

Evaluating Problems With Footwear in the Geriatric Population

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Abstract

Foot pathologies are common in nearly 80% of all elderly patients, and studies have indicated inappropriate footwear as one of the major underlying cause. It has been postulated that ill-fitting shoe wear affects plantar pressure, thus exacerbating weak balance. Complications arising from foot pathologies, which include difficulty in maintaining balance, have increased the risk of falls that can result in fractures and other serious injuries. The link between footwear and the onset or progression of certain foot pathologies has emphasized the need to explore and promote preventative measures to combat the issue. Wider and higher toe boxed shoes, along with sneakers, are examples of footwear documented to evenly distribute plantar pressure, increase comfort, and facilitate appropriate balance and gait. Ultimately, the use of appropriate footwear can help to better stabilize the foot, thus reducing the risk of sustaining debilitating physical injuries known to drastically decrease the quality of life among the geriatric population.

Keywords

geriatric medicine, fragility fractures, foot and ankle surgery, footwear, and geriatrics, foot pathology

Introduction

Problems with shoe wear have long been recognized as an endemic issue among the geriatric population with a prevalence rate of nearly 80%.^{1,2} Women in particular are more susceptible to these problems than men.¹ Individuals having foot pathology are often severely physically impaired, making it increasingly difficult to perform activities of daily living. Consequentially, this leads to physical inactivity, which is cited as one of the first signs of deterioration and the overall decrease in quality of life.³ Moreover, some studies have linked physical inactivity to suicide, depression, and increased risk of cardiovascular-related problems.^{3,4} Individuals with diabetes, chronic disease, nondiabetic neuropathy, and inflammatory conditions are at a severe disadvantage.⁴ Further complications of foot pathology, which include cellulitis, ulcerations, and difficulty in maintaining balance, have increased the risk of serious injuries and fractures from falls. Studies have shown that adults older than 65 years fall at least once per year on average, some of which are attributed to generalized thinning of skin and fat pad atrophy.^{5,6} The increased risk of falls may highlight the need to promote preventative measures to combat this issue. One of these measures may include wearing appropriate footwear.^{7,8} Unfortunately, little current data or research focuses on the role of footwear in the prevention of inactivity in the elderly patients.

Common foot pathologies like corns, hallux valgus (bunions), and hammertoes have been known to increase plantar pressure, cause discomfort, pain, and swelling.^{9,10} Multiple

etiologies have been noted to cause foot problems, and studies have indicated ill-fitting shoes as one of the major underlying cause.^{4,5,11} A prevailing hypothesis is that wearing the appropriate footwear will improve factors such as plantar pressure, thereby mitigating pathology while facilitating balance. Ultimately, the goal is to reduce the overall risk of serious injury. This review aims to form a general basis of understanding footwear-associated foot pathologies pertaining to the elderly patients.

Common Foot Pathologies: Footwear as a Contributor

Elderly individuals with preexisting clinical conditions such as diabetes, neuropathies, and musculoskeletal disorders are at a higher risk of developing foot problems when compared to normal, healthy individuals.^{7,11} Furthermore, factors such as exercise and living conditions contribute to the development of foot problems.^{3,12} Finally, the uneven pressure provoked by ill-fitting footwear has been documented as a key factor that can cause, accelerate, or exacerbate foot-related conditions.^{8,9,13}

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Some common foot pathologies include hallux valgus (bunions), corns (callus), and hammertoes.

Callus formations, or corns, result from continuous pressure from tight footwear, leading to hyperkeratosis of the skin.^{10,14} If left unattended, callus formations can lead to ulcerations, which are particularly troublesome for diabetic patients.^{10,14}

The hallux valgus deformity, or bunion, is also frequently linked to ill-fitting (ie, tight, narrow) footwear.^{10,14} It is caused by the lateral deviation of the great toe, which causes a valgus deformity in the first metatarsophalangeal (MTP) joint.^{10,14} Patients complain about pain over the medial eminence of the MTP joint.

Lesser toe deformities, such as hammertoes, are also associated with ill-fitting footwear. These deformities of the second, third, fourth, and fifth toe are caused by contracture of the phalangeal joints. Clinical presentations include the deformity accompanied by pain over the dorsal surface of the foot, which tends to worsen with ill-fitting footwear.^{10,14,15} One of the unifying elements to these 3 common forms of foot pathology is their link with ill-fitting footwear and their tendency to go unnoticed in the elderly population.

