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DIABETES MELLITUS: CHALLENGES TO HEALTH CARE SYSTEM IN GAZA STRIP

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ABSTRACT

Introduction Diabetes mellitus (DM) has reached pandemic proportions worldwide. The International Diabetes Federation estimated the worldwide prevalence of DM at 415 to 642 by 2024. According to the Palestinian Ministry of Health, the total number of DM cases In GS was 27'601, with an incidence rate of 15.4/1000 (MOH, 2014). Diabetes is one of the four priority non-communicable diseases (NCDs) identified by the WHO along with cardiovascular disease (CVD), which includes heart attack and stroke, cancer, and chronic respiratory disease, Diabetes is common, chronic, and costly. **Conclusion** This review has Explain the diabetes mellitus status in Gaza Strip, Health services provided for diabetic patients in Gaza Strip and provided information about the self-management approach of the people suffering with diabetes in the Gaza Strip and identified the barriers to self-management of diabetes, A self-management as an integral part of diabetes management, Patients with diabetes are at risk of developing devastating diabetes-related complications such as retinopathy, Diabetic Foot and kidney failure. This review will also contribute to providing information on recommended a multifactorial approach emphasizing patient education, culturally and personally Attitude towered adherence to medication, follow up and ongoing monitoring to health services in the community among diabetic patient and support the vulnerable group by different ways finally the Self-management education for people with diabetes is not an option; it is an imperative.

KEYWORDS: Diabetes mellitus, Diabetic foot, Gaza Strip, Palestine.

INTRODUCTION

Diabetes mellitus (DM) has reached pandemic proportions worldwide. The International Diabetes Federation estimated the worldwide prevalence of DM at 415 million adults in 2015 and this figure is expected to increase to 642 million by 2040 (IDF, 2015). Just in the United States, the total estimated cost of diagnosed DM in 2012 was $245 billion, including $176 billion in direct medical costs and $69 billion in reduced productivity (ADA, 2013). Importantly, the prevalence of DM is increasing considerably faster in developing countries than in post-industrialized ones, having at least doubled between 1980 and 2014 in most Middle East countries (NCD, 2016). The Worldwide, about 8% of people suffer from diabetes. In the Middle East, more than 10% have the disease. Residents of the Gaza Strip and West Bank, with diabetes rates approaching 15-20%, are in an unhealthy class of their own and the reason is lack of awareness on how to treat and how to prevent the disease from occurring and Another is high levels of obesity, a major risk factor for diabetes. (WDF, 2015).

In Gaza Strip, ageing populations, sedentary life and changing lifestyles are rapidly increasing the spread of DM along with other chronic diseases. In the occupied Palestinian Territory, prevalence of DM was estimated at 9.6% (Almoutaz, et al., 2011), and rose from 6.6% in 1980 to 16.5% in 2014 (NCD, 2016). According to the Palestinian Ministry of Health, the total number of DM cases In GS was 27'601, with an incidence rate of 15.4/1000 (MOH, 2014). Although in 2009 the number of deaths related to DM was only 85 (46% males) (MOH, 2009), still DM ranks 8th in the causes of death in GS, where it represented 11.2% of all deaths in 2014 (MOH, 2014). The recent study in GS to evaluation of Diabetic Foot Management the study emphasized the role of health care providers in health education, they need to employ adequate qualified physicians and nurses to offer quality care to diabetic patients.(E. Isleem, Y. Aljeesh, 2015). Another recent study conducted in Palestine to analyse the pattern of diabetes care by physicians and nurses in primary care clinics and their self-reported compliance with the local Palestinian guidelines, about half of physicians and nurses not adhered to the guidelines because lack of interest by physicians and attitude of PHC providers towards diabetes was a major limiting factor in diabetes management(N. El Sharif, & et al, 2015). Diabetes is one of the four priority non-communicable diseases (NCDs) identified by the WHO along with cardiovascular disease

(CVD), which includes heart attack and stroke, cancer and chronic respiratory disease , Diabetes is common, chronic and costly(IDF, 2011).

