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–to: Gale EAM (2002) A missing link in the hygiene hypothesis? Diabetologia 45:588–592

To the Editor: The Hygiene hypothesis put forward to explain the increased incidence of autoimmune diseases over the past 50 years, including Type 1 diabetes, claims that the rising incidence could be due to reduced antigen stimulation or infection during infancy which could interfere with the development of the immune system [1]. In his *For Debate* article Dr. Gale [2] suggested that the missing link in the hygiene hypothesis could be related to Pinworm infections. In the 20th century 50% of European children were infested with *Entrobius*, but such an infestation nowadays has subsided dramatically, and infestation is now less frequent and intense than before [3]. In support of the *Entrobius* hypothesis, diseases such as Asthma and Type 1 diabetes have risen in Europe, possibly due to the loss of a protective influence of infestation.

To better clarify the role of hygiene in Type 1 diabetes, we decided to look at the personal care consumption expenditure in countries of the European Union for the same period where incidence data of Type 1 diabetes are available [4]. The personal care consumption was calculated by means of Purchasing Power Standards (PPS), which compare incomes (or other disposable amount of money) as well as expenditure in different countries. PPS indicates, for the various countries, the national currency units needed to purchase the same basket of goods and services (personal care including toiletries, hair and skin products). If currency values (e.g. an amount of received income) are converted into PPS, the resulting values are directly comparable in terms of the purchasing of households [5]. We have to take this data with caution since PPS reflect personal care for all the family and do not consider personal care consumption expenditure in childhood. Nevertheless, PPS represent the best available indicator of personal care in different EU countries.

We found a high statistically significant negative correlation between the incidence of Type 1 diabetes and personal care consumption, as reflected by PPS, in EU countries; that is, the higher the level of personal care, the lower the incidence of Type 1 diabetes (Fig. 1).

Our data are of particular interest because countries where PPS data were available were all members of European Union. In a recent paper [6] a series of indicators of national prosperity of countries with poor and high income across Europe were studied (not only EU countries) whereby the wide variation of Type 1 diabetes incidence rates could be partially explained by indicators of national prosperity. If by contrast we compare the incidence of Type 1 diabetes and Gross Domestic Product in only European Union countries selected for our analysis of PPS we did not observe any correlation (r=–0.05, p=NS), indicating that it is not the national prosperity which correlates with the different incidence of Type 1 diabetes within the EU. Therefore, our data do not support the hygiene hypothesis for Type 1 diabetes, on the contrary we think that high personal care may be protective from the development of Type 1 diabetes.

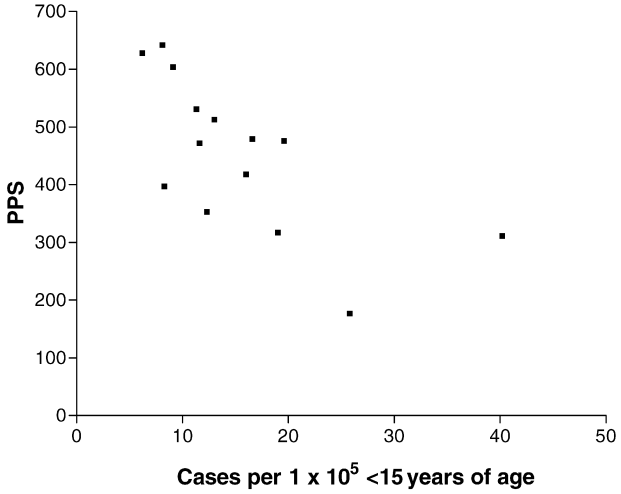

Fig. 1. The relation between incidence of Type 1 diabetes and Purchasing Power Standard (PPS) for Personal Care Use in Western European Countries (n=14). Correlation coefficient =–0.6855, two-tailed p=0.0068. List of countries for which PPS data and incidence figures for Type 1 diabetes are available include: Austria, Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Netherlands, Portugal, Finland, Sweden, United Kingdom

In conclusion, spending extra money on personal care may be a preventative measure for the development of Type 1 diabetes.

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Author's reply

To the Editor: While it is interesting to note that Beyan et al. have found yet another variable that correlates (albeit negatively) with the incidence of Type 1 diabetes, I think it is a mistake to confuse the hygiene hypothesis with "personal hygiene" as judged by the use of deodorants, aftershave, etc. The hygiene hypothesis is based on the concept that early exposure to infectious agents is important for education of the immune system, and I am not aware that airborne infection (or for that matter infestation with *Enterobius*) is related in any way to the number of personal care items in a shopping basket.

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–to: M. Koopmanschap: Coping with Type 2 diabetes: the patient's perspective. Diabetologia 45:S18–S22

To the Editor: In a recent issue, Koopmanschap [1] reported very interesting and relevant results, confirming the idea that health-related quality of life (HRQoL) is an important issue in Type 2 diabetes. The data of this study was collected in five European countries, within the framework of the Costs of Diabetes in Europe – Type II (CODE-2) study. The core measure was the Euroqol 5 dimensions (EQ-5D) questionnaire. This tool involves patient self-reporting of their health status in five dimensions: mobility, self-care, usual activities, pain and discomfort, anxiety and depression. It is a widely used instrument that was also utilised in the United Kingdom Prospective Diabetes Study (UKPDS) for assessing generic HRQoL.

In the final analyses of this manuscript regarding the results of the CODE-2 study, HRQoL is analysed by treatment type (diet and exercise, oral drugs or insulin). It seemed that those who used insulin had a lower mean level of HRQoL when compared to those who did not use insulin. Furthermore, it was described that treatment type was a predictor of quality of life after adjusting for age, sex and any complications. Based on these findings, the author concludes: "... the CODE-2 study shows that progression to insulin treatment is independently associated with a reduction in quality of life as is poor glycaemic control and a BMI of more than 27." and "... the implication for policy makers is that an avoidance of insulin therapy and the reduction or prevention of complications is the key to improving patients' HRQoL."

We feel that the data of the CODE-2 study do not permit this conclusion and implications, as the cross-sectional design of this study does not allow for causal inferences. The author states that treatment with insulin is a cause of impaired HRQoL, but different dimensions of HRQoL could also have contributed to the start of insulin therapy. For example, depression (with anxiety one of the five dimensions that is assessed by the EQ-5D) was found to be associated with poor glycaemic control in many studies, probably partly as a result of impaired self-care behaviour [2, 3, 4]. Furthermore, poor glycaemic control is one of the main reasons for physicians to start insulin therapy. Thus, poor HRQoL could also be causally linked to initiation of treatment with insulin.

Moreover, previous studies investigating the relationship between insulin therapy and quality of life in Type 2 diabetes have produced conflicting results. Some prospective studies suggest that the shift from a treatment consisting of exercise and/or tablets to insulin therapy can improve the glycaemic control of patients with Type 2 diabetes, without influencing their quality of life [5, 6] or with even improving it [7]. In contrast, another study [8] has found that introduction of insulin therapy, initially had no effect on the quality of life of patients with Type 2 diabetes. But, they also found that a substantial number of subjects experienced a steady deterioration in glycaemic control during the first few years after insulin therapy,

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