



**IT DIMINISHES THE RISK FACTORS, PREVENTS THE DIABETES TYPE 2**  
**DIMINUA OS FATORES DE RISCO, PREVINA A DIABETES TIPO 2: REVISÃO DE LITERATURA**  
**DISMINUYE LOS FACTORES DE RIESGO, PREVIENE LA DIABETES TIPO 2**

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**ABSTRACT**

**Objective:** to describe the risk factors that contributes to the onset of type 2 diabetes. **Method:** to perform this article we proceeded to an integrative review of Portuguese and international literature between the years 2000 and 2011 held in the database of the Scientific Open Access Repository of Portugal and Medline, with the descriptors for type 2 diabetes mellitus, risk factors, nursing in Portuguese and English. **Results:** the onset of type 2 diabetes is a combination of genetic, environmental and behavioral factors, associated with lifestyles, characterized by inactivity, and the proportional increase in caloric intake. **Conclusion:** you can change the natural history of type 2 Diabetes Mellitus, preventing it from occurring by practicing healthy behaviors. The nurse should create projects for the prevention of type 2 diabetes, including strategies and activities to reduce risk factors and working together with citizens, contributing to a clarification, training, and thus improving health levels. **Descriptors:** diabetes mellitus type 2; risk factors; nursing.

**RESUMO**

**Objetivo:** descrever os fatores de risco que contribuem para o aparecimento da diabetes mellitus tipo 2. **Método:** revisão integrativa da literatura publicada em Portugal e Internacionalmente, no período compreendido entre os anos 2000 e 2011, realizada na base de dados do Repositório Científico de Acesso Aberto de Portugal e Medline, com os descritores diabetes mellitus tipo 2, fatores de risco, enfermagem, em português e em inglês no período compreendido entre os anos 2000 e 2011. **Resultados:** o aparecimento da diabetes tipo 2 é uma conjugação de fatores genéticos, ambientais e comportamentais, associados aos estilos de vida. Caracteriza-se por sedentarismo com aumento proporcional da ingestão calórica. **Conclusão:** é possível mudar a história natural da diabetes mellitus tipo 2, prevenindo o seu aparecimento através da adoção de comportamentos saudáveis. O Enfermeiro deve criar projectos de prevenção da diabetes mellitus tipo 2, delineando estratégias e actividades para reduzir os factores de risco identificados e trabalhando em conjunto com o cidadão e comunidade, deve esclarecer, capacitar e assim aumentar os ganhos em saúde. **Descritores:** diabetes mellitus tipo 2; fatores de risco; enfermagem.

**RESUMEN**

**Objetivo:** describir los factores de riesgo que contribuyen a la aparición de la diabetes tipo 2. **Método:** para realizar este artículo se procedió a una revisión integradora de la literatura producida en Portugal y internacionalmente entre los años 2000 a 2011 celebrada en la base de datos del repositorio de acceso abierto de la Ciencia de Portugal y Medline, con los descriptores para la diabetes mellitus tipo 2, factores de riesgo, enfermería en portugués y en Inglés. **Resultados:** el inicio de la diabetes tipo 2 es una combinación de factores genéticos, ambientales y comportamentales, asociada a estilos de vida, que se caracteriza por la inactividad con aumento proporcional de la ingesta calórica. **Conclusión:** se puede cambiar la historia natural de la diabetes mellitus tipo 2, con la práctica de estilos de vida saludables. La enfermera debe crear proyectos para la prevención de la diabetes tipo 2, incluso estrategias y actividades para reducir los factores de riesgo y trabajando en conjunto con los ciudadanos y población en general contribuir para la enseñanza, clarificación y formación, mejorando así los niveles de salud. **Descriptor:** diabetes mellitus tipo 2; factores de riesgo; enfermería.

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## INTRODUCTION

Diabetes Mellitus (DM) is known to man since antiquity. Diabetes means "flow through" and mellitus means "sweet as honey." Type 2 diabetes is referred to as maturity onset diabetes manifesting generally after 35 years old.<sup>1</sup> It is a chronic disease characterized by an increase in blood sugar levels, when it is high it is referred as hyperglycemia.<sup>2</sup>

It is increasingly more common diabetes in our society and its prevalence increases with age, affecting both sexes. It is characterized by hyperglycemia and should be, in some cases, inadequate production, other insufficient insulin action and often a combination of these two factors.<sup>3</sup>

In Portugal, as in most countries, chronic diseases are the leading cause of mortality and morbidity and the scientific basis points to an increase in these diseases in the near future, mainly due to the increase of pathologies such as Diabetes.<sup>4</sup>

The number of diabetics in Portugal increased 40% over the last seven years, according to the Fourth National Health Survey.

