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ORIGINAL ARTICLE

ASSESSMENT INSTRUMENT FOR FALLS AMONG THE HOSPITALIZED ELDERLY (HOSPITAL AIFE): NURSE ANALYZING VULNERABILITY AND MOBILITY INSTRUMENTO DE AVALIAÇÃO DE QUEDAS EM IDOSOS HOSPITALIZADOS (IAQI HOSPITALAR): ENFERMEIRO ANALISANDO VULNERABILIDADE E MOBILIDADE INSTRUMENTO DE EVALUACIÓN DE CAÍDAS EN ANCIANOS HOSPITALIZADOS (HOSPITAL IAQI): ENFERMERO ANALISANDO VULNERABILIDAD Y MOVILIDAD

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ABSTRACT

Objective: to develop a tool for assessing vulnerability to falls in hospitalized elderly. **Method:** exploratory and descriptive study with a qualitative approach. It conducted an evaluation of the items that make up the Assessment Instrument for Falls in Elderly (AIFE) used in the Family Health Strategy, selecting those related to vulnerability to falls in hospitalized elderly, focusing on mobility dimension. **Results:** some functional assessment tools were adapted and/or added, which outlined the AIFE Hospital, presented through schematic and visual flowchart figures. In it, the mobility was subdivided into individual (identification, sense organs, musculoskeletal system, assessment activities of daily life; assessment of balance and gait, history of falls and fractures) and environmental (environmental scale of risk of falls). **Conclusion:** IAQI Hospital assists in determining the individual profile and vulnerability of the elderly, for the prevention of falls, actions are scheduled. **Descriptors:** Aged; Accidental Falls; Hospitalization; Nursing.

RESUMO

Objetivo: elaborar um instrumento para avaliação da vulnerabilidade às quedas em idosos hospitalizados. **Método:** estudo exploratório e descritivo, com abordagem qualitativa. Realizou-se avaliação dos itens que compõem o Instrumento de Avaliação de Quedas em Idosos (IAQI) usado na Estratégia de Saúde da Família, selecionando aqueles relacionados à vulnerabilidade a quedas em idosos hospitalizados, com enfoque para dimensão mobilidade. **Resultados:** foram adaptados e/ou acrescentados alguns instrumentos de avaliação funcional que delinearão o IAQI Hospitalar, apresentado por meio de figura esquemática e fluxograma visual. Nele, a mobilidade foi subdividida em individual (identificação; órgãos dos sentidos; sistema musculoesquelético; avaliação de atividades da vida diária; avaliação do equilíbrio e da marcha; histórico de quedas e fraturas) e ambiental (escala ambiental de risco de quedas). **Conclusão:** o IAQI Hospitalar auxilia na determinação do perfil individual e vulnerabilidade do idoso, para que sejam programadas ações de prevenção das quedas. **Descritores:** Idoso; Acidentes por Quedas; Hospitalização; Enfermagem.

RESUMEN

Objetivo: desarrollar un instrumento para evaluar la vulnerabilidad a caídas en los ancianos hospitalizados. **Método:** estudio descriptivo y exploratorio con un enfoque cualitativo. Se realizó evaluación de los elementos que componen el instrumento de evaluación de las caídas en los ancianos (IAQI) utilizado en la estrategia de salud de la familia, seleccionarlos relacionados con la vulnerabilidad a caídas en los ancianos hospitalizados con enfoque para la dimensión de la movilidad. **Resultados:** fueron adaptados o añadido algunos instrumentos de evaluación funcional, que contornaron el hospital IAQI, presentado a través de la figura esquemática y diagrama de flujo visual. En él, la movilidad fue subdividida en individual (ID; órganos de los sentidos sistema músculo esquelético; vida diaria de las actividades de evaluación, evaluación del equilibrio y la marcha; historia de caídas y fracturas) y ambiental (ambiental escala de riesgo de caídas). **Conclusión:** el Hospital IAQI ayuda a determinar el perfil individual y la vulnerabilidad de los ancianos, que acciones programadas de prevención de caídas. **Descritores:** Anciano; Accidentes por Caídas; Hospitalización; Enfermería.

