

Glycemic control, BMI-SDS and blood pressure in 6,680 patients with 26,490 visits in 2012 - centre differences in the SWEET project



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OBJECTIVES

The SWEET Online platform allows presently fourteen SWEET certified centres from thirteen countries (Fig. 6) to connect to one unified anonymized diabetes database (Fig. 1). Data collection provides a basis for benchmarking and longitudinal health analysis. Clinical data from electronic health records in different pediatric diabetes centres throughout Europe within the SWEET consortium (www.sweet-project.eu) in 2012 were compared.

METHODS

Aggregate data is de-identified and exported for longitudinal health and economic data analysis (Fig. 1). HbA1c, body mass index (BMI) and blood pressure of all uploaded patients visiting their centre in 2012 were analyzed. Standard Deviation Scores relative to gender and age (SDS) for BMI and systolic and diastolic blood pressure are calculated from the WHO standards (2007).

RESULTS

- While the total data base comprises 9,731 children, in 2012 the 14 centres uploaded data from 6,680 patients. (Tab. 1)
- There are mainly patients with type 1 diabetes as the distribution among the patients of all centres shows: 97.2 % type 1, 1.1% type 2 and 1.7 % others types (Tab. 1)
- The median age was 13.9 years and diabetes duration was 5.0 years (patients with type 1 diabetes and the age of 0 to 18 years). (Tab. 1)
- The HbA1c was evaluated (patients with type 1 diabetes and the age of 0 to 18 years) : Three centres had an average HbA1c 0.5 pp above the median of the others. Only three centres had an average HbA1c below the ISPAD target of < 7.5% (Fig. 2). In the centres overall were 67 % patients with a HbA1c above the ISPAD target of < 7.5 % (Fig. 3)
- Striking differences were found between centres (patients with type 1 diabetes and the age of 0 to 18 years):
 - average HbA1c (median of the annual individual median): 7.9 % (7.0 % to 9.0 %) (Fig. 2)
 - elevated BMI-SDS (mean of median SDS per center): +0.46 (+0.17 to +0.70) (Fig. 4)
 - blood pressure (mean of median SDS per center): systolic: +0.38 (-1.0 to + 0.66) (Fig. 5)
 - diastolic: +0.29 (-0.51 to +0.59) (Fig. 5)

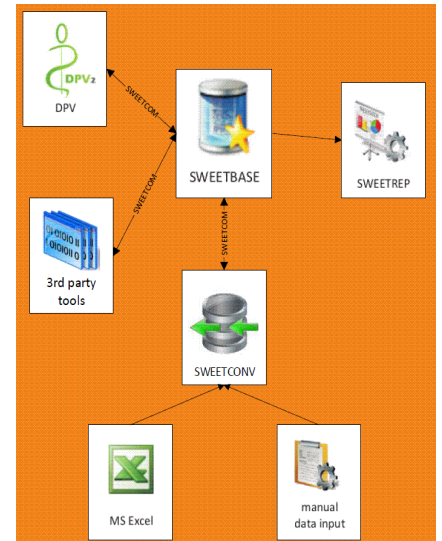


Fig. 1: SWEET Data management system

Tab. 1: Status quo of SWEET database in 2012

Number of centres	14
Number of patients in SWEET-Base (overall)	9,731
Number of all visits in SWEET-Base (overall)	118,740
Number of patients in 2012	6,680
Number of visits in 2012	24,490
Percentage of patients with diabetes	
• type 1 [%]	97.2
• type 2 [%]	1.1
• other types [%]	1.7
Median age [years]	13.9
Median diabetes duration [years]	5.0
Median HbA1c [%]	7.9

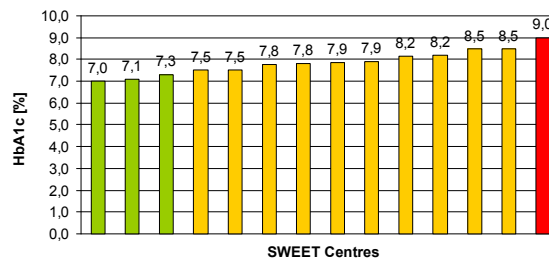


Fig. 2: HbA1c (type 1 diabetes): median of the median HbA1c of patients with the age of 0 - 18 years, displayed per centre

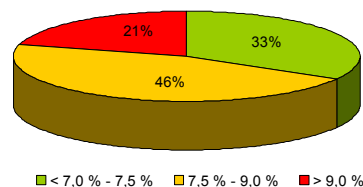


Fig. 3: HbA1c-values: Percentage of patients (diabetes duration > 1 year) of the 14 centres grouped around the ISPAD target of < 7.5 %

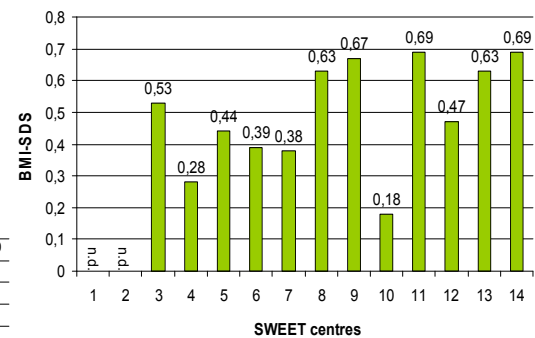


Fig. 4: Differences in BMI among type 1 diabetes patients of 14 centers with the age of 0-18 years on the basis of mean of median SDS of BMI

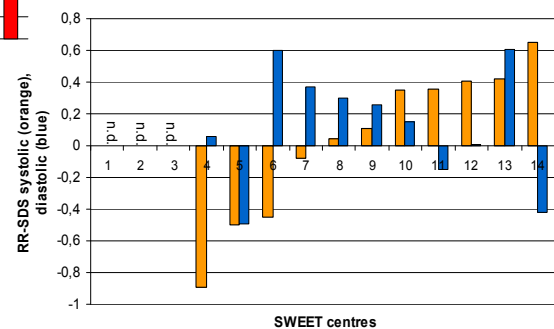


Fig. 5: Differences in systolic and diastolic blood pressure (RR) among type 1 diabetes patients of 14 centers with the age of 0-18 years on the basis of mean of median SDS of RR

CONCLUSION

Despite improvements over time this study reveals significant outcome differences between large international pediatric diabetes centers. It appears that centers achieve goals in different aspects of care. Therefore, such international benchmarking data will now be used in quality control circles to exchange best practices.

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Fig. 6: SWEET participating countries in 2013 (blue)