GLYCAEMIC CONTROL AND ACUTE COMPLICATIONS IN EUROPEAN CHILDREN, ADOLESCENTS AND YOUNG ADULTS WITH TYPE 1 DIABETES (T1D) IN THE TEENS STUDY

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INTRODUCTION
- Suboptimal glycaemic control in persons with type 1 diabetes (T1D) increases risk for chronic complications; poor control in the current era of intensive insulin therapy is also associated with acute complications, such as diabetic ketoacidosis (DKA) and hypoglycaemia.
- International treatment guidelines recommend glycaemic targets to preserve health and reduce the risk of complications. However, many youth with T1D fail to achieve these targets and many experience acute complications.
- Understanding the current levels of glycaemic control and factors associated with achieving glycaemic goals may provide an opportunity to develop more effective treatment strategies.

TEENS is the largest worldwide (20 countries, 6 regions) cross-sectional study of T1D in 5680 youth aged 8-25 years old (n=2943). The TEENS study aims to assess the factors associated with optimal glycaemic control and quality of life in order to develop recommendations to improve glycaemic control and outcomes; this presentation includes data on the European youth in the TEENS sample.

OBJECTIVES
- To examine current levels of glycaemic control in a sample of European youth with T1D in three predefined age groups (8-12 y/o, 13-18 y/o, and 19-25 y/o).
- To assess and compare rates of acute complications according to age group, glycaemic control and treatment regimen.

METHODS
- Study design and population: 111 centres in 11 European countries (Figure 1) collected data via participant interviews, medical record review and participant surveys, conducted during a single study visit.

RESULTS
- Participant demographics: 27% of 2943 European youth (8-12 y/o, n=887; 13-18 y/o, n=1451; 19-25 y/o, n=605) participated in the study. Table 1 outlines the participants’ demographic information.

Insulin regimen and glycaemic control:
- Overall, mean (±SD) HbA1c was 8.1 ± 1.6% (65 ± 18 mmol/mol), and varied by age (Table 1). Figure 2 shows the distribution of HbA1c levels according to age group. The youngest age group had the smallest percentage of participants with HbA1c levels ≥ 9.0% (75 mmol/mol); 6-12 y/o, 18%; 13-18 y/o, 26%; 19-25 y/o, 21%.
- Overall, 35% of participants achieved HbA1c targets (Table 1). A higher proportion of 8-12 y/o (39%) attained target HbA1c compared with 13-18 y/o (37%) and 19-25 y/o (23%).
- In all age groups, the majority of participants (8-12 y/o, 69%; 13-18 y/o, 70%; 19-25 y/o, 76%) used insulin injections, and most of these participants used basal-bolus insulin (Table 1).

Occurrence of acute complications:
- In the 3 months prior to the study, 3.7% of those not at HbA1c target and 2.0% of those at target had DKA episode. In all age groups, the percentage of participants experiencing DKA was higher in those who were above HbA1c target compared with those who achieved target HbA1c (Figure 3).
- Overall, the occurrence of DKA, irrespective of target attainment, was higher in children and adolescents (3.3% in both age groups) than young adults (2.5%) (Figure 3).
- Overall, in the previous 3 months, 1.1% of participants not at HbA1c target and 1.4% of those at target had ≥ 1 severe hypoglycaemic event leading to seizure or loss of consciousness.
- Occurrence of severe hypoglycaemia was greater in young adults at target than those not at target (Figure 3).

CONCLUSIONS
- Data from the TEENS European sample demonstrate that T1D remains poorly controlled in many young people, with approximately two-thirds of participants failing to reach target HbA1c levels; in addition, many youth experienced acute complications.
- The mean HbA1c level achieved in adolescents aged 13-18 y/o was similar to that achieved by adolescents (13-17 y/o) in the intensive treatment group of the Diabetes Control and Complications Trial (5.2 ± 1% and 8.1 ± 1% respectively).
- A higher percentage of participants in the younger age group attained HbA1c target. This trend was also seen in the TEENS global population.
- Severe hypoglycaemic events occurred in a similar percentage of participants in all age groups; the occurrence of DKA was more common in children and adolescents than young adults and in those not at HbA1c target.
- Overall, in European youth with T1D, diabetes outcomes remain suboptimal and further improvements in the management of T1D are required.

DISCLOSURES:
- Descriptive statistics (mean, median, SD) for participants with complete data, all patients with complete data, and number of participants included (1045) and excluding (1896).

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