Body Mass Index and Incident Type 1 Diabetes in Children from Lesser Poland over an 11 year observation period

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Background

One of the speculated reasons for the observed increase of type 1 diabetes incidence in children is weight gain causing accelerated disease development in predisposed individuals. This so-called accelerator hypothesis is, however, controversial.

The aim of the study

was to analyze whether in the ethnically homogeneous population of Lesser Poland an increase in the number of cases of diabetes among children was associated with younger age and higher BMI-SDS at the moment of diagnosis.

Material and Methods

Retrospective data analysis from medical records of all patients under the age of 14 (**n=559; 50.6 percent male**), with newly diagnosed type 1 diabetes in Krakow region (former *województwo krakowskie*) between 1st of January 2006 and 31st of December 2012 and in whole Lesser Poland between 1st of January 2013 and 31st of December 2017.

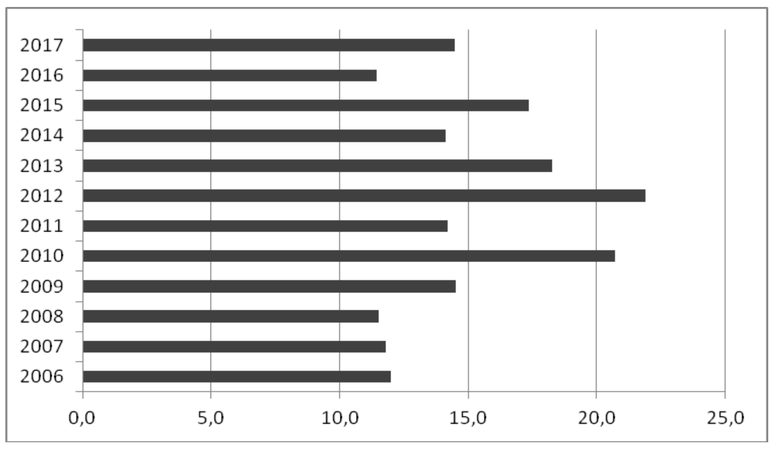
The analysis included children with type 1 diabetes only.

All data were collected in one reference centre for the region – the Department of Pediatric and Adolescents Endocrinology, Chair of Pediatrics, Jagiellonian University Medical College, which is the reference centre for the region.

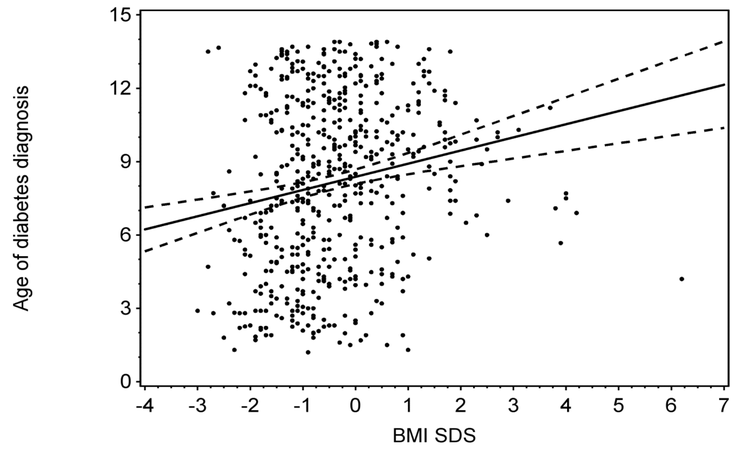
As the standard of reference for calculating BMI-SDS, normal values from the local population were used.
Incidence rate was evaluated based on the data from the Central Statistical Office (Polish: *Glowny Urzad Statystyczny, GUS*) for the population of the region which was subject to analysis.