Between 2005 and 2006, the disease incidence was 6.5%, while in 1998, diabetes affected only 4.7% of the population. The disease is increased substantially, but may be "underestimated" due to 30% to 40% are not diagnosed.<sup>5</sup>

The 2009 study found that the prevalence of diabetes in the Portuguese population was 11.7%, and there are significant differences in men 14.2% and 9.5% in women. These numbers become even more worrying if we add the numbers of pre-Diabetes, revealing that 34.9% of the Portuguese population between 20 and 79 have diabetes or pre-diabetes. These data reinforce the importance of risk assessments in the early diagnosis of DM.<sup>6</sup>

According to the International Diabetes Federation, approximately 140 million people worldwide have diabetes Mellitus and estimates suggest an increase to 300 million by 2025.<sup>7</sup>

Chronic diseases are those which cause a greater expenditure of resources, calculated between 60 and 80% of total spending on health, and considered only direct costs, since the indirect reach values 3-4 times higher than direct costs.<sup>4</sup>

Major Risk Factors (RF) for the development of non-transmissible diseases are physical inactivity, obesity, hypertension, high cholesterol, smoking and eating hypercaloric. The RF today are absolutely essential in

clinical practice, particularly in the preventive area. It feels like any trait, characteristic or change that would predict the likelihood of an individual to manifest a certain disease.<sup>9</sup>

Given these facts, it is necessary to develop studies to a greater understanding of the risk assessment of type 2 diabetes, each person and the population in order to make more effective interventions of health professionals, thereby helping to raise awareness and reduce risk factors that lead to the onset of type 2 diabetes.

## OBJECTIVES

- To inform the public of the risk factors those contribute to the onset of type 2 diabetes.
- The population aware of the importance of reducing or eliminating risk factors.
- Encourage people to adopt healthy lifestyles.

## METHODOLOGY

It is an integrative review of literature in order to uncover risk factors that lead to the onset of type 2 diabetes, as well as explain the relevance of its disappearance or diminution. The research of scientific literature was conducted on the basis of data from Scientific Open Access Repository of Portugal and Medline with the keywords type2 diabetes mellitus, risk factors, nursing, in Portuguese and English in the period between 2000 and 2011.

## RESULTS AND DISCUSSION

International Diabetes Federation studies reported in China, Finland, the United States have confirmed that the type 2 diabetes can be avoided in many cases, provided that one maintains a normal body weight and practice physical exercise. It is recommended that people at high risk can be easily identified through a simple questionnaire for the assessment of age, waist circumference, family historic and cardiovascular passage and pregnancy. Prevention efforts should focus on users who have high risk factors in order to avoid or prevent the onset of diabetes 2.<sup>7</sup>

Type 2 DM has a hereditary character, coming in people who received from the family (usually parents, uncles, and grandparents) a tendency toward diabetes. Usually are overweight and in some cases are even obese, do little exercise and consume calories in sweets and / or fats, in excess to what the body spends daily. It is in most of

these people sometimes hypertension and cholesterol or triglycerides.<sup>10</sup>

In Portugal it is verified an increase of the yearly incidence since 2000 and, in 2009, we detected 571 new cases of diabetes per 100 000 inhabitants. Direct costs of diabetes are therefore increasing, being encompassed the drugs, hospital and clinic, represents therefore a direct cost diabetes 1,000 million Euros.<sup>11</sup>

Despite this increase, the overall objectives and targets for the National Program for Prevention and Control of Diabetes Mellitus (2008) generally coincide with those defined in the Declaration of St. Vincent (1989), and aimed at achieving health gains through health promotion and improvement of its quality, life expectancy of diabetic patients and reduce the complications of chronic disease, ie, increase the average number of years of life free of disability due to complications of diabetes.<sup>12</sup>

The World Health Organization (WHO) recognizes that changes in the global health situation imply that implements the "Health Policy for All in the XXI century", by political and strategic regional and national relevance.<sup>13</sup>

It is therefore important the creation of conditions and ways that allow the individual or group, to capacitate themselves to increase and improve control of their health, interfering in the factors that influence them. It will be possible to obtain success in health through healthy policies, privileging citizenship, ie when citizens are primarily responsible for their own health, individually and collectively, have the duty to defend and promote the State providing the information and means to enable citizens to participate actively in health.<sup>15</sup>

Nurses should promote health, especially clarifying the population and making them conscious of their health situation, so as to interfere in the modifiable factors, in this case reducing the risk of getting type 2 diabetes.

It is evidenced that when there is change in eating habits and patterns of physical activity it produces a rapid change in risk factors and in turn the load on chronic diseases.

