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Exploring quality of care and social inequalities related to type 2 diabetes in Hungary: Nationwide representative survey

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ABSTRACT

Aims: The study aimed to launch a T2DM adult cohort that is representative of Hungary through a cross-sectional study, to produce the most important quality indicators for T2DM care, to describe social inequalities, and to estimate the absolute number of T2DM adult patients with uncontrolled HbA1c levels in Hungary.

Methods: A representative sample of the Hungarian T2DM adults (N = 1280) was selected in 2016. GPs collected data on socio-demographic status by questionnaire, and on history and laboratory parameters from medical records. The process and outcome indicators used in the international monitoring practice were calculated. The socio-economic status influence was determined by multivariate logistic regression models.

Results: Target achievement was 61.66%, 53.48%, and 54.00% for HbA1c, LDL-C, and blood pressure, respectively, in the studied sample (N = 1176). In Hungary, 294,534 patients have above target HbA1c value out of 495,801 T2DM adults. The education-dependent positive association with majority of process indicators was not reflected in HbA1c, LDL-C, and blood pressure target achievements. The risk of microvascular complications and requirement of insulin treatment were higher among less educated.

Conclusions: According to our observations, the education-independent target achievement for HbA1c and LDL-C is similar as, for blood pressure is less effective in Hungary than in Europe.

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Abbreviations: T2DM, type 2 diabetes; T1DM, type 1 diabetes; GPMSSP, General Practitioners' Morbidity Sentinel Stations Program; OR, odds ratio; 95%CI, 95% confidence interval; EUBIROD, European Best Information through Regional Outcomes in Diabetes; NIHIFM, National Institute of Health Insurance Fund Management; TC, total cholesterol; TG, triglyceride; LDL-C, LDL-cholesterol; HDL-C, HDL-cholesterol; GP, general practitioner; AMI, acute myocardial infarction; IHD, ischaemic heart disease; BMI, body mass index; HbA1c, haemoglobin A1c; eGFR, estimated glomerular filtration rate.

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1. Introduction

According to the latest estimations, globally, more than 425 million adults had diabetes in 2017 [1]. T2DM was the 11th leading cause of burden of disease in 2015 [2]. The health and economic burden of T2DM could mainly be described by its complications which are considered largely preventable [3]. Early diagnosis and adequate glycaemic control are essential for preventing and postponing T2DM complications [4,5]. Although, knowledge has been growing on the optimization of T2DM patient care, its translation into daily practice is far from acceptable as it is shown by the recent publications on the therapeutic target achievements [6].

Reflecting the importance of multidisciplinary T2DM care, international organizations have released recommendations for T2DM monitoring systems. Despite their heterogeneity, the main conception and key indicators have significant overlap [6–8]. Minority of the European countries (5 of 47) has well operating diabetes registry. The lack of reliable monitoring systems is among the factors, which contribute to the weak guideline adherence [9].

Hungary belongs to the group of countries without a well-functioning T2DM care monitoring. However (a) there is a type 1 diabetes (T1DM) monitoring system in Hungary (Hungarian Childhood Diabetes Registry), which covers the entire country with its obligatory reporting system contributing to better-than-European-average long term outcome among children [10,11], and (b) national and international surveys were implemented in Hungary. Recent surveys were not able to produce data representing of the country:

- In the DEPAC multinational survey in 2005, endocrinologists or diabetologists completed questionnaires for the group of T2DM patients who were treated in secondary care settings. The sampling could not cover the T2DM patients who were cared by general practitioners [12].
- A primary health care-based national cross-sectional study was implemented in 2006, which aimed to determine the metabolic disorders' epidemiologic properties. The sampling frame was broader than patients with T2DM [13].
- Another primary care-based survey was performed in 2008, which was focused on T2DM older than 50 years of age [5,14]. The results from this survey had been used in the European Best Information through Regional Outcomes in Diabetes (EUBIROD) international collaboration as well [15].

The Hungarian Diabetes Association regularly publishes guidelines. Although, these guidelines defines the necessary indicators for quality monitoring according to the international guidelines [16], the proposed indicators are not applied in practice.

The only regular, nationwide T2DM care monitoring in Hungary is maintained by the National Institute of Health Insurance Fund Management (NIHIFM). Two process indicators (the proportion of T2DM patients with HbA1c evaluation and ophthalmological examination in the past 12 months) to evaluate GPs' performance are applied. Their use is not completed with application of outcome indicators. This approach is potentially counter-productive in terms of the quality devel-

opment because it establishes the interest of service providers in increasing the episode numbers without improving the outcomes [14,17,18].

Altogether, Hungarian T2DM adult care quality has not properly been evaluated yet. The heterogeneity of the performance has not been assessed, even though it is well demonstrated that the poor care quality in certain demographic strata can be responsible for the low effectiveness observed in general population [19–22]. Neither surveys nor continuous monitoring could produce representative data.

According to the Non-communicable Diseases Risk Factor Collaboration's latest estimations, the probability of achieving the target of halting the rise in diabetes by 2025 compared to its 2010-level (among adults 18 years and older), if the post-2000 trends continue, is far from achievable in Hungary [23]. Therefore, this trend has to be targeted by developing/restructuring diabetes care, which is hardly feasible without relying detailed and reliable data from representative monitoring.

The objectives of our study were (1) to launch a national representative T2DM adult cohort through a cross-sectional study, ensuring further possibilities for continuous follow-up, (2) to produce and evaluate in European context the most important process and outcome quality indicators for T2DM care, (3) to describe the social inequalities of these indicators, and (4) to estimate the absolute number of T2DM adult patients with uncontrolled HbA1c levels in Hungary.

2. Materials and methods

2.1. Setting

The General Practitioners' Morbidity Sentinel Stations Program (GPMSSP) has collected data on the occurrence and incidence of diseases, which have major public health importance, as a Hungarian surveillance system since 1998. T2DM is among the GPMSSP monitored diseases. It has represented the demographical structure and geographical distribution of the Hungarian population. The design of this programme has been described in detail elsewhere [24].

2.2. Study design

A population-based, nationally representative cohort of (above 18 years old) adult T2DM patients was launched in the framework of GPMSSP. A cross-sectional study was performed to start the follow-up.

2.3. Participants

Two-stage sampling was performed. The first step was the random selection of 32 out of the total 121 GPMSSP GPs representative of Hungary. The participating GPs prepared their T2DM patient lists, which were used as the sampling frame. These were used in the second stage of sampling with a random selection of 40 patients in each practice, resulting in a total of 1280 subjects. Selected patients had been contacted. Collection of their data had been commenced if they had signed the informed consent form.

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