Assessing Footwear as a Treatment Option

Nonoperative approaches have been employed as the first line of treatment for the most common foot pathologies.¹⁶ Measures are taken to adjust or alleviate pressure from the affected area. As a result, wider and higher toe box shoes are recommended as the first line of treatment.^{17,18} Foot inserts (ie, Dr Scholls) are also used to facilitate balance by improving arch support, which can decrease the width of the foot during weight bearing maneuvers.¹⁹ Furthermore, met pads and splits have also used to limit the need for extra depth shoes.¹⁹ Operative management is considered only when conservative measures fail to relieve progressed, advanced-stage pathology. Usually, symptomatic relief can be achieved with more accommodating shoe wear after the soft tissue envelope around the foot is stabilized. This process of relieving the pressure areas and encouraging natural healing of ulcerations or soft tissue problems to heal before using modified shoe wear and orthotics often involves close follow-up in the office or wound care center. Special consideration is given to diabetic patients, who have a higher risk of developing ulcerations due to peripheral neuropathy.¹⁰ Therefore, routine physical examination is encouraged to detect and address these issues early before they lead to progressive deterioration. Studies have shown that women are more susceptible than men to problems associated with inappropriate footwear—likely owing to differences in shoe design.^{9,17,20}

In terms of the choice of footwear in the elderly patients, Lord et al concluded that individuals had better balance when wearing shoes with higher collars than with lower ones.⁹ Wide shoes are effective against bunions, and extra-depth shoes are more appropriate if the individual has hammertoes or mid-foot arthrosis.¹⁹ Low-heeled footwear is known to reduce the risk of falls, likely due to the associated lowering of the center

of gravity. While assessing different footwear, athletic and canvas shoes (sneakers) are associated with the lowest risk of a fall when compared to other types of shoes.^{10,12} Moreover, some suggested that sole hardness have a little effect on overall balance in the absence of a specific condition, such as hallux rigidus, which may benefit from application of hard sole.^{9,12} As an extra preventative measure, better fitting footwear with slip-resistant soles is recommended both inside and outside the household to reduce the risk of falls.^{12,16,18} Taken together, these studies seem to support the use of footwear with low heels, slip-resistant soles and wider frames to ensure comfort, better balance, and reduced risk of injury in the elderly population. In the event of multiple deformities, an individual may benefit from the combination of both extra-depth, wide, and low-heeled footwear to increase foot stability and facilitate balance.

Challenges and Limitations

The use of appropriate shoe wear in the elderly patients is related to the socioeconomic factors. Millions of elderly individuals live at or below the poverty level.²¹ In fact, women older than 75 years are 3 times more likely to become poor.^{4,21} Without established financial programs such as social security, nearly half of all elderly individuals would be considered poor today.^{4,21} Changes in living conditions (ie, community homes, nursing homes, etc) can often worsen the socioeconomic status of elderly patients.²² Deteriorating health conditions followed by reduced physical activity can lead to a shift in clinical care, one that emphasizes the management of illness.^{4,21} In the face of such socioeconomic constraints, appropriate footwear is often an afterthought. One study showed that elderly individuals rarely get “sized” for shoes that fit any more often than once in 5 years.^{17,20} Furthermore, retail stores often do not stock the customized shoes (ie, extra wide) needed for elderly customers, making availability an issue for elderly patients.¹⁷ The increased expenses may cause elderly patients to abandon the recommendations completely. The neglect of appropriate footwear in the elderly has been linked to early amputation, and in rare cases, early demise.^{14,15}

To help alleviate the financial burden, elderly patients enrolled in Medicare Part B may benefit from the medical coverage of certain medical supplies and preventative services.²³ Eligible patients typically have diabetes or other severe foot diseases. Under the Medicare Part B provision, such patients are entitled to a pair of custom-molded shoes, 3 pairs of inserts, or a pair of extra-depth shoes per calendar year.²³ The patient will be held responsible for only 20% of the cost while Medicare covers the rest. This provision ultimately helps to reduce the costs associated with obtaining needed medical treatment.

Conclusion

The growing list of common health hazards parallels the rise in age of elderly patients. Some of these hazards such as wet pavements and bad weather conditions are capable of causing

serious injury. Footwear has been implicated in the incidence or prevalence of some common foot pathologies. These pathologies, in return, have contributed to the growing risk of even more serious injuries such as falls and fractures. Ultimately, the noticeable decrease in physical activity in the elderly patients has been linked to depression and an overall decline health and quality of life. Clinically, preventative measures such as appropriate footwear should be continually emphasized to stop or delay the progression of some foot problems. While recommending appropriate footwear is a cost-effective approach when compared to other options, it is often hindered by socio-economic obstacles. Nevertheless, studies have shown that it can be a vital step to ensure prolonged musculoskeletal and overall health among the elderly patients.

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