Prevalence of and Risk Factors for Nonadherence to Insulin among Paediatric Type 1 Diabetes Patients in Singapore

Chua B1, Lim XY1, Poh KM1, Stephanie J1, Cheen MP3, Lim ST1, Lek N1,3
1 KK Women’s and Children’s Hospital, Singapore
2 Singapore General Hospital, Singapore
3 Duke-NUS Medical School, National University of Singapore, Singapore

Introduction

• Nonadherence to insulin therapy is a significant problem worldwide, which is associated with poor health outcomes among patients with type 1 diabetes (T1D).
• It is important to identify the risk factors related to nonadherence to target those at higher risk of diabetic complications.
• In Singapore, there is a knowledge gap in understanding the risk factors for insulin nonadherence in paediatric patients with T1D.

Objectives

• To assess the prevalence of nonadherence to insulin therapy among paediatric patients with T1D in Singapore.
• To identify the associated risk factors for insulin nonadherence in this group of patients.

Methods

• This is a single centre, retrospective longitudinal study in KK Women’s and Children’s Hospital, Singapore.

Inclusion criteria

• Singapore citizens with T1DM aged ≥18 years old
• ≥1 year of insulin prescription between 1st January 2012 – 31st December 2016
• Insulin pump users
• Follow up at other healthcare institutions

Exclusion criteria

• Follow up at other healthcare institutions

Study outcomes

• Primary outcomes: Prevalence of nonadherence measured by medication possession ratio (MPR)
• Secondary outcomes: Factors associated with nonadherence

Statistical analysis

• Mann Whitney U test, I-test, χ2 test to compare medians, means and proportions, respectively
• Logistic regression to assess factors associated with nonadherence

Results

• A total of 210 patients were included in the study.
• Those in the nonadherent group were older and had a longer duration of follow up and diabetes since diagnosis. Gender, race, financial class and number of concurrent medications were comparable between the nonadherent and adherent groups (Refer Table 1).

<table>
<thead>
<tr>
<th>MPR &lt; 100%</th>
<th>Sensitivity analyses performed for varying definitions of MPR:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPR &lt; 95%</td>
<td>26.2% (95% CI = 20.4% – 32.7%)</td>
</tr>
<tr>
<td>MPR &lt; 80%</td>
<td>12.4% (95% CI = 8.3% – 17.6%)</td>
</tr>
</tbody>
</table>

Discussion

• No gold standard exist for MPR definition of nonadherence - varying thresholds exist depending on disease. As absolute adherence to insulin therapy is important in T1D, nonadherence was defined as MPR < 100% in this study.
• Those who had diabetes for a longer duration were more likely to be nonadherent to insulin therapy, likely due to the fatigue from care of a chronic, lifelong condition.
• Patient reported measures in conjunction with pharmacy refill records may provide complimentary and holistic view of nonadherence behaviors

Conclusion

• More than one-third of the paediatric patients with T1D in Singapore were nonadherent to insulin therapy.
• This signifies a need to design targeted interventions based on the risk factors identified in this study.

References