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INTRODUCTION

The world presents significant changes in the age composition of the population, with accelerated aging process due to the reduction in birth rates and mortality associated with the increase in life expectancy. It is estimated that in 2030, the amount of elderly people in Brazil will surpass that of children and adolescents in four million.¹ Parallel to the increase in the number of elderly in the population, the incidence of diseases and disabilities is evident. Among them stands out the risk for falls, institutionalization, disability and anticipated death.² The aging process itself is experienced with biological, psychological and social changes such as decreased visual acuity and changes in gait that can make the individual more vulnerable to adverse situations.

Vulnerability is understood as the interaction of different degrees and susceptibilities of nature that expose the person to illness or events such as falls, especially in the elderly. The definition of vulnerability considers particularities of each situation, individual, social, political, economic and cultural issues, as well as the provision of health services.³ Vulnerability is associated with the frailty of the elderly, reported as multidimensional syndrome, as evidenced by decreased reserve energy with changes in muscle, neuroendocrine and immune systems, which can make the elderly more vulnerable to physical and psychological stressors, increasing susceptibility to adverse events.⁴

Concerning the frailty and vulnerability, there is the occurrence of falls in the elderly. These accidents are not normal events associated with aging and, therefore, all the episodes should be investigated. The fall can be defined as the unintended trip on the floor or a lower plane; it is a multifactorial event, resulting from the interaction of intrinsic factors (individual problems), situational (Activities of Daily Living - ADL) and extrinsic (environmental problems).⁵ Brazilian epidemiological data indicates that they annually experience 32% falls in the elderly aged 65 and 74 years; 35%; between 75 and 84 years and 51%; above this age.⁶

Falls are adverse events commonly found in the hospital area, accounting for two out of five undesirable events related to the patient.⁷ Security to the injuries from falls occur between 15% to 50% of the events, resulting in a wide variety of damage as physical (fractures, traumatic brain injuries,

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abrasions, bruises), psychological (fear of falling with insecurity in locomotion), social (isolation due to the fear of falling again and reduced functional capacity), as well as unscheduled withdrawal and / or disconnection of various therapeutic devices. Thus, the fall causes increase in length of stay and cost of treatment and reduce the reliability compared to nursing services.⁷

During the process of elderly hospitalization, attention should be paid to increasing vulnerability to falls, because, in these situations, the elderly usually have acute conditions such as delirium, systemic infections, cardiovascular diseases, neurological and musculoskeletal issues and still related causes of the side effects of medication.⁸ The unknown hospital may accentuate the risk of combined comorbidities such as dementia, urinary incontinence and problems with balance, strength, mobility and vision. Studies indicate that the falls in the hospital occur three times more than in the community.⁹ Even when not associated with comorbidity, the hospital is often totally unknown for the elderly, which can lead to loss of privacy and independence, can cause situations of confusion and/or disorientation. Thus, prevention is a crucial artifice of patient safety, with various resources to identify and reduce vulnerability to falls.⁹

Considering the impact of falls on the life of the elderly population, the Ministry of Health, through the National Program Patient Safety (PNSP) aimed to prevent and reduce the incidence of adverse events (incidents of harm to patients) in health services, qualifying care in all public and private, health institutions of the national territory. To guide professionals in the expansion of patient safety were developed protocols of Basic Patient Safety, among them stands out the Falls Prevention Protocol with the purpose of reducing the occurrence of loss of patients in service points and damage arising from these events, through the establishment and implementation of measures covering the assessment of patient risks, ensure multidisciplinary care in a safe environment and promote patient education, family and professional.¹⁰

Interventions to reduce the number of falls in the hospital include: assessing the risk of falls; identification of the patient who is at risk, with signs at the bedside or bracelet; scheduling care of personal hygiene; periodic review of medication; attention to shoes worn by patients; education of patients and professionals; drop occurrence of review to identify possible causes.¹⁰

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Another measure that can help prevent falls in the hospital is the instrument formulation to assess vulnerability to falls in hospitalized elderly. This instrument can be used by nurses in admission and following the care of the hospitalized elderly, to identify those who are more vulnerable to falls in an attempt to implement measures to prevent this occurrence. Therefore, health care services should have available resources to make the correct diagnosis of the situation of each senior to subsequently plan more adequate interventions.¹¹

This study is a matter of research << What should the instrument for assessing vulnerability to falls in the elderly in the hospital consist of? >> To answer it, the objective was defined as:

- Developing tools for assessing vulnerability to falls in hospitalized elderly.

METHOD

An integral article dissertation << instrument Proposal for assessing vulnerability to falls in the elderly in the hospital >> presented in 2015 at the Federal University of Santa Catarina / UFSC.

