ORIGINAL ARTICLE

Diabetes in Greece - A recent approach

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ABSTRACT

Introduction: Diabetes mellitus is one of the most common non-communicable diseases globally.
Aim: The aim of the present study was to review the literature and the new items about diabetes approach in Greece.
Materials and Methods: Study of international and Greek literature from electronic databases Medline, PubMed and scientific journals, WHO, and other current databases, mainly from the last ten years. The keywords used were: diabetes mellitus, National Health System, insulin approach and complications.
Literature review: From the literature review data showed that diabetes presents a higher incidence in the western world which is related to diet and sedentary life style. Greece has a population of about 11 million and most of the specialists indicated that the prevalence of diabetes in Greece is close to 7% for 2011. One diabetic subject loses his leg every 20 seconds worldwide and annually one million of diabetic foot is lost. Patients with diabetes exhibit considerable heterogeneity in the severity of the disease and in the need of managing it by physicians of primary or secondary care . Today, most patients who visit Diabetes Outpatient clinics, should and could easily be monitored by physicians or general practitioners and not by qualified medical personnel.
Conclusions: The objectives of a National Plan of Action should be aimed at improving the quality of life of patients with type 2diabetes and the prevention of complications. National Health System in Greece has to give access for at least regular testing for diabetes in all people.

Key Words: Diabetes mellitus, National Health System, insulin approach and complications.

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INTRODUCTION

Diabetes mellitus is one of the most common non-communicable diseases globally. It is the fourth or fifth leading cause of death in most high-income countries. Each new edition of the authoritative Diabetes Atlas, which incorporates updated international epidemiological data, flatly confirms the fact that the number of new cases of diabetes is soaring. According to the Diabetes Atlas (fifth edition) 366 million people have diabetes in 2011, more than 55 million people in the EUR Region have diabetes, 4.6 million deaths are connected with diabetes in 2011 and in 2030 this number is expecting to rise to 552 million especially to people who live in low- and middle-income countries (WHO, 2010). Many middle- and low-income countries have more people under the age of 60 with diabetes compared to the world average. Meanwhile, for high-income countries, a growing population over the age of 60 makes up the largest proportion of diabetes prevalence (IDF, 2012).

Diabetes in conjunction with obesity has exploded during the last years. Diabetes presents a higher incidence in the western world which is related to diet and sedentary life style. 32 million people in the EU are diabetic and as many as them have corresponding susceptibility. 75 % of patients can not regulate diabetes and the statistics show that every two minutes an EU citizen dies from the effects of the disease. The whole situation is not different. Within the last 30 years, the number of people with diabetes worldwide has six-folded and from 50 millions in the 80's they have reached the 350 millions today. The future looks bleak. The World Health Organization (WHO) predicts that if within the next 15 years there are no coordinated interventions, the number of diabetic subjects will exceed 500 millions. During the last 30 years in our country, diabetes has quadrupled and it is estimated that 8% - 9% of the population (800-900.000) suffers from the disease. There is also 3-4 % who does not know that they suffer from diabetes. Type 1 diabetes is growing by 3 % per year in children and adolescents. Type 2 diabetes also affects more and more younger people and young children (IDF, 2009; IDF, 2012). Greece has a population of about 11 million and most of the specialists indicated that the prevalence of diabetes in Greece is close to 7% for 2011 (about 1 million people with diagnosed diabetes). The International Diabetes Federation estimates that these rates will raise to 8.3% at 2030 and 7.7% are the total health budget which the National Health System in Greece spends on diabetes (Souliotis et al, 2005; Yfantopoulos, 2008; HNDC, 2013). There were 638.770 cases of diabetes in Greece in 2012 (IDF, 2013). The prevalence estimates for diabetes in the population 20-79 years old is 8.6% (Figure 1).

Diabetes and complications

Diabetes is not an innocent, temporary and inconsequential disease. Diabetes is the leading cause of adult blindness, amputation of lower limbs, chronic renal failure and dialysis, erectile dysfunction, and the main cause of heart attacks and strokes. Diabetics have the same risk of myocardial infarction with that of non- diabetics who are older by 15 years. Up to 40 % of people with diabetes suffer from coronary heart disease. Up to 12% of people with diabetes suffer from stroke; up to 23% suffer from retinopathy and 44% by microalbuminuria; up to 68 % suffer from neuropathy; up to 52 % of suffer from retinopathy that can result in blindness; 5% of diabetics develop foot ulcers. One diabetic subject loses his leg every 20 seconds worldwide and annually one million of diabetic foot are lost . 40,000 to 50,000 patients in Greece are at risk of foot amputation annually, because only one in two patients visits the doctor in time. 3,000 diabetic foot amputations take place in Greece annually. 8.5 to 17.5 % of all deaths in the Greek population, are associated with a lack of proper control of diabetes. The only shield against complications is screening and regulating the disease (Athanasakis et al, 2010).

