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The risk of developing type 2 diabetes in vulnerable categories of patients (according to the results of a screening survey of the population in Chui region of Kyrgyz republic)

Abstract

Objective: To evaluate the 10-year risk of developing type 2 diabetes and barriers of its identification among vulnerable population with low incomes in Chui region of Kyrgyz Republic.

Methods: The study involved 227 respondents aged 18 to 86years, including 43 men and 184 women living in the Chui region. The FINDRISK questionnaire and a map of barriers were used for stratification of risks of type 2 diabetes.

Results: Stratification of the risks of type 2 diabetes has identified following: in the group of men there were 18,6% respondents who have less than 7 points, i.e. lower risk of developing diabetes in the next 10years; 46.6% had 7-11 points, i.e. slightly increased risk of developing diabetes; 18.6% had 12-14 points, i.e. average risk of developing diabetes; 16.2% respondents have 15-20 points, i.e. high developing of diabetes, and nobody had more than 20 points, i.e. very high risk of developing diabetes. In the group of women 8.7% respondents had less than 7 points, i.e. lower risk of developing diabetes; 39.6% had 7-11 points, i.e., slightly increased risk of developing diabetes; 32% had 12-14 points, i.e. average risk of developing diabetes; 19.7% had 15-20 points, i.e. higher risk of developing diabetes, and nobody had more than 20 points, i.e. very high risk of developing diabetes. The main barriers to identify risk factors for diabetes were low level of awareness about diabetes, low level of priority of diabetes prevention and financial inaccessibility of methods for detection of diabetes.

Conclusion: In Kyrgyzstan, the prevalence of risk factors of type 2 diabetes among vulnerable populations is distributed consequently in following order: in male - hypertension, inadequate intake of fruit and vegetables and visceral obesity, in female - dominated visceral obesity, hypertension and irregular consumption of vegetables and fruits.

Keywords: diabetes mellitus, vulnerable category of patients, risk factors, hypertension, visceral obesity, barriers to identify risk factors

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Abbreviations: WC, waist circumference; CVD, cardiovascular disease

Introduction

Diabetes mellitus is currently ranked third in the intensity of growth of morbidity, medical and social significance, since the economic damage and loss of employment are increased eachyear due to disability and mortality.[1] According to the International Diabetes Federation,[2] the number of patients with type 2 diabetes is projected to increase from 285 million in 2010 to 500 million people in 2030, i.e. by 54%.[3] A key element in the pathogenesis of type 2diabetes is peripheral tissue insulin resistance most commonly associated with abdominal obesity. The relative risk of developing type 2 diabetes in women is increased by 8times in waist circumference (WC) more than 80cm and by 20times in the WC more than 96cm,[4] and in men a WC of 100cm or more the risk of developing type 2 diabetes increases by 3.5times, regardless of body mass index. Abdominal obesity is recognized as an independent risk factor of type 2diabetes and cardiovascular disease (CVD).[5] WC is an important predictor of diabetes, coronary heart disease and mortality, irrespective of the traditional factors such as hypertension, blood glucose levels and lipoprotein.[6,7] Research of Butrova SA[2] have shown that the risk of developing type 2 diabetes is increased by 2times in first class of obesity, 5times in second class and more than 10times in third class. Framingham study was the first large studies showing the relationship of overweight with diabetes and hypertension. Among patients with acute myocardial infarction, 60% of them had carbohydrate metabolism impairment, including 25% of type 2 diabetes.[8] DALYs criteria show that nearly 60% of the total burden of disease falls on the seven leading risk factors: hypertension (12.8%), tobacco (12.3%), alcohol (10.1%), elevated cholesterol levels in the blood (8,7%), overweight (7.8%), low intake of fruits and vegetables (4.4%), and lack of exercise (3.5%).[9] Considering the commonality of risk factors for cardiovascular disease, hypertension,

diabetes, and their close relationship, and that diabetes at the present time is the third leading cause of death after cardiovascular disease and cancer,[10] screening is justified to reveal early metabolic disorders, especially in the vulnerable category of the adult population that can be successfully engaged in the diabetes prevention program. Studies show that at the time of diagnosis and prescribing treatment the majority of patients already have multiple complications.[11,12]

Objective

To evaluate the 10year risk of developing type 2 diabetes and barriers of its identification among vulnerable population in Chui region of Kyrgyz Republic.

Materials and methods

Preliminary the incidence of diabetes was analyzed according to the data of Kyrgyz republican medical information center. The study involved 227 respondents aged 18 to 86years, including 43 men and 184 women living in the Chui region. The FINDRISK questionnaire was used to assess the risk of developing type 2 diabetes,[10] evaluating in points the possibility of developing diabetes over the next 10years, and a map of barriers of identification risk factors. The obtained data was carried out for stratification of risks of type 2 diabetes. Representative sampling was carried out by simple randomization. Randomization is based on a survey of groups of people in families with low incomes.