Scientific evidence shows that regular physical activity contributes to many physical benefits, mental and social and a healthy diet and regular exercise are powerful means to prevent chronic diseases.<sup>16</sup>

Diabetes mellitus, whose chronic manifestations are the common causes of hospitalization and absenteeism at work, is

recognized in several countries as a public health problem with important social consequences, the social and economic impact that has caused both in terms of productivity and of costs.<sup>17</sup> Similarly to other chronic diseases, diabetes is caused by genetic factors and environmental factors, the latter being the lifestyle, the genes cannot be modified, but it can interfere and change the lifestyle.<sup>18</sup>

The purpose of prevention is to reduce the incidence of the disease, by monitoring the FR; this requires knowing how these are rooted in the population and use this knowledge to create a strategy in order to change the risk profile that may can exist in each citizen.<sup>19</sup>

Primary prevention comprehensive, integrated, multidisciplinary and multisectoral, is essential for the prevention of chronic diseases such as cardiovascular diseases and diabetes and should be anticipated a general mobilization of society, by raising the permanent adoption of healthy lifestyles, as this measure will only be effective if fully understood and integrated by society on day to day.<sup>20</sup>

The number of people with diabetes is increasing due to a combination of factors such as growth and aging population, the prevalence of obesity and physical inactivity.<sup>21, 22</sup> In an age where the majorities of societies have to deal with increasing demand for health resources, we should start a strategic planning with the adoption of various policies and interventions aimed at reducing the presence of disease in the general population and more specifically those who are concerned in their multiple risk factors of human origin, changeable<sup>23</sup>

The risk assessment for a particular disease is usually based on a number of factors, categorized into modifiable and non modifiable. Risk factor is a subjective mean to identify people who have a greater risk for a given disease compared with the others.<sup>24</sup>

#### ◆ Unmodifiable Risk Factors

The term unmodifiable includes a set of elements on which man has no action: heredity, age, sex, race, ethnicity.<sup>24</sup>

#### ◆ Family History of Diabetes

Epidemiological studies showed a positive correlation between the degree of relatedness and the possibility of developing diabetes. This probability increases when increases the family proximity.<sup>25,26</sup> In reality, genetics plays a strong role in the development of type 2 diabetes is easily found in various elements of

the same family, and especially in direct relatives.<sup>12, 27</sup>

In general, if a person has type 2 diabetes, the risk of their children developing this disease is one in seven if the diagnosis occurred after fifty years and one to three if has been diagnosed before that age. If both parents are diabetic the risk of children developing diabetes is one to two.<sup>27</sup>

#### ◆ Age

The prevalence of type 2 diabetes increases with age,<sup>12, 26</sup> being its biggest increase in the age group above 45 years old in the European population over 35, if it's from another origin / region of the World.<sup>26</sup>

#### Gestational Diabetes Previa

Gestational Diabetes (DG) is defined as any degree of carbohydrate intolerance diagnosed or detected for the first time during pregnancy. The prevalence of DG has been increasing worldwide, which implies an increase in health resources, which makes it important to implement surveillance programs and prevention.<sup>28</sup>

Women during pregnancy and that DG had postpartum glucose tolerance returns to normal, have a higher probability to later develop type 2 diabetes, but may reduce the risk change with the style of life.<sup>12, 26, 28-9</sup>

#### ◆ Modifiable Risk Factors

The term risk modifiable is applied to factors that are actually likely to be changed: obesity, diet, exercise, medication and modifying healthy lifestyles.<sup>24</sup>

#### ◆ Obesity

The WHO defines obesity as a chronic disease in which excess body fat accumulated can achieve degrees those can affect health. Excess fat results of continuous positive energy balance in which the amount of energy consumed is greater than the amount of energy expended. The factors causing this imbalance are genetic, metabolic, and environmental and behavioral diabetes has been increasing in recent years, mainly due to obesity. If we can control obesity, the incidence will diminish.<sup>31</sup>

The therapy of obesity is based on modification of lifestyle, including eating habits and physical activity. But for these behavioral changes to be effectuated it is necessary that the person feels influenced to such and is essential for the therapy results. The motivating factors are varied and individual; depending on their own experience however, are several factors that encourage people to lose weight such as psychological, financial, quality of life, doctors and others.<sup>32</sup>

#### Physical inactivity

In recent decades it has been found that the level of physical activity decreased in many populations, which has contributed to an overall increase in obesity.<sup>26</sup>

Physical activity is a key factor in energy expenditure, energy balance and weight control; reduces the risk associated with cardiovascular diseases, diabetes and presents considerable advantages with respect to diseases other than those associated with obesity. Depending on the type and intensity of physical activity can thus different results for health, 30 minutes of regular activity of moderate intensity, with a frequency almost daily reduces the risk of cardiovascular disease and diabetes. It is recommended that all people remain sufficiently active during the whole life.<sup>33</sup>