An exploratory and descriptive study with a qualitative approach,¹² developed in the period from March to September 2014, consists of three steps: 1) evaluation of the items that make up the Assessment Instrument for Falls in the Elderly (AIFE) used in the Family Health Strategy built by Mallmann¹³; 2) critical analysis of items related to vulnerability to falls in hospitalized elderly; 3) development of the instrument to be used in the hospital (Hospital AIFE) to assess vulnerability of the elderly to falls in order to avoid them and provide security to the patient.

In the first stage, items AIFE of Mallmann¹³ were evaluated, exploring, reflecting and seeking theoretical basis for each item, as well as guidance and guidelines for implementation / application of the same in practice.

The AIFE prepared by Mallmann¹³ was planned to be used in the Family Health Strategy for the elderly, based on Multidimensional Assessment Protocol Moraes Elderly (14), which consists of several instruments of multiple assessments of the elderly, both globally and in full. The Mallmann¹³ instrument was chosen because of its construction with research databases, being grounded and rated by experts in the field of gerontology. Assessments that make up the instrument are: identification; Detailed

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main complaint; review of the main physiological systems; assessment of the overall functionality with AVD, mobility, gait and balance, assessment of cognition; Current and past personal history; environmental assessment; main and specific diagnoses; and finally, a care plan directed to maintain or restore independence and autonomy of the elderly.

In the second stage a critical evaluation of the items that make up the AIFE was carried out with analysis that relates to vulnerability to falls in the elderly in the hospital area, emphasizing those in the mobility approach. Mobility was selected because of their relationship as a risk factor for falls.⁷

In the third stage of the study, AIFE fragments were selected related to falls in the hospital area, aiming at preparing the Assessment Instrument for Falls in Hospitalized Elderly (Hospital AIFE). For both items that could have been selected to be applied by nurses, adapting and/or adding some functional assessment tools to facilitate implementation in the hospital, the other items were excluded for not fitting the intent. Next it is presented in Figure 1 a schematic drawing of Hospital AIFE composition.

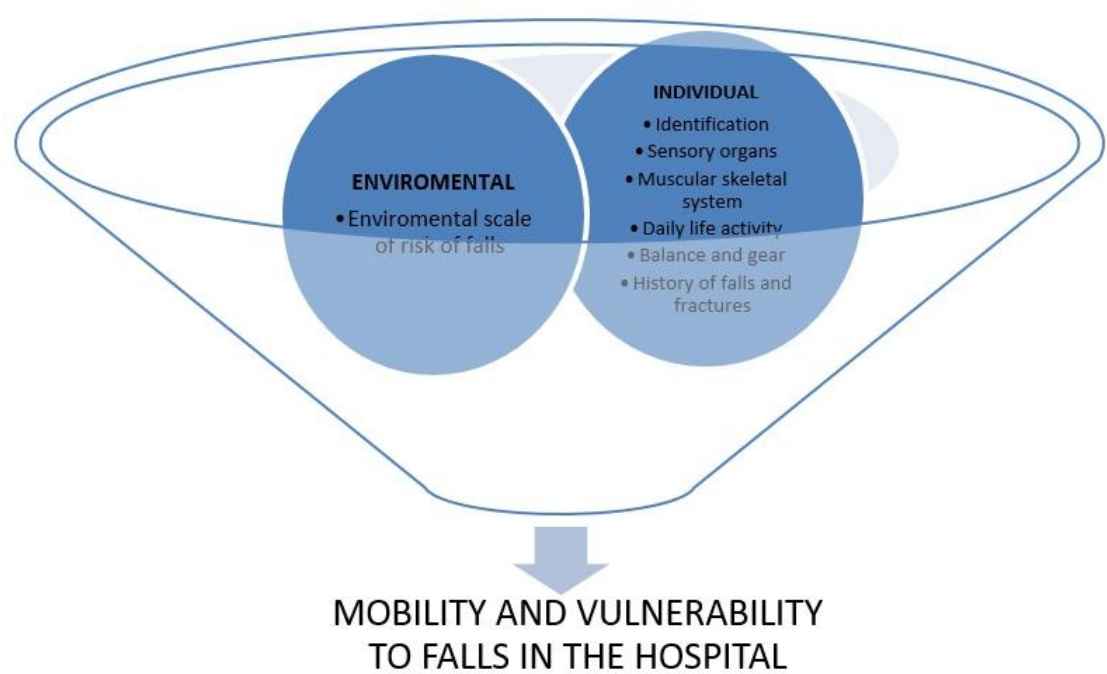


Figure 1. Assessment Instrument for Falls in Hospitalized Elderly (Hospital AIFE).