Characteristics of Type 2 Diabetes

Diabetes is a metabolic disease characterized by elevated concentrations of blood glucose for prolonged periods of time, *i.e*., hyperglycemia (Hakeem, and Fawwad, 2010). insulin resistance and increased hepatic glucose production and these metabolic abnormalities are treated by use of various medications which are designed to correct one or more of metabolic abnormalities (Gerich, J.E. 2005), (Saltiel and Olefsky, 2001). The complications of type 2 diabetes from micro-vascular and macro-vascular diseases can have a devastating effect on quality of life and impose a heavy burden on healthcare systems. The treatment for type 2 diabetes differs at various stages of the condition. In its early stages, many people with type 2 diabetes can control their blood glucose levels by losing weight, eating properly and exercising. Many may subsequently need oral medication, and some people with type 2 diabetes may eventually need insulin shots to control their diabetes and avoid the disease's serious complications (Saltiel and Olefsky, 2001). Even though there is no cure for diabetes, proper treatment and glucose control enable people with type 2 diabetes to live normal, productive lives. A major advance for people at risk of developing type 2 diabetes-such as family members of those with the condition-occurred recently when it was shown that diet and exercise can prevent or delay type 2 diabetes. People at high risk, who already had early signs of impaired glucose tolerance, significantly reduced their risk by losing only 5 - 7 percent of their body weight and performing moderate physical activity for 30 minutes/day. (Saltiel and Olefsky, 2001). Diabetes is associated with a 2- to 4-fold increase in cardiovascular mortality and stroke. Also, 75% of individuals with type 2 diabetes die from cardiovascular causes.[24] Diabetic neuropathy is present in 12% of people at diagnosis and diabetic neuropathy affects approximately 70% of people with diabetes and is a leading cause of non-traumatic lower extremity amputations. Therefore, early detection and treatment of diabetes is essential in order to reduce the impact of its serious complications(Saltiel, and Olefsky, 2001).

The cost of diabetes care

Diabetes results in high healthcare costs, loss of labour productivity and decreased rates of economic growth. Globally, healthcare expenditure for diabetes totaled USD 465 billion in 2011, equivalent to 11% of total health spending. Without an investment in making effective treatments for preventing diabetes complications widely available, this is predicted to rise to USD 595 billion by 2030(IDF, 2011). Expenditures spent on diabetes care are not evenly distributed across age and gender groups More than three-quarters of the global expenditure in 2010 will be used for persons who are between 50 and 80 years of age. Also, more money is expected to be spent on diabetes care for women than for men. There is a large disparity in healthcare spending on diabetes between regions and countries. More than 80% of the global expenditures on diabetes are made in the world's economically richest countries, not in the low- and middle-income countries where 80% of people with diabetes will soon live(IDF, 2011). According to Palestinian Central Bureau of Statistics & Ministry of Health The Government spending on healthcare of Palestine is about 12.3% of GDP or US$1.3 billion, Between 2000 and 2013, expenditure on referrals increased from US$8 million to US$52 million, because The lack of availability of certain treatments, medications, medical staff, equipment and infrastructure within the public system has led to the creation of a referral abroad (PCBS, 2014).

In Palestine, there is no data about health expenditure due to diabetes and diabetic foot, The only available data is about the costs of direct diabetes medications(MOH, 2014).

Health care system

Health care services in Palestine are provided by four sectors, which is Ministry of Health (MOH), UNRWA, Medical Military Services, Non-Governmental Organizations (NGOs) and private sector. MOH is the main health care provider; it provides primary, secondary and tertiary services and purchases some services from private providers locally and abroad (MOH, 2011). The current Palestinian health system is made up of fragmented services that grew and developed over generations and different regimes.

Health services provided for diabetic patients in Gaza Strip

At governmental sector, health services - particularly for diabetic patients –are provided through a multidisciplinary system including primary, secondary, and tertiary health services.