Results of the study

In Kyrgyzstan the number of diabetic patients increased from 25,338 in 2006 to 37,058 in 2011. The number of diabetes complications also continues to grow steadily. More than half of surveyed men - 53, 4%, and nearly 80% of women have WC exceeding normal values, indicating the relatively high prevalence of abdominal obesity in the population. It was revealed that in the group of men 74, 4% of them engaged in physical activity for 30minutes or more per day, 25.6% of them - less than 30minutes per day, and among women, 77.1% and 22.9%, respectively. Daily inadequate consumption of fruits and vegetables is also revealed in 53.5% of respondents in group of men and in 41.8% of respondents in the group of women. 60, 4% of men and 62.5% of women use antihypertensive drugs. 18.6% of men and 9.2% of women have family history of type 2 diabetes (Table 1). The main risk factors of type 2 diabetes among the surveyed population of Chui region are distributed consequently as following: in male - hypertension, inadequate intake of fruit and vegetables and visceral obesity, in women-visceral obesity, hypertension and inadequate consumption of vegetables and fruits.

Table 1 The prevalence of risk factors for type 2 diabetes in Chui oblast (according of a survey of Moldobaeva M.C. and others, 2013)

	WC	Do not engage in regular physical activity	Do not eat vegetables and fruits everyday	Regularly taking antihypertensive drugs	The presence of close relatives of patients with diabetes
Men	>102см 4,8%	25,6%	53,5%	60,4%	18,6%
Women	>88см 79,8%	22,9%	41,8%	62,5%	9,2%

Stratification of the risks of type 2 diabetes has identified following: in the group of men there were 18,6% respondents who have less than 7 points, i.e. lower risk of developing diabetes in the next 10years; 46.6% had 7-11 points, i.e. slightly increased risk of developing diabetes; 18.6% had 12-14 points, i.e. average risk of developing diabetes; 16.2% respondents have 15-20 points, i.e. high developing of diabetes, and nobody had more than 20 points, i.e. very high risk of developing diabetes (Figure 1).

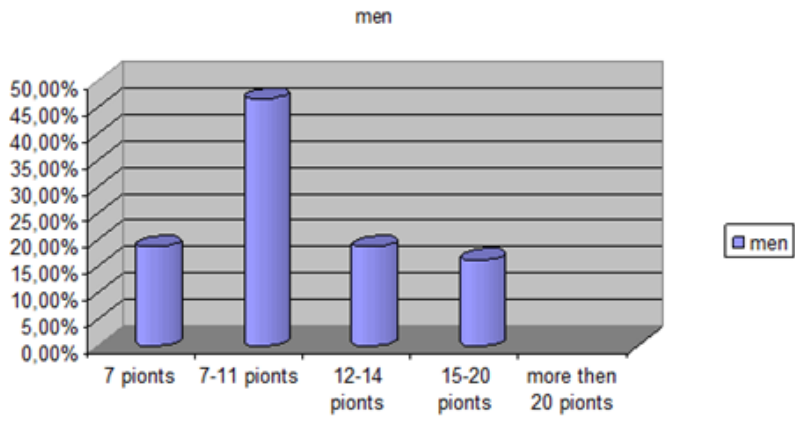

Figure 1 Developing diabetes in men.

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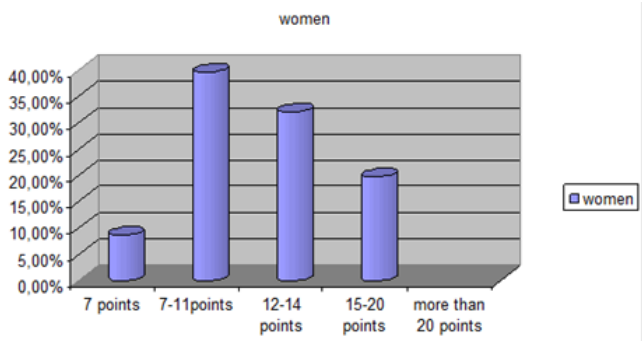

Figure 2 Developing diabetes in women.

In the group of women 8.7% respondents had less than 7 points, i.e. lower risk of developing diabetes; 39.6% had 7-11 points, i.e., slightly increased risk of developing diabetes; 32% had 12-14 points, i.e. average risk of developing diabetes; 19.7% had 15-20 points, i.e. higher risk of developing diabetes, and nobody had more than 20 points, i.e. very high risk of developing diabetes (Figure 2).

The main barriers to identify risk factors for diabetes were low level of awareness about diabetes, low level of priority of diabetes prevention and financial inaccessibility of methods for detection of diabetes.[13,14]

Conclusion

In Kyrgyzstan, the prevalence of risk factors of type 2 diabetes among vulnerable populations is distributed consequently in following order: in male-hypertension, inadequate intake of fruit and vegetables and visceral obesity, in female-dominated visceral obesity, hypertension and irregular consumption of vegetables and fruits.

Stratification of patients according to the risk of developing diabetes in the next 10years revealed high risk group (16.2%) and a slightly increased risk (46.6%) in men and high risk group (19.7%) and a slightly increased risk (39.6%) in women.

The findings of our study allow carrying out targeted diagnostic and preventive measures to detect and prevent not only the complications of diabetes, but also to identify the early stages of diabetes with lifestyle changes. Persons at high risk of cardiovascular disease require constant monitoring of hypertension and regular adequate antihypertensive treatment. Our findings will be very useful in the primary care level because of possibility to involve vulnerable population in the diabetes prevention programs.

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None.

Conflict of interest

Author declares that there is no conflict of interest.

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