Results

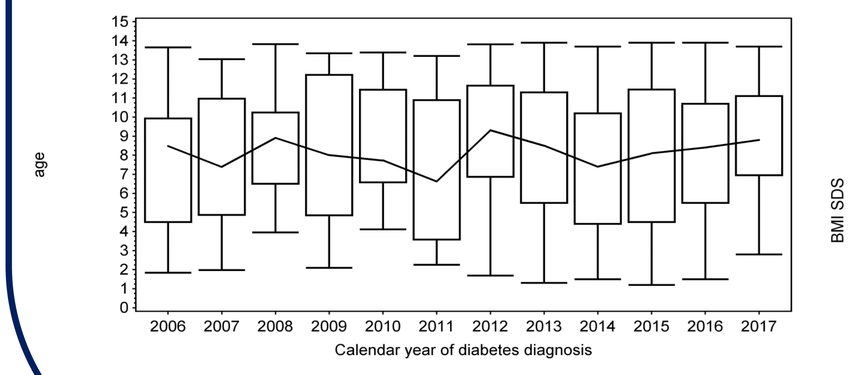
Incidence rates (per 100,000) for type 1 diabetes in Krakow and Lesser Poland region



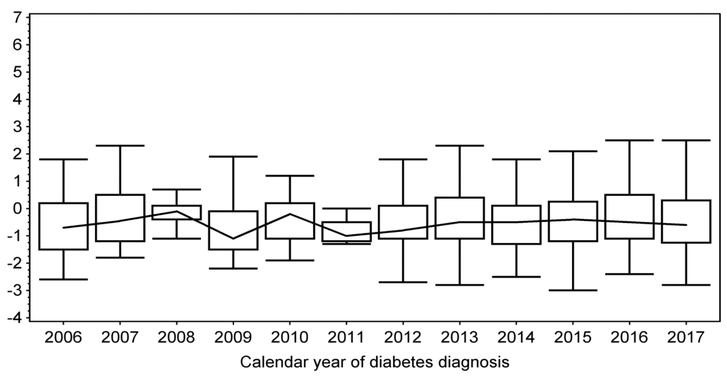
Correlation between the age of type 1 diabetes diagnosis and BMI-SDS



Mean age at the moment of type 1 diabetes diagnosis in subsequent analyzed calendar years. The upper and lower box boundaries indicate quartiles and the line across the centre of the graph joins the medians. The whiskers indicate the range of age in each year.



Mean BMI-SDS at the moment of type 1 diabetes diagnosis in subsequent analyzed calendar years. The upper and lower box boundaries indicate quartiles and the line across the centre of the graph joins the medians. The whiskers indicate the range of BMI-SDS in each year.



The occurrence of obesity (BMI- SDS > 2.0 SDS) a in patients with newly diagnosed type 1 diabetes in the subsequent years of observation.

Year	Number of patients with obesity (BMI-SDS >2.0) [number of all newly diagnosed type 1 diabetes cases]
2006	0 [21]
2007	1 [20]
2008	2 [21]
2009	0 [22]
2010	0 [23]
2011	0 [27]
2012	0 [22]
2013	5 [97]
2014	1 [75]
2015	2 [92]
2016	1 [61]
2017	4 [78]

Conclusion

The results of the present study do not confirm that increase of type 1 incidence in paediatric population is associated with younger age of diagnosis and higher BMI-SDS. Therefore are insufficient to prove the *accelerator hypothesis*.

References

Wilkin TJ. The accelerator hypothesis: weight gain as the missing link between Type I and Type II diabetes. Diabetologia. 2001;44(7):914-22.
Betts P, Mulligan J, Ward P, Smith B, Wilkin T. Increasing body weight predicts the earlier onset of insulin-dependent diabetes in childhood: testing the 'accelerator hypothesis' (2). Diabet Med. 2005;Feb;22(2):144-51.
Palczewska I, Niedzwiecka Z. Wskazniki rozwoju somatycznego dzieci i młodziezy warszawskiej. (Somatic development indices in children and youth of Warsaw). Med Wieku Rozwoj 2001; 5:18 – 118.