At primary level, health services are provided in Primary Health Care Centers (PHCCs), these services include:

Identification and diagnosis of people with diabetes by annual screening for DM and 6-monthly for hypertension if they are 40 years or older during attendance to the PHCCs, and Initial assessment and care at confirming diagnosis of DM, and patients are clinically assessed for complications and co-morbidities such as hypertension, foot examination, and Patients are managed according to a standard algorithm with diet and lifestyle modification, oral hypoglycemic medication (Glibenclamide, Glicazide and metformin) and insulin and are assessed as having controlled or uncontrolled DM.

- Health education and advices about life style and diet.
- Medications given in the PHCCs are free of charge.

At secondary level, health services are provided in the hospitals, these services include: emergency services, admission to inpatient wards, intensive treatment to manage uncontrolled blood sugar levels, surgical intervention (debridement and amputations), consultation, various laboratory tests.

At tertiary level, rehabilitation services and training to adjust for disabilities resulted from loss of extremity (due to amputation). These services are provided through physiotherapy departments in the governmental hospitals.

Health Services in the Local Community

The health services in the community in Gaza Strip are not enough and diabetes health management programme in the community health clinics does not provide enough help and support to the patients. Shortage of specialist doctors in diabetes and expensive consultation with private doctors make the life of patients more difficult in terms of managing their diabetes in the Gaza Strip. The chronic disease care is mostly integrated into the public health system through primary health care centers, Usually people with diabetes are referred from primary health-care clinics to specialist diabetes centers but in Gaza strip no specialist centers in primary health-care clinics. According to WHO report about NCD services in health care system n Gaza Strip it showed some Weakness' point such as lacked standardization and supervision system**,** lack of protocols and tools for early detection**,** unreliable supply of essential NCD medicines**,** MoH facilities, and use of multiple providers that do not use the same treatment protocols notably UNRWA and MoH, Use of multiple providers challenges a central concept of effective NCD management: continuous comprehensive care by the same provider over time **(**WHO, 2014). During 2013 In Al Shifa hospital new unit established to care and manage the diabetic foot ulcer, the team of this unit contain endocrinologist ,specialist in vascular and nurse, this unit provide services to all resident in Gaza city just. According to DF unit in Al Shifa hospital report the number of diabetic foot patient annually around 4000 to 5000 patient and approximately 6-8% amputation in Shifa hospital (MOH, DFU, 2013). We need more effort to expanded this unit at major hospital in Gaza strip and to standardization of care about diabetic patient then to improve care about diabetic patient.

Global Diabetes Plan

The International Diabetes Federation IDF Create the Global Diabetes Plan 2011-2021, this Plan calls on the United Nations and its agencies, governments, civil society, the private sector and the global diabetes community to turn the tide of diabetes now.

The Objectives of the Global Diabetes Plan is to

1- Improve health outcomes of people with diabetes
2- Prevent the development of type 2 diabetes
3- Stop discrimination against people with diabetes

Self-Management Approach

The successful management of diabetes depends not just on medicines and medical treatments. It also relies on a combination of medicines, medical monitoring and treatments, an appropriately constituted and balanced diet, physical activity, and self-management education about the nature of diabetes and how to manage it. People with diabetes need to make multiple daily decisions about balancing food, physical activity and medicines. For many people with diabetes this may include self-injecting insulin and self-monitoring of blood glucose levels. These care requirements can change substantially during the different stages of the individual's life cycle and diabetes disease process. Thus successful self-management not only requires initial diabetes education at the time of diagnosis but an ongoing cycle of assessment and educational intervention. Special attention needs to be directed to education for the cares of people with diabetes, particularly those who cannot understand or undertake the requirements for self-management such as young children, the very elderly, and people with physical or mental disabilities that make self-management impossible.(IDF, 2011).

In Gaza Strip the patient with diabetes require self-management education and understanding of this disease which in itself poses a great challenge. The Gaza strip is facing the greatest challenges like primary health care system in managing NCD specially diabetes and siege and scarcity, lack of financial resources so, the health policies we need to change toward self-management approach and support it, Diabetes self-management education helps people to stay healthy and prevent costly complications, yet very few people with diabetes attend a course.

