Title:
Falls in the Elderly and Its Relationship With the Characteristics of the Foot

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15. Rivadeneira, 2010. Prevention of foot diseases in the elderly population for caregivers. Degree dissertation prior to obtaining the degree of licenciada in nursing; Pontificia Universidad Católica del Ecuador Faculty of Nursing.
Abstract Summary:
The falls in the elderly are one of the main geriatric syndromes, due to their high prevalence and an important health problem, due to the high number of complications, incapacity and even death of the elderly. Its importance lies in the function of the most reliable indicator of fragility.

Learning Activity:

<table>
<thead>
<tr>
<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>The nurse will be able to evaluate the risk of falls in a holistic way in the elderly, also contemplating the foot characteristics. To avoid motor, functional and cognitive complications</td>
<td>Improve the ability of clinical approach in the elderly to provide comprehensive geriatric assessment improve</td>
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<td>That the nursing staff and students know the different scales of assessment that can be used to detect the risk of falls, functionality so they can detect in time the pathologies in the elderly</td>
<td>The knowledge of the different assessment scales will improve the plan of care when detecting pathologies and with respect to the research topic will allow to detect the risk of falls and how these are related to the structure and conditions of the foot in the elderly</td>
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</tbody>
</table>

Abstract Text:

Background: The falls in the elderly population are one of the main geriatric syndromes, due to their high prevalence and an important health problem, due to the high number of complications, incapacity and even death of the elderly. The importance of this geriatric syndrome relies on the function of the most reliable indicator of fragility in the elderly. Especially if they are repeated, they should be considered as indicators of a situation of tendency towards disability, and are both the result and the cause of various pathologies (1).

The World Health Organization in 2012 defines the fall as any involuntary event that causes the person to lose his balance and precipitates the person to the ground or other firm surface that stops him (2). Falls are the world's second leading cause of death from accidental or unintentional injuries. An estimated 424,000 people worldwide die from falls each year, with more than 80 per cent of those deaths occurring in low- and middle-income countries. Those over 65 are those who suffer more fatal falls. Each year 37.3 million falls occur whose seriousness requires medical attention. Preventive strategies should emphasize education, training, the creation of safer environments, the prioritization of fall-related research and the establishment of effective policies to reduce risks.

Generally, the reason for falls is multifactorial. Increased risk of polypharmacy, some concomitant pathologies, decreased physical function due to involvement of the musculoskeletal system, environmental factors and other geriatric syndromes (1,3-8). Most of these falls have no consequences or they are minor, but they can also have important consequences such as fractures. It is estimated that about 5% of falls cause serious injuries (among them, fractures), the consequences of which are temporary or permanent disability, increased hospital stay, complication of prognosis, diagnostic actions and treatment, and Psychosocial consequences, such as post-fall syndrome (fear of falling again, resulting in decreased activity and mobility) (7,9,10).

Falls are more frequent in women, although as the years go by, the tendency is to equalize. Two-thirds of the elderly who fall will suffer a further fall in the next six months. That is, the fall is a risk factor per se to suffer further falls (13). There are several factors that increase mortality due to falls, such as prolonged stay in the soil, pluripathology, polypharmacy, preexisting cognitive impairment, female sex and very advanced age (6,7). To prevent them, it is necessary to know the epidemiology of the problem in the adult
adult population and to go beyond the problem associated with frequent chronic pathologies in this type of population.

In addition to the above, the aging process generates a series of changes in the different structures that make up the ankle-foot complex, possibly altering the gait of the older adult. Foot conditions are a health problem, given the relevance they have for life and the maintenance of independence. Its alteration is a source of suffering and endangers the functional independence and autonomy of the elderly. Common foot problems result both from certain diseases, from years of wear, inappropriate footwear, trophic changes due to vascular insufficiency, inadequate nail hygiene, sensory deficits, obesity, or disabling illness. These factors include external factors such as lifestyle, customs, profession, inappropriate use of orthoses and risks determined by the family environment (architectural barriers).

The foot is a support organ composed of a complex osteoarticular, muscular, vascular, lymphatic and nervous system that gives it a design and architecture capable of performing two essential functions: a static, given by the support and the balance that they give to the human being being the erect attitude in standing; The other dynamic, that allows the march and all the movements executed in different functions to which the foot is subjected by the man in his daily life, labor, artistic or sport.

