FA. Capacidade funcional, morbidades e qualidade de vida de idosos. Texto Contexto Enferm [Internet]. 2012 [cited 2015 Feb 7]; 21(1):112-20. Available from: http://www.scielo.br/pdf/tce/v21n1/en_a13v21n1.pdf
6. North American Nurses Diagnosis Association. Nursing diagnoses: Definitions and classification

(1999-2000). Philadelphia (US): North American Nurses Diagnosis Association; 1999.

7. Herdman TH, editor. NANDA International - Nursing Diagnoses: Definitions and classification 2012-2014. Oxford (UK): Wiley-Blackwell. 2012.
8. Herdman TH, Kamitsuru S, editors. NANDA International - Nursing Diagnoses: Definitions and classification 2015-2017. Oxford (UK): Wiley-Blackwell; 2014.
9. Ordem dos Enfermeiros. Classificação internacional para a prática de enfermagem: versão 2. Santa Maria da Feira (PT): Lusodidacta; 2011.
10. Herdman TH. Diagnósticos de Enfermagem e sua relação com o raciocínio clínico. In: NANDA Internacional Inc. Herdman TH, Carvalho EC, organizadores. PRONANDA Programa de atualização em diagnósticos de enfermagem: Conceitos básicos. Porto Alegre (RS): Artmed Panamericana; 2013. p. 29-62.
11. Stevens K. The impact of evidence-based practice in nursing and the next big ideas. Online J Issues Nurs [Internet]. 2013 may [cited 2014 Jan 6]; 31; 18(2): Manuscript 4. Available from: http://ucategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Vol-18-2013/No2-may-2013/Impact-of-Evidence-Based-Practice.html
12. Bettany-Saltikov, J. How to do a systematic literature review in nursing: A step-by-step guide: a step-by-step guide. Berkshire (US): McGraw-Hill International; 2012.
13. Grove S, Burns N, Gray J. The practice of nursing research: appraisal, synthesis and generation of evidence. 17th ed. Missori (US): Elsevier Saunders; 2013.
14. Polit D, Beck C. Essentials of nursing research: appraising evidence for nursing practice. 8ª ed. Philadelphia (US): Lippincott Williams & Wilkins; 2014.
15. Joanna Briggs Institute. Joanna Briggs Institute's user manual: Version 5.0 system for the unified management. Assessment and Review of Information [Internet]. Adelaide: The Joanna Briggs Institute; 2011 [cited 2014 Nov 13]. Available from: http://joannabriggs.org/assets/docs/sumari/SUMARI-V5-User-guide.pdf
16. Kollen B, Kwakkel C, Lindenian F. Time dependency on walking classification in stroke. Phys Ther [Internet]. 2006 [cited 2014 Jan 13]; 86(5):618-25. Available from: http://ptjournal.apta.org/content/86/5/618.full.pdf+html
17. Huang WNW, Van Swearingen JM, Brach JS. Gait variability in older adults: Observational rating validated by comparison with a computerized walkway gold standard. Phys Ther [Internet]. 2008 [cited 2014 Jan 13]; 88(10):1146-53. Available from: http://ptjournal.apta.org/content/88/10/1146.full
18. Kaegi C, Boudreault R, Rousseau J, Bourbonnais D, Nadeau S, Dubé F. Development of a walking safety scale for older adults, part I: content validity of the GEM scale. Physiother Can [Internet]. 2008 [cited 2014 Jan 13]; 60(3):264-73. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2792775/pdf/ptc-60-264.pdf
19. Taikowski JB, Brach JS, Studenski S, Newman AB. Impact of health perception, balance perception, fall history, balance performance, and gait speed on walking activity in older adults. Phys Ther [Internet]. 2008 [cited 2014 Jan 13]; 88(12):1474-81. Available from: http://ptjournal.apta.org/content/88/12/1474.full.pdf+html
20. Allet L, Armand S, Bie RA, Golay A, Pataky Z, Aminian K, Bruin ED. Clinical factors associated with gait alterations in diabetic patients. Diabet Med. 2009; 26:1003-9.
21. Chiang CY, Sun FK. The effects of a walking program on older chinese american immigrants with hypertension: A pretest and posttest quasi-experimental design. Public Health Nurs. 2009 may-jun; 26(3):240-248.
22. Du HY, Newton JP, Salamonson Y, Carrieri-Kohlman VL, Davidson PM. A review of the six-minute walk test: Its implication as a self-administered assessment tool. Eur J Cardiovasc Nurs. 2009; 8:2-8.
23. Martinez CA, Canneli E, Barak S, Stopka CB. Changes in pain-free walking based on time in accommodating pain-free exercise therapy for peripheral arterial disease. J Vasc Nurs [Internet]. 2009 mar [cited 2014 Jan 7]; XXVII(1):2-7. Available from: ftp://82.239.144.183/bibli/-%20Revue%20Articles%20FB/Biblio%20090219/331.0903-Changes%20in%20pain-free%20wlaking%20based%20on%20time%20in%20accomodating%20pain-free%20exercise%20therapy%20for%20PAD%20%28Martinez,%20J%20Vasc%20Nurs%29.pdf
24. Allet L, Armand S, Bie RA, Golay A; Monnin D, Aminian K, Staal JB, Bruin ED. The gait and balance of patients with diabetes can be improved: A randomised controlled trial. Diabetologia [Internet]. 2010 [cited 2014 Jan 13]; 53:458-66. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2815802/pdf/125_2009_Article_1592.pdf
25. Schrack JA, Simonsick EM, Ferrucci L. The energetic pathway to mobility loss: An emerging new framework for longitudinal studies on aging. J Am Geriatr Soc [Internet]. 2010 [cited 2014 Jan 7]; 58:S329-36. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3057770/pdf/nihms219106.pdf
26. Hall CD, Echt KV, Wolf SL, Rogers WA. Cognitive and motor mechanisms underlying older adults ability to divide attention while walking. Phys Ther [Internet]. 2011 [cited 2014 Jan 15]; 91(7):1039-50. Available from: http://ptjournal.apta.org/content/91/7/1039.full.pdf+html