In relation to ethical principles of the study, secondary data sources were used and considered national and international copyright rules.

RESULTS

Mobility has focused as the basic structure of the instrument, being subdivided into individual and environmental. The first composed of items: identification; organs of the senses - sight; muscular-skeletal system -

lower limbs; AVD - Katz Index; Guests - march; rating scale of balance and gait - Tinetti Index; history of falls and fractures. In the second (environmental mobility) is included: environmental scale of risk of falls.

Figure 2 shows the visual structure of AIFE Mallmann¹³ highlighting the items inserted in Hospital AIFE.

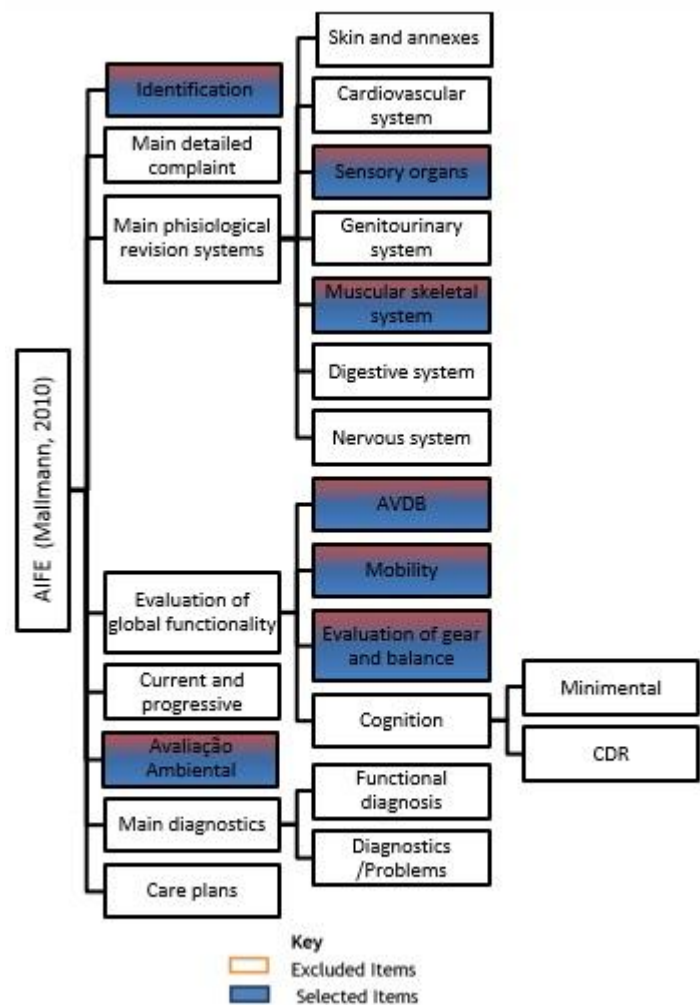


Figure 2. Assessment Instrument for Falls Hospitalized in Elderly (Hospital AIFE): composition; visual flow chart of the construction of the Hospital AIFE.

DISCUSSION

Among the factors influencing the falls in the hospital, are: use of medications that change the central nervous system, age of 60 years and difficulties in walking.⁷ Concerning the relevance of this dimension to the occurrence of falls in this environment, mobility was focused as a Basic constitution structure for the proposed instrument.

The Mallmann¹³ instrument starts with the identification of the elderly. This item is essential for assessment of the individual and social vulnerability to falls, since it contemplates aspects related to gender, profession, age, marital status, race (self referenced), education, address and telephone number and information about caregiver or informant.

