A COMPARISON OF CHARACTERISTICS OF PATIENTS SEEN IN A TERTIARY HOSPITAL DIABETES TELEHEALTH SERVICE VERSUS SPECIALIST FACE-TO-FACE OUTPATIENTS

Anish Menon
Centre for Online Health

Diabetes

281 Australians develop diabetes every day
~1.7 million Australians have diabetes
An estimated 2.4 million Australians are affected by diabetes every day
Total annual cost impact of diabetes in Australia estimated at $14.9 billion

Leading cause of diabetes

• Kidney failure
• Preventable hospitalisations

Diabetes Regional/Remote

• Higher proportion with chronic diseases
• Increased diabetes-related hospitalisation rates
• Worse health outcomes

1. Australian Bureau of Statistics (ABS), 2017

Source: Diabetes Australia 2017
Diabetes & Telehealth – Stakeholder views

- Endocrinologists’ perspective
  - Proportion of diabetes consultations can be substituted
  - Minimal requirement for in-person visits
  - Management recommendations are clinically acceptable

- Patients’ perspective
  - Expressed high satisfaction


Diabetes & Telehealth – Evidence

- Increasing evidence that it works
- But…
  - Uptake is slow
- Limited published evidence
  - Diabetes Telehealth Service (DTS) in Australia


Diabetes & Telehealth – PA Hospital

- One of the early adopters of a DTS in 2011
- Based at the purpose-built centralised PAH Telehealth Centre
- The service covers a wide area of Queensland & is expanding


Annual occasions of combined diabetes/endocrine service

Occasions of service August 2016
DTS (Diabetes Telehealth Service)

PA Hospital
Fax/email
Video conference
GP Practice/
Health Centre

ANDA - Australian National Diabetes Audit

• Annual audit – Cross-sectional survey
• Alternate years capture different aspects of diabetes
  • ANDA – AQSMA in May 2016
  • ANDA – AQCA in May 2017
• In 2016 we included data from the DTS for the first time

Aim

• Describe patient-related characteristics of those attending the DTS at a tertiary specialist centre and compare
  • these with the characteristics of people attending face-to-face visits at the same centre’s diabetes outpatient service (DOS).

This could be useful to inform DTS service improvements
• regarding patient education and clinical care.

ANDA – AQSMA in May 2016

• Focus on patient education and self-management
• Clinical parameters to be covered in ANDA-AQCA in May 2017
• Total numbers – 188
  • 155 in the Outpatient (DOS) and 33 in the Telehealth (DTS) group

Results:

Patient Demographics

0% 10% 20% 30% 40% 50% 60% 70% 80%

Male total
Female total
Initial visit
Diabetes Type
Type 1
Type 2
Other
Aboriginal/Torres Strait Islander
Type 1
Type 2

Mean Age (years)

Total
Type 1
Type 2
Telehealth (DTS)
Outpatient (DOS)
**Patient Demographics**

**Mean Diabetes Duration (years)**

![Graph showing mean diabetes duration for Type 1 and Type 2 patients in telehealth and outpatient settings.]

**Results: Health professional appointments in the past 12 months**

- **Diabetes Educator (total)**
- **Dietitian (total)**
- **Podiatrist (total)**
- **Ophthalmologist (total)**
- **Optometrist (total)**
- **Psychologist (total)**

![Bar chart comparing telehealth and outpatient appointments for different health professionals.]

**Results: Patient self-care practices**

- **Difficulties following prescribed diet/day**
- **Check blood glucose as often as recommended**
- **Forgot to take medications**

![Bar chart showing difficulties and self-care practices for Type 1 and Type 2 patients in telehealth and outpatient settings.]

**Results: Patient mental well-being and treatment**

- **Depression likely (total)**
- **Patient taking antidepressants (total)**
- **Psych. treatment/counselling – past (total)**
- **Psych. treatment/counselling – now (total)**

![Bar chart comparing telehealth and outpatient mental well-being and treatment for Type 1 and Type 2 patients.]

