Health Outcome Indicators in Children and Young People with Diabetes Mellitus during the SARS-CoV-2 Pandemic

NIKITA BHAT, RACHEL OH LIM, ELIZABTH NASH, NISH PATEL, EVELIEN GEVERS, PRATIK SHAH

1. Barts and The London School of Medicine and Dentistry, Queen Mary University of London, United Kingdom
2. Department of Paediatric Endocrinology, The Royal London Children’s Hospital, Barts Health NHS Trust, London, United Kingdom
3. William Harvey Research Institute, Queen Mary University of London, London, United Kingdom

INTRODUCTION

The SARS-CoV-2 pandemic has resulted in major cutbacks in service provision to patients. This could be detrimental to children with diabetes mellitus (DM) who need regular access to healthcare. The lockdown has also potentially caused changes in diet, sedentary behavior and psychological burden due to stress associated with COVID-19, which can affect glycemic control. Current literature is inconclusive and focuses on the impact on HbA1c levels in the short term; little is known on other markers of control or long term effects

AIM

- To observe the long-term effects of the pandemic and lockdowns on clinical outcome markers amongst children and young people's DM with DM
- To evaluate service provision during the pandemic of the paediatric diabetes team
- To understand mental health outcomes of the pandemic and lockdown on CYP with chronic conditions

RESULTS

- There were 207 patients with T1DM, 18 with T2DM, 11 with MODY and 34 with others.
- The mean age was 14.2 ± 4.0 and ranged from 2 to 19 years old.

<table>
<thead>
<tr>
<th>Mean BMI-T0 (95% CI)</th>
<th>Mean BMI-T1 (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.42 (21.45-23.4)</td>
<td>22.21 (21.36-23.16)</td>
<td>&gt;0.05</td>
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<tr>
<td>38.71 (39.71-39.71)</td>
<td>36.85 (36.85-36.85)</td>
<td>&gt;0.05</td>
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- The BMI of patients with T1DM significantly increased from T0 to T1 (21.45 to 22.33, p<0.001) (Table 1).
- BMI of those with T2DM reduced, but this was skewed from a small sample size and one patient whose BMI decreased substantially due to change in management.
- The mean HbA1c values for the whole cohort did not change significantly (61.7 to 62.1 mmol/mol, p=0.286), neither did that for just the patients with T1DM.
- The increase in HbA1c for patients with T2DM alone was significant (51.4 to 57.8 mmol/mol, p=0.052).

- Of those assessed during both periods, (n=111), 55.9% required psychological support in T0 versus 57.7% in T1.
- The percentage of patients who received ‘red’ was significantly reduced from T1 to T0 (4.2% to 15.4%) (Figure 3).
- Of those with data for both periods and receiving psychological input during T0/ T1 (n=56), mental health stagnation declined for 38.6%, remained unchanged for 42.1% and improved for 19.3% (p=0.092) (Figure 4).

DISCUSSION

- T1DM: No deterioration in glycemic control during the pandemic, which correlates with previous studies showing an improvement or no change. (4)
  - Lockdown may have allowed more timely insulin administration, monitoring of glucose levels and familial support.
  - T2DM: significant decline in glycemic control
  - Mainstay T2DM management is outpatient clinics discussing lifestyle changes and therapy, but with the transition to virtual clinics, there was reduced attendances and monitoring of outcome markers. Also, technologies like insulin pumps and continuous glucose monitors tend T1DM management to a better transition to remote care.(4,5)

- T2DM: BMI significantly increased during the pandemic
  - Previous studies have similarly shown negative effects of lockdown measures on healthy eating behaviors and exercise in CYP.(5)
  - Emphasis on lifestyle management is essential as it can largely impact on HbA1c in the long term.(6)

- First to report on mental health of CYP with DM during COVID-19
  - Although the proportion of patients assessed as needing support did not increase, those having severe mental health problems increased drastically.
  - Increased mental health needs has been uniformly noted globally during the pandemic,(10,11) and may be due to anxiety from the pandemic, stress of disrupted routines and loneliness from isolation measures.
  - CYP with DM already experience higher stress from the need for compliance to chronic medication and regular remote appointments, school disruption and the fear of death,(12) so added stress and reduced access to health services could play a large part in their anxiety.

Conclusion

- While the pandemic, the BMI of patients with T1D and the HbA1c of patients with T20 increased significantly. Key indicators were monitored less frequently and patient’s mental health deteriorated likely due to less face to face contact.

REFERENCES