Older people and ill fitting shoes

S L Burns, G P Leese, M E T McMurdo

Foot health is an important issue in older life. Poor foot health is extremely common, although the reason for this is not straightforward. With rising age there is an increased risk of conditions such as diabetes mellitus which may predispose to foot problems, but this does not explain why older non-diabetic patients have a similar rate of foot disease to their diabetic contemporaries. Almost half the patients who were referred to one specialist foot clinic over a two year period were not diabetic and most were over 60 years of age. This is important as a significant association has been demonstrated in older people between “trouble with feet” and a decrease in functional ability measured by a disability score. This is likely to be independent of the presence of diabetes, peripheral neuropathy, or peripheral vascular disease. 

METHODS

Our subjects were a convenience sample of 65 consecutive admissions to a rehabilitation unit, all of whom had an mental state questionnaire score greater than 6/10 (all patients referred for rehabilitation have cognitive screening as part of the assessment process). The unit offers rehabilitation to people after a variety of problems including orthopaedic, stroke, general medical, and surgical conditions. All measurements were made by a single observer using equipment on loan from the diabetic foot clinic. First, foot length was measured using a standard “Clarks” shoe shop measuring stick. This is calibrated to measure the feet in a sitting position. Foot width was measured with callipers across the widest part of the metatarsal head. The size of footwear used by the patient to attend physiotherapy was then recorded. This was achieved by looking at the size of the shoe and by measuring the internal dimensions with callipers. The two sizes were then compared.

Next, sensation was tested using a standard 10 g (5.07) monofilament. The foot was judged to be insensate if the
monofilament could not be detected at, at least, six out of eight positions on the foot.

The foot was inspected and any ulceration was noted. When men and women were compared, 65% of the men (17/26) wore ill fitting shoes compared with 77% of the women (30/39), although this was not statistically significant—perhaps due to the small numbers involved.

Two people had only slippers available on the ward, and one person had shoes which had been fitted by the orthotic department.

None of the six patients with diabetes were wearing shoes of the correct size (compare with Reddy et al). This may relate to difficulties in purchasing shoes of varying width fittings—very wide or very narrow shoes are not always readily available.

Tables 2 and 3 show the results of regression analyses. Incorrect shoe length was significantly associated with increased ulceration (odds ratio (OR) = 10.04, p = 0.016). Presence of ulceration was significantly associated with a history of peripheral vascular disease (OR = 11.56, p = 0.008). Pain was significantly associated with incorrect shoe length (p = 0.0238) and with sensory impairment (p = 0.0314).

### DISCUSSION

Most of the elderly people studied had ill fitting footwear and an association was found between self reported pain score and ill fitting shoes, and an increase in ulceration.

This observational study raises several questions. Firstly, it is not clear whether people with painful or ulcerated feet buy large shoes for comfort or that the large shoes are the underlying cause of the foot problem. However we do know from studies in patients with diabetes that shoes which rub are a cause of ulceration, and from studies in sports footwear that if the foot can slide about in the shoe the shearing forces on the skin are increased with resultant injury.

Secondly, although inappropriate shoes have been cited as a cause of falls we were unable to record rates of falling during this initial study. We hope to rectify this in future research.

Finally, if we are to recommend new shoes to our patients we must ensure that they have access to facilities where their feet can be measured and shoes can be fitted correctly. White and Mulley found that 25% community dwelling older people were unable to get to a shoe shop. These authors suggested the possibility of mobile shoe shops where trained staff can go out into people’s homes to fit shoes. Our study population is a trailer group and so difficulties with access are likely to be greater.

Extra wide or extra narrow shoe fittings are not always easily available and specialist companies providing this type of footwear are likely to have more expensive products which many older people cannot afford.

In conclusion, our findings suggest that a straightforward assessment of footwear in older people could improve comfort and avoid preventable foot problems.

### REFERENCES


### Authors’ affiliations

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### Table 1 Subjects categorised by shoe fit

<table>
<thead>
<tr>
<th>Too wide</th>
<th>Correct width</th>
<th>Too narrow</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too long</td>
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<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Correct length</td>
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<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Too small</td>
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<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
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<td>42</td>
<td>2</td>
</tr>
</tbody>
</table>

PVD, peripheral vascular disease.

### Table 2 Results of logistic regression analysis

<table>
<thead>
<tr>
<th>Associations with ulceration</th>
<th>Odds ratio</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect shoe length</td>
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<td>0.016</td>
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<td>Incorrect shoe width</td>
<td>0.75</td>
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<td>History of diabetes</td>
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<tr>
<td>History of PVD</td>
<td>11.56</td>
<td>0.008</td>
</tr>
<tr>
<td>Sensory impairment</td>
<td>1.26</td>
<td>0.713</td>
</tr>
</tbody>
</table>

PVD, peripheral vascular disease.

### Table 3 Results of regression analysis

<table>
<thead>
<tr>
<th>Associations with pain (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect shoe length</td>
</tr>
<tr>
<td>Incorrect shoe width</td>
</tr>
<tr>
<td>History of diabetes</td>
</tr>
<tr>
<td>History of PVD</td>
</tr>
<tr>
<td>Sensory impairment</td>
</tr>
</tbody>
</table>

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**MEDICAL ANNIVERSARY**

**Prosper Ménière (18 June 1799)**

Prosper Ménière (1799–1862) was born at Angers, Maine-et-Loire, France, son of a tradesman. He graduated in medicine in Paris with a gold medal (1826), MD (1828), and became assistant to Dupuytren at the Hôtel Dieu; he eventually became chief physician to the Institution for Deaf Mutes. Just before he died he described a condition of middle age comprising vertigo, nausea, headache, deafness and tinnitus, occurring in attacks. He attributed his syndrome to dysfunction in the semicircular canals.

He married Mlle Becquerel, of a family with numerous links to medicine, otolaryngology, and radioactivity. He died of pneumonia on 7 February 1862.—D G James