**Results: Diabetes management**

- **Glycated Haemoglobin HbA1c %**

![Graph showing HbA1c levels for Type 1 and Type 2 patients in telehealth and outpatient settings.]

**Results: Diabetes management**

- **Proportion of patients on insulin among T2DM**
- **Physical activity sufficient**
- **Current Smoker**

![Bar chart comparing insulin use, physical activity, and smoking status among Type 1 and Type 2 patients in telehealth and outpatient settings.]

---

**Successes and Failures in Telehealth 2017**
Results: Quality of Life Assessment

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Type1</th>
<th>Type2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telehealth (DTS)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient (DOH)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean Own Health State Rating (0 to 100)

Recommendations for improvements to DTS

- People with diabetes in the DTS had more complex diabetes and thus will require more resource allocation – further expansion of existing DTS and/or setting up of new DTSes.
- Given the high attendances of diabetes patients with diabetes educators, enhancing the skills of the local Diabetes Educator would likely facilitate even better diabetes care in regional and remote areas.
- Greater indigenous component and thus treatment needs to consider cultural sensitivities and assistance of healthcare workers.
- Higher proportion of reported smoking rates in DTS group would require a greater emphasis to be placed on smoking cessation in diabetes management care plans in future.
- The higher proportion of females in the DTS group needs review exploring the different population groups served by DTS and attendance rates by gender.

Limitations

- Small number
- Lack of longitudinal follow-up
- Generalisability
- Clinical parameters
  - ANDA-AQCA 2017

Future

- Future national audits should include the mode of delivery
- Establishing DTS services
- Look at implementation of mHealth as an adjunct
  - Ep. BGL data etc.
  - Questionnaires through apps

Patient from Jundah

- Excellent glycaemic management
- No more low blood glucose
- Discharged back to local doctors / RFDS

Conclusions

- More complex diabetes in DTS Group
  - Higher proportion of
    - Indigenous clients
    - Higher HbA1c
    - Longer mean duration of diabetes
- DTS is providing a valuable service
SFT 2017 Special Issue

Results: Patient Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type 1 (n=57.6 ± 12.6)</th>
<th>Type 2 (n=50.3 ± 14.8)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>33</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>Mean Age (years)</td>
<td>57.6 ± 12.6</td>
<td>50.3 ± 14.8</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male total</td>
<td>Female total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13 (9) 39%</td>
<td>113 (70) 73%</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>20 (12) 61%</td>
<td>42 (12) 27%</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Visit</td>
<td>Initial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 24%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes Type</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>21 63.3%</td>
<td>95 61.3%</td>
<td>1 3.4%</td>
</tr>
<tr>
<td>Mean Diabetes duration</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>20.4 ± 14.0</td>
<td>21.0 ± 15.7</td>
<td>20.3 ± 13.8</td>
</tr>
<tr>
<td></td>
<td>16.9 ± 13.4</td>
<td>22.6 ± 15.8</td>
<td>13.6 ± 10.6</td>
</tr>
<tr>
<td>Aboriginal/Torres Strait Islander</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>11 33%</td>
<td>2 1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 18% (n=11)</td>
<td>1 2% (n=58)</td>
<td>0.064</td>
</tr>
<tr>
<td></td>
<td>9 43% (n=21)</td>
<td>1 1% (n=95)</td>
<td>&lt;0.001*</td>
</tr>
</tbody>
</table>

Results: Patient self-care practices

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type 1 (n=57.6 ± 12.6)</th>
<th>Type 2 (n=50.3 ± 14.8)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulties following prescribed diet (total)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27%</td>
<td>42%</td>
<td>0.117</td>
</tr>
<tr>
<td></td>
<td>18%</td>
<td>31%</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>33%</td>
<td>48%</td>
<td>0.209</td>
</tr>
<tr>
<td>Check blood glucose as often as recommended (total)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>61%</td>
<td>72%</td>
<td>0.184</td>
</tr>
<tr>
<td></td>
<td>64%</td>
<td>79%</td>
<td>0.265</td>
</tr>
<tr>
<td></td>
<td>57%</td>
<td>67%</td>
<td>0.372</td>
</tr>
<tr>
<td>Forget to take medications</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>27%</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18%</td>
<td>29%</td>
<td>0.715</td>
</tr>
<tr>
<td></td>
<td>33%</td>
<td>36%</td>
<td>0.831</td>
</tr>
</tbody>
</table>