Diabetes, an "expensive" disease

According to recent studies of the National School of Public Health, the direct cost of a patient with type II diabetes in Greece regardless the adjustment is 1,300€ per year. The well-adjusted patient (HbA1c <7%) has an annual cost of 983€, while the unsettled (A1c> 7%) 1.570 € (60 % higher treatment cost for non-regulated patients) with the pharmaceutical expenditure in 2011 reached 200 million €. So the total cost for the treatment of diabetic patients in Greece (which are about 800.000 to 1.000.000) exceeds 1.3 billion € (6.4% of total costs made for health totally) (Economou, 2010).

If we also count the expenditure for the treatment of the complications of the disease (according to international studies they represent 50-60% of total cost), then the average annual cost per patient is about 2900€, while the total expenditures for diabetes are estimated at 2.3 billion €, which means 12-15 % of total health expenditure. Finally, we should also calculate the indirect costs of diabetes (loss of working hours, reduced productivity, disability, early retirement, psychosocial effects, etc.) which are estimated at 110% of direct costs (Kanavos et al, 2012). If we take under consideration the whole situation, the total cost of diabetes exceeds 4.5 billion€ annually.

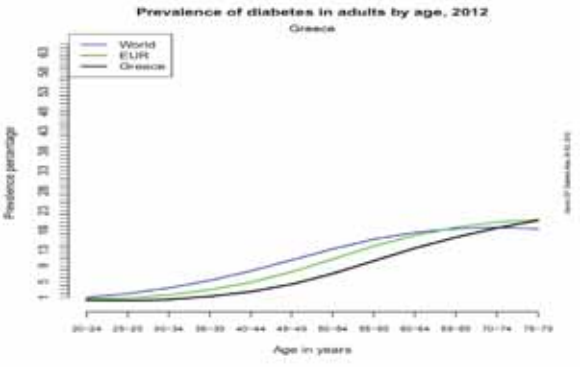

Figure 1. Prevalence of diabetes by age in Geece, 2012. Source: International Diabetes Federation.

Diabetes and new therapeutic directions

During the last years, the science of medicine with the correct clinical practice, which is based on scientific data, investigated lots of laboratory tests. The Evidence Based Medicine, as named internationally, is a basic requirement in modern medical practice that stems from the need for proper patient management for his benefit on the purpose of reducing potential risks of the practice of medicine (WHO, 2011) .

Specifically, according to the latest data, the safety of new pharmaceutical antidiabetic treatments is documented. This leaded to the development of incretins (GLP-1 agonists and DPP-4 inhibitors), without significant side effects, so the therapeutic strategies change, as new molecules of long-acting incretin molecules develop (GLP-1 agonists and DPP-4 inhibitors of weekly action). It is also important that the scientific data and clinical benefits of the concomitant of insulin and incretin action concerning the effective regulation and reducing hypoglycemia. Finally, the new sophisticated pumps of insulin administration, in the form of patch, perhaps in the future will replace the existing pumps (Katsilambros et al, 1993).

The management of patients with diabetes in Greece - recording problems

Patients with diabetes exhibit considerable heterogeneity in the severity of the disease and in the need of managing it by physicians of primary or secondary care. Today, most patients who visit Diabetes Outpatient clinics, should and could easily be monitored by physicians or general practitioners and not by qualified medical personnel. This would give the opportunity for more frequent and more effective monitoring of patients with type 1 diabetes, with complications or generally, "difficult cases". The average waiting time for an appointment in the Diabetes Centres in Athens or Piraeus is about 3.5-4 months. This time could be reduced if the specialized centers could be referred for follow-up of some patients (those who are on diet or tablets) to physicians outside the hospital (Manes et al, 2002; Rekleiti et al, 2013).

From the symptom to the hospital

The management and treatment of the disease is lacking at all levels of the health system. In the field of recognition of the signs of diabetes, there has never been any organized, systematic and long-term campaign to inform the public and there are no organized programs of primary and secondary prevention of the disease (Waugh et al, 2007). Patients often come to clinics or hospitals without being aware of the disease. Quite often, patients discover the disease when they have already experienced complications from it, especially for type 2 diabetes. This has often resulted in a delay of diagnosis for several years after the onset of symptoms and when they have already displayed the complications of the disease.

There is no organized network of Primary Health Care (crucial for diabetes and the prevention of its complications); there is complete absence of units of residential care, insufficient number of clinics monitoring patients with diabetes in primary care level and insufficient number of clinics treating obesity. At the level of secondary and tertiary care, there is a lack of specialized clinics for treating and hospitalizing diabetic subjects (only a few in Attica), a problem which is bigger in the rest of the country. In theory, there are Diabetes clinics in almost every city but these actually underperform or their function has stopped due to lack of staff.

Urgent outpatient and inpatient treatment

A large and important problem is the lack of organized management of patients on their arrival at the hospital. No hospital in the country has an organized management protocol and treatment of patients in emergency rooms on the day of call. Patients arrive at the emergency units by ambulance or privately, and, depending on the hospital, most of them are hospitalized in internal medicine units. There are few specialized sections for the hospitalization of patients with diabetes in hospitals in large urban centers, while there are no such sections at the rest of the country.