The studies on diabetes knowledge, beliefs and practices among people with diabetes provided further evidence that there was a lack of information available to people with diabetes. the recent study conducted in Gaza Strip showed that 81 of cases and 49 of controls had secondary education and less [OR 4.437, 95% CI (2.351 – 8.374) P= 0.000]. This result indicated statistically significant association between diabetic foot and level of education, and that those who have low level of education are 4.4-times at higher risk of developing diabetic foot(Abu Obiad and Eljedi, 2015). Previous studies found an association between DF and illiteracy (Desalu, 2011, Aboalfotouh, et al., 2011). Another study indicated that low level of formal education was a significant risk factor for foot complications (Simon, 2008; Al-Maskari and El-Sadig, 2007). Additionally, Simon (2008) reported that the low mean score of knowledge about foot care was related to not receiving advice on foot care, and that only 48% of patients had received advice on foot care and 27.5% reported to have had their feet examined by the doctor at least once, also, foot self-care behavior improved significantly in patients who had been

given advice on foot care and in those whose feet had been examined by the doctor at least once.

Finally According to International Diabetes Federation IDF, Self-management education for people with diabetes is not an option; it is an imperative.(IDF, 2011).

Benefit of self management

Diabetes self-management education includes the ongoing processes of facilitating the knowledge, skill and ability necessary for diabetes self-care. It incorporates the needs, goals and life experiences of the person with diabetes. Education helps people with diabetes initiate effective self-management and cope with diabetes when they are first diagnosed. Ongoing diabetes education helps people with diabetes maintain effective self-management throughout a lifetime of diabetes(ADA, 2014). self-management has been shown to be cost-effective by reducing hospital admissions and readmissions(Healy, et al 2013)(Robbins, et al, 2009). as well as estimated lifetime health care costs related to a lower risk for complications (Brown,etal.2012). Given that the cost of diabetes in the U.S. in 2012 was reported to be $245 billion(ADA, 2013). DSME/S offers an opportunity to decrease these costs(Duncan, et al, 2011) (Robbins, et al, 2009). It has been projected that one in three individuals will develop type 2 diabetes by 2050(Boyle, et al, 2010). The U.S. health care system will be unable to afford the costs of care unless incidence rates and diabetes-related complications are reduced.

Barriers to Diabetes Care

It was identified by (Glasgow et al, 2001) that two types of barriers (internal and external) exist. The internal barriers to diabetes care (self-management) include psychosocial and cultural, attitude and psychosocial barrier is related to interpersonal factors that impede diabetes self-management, the external barrier is related to biological factor such as organization of medical care and community and cultural influences (Starfield, 2003).

Personal Barrier

qualitative study among low-income minority diabetics it showed the Attitudes, perceptions and behaviors surrounding diabetes and self-management of the condition did vary across individuals, however, the variation appeared to reflect the individual's knowledge and opinions rather than patient's age, sex, or culture.(Nneka Onwudiwe, et al, 2011). Another study conducted that aim to systematic review is to summarize existing knowledge regarding various barriers of diabetes management from the perspectives of both patients and clinicians the article published between 1990 and 2009, addressing type 2 diabetes, patient's barriers, clinician's barriers, and self-management the study showed the Patients' adherence, attitude, beliefs and knowledge about diabetes may affect diabetes self-management. Culture influence the patient's health beliefs, attitudes, health literacy, thereby affecting diabetes self-management.(Nam, S, et al, 2011). A Recent study in Palestine that aim to assess medication adherence and its potential association with beliefs and diabetes – related knowledge in patients with type II DM, the study showed that non-adherence was significantly associated with diabetes-related knowledge, beliefs about necessity of the anti-diabetic medications, concerns about adverse consequences of anti-diabetic medications, and beliefs that all medicines are essentially harmful Beliefs and knowledge are important Barriers to understanding variations in medication adherence among diabetic patients (Sweileh, et al, 2014). Finally, improving knowledge of diabetic patients about their illness can positively influence their medication adherence and therapeutic outcome.