Progressive deterioration of the osteoarticular system leads to osteopenia, a distension of the capsule-ligamentous structures and a decrease in dorsal ankle flexion and mobility of the interosseous joints. These alterations will provoke structural modifications, triggering a kind of stretching of all muscle-ligamentous structures, which will lead to an increase in predisposition to falls and their complications, a growing tendency to chronic osteoarticular pain and a limitation in functionality, increasing Levels of dependency.

At the dermal level, there is a significant loss of plantar pad thickness and flexibility of the plantar integument due to collagen reduction and disappearance of elastin. The sweat glands undergo aplasia causing hyperkeratinization of the stratum corneum. The adipose tissue decreases and melanocytes are lost, but those that remain are hypertrophied and cause the alteration of the blood vessels, resulting in loss of hair.

As for the nail apparatus, its speed of growth decreases while the nail plate becomes hypertrophy acquiring a rough appearance and dirty brown coloration, often coming to separate from the nail bed. The nails become hard, dry and brittle (14). Of all the affections presented by the elderly in the feet, roughness or callosity, onychomycosis or fungal infection, onychocriptosis or ingrown toenail and hallus valgus, also known as bunion, are the most frequent2, they affect both men and To women and to any age, 16 and not to consider them as a priority, unfortunately, there are unnecessary consequences and repercussions on the Elderly.

Among the measures to be contemplated for the prevention of these, should include the assessment of the condition of the foot of the elderly and their podological treatment. These are inexpensive and easy to implement, suggesting the incorporation of a multidisciplinary program to improve the health of the geriatric foot in the fall protocol of residences and other centers of the elderly. For assessment a complete and systematic examination of the foot is necessary, even in the absence of complaints. Subsequently, the necessary preventive treatment will be applied: hygiene care, protection of the skin and prevention of pressure ulcers and podological care.

In a number of cases, more important measures, including surgical ones, will be necessary, but the relationship between the benefits provided and the risks should be assessed.

To date, there are few studies in the literature that demonstrate which pathological conditions are associated with an increased risk of falls in older adults. There are only articles that collect data on the prevalence of specific podological pathologies, which are detailed below. Foot pathology is a common problem among the elderly. Several studies show an increase in podiatric conditions in people over 64 and among the female gender. The prevalence of pathology ranges from 71% to 90.7%.
Among the most prevalent conditions are: nail abnormalities or onychopathies (49.62%-74.9%), hyperkeratosis and helomas or keratopathies (58.2%-73.6%), minor finger alterations (60%), presence of hallux Abductus valgus (37.1%-43.8%) and signs of fungal infection, suras and cracks or interdigital maceration (36.3%) (14, 15).

The female population has a higher prevalence of hyperkeratosis, helomas, alterations of the small fingers and hallux abductus valgus, whereas the male sex presents a greater prevalence of ungual alterations and mycosis (15,16).

It is important to achieve the maximum functionality of the foot and try to restore the highest possible level of independent activity. It is necessary to help the elderly person to have a good walking, involving him in the care of their feet, since many of their ailments can become chronic and require a periodic attention of the podólogo. If they are not treated, they could lead to progressive deterioration leading to loss of normal gait, instability, falls and the creation of physical, psychological, familial, social and economic burdens.

**Objective:** Determine if podological conditions are related to falls in the elderly.

**Specific objectives:**
- To define the prevalence of foot pathology in older adults belonging to the DIF of the city of Saltillo Coahuila.
- To identify the socio-demographic variables of podological pathology.
- To analyze the functional and cognitive status of older adults.
- Apply assessment scales to participants to assess their cognitive status, risk of falls, functional status, and nutritional status.
- Make a correlation of the data obtained.

**Methodology:** The type of design that will be used for this research will be descriptive correlational, the population will be conformed by older adults of the city of Saltillo Coahuila that are registered to day centers of the DIF, the sample will be taken of the total of older adults who attend the Different centers. With a show of convenience.

**Results:** The analysis of the data will be performed with the statistical package SPSS 21. A description of the characteristics of the sample will be made, where the frequencies and percentages of the variables of interest will be calculated as well as the measures of central tendency will be obtained. Lastly, a correlation of the variables will be performed and the significance of the falls in the older adult’s foot.

**Conclusions:** The importance of a podiatric assessment in older adults is necessary, this would help both personal, family, and health in different aspects (economic, social and development). It will inform us of the most common pathologies, to treat correctly the foot of the older adult anticipating us situations that increase the risk of falls.