



# **SYNTHESIS OF SCIENTIFIC EVIDENCE IN A FIELD OF DIAGNOSTIC ACCURACY AND SCREENING PRACTICES OF PRE-DIABETES TYPE 2 IN CHILDREN**

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The 347 million of people suffer from diabetes (Danaei et al., 2011). In 2004 3.4 million of people died from consequences of fasting high blood glucose (WHO, 2010). According to research carried out in Europe (Haines, Wan, Lynn, Barrett, & Schield, 2007) prevalence of type 2 diabetes in children has been increasing. In 2002 the prevalence of type 2 diabetes and impaired glucose tolerance (IGT) were Italian youths only 0.5% and 5%, respectively (Invitti, Gilardini & Viberti, 2002); however, a recent study conducted in Italy on a large sample of overweight/obese children and adolescents reported a prevalence of glucose metabolism alterations of 12.4%. IGT. Effective screening of pre-diabetes, early diagnosis and preventive programs can help to prevent type 2 diabetes. The main problem in youth population is diagnostics and screening of type 2 diabetes in children unlike adults is missing. The outbreak of child obesity and metabolic syndrome brings a need of systematic review development and on its basis built clinical practice guidelines in the field of diagnostic accuracy and screening in pediatric population. Effective diagnostics and screening of type 2 diabetes would allow us to deal with this disease at the earliest stage of development.

The main aim of this paper is to present a part of the protocol of the synthesis of scientific evidence of diagnostic accuracy and screening practice to identification of pre-diabetes mellitus type 2 in children.

## **REVIEW QUESTION:**

What is in terms of diagnostic accuracy, effectiveness and cost effectiveness of screening for pre-diabetes mellitus type 2 in children at different stages of ontogenetic development the most efficient existing screening method, program or test?

- Population — children with the risk of pre-diabetes development at different stages of ontogenetic development.
- Intervention — existing methods or programs for detecting pre-diabetes.
- Outcomes — sensitivity, specificity a predictive values of screening tests, effectiveness of screening practices in the context of health and costs.

Systematic search strategy aims to find published and unpublished studies, among which are included sources from literature and from the so-called “grey” literature. Search strategy in this systematic review protocol will include three steps according to JBI methodology. Initial search will be done in MedLine, Cinahl, Embase databases. Retrieved studies will be evaluated for relevance (determined by criteria) by two independent reviewers in terms of internal and external validity, objectivity and reliability. Standardized JBI tools will be used. Heterogeneity will be assessed using Chi-Square and I<sup>2</sup> index.

Results of this secondary research will bring synthesis of evidence of diagnostic accuracy and screening practice to identify the pre-diabetes mellitus 2 type in children. Scientific evidence synthesis should become a message about awareness in the field of screening strategy development. After that it should help to develop a clinical practice guideline in children with pre-diabetes mellitus 2 type.

Systematic review developed by rigorous JBI methodologies will systematically search, critically and independently appraise, and by standardized tools extract and then analysed and synthesize relevant data which will be used for information to practice, healthcare policy and other involved subjects. It will be possible to develop strategies for diagnostic and screening practices and follow-up programs on the basis of obtained data and its dissemination.

It will be possible to prevent this metabolic disease with an early identification of pre-diabetes mellitus 2 type helping diagnostic accuracy and screening practice in combination with appropriate preventive measures in children and adolescents. The research results can have significant impact to citizens of the Czech Republic public health, but also in other EU countries and the world which have been dealing with increasing incidence of diabetes mellitus 2 type and development of its on set complications.