Manual Wheelchairs for People with Diabetes: Expert’s Opinion on Indications for Wheelchair Adjustments

Philippe Archambault¹,², Sophie-Anne Scherrer¹,², Joelle Chu Yu Chee¹,², Nhi Vu¹,², Patrice Lu¹,², Michelle Ischack³

¹. School of Physical and Occupational Therapy, McGill University; 2. Interdisciplinary Research Center in Rehabilitation; 3. CIUSSS Centre-Ouest-de-l’Île-de-Montréal

Montreal, Canada
Diabetes

2014
- 387 millions

2035
- 592 millions

Low-to middle income countries: 77% of cases

(Cho et al, 2014)
Diabetes and mobility impairments

- Complications include:
  - Obesity
  - Neuropathies
  - Loss of sensation
  - Visual impairments
  - Cognitive impairments
  - Decreased blood flow, skin ulcers

- A common consequence is amputation of foot or lower extremity

- **Wheelchairs** are often recommended to people with diabetes who have mobility limitations
Need for wheelchair guidelines for people with diabetes

Although there are general guidelines for wheelchair adjustments (e.g. WHO), none are specific to people with diabetes.

**Objective:** describe the clinical reasoning underlying MWC adjustments for adults with diabetes through expert opinions.
Participants (N = 13)

- Physicians: 1
- OTs: 7
- PTs: 3
- Technicians: 2
- Acute and technical setting: 3
- Long-term care: 3
- Rehabilitation on center: 7
Example of wheelchair adjustments: skin integrity

- **Issues**: risks of sores, incidents during transfers and propulsion, incontinence and perspiration

- **Strategies**: interconnected air-cell or gel cushions; wide-back support avoid foam cushions
Example of wheelchair adjustments: obesity

- **Issues**: wheelchair durability, skin protection, community mobility

- **Strategies**: Lightweight wheelchair; double-X frame
Indications and contraindications

Specific adjustments may be beneficial for some diabetes-associated conditions, but not for others

Example: Wide-back support and deep seat to improve pressure distribution; but this makes transfer more difficult for someone with decreased strength
### Considerations for less resourced settings

<table>
<thead>
<tr>
<th>Issues</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility/environmental barriers</td>
<td>• Large wheels&lt;br&gt;• Airless tires to avoid puncture</td>
</tr>
<tr>
<td>Incontinence in humid climate</td>
<td>• Waterproof seat cushion covers&lt;br&gt;• Provision of extra cover to allow cleaning</td>
</tr>
<tr>
<td>Wheelchair robustness/durability</td>
<td>• Fixed axles&lt;br&gt;• Robust sling seat insert to avoid sling stretching and compression of buttocks</td>
</tr>
</tbody>
</table>
Conclusions

- Participants confirmed that the conditions associated with diabetes (neuropathy, obesity, etc.), are determining factors for wheelchair adjustments.

- Challenge is in simultaneous management of multiple conditions, often present in the same individual.

- In less-resourced settings, there is a need to increase the availability and affordability of wheelchairs, without compromising on durability and reliability.
Thank you!

For more information: