Factors affecting Foot Self-care Practices in Diaetics in an Asian Population

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All the authors certify that they have no funding or commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing agreements etc.) to themselves or their family members that might pose a conflict of interest.
Foot complications commonly occur in diabetic patients due to poor foot care.

The prevalence of Diabetes Mellitus (DM) in Singapore increased in the past 10 years, between 8.2% and 11.3%. Attributed to genetic and environmental factors.

Aimed to understand the extent of proper foot care practices amongst diabetic patients in a multi-ethnic Asian population.

To identify the factors which potentially influence the extent of proper foot care practices amongst diabetic patients.
Methods

• **350 patients** – formally diagnosed with DM

• Cross-sectional study:
  – Patient demographics and past medical history
  – Nottingham Assessment of Functional Footcare (NAFF) scores
    • 29 questions (rated 0-3) about foot care behavior frequency
  – Extent of peripheral neuropathy
    • Semmes-Weinstein 5.07 esthesiometer

• Data analysis
  – SPSS Version 20.0
# Participant Characteristics

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
<th>Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>60 and Below</td>
<td>163 (46.6%)</td>
<td>GCE O level &amp; Below</td>
<td>304 (86.9%)</td>
</tr>
<tr>
<td>More than 60</td>
<td>187 (53.4%)</td>
<td>GCE A level &amp; Above</td>
<td>46 (13.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
<th>Employment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>215 (61.4%)</td>
<td>Unemployed</td>
<td>37 (10.6%)</td>
</tr>
<tr>
<td>Female</td>
<td>135 (38.6%)</td>
<td>Employed</td>
<td>167 (47.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th></th>
<th>Previous DM foot complication</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>147 (42.0%)</td>
<td>Yes</td>
<td>129 (36.9%)</td>
</tr>
<tr>
<td>Malay</td>
<td>102 (29.1%)</td>
<td>No</td>
<td>221 (63.1%)</td>
</tr>
<tr>
<td>Indian</td>
<td>88 (25.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>13 (3.7%)</td>
<td></td>
<td></td>
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</tbody>
</table>
Results

- Univariate analysis - Significant differences in footcare
  - Gender – males scored better than females ($p = 0.003$)
  - Ethnicity – non-Chinese scored better than Chinese participants ($p = 0.031$)
  - Education – those with post-secondary education scored better ($p = 0.017$)
  - Occupation – employed participants scored better ($p = 0.006$)
  - DM foot complications – those with previous complications scored better ($p=0.022$)
## Results

Linear regression analysis to **control for confounders**

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>95.0% Confidence Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>(Constant)</td>
<td>45.999</td>
<td>1.155</td>
<td></td>
<td>39.839</td>
<td>0.000</td>
</tr>
<tr>
<td>Employed</td>
<td>1.651</td>
<td>0.771</td>
<td>0.115</td>
<td>2.140</td>
<td>0.033</td>
</tr>
<tr>
<td>Post-secondary Education</td>
<td>2.934</td>
<td>1.124</td>
<td>0.138</td>
<td>2.611</td>
<td>0.009</td>
</tr>
<tr>
<td>Foot Complications</td>
<td>1.747</td>
<td>0.792</td>
<td>0.117</td>
<td>2.207</td>
<td>0.028</td>
</tr>
</tbody>
</table>
Discussion

• Education
  – Post-secondary education correlated with better foot self-care practices compared to lower education level (p=0.009)
    • Lower understanding of the disease process amongst less educated
    • Less awareness of foot complications

• Foot complications
  – The presence of foot complications, ranging from foot ulcers to amputations of varying severity, had a positive correlation with foot care scores (p=0.028)
• Employment
  – Previous studies have shown that patients who were retired generally had better practices than those who were employed
  – Our study showed *employed* patients have better practices than retirees or the unemployed ($p=0.033$)
  – Healthcare funding in different countries may have influenced this difference
  – Previous diabetic *foot complications*, which require amputations, could *preclude* a patient from *getting a job* afterwards
Limitations

• Small study population (350 participants)

• Study was conducted in a hospital setting
  – might not necessarily be able to apply these to diabetic patients in the community

• Recall bias

• Non-relevance of certain questions in the NAFF questionnaire to the Singapore context
Conclusion

• Compared to studies performed in Western countries, Asian patients have poorer foot care practices.

• The following factors have been shown to be associated with poorer foot care practices:
  – Lower education level
  – Unemployment
  – Absence of previous diabetic foot complications

• Further studies into specific interventions to improve foot care practices in such subpopulations are indicated.
References

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