In the old identification, age and gender are noteworthy because the occurrence of falls gradually increases over 65, more common in women than in men (the same age).¹⁵ The greater occurrence of falls in women than in men can be explained by poor functional status, higher morbidity and greater exposure to domestic activities.¹⁶ Concerning age group, 28% to 35% of over 65 years of age fall at least once a year in the

world. This proportion increases to up to 42% when the age exceeds 70 years.⁶

Regarding marital status, it is important to emphasize that the elderly living alone are more vulnerable to falls.^{6,17} This can be explained by the fact of having to perform many tasks from not having fellowship and mutual cooperation, common among couples in health care. Still, low education still may have implications on the vulnerability to falls, it creates limitations that can interfere significantly in understanding and following guidelines directed to the elderly.¹⁸

The existence of family caregiver was inserted kinship, it is relevant to understanding the dynamics of patient care in focus, involvement of the family network, and the fact that the presence of family members during hospitalization may help prevent falls.¹⁹

In the second item, sense organ, was kept focus on vision, because no relationship between self perception of bad eyesight and the occurrence of falls, since poor vision increases difficulty to remain stable on environments and complex tasks.¹⁶ Importantly, the Snellen vision test was taken due to the need for physical space and

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specific materials for its realization, as well as more time for instrument application.

The evaluation of the muscular-skeletal system was directed to the lower limbs to believe that these changes increase vulnerability to falls. Questions were included on pain, stiffness and weakness or heaviness in the lower limbs, in addition to evaluation of changes in the feet that are functional changes in the aging process in the elderly and directly influenced the transfer and mobility, providing greater chance of falls.¹¹ Weakness in the muscles reduces muscle efficiency to respond to posture disorders, leading to imbalance that is a predisposing factor of falls.²⁰ There are also relationships between lower limb pain, immobility and greater predisposition to falls.¹⁶

Regarding functional evaluation, it was considered essential to maintain items to check the performance of daily activities of the elderly, because there was a relationship with vulnerability to falls. Functional capacity is one of the major components of the health of the elderly that is emerging as an important focus for evaluating the health of this population. Factors strongly associated with the functional capabilities are demographic, socioeconomic, health-related, social relations and self perception of health.¹¹

With the instrument developed in this study, we used the Katz scale adapted to evaluate the Basic Activities of Daily Living (BADL), with objective items to facilitate the implementation of the instrument in the hospital. In elderly who need help in ADLs, the chance of falling increases by 14 times. Moreover, the degree of dependence and the elderly functionality is a key factor that affects their relationship with the environment, conditioning their way to overcome obstacles and barriers in the environment.¹⁵

The Katz Index and Activities of Daily Living Index was developed to assess physical functioning in relation to self-care in patients with chronic diseases. Katz and his team have shown that the recovery of functional performance of six activities considered basic in everyday life of disabled elderly (bathing, dressing, toileting, transferring, incontinent and foraging) was similar to the sequence observed in the child development process. According to the original version of this scale, the elderly were classified as independent, partially dependent or totally dependent, as their capacity to develop each of the six proposed activities without supervision, guidance or any kind of direct aid.²¹

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The usual methods of performing structured functional assessment consists of direct observation and measurement of the ability to perform daily activities. This can be done through performance tests and self questionnaires or face to face interviews, systematized by a series of scales checking the main components of each dimension.¹¹ The scale used was adapted with changes from the original version, presented objective items that make it more agile, its fill and a cutoff point for independence and dependence, nonexistent in the original scale. For each confirmation of carrying out the activity, they sum up a point and each denial of carrying out the activity has zero score. A score of six indicates that the elderly are independent, three to five score indicates partial dependence and lower scores than or equal to two indicates dependence importante.²²

What also remained was reduced reference in relation to the mobility of the elderly before the process that led to hospitalization. This information enhances understanding of the previous state of this patient to, from then evaluate the changes resulting from the disease process and vulnerability to falls at the time of hospitalization. The topic march was only kept that there is need of help or a support object for ambulation. The evaluation of climbing stairs due to difficulty in applying it in the hospital being excluded. The elderly who need help to walk shows great commitment of balance and muscle strength, which contributes to greater postural instability and predisposition to falls.²⁰ In addition, the elderly with free running or using canes had greater freedom of movement and sensation of safety compared to the elderly which make use of a walker or wheel chair, causing it to be exposed more and more times to falls.²³

For evaluation of gait and balance, the tool used by Mallmann¹³ with option for Tinetti²⁴ Index has changed since their model with objective questions facilitates understanding and application of the instrument. This detects changes in locomotion, diagnoses and quantifies the severity of the compromise, thus predicting the risk of falling; it consists of two scales: balance and gait, the first has nine items (sitting balance, raised, attempts to lift, just lifting, balance standing test of the three times, eyes closed, turning 360 ° and sitting). The second scale has seven items (start of the march, length and height of the steps, the steps symmetry, continuity of steps, direction, distance torso and ankles). The overall Index score is 28 points. A score