Results: Patient mental well-being and treatment

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type 1 (n=57.6 ± 12.6)</th>
<th>Type 2 (n=50.3 ± 14.8)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression likely (total)</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>33%</td>
<td>32%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>36% (n=11)</td>
<td>26% (n=58)</td>
<td>0.480</td>
</tr>
<tr>
<td></td>
<td>33% (n=21)</td>
<td>37% (n=95)</td>
<td>0.762</td>
</tr>
<tr>
<td>Patient taking antidepressants (total)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>36%</td>
<td>22%</td>
<td>0.080</td>
</tr>
<tr>
<td></td>
<td>55%</td>
<td>26%</td>
<td>0.078</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td>19%</td>
<td>0.374</td>
</tr>
<tr>
<td>Psych. treatment/counselling – past (total)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>39%</td>
<td>28%</td>
<td>0.212</td>
</tr>
<tr>
<td></td>
<td>64%</td>
<td>36%</td>
<td>0.106</td>
</tr>
<tr>
<td></td>
<td>29%</td>
<td>22%</td>
<td>0.571</td>
</tr>
<tr>
<td>Psych. treatment/counselling – now (total)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12%</td>
<td>9%</td>
<td>0.528</td>
</tr>
<tr>
<td></td>
<td>9%</td>
<td>14%</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>14%</td>
<td>6%</td>
<td>0.207</td>
</tr>
</tbody>
</table>

Results: Diabetes management, Quality of Life Assessment & Diabetes Distress

<table>
<thead>
<tr>
<th>Variable</th>
<th>Type 1 (n=57.6 ± 12.6)</th>
<th>Type 2 (n=50.3 ± 14.8)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycated Haemoglobin HbA1c %</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>9.0 ± 2.0 (74.6 ± 21.7)</td>
<td>8.8 ± 1.4 (72.6 ± 15.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.1 ± 2.3 (76.3 ± 24.7)</td>
<td>8.2 ± 1.6 (66 ± 17.5)</td>
<td>0.013*</td>
</tr>
<tr>
<td>Proportion of patients on insulin among T2DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 81%</td>
<td>72 75.8%</td>
<td>0.778</td>
</tr>
<tr>
<td>Physical activity sufficient</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>19 58%</td>
<td>70 45%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 73% (n=11)</td>
<td>38 66% (n=58)</td>
<td>0.740</td>
</tr>
<tr>
<td></td>
<td>10 48% (n=21)</td>
<td>30 32% (n=95)</td>
<td>0.162</td>
</tr>
<tr>
<td>Current Smoker</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>9 27%</td>
<td>20 13%</td>
<td>0.038*</td>
</tr>
<tr>
<td></td>
<td>2 18% (n=11)</td>
<td>9 16% (n=58)</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>6 29% (n=21)</td>
<td>10 11% (n=95)</td>
<td>0.04*</td>
</tr>
<tr>
<td>Mean Own Health State Rating (0 to 100)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60.2 ± 23.3</td>
<td>62.3 ± 25.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>59 ± 23.1</td>
<td>65.4 ± 21</td>
<td></td>
</tr>
<tr>
<td>Mean DDS2 Score</td>
<td>Type 1</td>
<td>Type 2</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>2.4 ±1.2</td>
<td>2.1 ± 0.8</td>
<td>0.924</td>
</tr>
<tr>
<td></td>
<td>2.4 ±1.2</td>
<td>2.0± 0.9</td>
<td>0.669</td>
</tr>
<tr>
<td></td>
<td>2.3 ±1.2</td>
<td>2.0± 0.7</td>
<td>0.81</td>
</tr>
</tbody>
</table>