27. Ikezoe T, Mori N, Nakamura M, Ichihashi N. Atrophy of the lower limbs in elderly women: Is it related to walking ability? Eur J Appl Physiol. 2011; 111:989-95.

28. Moncada LV. Management of falls in older persons: A prescription for prevention. Am Fam Physician. 2011; 84(11):1267-76.

29. Morghen S, Gentile S, Ricci E, Guerini F, Bellelli G, Trabucchi M. Rehabilitation of older adults with hip fracture: Cognitive function and walking abilities. J Am Geriatr Soc. 2011 august; 59(8):1497-502.

30. Moriello C, Finch L, Mayo NE. Relationship between muscle strength and functional walking capacity among people with stroke. J Rehabil Res Dev [Internet]. 2011 [cited 2014 Jan 13]; 48(3):267-76. Available from: http://www.rehab.research.va.gov/jour/11/483/page267.html

31. Muñoz-Mendoza CL, Cabañero-Martínez MJ, Millán-Calenti JC, Cabrero-García J, López-Sánchez R, Maseda-Rodríguez A. Reliability of 4-m and 6-m walking speed tests in elderly people with cognitive impairment. Arch Gerontol Geriatr. 2011; 52:e67-e70.

32. Volkers KM, Scherder EJ. The effect of regular walks onvarious health aspects in older people with dementia: protocol of a randomized-controlled trial. BMC Geriatr [Internet]. 2011 [cited 2014 j Jan 13]; 38:1-11. Available from: http://www.biomedcentral.com/content/pdf/1471-2318-11-38.pdf

33. Bellelli G, Noale M, Guerini F, Turco R, Maggi S, Crepaldi G, Trabucchi M. A prognostic model predicting recovery of walking independence of elderly patients after hip-fracture surgery. An experiment in a rehabilitation unit in Northern Italy. Osteoporos Int. 2012; 23:2189-200.

34. Bladh S, Nilsson MH, Hariz GM, Westergren A, Hobart J, Hagell P. Psychometric performance of a generic walking scale (Walk-12G) in multiple sclerosis and parkinson's disease. J Neurol. 2012; 259:729-38.

35. Boonsinsukh R, Saengsirisuwan V, Carlson-Kuhta P, Horak FB. A cane improves postural recovery from an unpracticed slip during walking in people with Parkinson disease. Phys Ther [Internet]. 2012 [cited 2014 Jan 13]; 92(9):1117-29. Available from: http://ptjournal.apta.org/content/92/9/1117.full.pdf+html

36. Bryant MS, Pourmoghaddam A, Thrasher A. Gait changes with walking devices in persons with Parkinson's disease. Disabil Rehabil Assist Technol [Internet]. 2012 [cited 2014 Jan 13]; 7(2):149-152. Available from: http://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC3423959&blobtype=pdf

37. Julius LM, Brach JS, Wert DM, Van Swearingen JM. Perceived effort of walking: Relationship with gait, physical function and activity, fear of falling, and confidence in walking in older adults with mobility limitations. Phys Ther [Internet]. 2012 [cited 2014 Jan 13]; 92(10):1268-77. Available from: http://ptjournal.apta.org/content/92/10/1268.full.pdf+html

38. Kieseier BC, Pozzilli C. Assessing walking disability in multiple sclerosis. Mult Scler J. 2012;18(7): 914-924.

39. Ko M, Hughes L, Lewis H. Walking Speed and Peak Plantar Pressure Distribution during Barefoot Walking in Persons with Diabetes. Physiother Res Int [Internet]. 2012 [cited 2014 Jan 13]; 17:29-35. Available from: http://onlinelibrary.wiley.com/doi/10.1002/pri.509/epdf

40. Schwesig R, Fischer D, Lauenroth A, Becker S, Leucht S. Can falls be predicted with gait analytical and posturographic measurement systems? A prospective follow-up study in a nursing home population. Clin Rehabil. 2012; 27(2):183-90.