Administration Barrier

According to Diabetes Voice report the People with diabetes in Gaza do not receive the support of dieticians, foot specialists, psychologists or diabetes educators. In the standard visit, people with diabetes commonly have the opportunity to monitor their body weight and blood pressure level, and undergo fasting or random blood glucose testing. (Diabetes Voice, 2004). The recent study in Gaza Strip showed two third of the DF patients do not receive any information or instruction about diabetes and DF and had poor knowledge. Unfortunately, several studies have found that primary care physicians infrequently perform foot examinations in diabetic patients during routine office visits(Wylie, 1995) (Bailey,1985). A cross sectional study found that 78.4% of patients had poor information about foot care(Bailey,1985). Another study showed statistically significant associations between level of education and effective diabetic foot practice(Abu-Qamar,2014). A study conducted in Gaza Strip about risk factors to diabetic foot ulcer the study found only 29% of cases had visited the doctor to examine their feet for four times and more in the last year(Abu Obaid and Eljedi, 2015). A Hospital Based conducted in Gaza Strip the study showed Ninety one percent (91%) of our patients were followed up to control of DM either in governmental health center or non-governmental health center. Most of the cases (68.9%) had poor DM controlled (as indicated by their HbA1C level > 7%), these findings suggest that DF is most likely to develop in a diabetic patients with poor control of blood glucose level(Salah, 2016). this is a clear evidence poor management and follow up about DM controlled. it is clear that to definition of these barriers, with subsequent, systematic action to reduce their impact, in both patients and populations could result in an improvement in diabetes outcomes.

Economic Barrier

A study conducted in Gaza Strip that showed that 93 of cases and 84 of controls earn 2500 NIS and less monthly [OR 2.531, 95% CI (0.993 – 6.452) P= 0.046]. This result indicated statistically significant association between income and diabetic foot and that diabetic patients who have low income are 2.5-times at higher risk of developing diabetic foot(Abu Obiad and Eljedi,

2015). Another study conducted among Arab patients in East Jerusalem with type 2 diabetes the study showed low diabetes self care management and we need more interventions to increase diabetes self care management practices, another found financial barriers(Daoud, et al, 2015). These results were consistent with previous studies that found an association between DF and low economic condition (Balla, et al., 2013; Desalu, 2011). In addition, low average monthly income has been associated with worse diabetic outcomes as it determines the ability to obtain medication and services that improve health (Dunlop, et al., 2000). The Financial status to the patient is significant barrier in keeping a check on blood sugar levels Even if healthcare was free or funded by insurance, patients still had to spend more money on healthy food, home glucose monitoring kits and transport to and from healthcare appointments and It is therefore necessary for educators to identify settings and facilitate support groups to promote behavioral changes and support the vulnerable group by different ways.

Recommendation

1- Establish programs to increase patients' awareness about DM are essential for all diabetics in the Gaza Strip in order to improve medication adherence and therapeutic result
2- Increase the Consultation times and effective examination during the patient visit at primary health centers.
3- Instruct to the decision-makers in ministry of health to support the self-management approach because efficient, cost effectiveness, affordable, and easy to applicable.
4- Instruct to establish on-going follow-up and effective monitoring to improve health services in the community.
5- Encourage Local community participation in all the aspects and at all levels to provide care among diabetic patient according to community interests and to make all the programs successful.
6- Support to the vulnerable people with diabetes by treated free and gives some devices to monitor blood sugar

CONCLUSION

This review has Explain the diabetes mellitus status in Gaza Strip, Health services provided for diabetic patients in Gaza Strip and provided information about the self-management approach of the people suffering with diabetes in the Gaza Strip and identified the barriers to self-management of diabetes, A self-management as an integral part of diabetes management, Patients with diabetes are at risk of developing devastating diabetes-related complications such as retinopathy, Diabetic Foot and kidney failure. This review will also contribute to providing information on recommended a multifactorial approach emphasizing patient education, culturally and personally Attitude towered adherence to medication, follow up and ongoing monitoring to health services in the community among diabetic patient and support the vulnerable group by different ways finally the Self-management education for people with diabetes is not an option; it is an imperative.

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