Monitoring Diabetes in special units

The existing Diabetes Specialist Units and Centers in our country are very few. By the National Diabetes Center, only eleven are mentioned vaguely labeled as diabetes centers in Attica, two in Thessalonika and one in Patras. About ten beds for diabetic subjects exist in the entire country. In theory, such beds exist in most cities in the country but they are underperforming or shut down due to lack of staff. Specifically, these structures:
• Have been developed in internal medicine or endocrine clinics by doctors' personal actions and not by a central or regional hospital coordinated proposal. • Essentially do not exist in the hospitals' structure; they function randomly with lack of nursing staff. • With regard to staffing, the diabetes care units (centers and Diabetes outpatient clinics) need nurses, dieticians, psychologists, etc, whose number in the existing Greek units is very limited. • Large private hospitals have developed specialized Diabetes clinics, and some special units that manage patients with diabetes, but patients are usually treated in pathological sections.

At the level of primary care, which is a critical stage for the timely and effective diagnosis and treatment of diabetes, there are no organized and functionally interconnected structures for the regular monitoring of patients with diabetes.

Diabetes in everyday life

The need for better monitoring and management of diabetes was the reason for the invention of self control methods of blood glucose levels at home. Thus, in 1965 Anrie Adams and Ames Company discovered and presented a product named Dextrostix. In 1970 Tom Clemens was the scientist who developed the first glucose meter. The most important step in terms of publicity was the device Eyetone, invented by the Japanese company Kyoto Daichi. This new device was smaller, easier to use and, most importantly, it was quite cheaper. In 1972, it was available in the market, shortly after the discovery of the ARM, and spread quite quickly unlike the ARM, which took several years to be instructed. The Eyetone operated on AC power and not with

rechargeable battery, and this was one of the major problems faced by the makers of ARM. Both counters should be prescribed by a doctor so that a person could buy them, and the doctor would also be responsible for training the individual to use the device. The first patient who bought such a device for personal use at home was Dick Vernstein, an engineer who saw it at his doctor's office and was interested to learn more about this method. Since he began to check his own blood sugar levels, he was no longer hospitalized, he felt better and generally the quality of his life improved. He was so excited to see his life changing, that he attended the Medical School at the age of 47. Everyone knows the later development in blood sugar devices (Panagiotakos et al, 2005).

SMBG can aid in diabetes control by facilitating the development of an individualized blood glucose profile, which can then guide health care professionals in treatment planning for an individualized diabetic regimen; giving people with diabetes and their families the ability to make appropriate day-to-day treatment choices in diet and physical activity as well as in insulin or other agents; improving patients' recognition of hypoglycemia or severe hyperglycemia; and at last enhancing patients' education and emancipation, regarding the effects of lifestyle and pharmaceutical intervention on glycemic control (Karamanos, 2008).

Education on Diabetes

Diabetes imposes lots of requirements for the life of sufferers and their families. These requirements have to do with a multitude of decisions related to the management of diabetes. Patients must monitor their blood sugar (self control), take medication, exercise regularly and change their eating habits. Additionally, they may have to deal with issues related to the complications of diabetes and they may be required to engage in significant psychological adjustments. For all these reasons, it is crucial to benefit from high quality education that fits their needs. Mismanagement will lead to a poor outcome and increased incidence of complications.

Diabetes and economic crisis

In a study investigating the effect of the economic crisis in the management of patients with diabetes (communication by phone of 600 people with diabetes), it was found that: only 13% considered the quality of primary care satisfactory, 34% moderate and 47% poor to unacceptable. 53% believe that the economic crisis has adversely affected the quality of food and 85% believed that the economic crisis has adversely affected the supply of medication and consumables (Economist, 2007).

Planning and Objectives

The objectives of a National Plan of Action should be aimed at improving the quality of life of patients with type 2 diabetes and the prevention of complications (Liatis et al, 2009). For this purpose the Greek Diabetes Association in 2012 proposed the following actions (IDF, 2012): • Informing and educating patients with type 2 diabetes to actively participate in the disease management. • Awareness and training of health professionals on issues of dealing with type 2 diabetes and its complications. • Improvement of care from health institutions in patients with type 2 DM. • Provide specialized medical treatment and upgrading the quality of services. • Upgrading both facilities and equipment of existing diabetology clinics and centers and creating new ones where needed. • Reduce morbidity and mortality from complications of type 2 diabetes.

Conclusion

The Hellenic Diabetes Federation believes than diabetes policy is moving too slowly. It's a challenge and parallel target for the National Health System in Greece to give access for at least regular testing for diabetes in all people. Also specialized centers must be friendlier to patients. Finally, and until we reach the ideal, the message that today dominates the treatment of diabetes is:
"Personalization, information - education and participation".

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