41. Shahar DR, Houston DK, Hue TF, Lee JS, Sahyoun NR, Tylavsky FA, Geva D, Vardi H, Harris TB. Adherence to mediterranean diet and decline in walking speed over 8 years in community-dwelling older adults. JAGS [Internet]. 2012 oct [cited 2014 Jan 7]; 60(10):1881-8. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3470771/pdf/nihms393022.pdf

42. Silva RCG, Brunorio L, Giribela CRG, Bortolotto LA, Wolosker N, Consolim-Colombo FM. Distâncias percorridas no teste de caminhada de seis minutos: proposta de característica definidora para o diagnóstico de enfermagem Perfusão Tissular Periférica Ineficaz. Rev Latino-Am Enfermagem [Internet]. 2012 [cited 2014 Jan 7]; 20(2):1-9. Available from: http://www.scielo.br/pdf/rlae/v20n2/pt_06.pdf

43. Adell E, Wehmhörner S, Rydwik E. The Test-Retest Reliability of 10 Meters Maximal Walking speed in older people living in a residential care unit. J Geriatr Phys Ther. 2013; 36(2):74-7.

44. Crisafulli E, Iattoni A, Venturelli E, Siscaro G, Beneventi C, Cesario A, Clini EM. Predicting walking-induced oxygen desaturations in COPD patients: A statistical model. Respir Care [Internet]. 2013 [cited 2014 Jan 13]; 58(9):1495-503. Available from: http://rc.rcjournal.com/content/early/2013/01/29/respcare.02321.full.pdf+html

45. Ko V, Naylor JM, Harris IA, Crosbie J, Yeo AET. The six-minute walk test is an excellent predictor of functional ambulation after total knee arthroplasty. BMC Musculoskelet Disord [Internet]. 2013 [cited 2014 Jan 13]; 14(145):1-9. Available from: http://www.biomedcentral.com/content/pdf/1471-2474-14-145.pdf

46. Landi PJ, Torrejón GA, Muiños R, Freue RD, Semeniuk GB. Repercusión de la cirugía torácica y abdómino-pélvica en el estado funcional del anciano. Medicina (B.Aires) [Internet]. 2013 [cited 2014 Jan 13]; 73(3):231-7. Available from: http://www.scielo.org.ar/pdf/medba/v73n3/v73n3a05.pdf

47. McGough EL, Logsdon RG, Kelly VE, Teri L. Functional mobility limitations and falls in assisted living residents with dementia: physical performance assessment and quantitative gait analysis. J Geriatr

Phys Ther. 2013 Apr-Jun; 36(2):78-86.

48. Motyl JM, Driban JB, McAdams E, Price LL, McAlindon TE. Test-retest reliability and sensitivity of the 20-meter walk test among patients with knee Osteoarthritis. BMC Musculoskelet Disord [Internet]. 2013 [cited 2014 Jan 13]; 14(166):1-8. Available from: http://www.biomedcentral.com/content/pdf/1471-2474-14-166.pdf
49. Najafi B, Bruin ED, Reeves ND, Armstrong DG, Menz HB. The role of podiatry in the prevention of falls in older people. J Am Podiatr Med Assoc. 2013 Nov-Dec; 103(6):452-6.
50. Okochi J, Takahashi T, Takamuku K, Escorpizo R. Staging of mobility, transfer and walking functions of elderly persons based on the codes of the International Classification of Functioning, Disability and Health. BMC Geriatr [Internet]. 2013 [cited 2014 Jan 13]; 13(16):0-8. Available from: http://www.biomedcentral.com/content/pdf/1471-2318-13-16.pdf
51. Tsai LT, Rantakokko M, Portegijs E, Viljanen A, Saajanaho M, Eronen J, Rantanen T. Environmental mobility barriers and walking for errands among older people who live alone vs with others. BMC Public Health [Internet]. 2013 [cited 2014 Jan 13]; 13(1054):1-17. Available from: http://www.biomedcentral.com/content/pdf/1471-2458-13-1054.pdf

Correspondence: Cristina Marques-Vieira
Instituto de Ciências da Saúde
Universidade Católica Portuguesa
Edifício 2, Gabinete 2505
1649-023 - Palma de Cima, Lisboa, Portugal
E-mail: cristina_marques@ics.lisboa.ucp.pt

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