#### ◆ Nutritional factors

The population generally is consuming more energetic food with high levels of sugar, saturated fats and salt. This form of feed combined with a sedentary lifestyle leads to obesity. By contrast a healthy diet rich in fruits and vegetables, together with regular physical activity is essential for health, reduces blood pressure, body fat and improve glucose metabolism. It should be included in the daily diet, the fibers as these have some important functions in the body as well as improve the functioning gut, reduce food intake and slow the absorption of glucose.<sup>31</sup>

Nutritional intervention is essential in the prevention and control of diabetes for people who are identified with increased risk of developing DM. Its integration in multidisciplinary teams is essential and it is essential that the user has powers to enable it to manage your diet in a healthy way. In each meal there is a need for making choices from a wide range of foods available, taking into account the social and cultural factors integrated in their everyday life.<sup>34</sup>

#### ◆ Hypertension

Arterial hypertension (AHT) is defined as the increase of Blood Pressure (TA) systolic of 140 mmHg or more and TA diastolic 90 mmHg or more in people who are not taking antihypertensive medication, when a person is overweight and loses weight, there is a decrease in systolic BP and diastolic.<sup>35</sup>

Hypertension is approximately two times more frequently in diabetic patients than in those without the disease, and conversely, hypertensive patients are more prone to the development of diabetes as compared to normotensives.<sup>36</sup>

Several studies of diabetes prevention by changes in lifestyle have proven the benefits of changes in lifestyle to prevent or retard diabetes, individuals at high risk obtained quite favorable results.<sup>37</sup> Making a change of style for healthier lives reduce 58 % incidence of diabetes in three years.<sup>38</sup>

Thus, we gain in health that can be translated in different ways: gains years in life that are no longer lost, reducing episodes of illness or shortening its duration, a reduction of cases of temporary or permanent disability due to illness, trauma or its sequelae and increased physical functioning and psychosocial; reduction of avoidable suffering and improving the quality of life related to or conditioned by health.<sup>39</sup>

Gains in health obtained in the area of chronic diseases should result from the combined action of sectoral policies, and increased public awareness of the right to integration and participation of people in social life.<sup>40</sup> But disease management, will have to be person-centered and including a culture of excellence and demanding responsibility, both by professionals as by the utentes.<sup>41</sup>

It recognized the impact of lifestyle of each individual on their health status and as such is necessary for their characterization to obtain the correct health policies and campaigns to raise awareness of the population. Poor diet and sedentary lifestyle are the main factors associated with obesity and type 2 diabetes mellitus and, in Portugal, the percentage of subjects who reported lead a healthy life appears to decrease with increasing age.<sup>42</sup>

Diabetes is one of the diseases of non-binding statement more common worldwide, being the 4th or 5th leading cause of death in most developed countries. Worldwide, every 10 seconds a person dies due to causes related to diabetes, with type 2 diabetes is between 85-95% of all diabetes cases in developed countries, and even higher percentage in developing countries.<sup>43</sup>

Diabetes is arguably a public health problem and why nursing as science has an important role in public education and prevention of disease, directing his attention mainly to the lifestyles of the population at risk.

## CONCLUSION

Diabetes mellitus type 2 is a complex metabolic disorder, multifactorial, present worldwide and affects the quality and lifestyle of people and communities. It is therefore

necessary to reduce the incidence of this disease, preventing its emergence with preventive measures, especially in high-risk individuals, where physical activity and weight loss are main common.<sup>45</sup>

The DM is a chronic disease currently affecting much of the world population is growing and expanding. The nurses can not remain indifferent to a problem with social significance as relevant as it presents itself as one of the important causes of morbidity and mortality. The prevention of risk factors is a challenge, to help achieve better health and a better quality of life.

For these reasons could be seen from the evidence that countries with better-organized primary care achieve better health outcomes, lower costs and greater equity. It is also the active participation of citizens and community health care is critical, however, for this to happen it is necessary that these are informed and enlightened, in order to make the right decisions and to participate with health professionals, to obtain a significant improvement in their health.<sup>46</sup>

The creation of the project in which would include the identification of the group of people who have a higher risk of getting type 2 diabetes will develop measures for health education and surveillance, taking into account its specificity, risk factors and their needs in order to gain health.

Policies directioned to changes in lifestyle, mainly looking for an appropriate body weight and regular physical activity should be implemented because they provide health benefits beyond the prevention of DM. Health professionals should therefore encourage healthy habits both individual collectively.<sup>47</sup>

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