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lower than 19 indicates that risk is five times greater for falls.²⁵

Another item in the subsequent instrument adapted for hospital use was the history of falls and fractures, because the history of falls in the previous year is one of the most important variables for predicting future falls. More than two-thirds of seniors who experience a fall will fall again within six months. Thus, the prevalence of recurrent falls among the elderly is an important risk factor for further falls, and can trigger the fear of falling again that undermines the trust and functionality of the elderly.²³ The number of falls was divided into periods: the past three years and last year. Regarding the cause/condition and the floor-call time, the last fall was specified as the individual may have experienced several falls and the answer is probably not accurate. Information about the condition of the fall can target the evaluation to the cause of the event, for example: fall after rising from a lower position may be related to postural hypotension; falls after tripping or slipping indicates the presence of environmental factors or gait problems, balance and vision.²³

In the item on historical fractures, as well as those of the femur, vertebra and forearm, was also added an option for pelvic fracture that is common in falls in the elderly and was also asked if the fracture suffered was accidental. Among the fractures from falls in the elderly, the most common are the hip (25%), being more prevalent in individuals over 75 years. About 25% of older people with this type of fracture die six months after the event and 60% present inability to perform their habitual functions.²³

In the second part, relating to environmental mobility, it was adapted to an environmental scale of risk AIFE falls. The description of the individual circulation sites was summarized in the bedroom, hallway and bathroom, as are the areas of greatest circulation of hospitalized elderly and therefore most common sites for falls. Thus, 30% of falls occur when the patient leaves the bed and goes to the bathroom. The presence of wet ground and rush to get to the toilet further aggravates this situation.¹⁹

The wardrobe term was replaced by cabinets to be more generic and adapted to the hospital environment. An item relating to the presence of side rails on beds, locks on the wheels of the beds and accessible doorbell was added because half of inpatients falls occur at the bedside when the patient is lying down or getting up from the bed.¹⁹

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The evaluation of the stairs was maintained despite not being part of the internal structure of the inpatient unit, but can be used to access other areas of the hospital as tests sectors. It was also added to review the elevator to be present as a means for locomotion, generally on different floors of hospitals. In addition to the options yes and no, was added to option does not apply to cases where the place described is not available for evaluation.

Still regarding environmental assessment, they were kept items on physical structure of the unit. There is more vulnerability to falls when the floor is slippery, height and number of support bars are inadequate, height of sockets and switches with difficult access, poor lighting of circulation areas, among other factors that disfavor the balance of patients, especially in the elderly.¹⁹

In this context it stressed that falls interfere with quality of life and can harm the daily lives of the elderly, especially in hospital settings. However there are possibilities of prevention, among which highlight the environmental organization to provide security for the performance of their actividades.²⁶

CONCLUSION

The aging process, with structural and functional changes, influences the degree of independence and functional capacity of the human being, leading to greater vulnerability to falls. In hospitals, this occurrence is enhanced as a result of one's clinical condition and the hospital.

The falls in the hospital may be underreported and entail significant consequences for the elderly and institution. Because of this prevention must be a priority strategy of a multidisciplinary health team, especially nursing that continuously monitors the hospitalized individual. Furthermore, they can be considered iatrogenic and have a strong relationship with the quality of health services.

The identification of risk factors for falls, through specific tools for the elderly, facilitates the determination of the individual profile of this patient so that, based on vulnerabilities, preventive actions are planned, strengthening the security measures for the hospital environment.

In this study we chose to focus on the individual and environmental mobility dimension to structure the proposed instrument, because it is believed that these areas include a significant portion of

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vulnerability to falls in the hospital area. Viability in its application should be a brief instrument, mainly due to high demand for care and administrative care that the nurse performs in the hospital. It highlights the importance of other dimensions for the global assessment of the elderly, such as: cognitive assessment, personal history, medical diagnostics, nutritional status, medication use.

The adjustments made in the proposed instrument included objective questions, with filling multiple alternatives, facilitating the targeting of the actions of the nurse for the prevention of falls. As for the time of application of the Hospital AIFE can be during the admission of the elderly in the hospital ward, however, it is important that this instrument is an additional component in the work process in health and does not relieve other clinical assessments. In this way, the instrument must be used to expand and not to limit the work of nurses.

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