PATIENT AND PHYSICIAN ASSOCIATED FACTORS OF ADHERENCE TO EVIDENCE-BASED GUIDELINES IN DIABETES MELLITUS TYPE 2

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Abstract

Introduction: Diabetes mellitus type 2 (T2DM) is a chronic disease that needs a high standard of health care. Clinical practice guidelines are diabetes care that ensures regular monitoring of diabetic patients, including annual diagnostic tests.

Objective: This study aims to review the Patient and physician-associated factors of adherence to evidence-based guidelines in Diabetes mellitus type 2

Methods: studies in this review article were obtained by online research through scientific websites, including the PubMed database and Google scholar. The search process included using several keywords; the keywords used were "physicians, patients, adherence, factors, diabetes, guidelines." We have reviewed the studies that were published between 2015 and 2020. We excluded all the articles before 2015.

Conclusion: adherence of physicians with evidence-based guidelines of DM2 was associated with lack of knowledge, patients' compliance, advanced co-morbidities, and geriatric patients. While the patients' adherence was related to patient education, knowledge, ability and behavior, patient preferences, and the relationship between the physician and the diabetic patient.

Keywords: diabetes mellitus, physicians, patients, adherence, factors, Diabetes, guidelines.

Introduction

Type 2 diabetes mellitus is a chronic disease characterized by high blood sugar and dysregulation of the body metabolism. It caused by disturbed insulin secretion, insulin resistance or both. [1] There are three major types of Diabetes disease, type 1 diabetes mellitus (T1DM), T2DM and gestational diabetes (GDM). Type 2 diabetes mellitus is the most common type of the three types of Diabetes representing for more than 90% of all diabetic cases. Its leading cause is progressively impaired insulin secretion by pancreas, usually due to insulin resistance. [2] Overt high blood sugar (hyperglycemia) is preceded by prediabetes, a high-risk condition that converted into T2DM. Prediabetes has appeared as impaired fasting glucose (IFG) levels, impaired glucose tolerance (IGT) or increased glycated hemoglobin A1c (HbA1c) levels. [3] Individuals with IFG levels are characterized by high fasting plasma glucose levels that exceed the normal but do not meet the range for the diagnosis of Diabetes. [4] IGT is characterized by

insulin resistance in muscle and impaired late insulin secretion after a meal, whereas individuals with IFG levels manifest hepatic insulin resistance and impaired early insulin secretion. [5] Prediabetes individuals have HbA1c levels between 5.7–6.4%; they represent a heterogeneous group with respect to pathophysiology and are clinically very diverse. Annual conversion rates of prediabetes to Type 2 diabetes mellitus range from 3-11% per year. [6]

Epidemiology of Diabetes mellitus type 2

In 2015, the International Diabetes Federation (IDF) reports that there were more 400 million patients with T2DM worldwide. Additionally, the WHO estimates that diabetic patients will exceed 592 million in 2035 [7, 8].

Saudi Arabia has the second-highest diabetic patients in the Gulf region and the seventh highest in the world. In Saudi Arabia, the prevalence of T2DM was 18.5% and has increased during the last years particularly in urban areas and in males [9]. T2DM remains one of the major causes of

disability and mortality in the country [10- 12]. The mortality rate is 2.25% and accounts for 4.78% lived with disability per year [13].

Diagnosis and treatment

Many patients with T2DM have no symptoms, whereas others have severe hyperglycemia or even diabetic ketoacidosis. In asymptomatic diabetic patients, the timing and frequency of testing for prediabetes or T2DM are based on the presence or absence of disease complications. Laboratory analysis in at-risk individuals is critical because prediabetes is common and approximately one-third of individuals with T2DM are undiagnosed. [1]

Management of Diabetes mellitus needs identification of patients who have prediabetes and intervention with improving the lifestyle through weight loss and exercise as well as the antidiabetic and anti-obesity therapies. [14] The high-risk individuals are prediabetic who had HbA1c more than 6.5% and are overweight with BMI ≥ 30 kg/m² and the population with age ≤ 60 years.

The American Diabetes Association (ADA) recommended that high-risk individuals with impaired glucose tolerance or impaired fasting glucose (IGT or IFG) levels be treated with metformin. Pioglitazone and combined low-dose metformin and rosiglitazone also are very effective in preventing the conversion of prediabetes to Diabetes. [15] the medication intervention was critical as lifestyle intervention alone, although initially effective, is associated with weight regain in most cases. [16] However, those individuals with prediabetes who successfully lose weight, maintain a physical activity program and improve their lifestyle can be expected to benefit from decreased conversion to Diabetes. [17]

Evidence-based guidelines for Diabetes mellitus 2

Evidence-based guidelines for T2DM are performed for a reduction in the burden of the disease and its complications. Following the evidence-based guidelines improve health outcomes, improve the quality of life, increasing efficiency, improving adequate clinical decisions, supporting quality improvement activities, support optimal care [18].

Physician contributing factors of adherence to evidence-based guidelines in Diabetes mellitus type 2

Various studies reported non-compliance to the evidence-based guidelines of T2DM [1, 19, 20]. Physicians' lack of knowledge and lack of familiarity with the guideline is the most common contributing factors leading to the non-adherence. Additionally, physicians not prescribing a medication therapy which is related to the patients values and preferences. [21]

The lack of familiarity with updated recommendations and the inability to apply them with the community of patients they treat is associated with the physician non-adherence. Savona and Vassallo study has found that the specialty is also an associated factor as successful treatment of T2DM

patients was more common in endocrinologists or diabetologists more than the other specialties, especially family medicine practitioners. It was found that family medicine practitioners were significantly more likely to accept an HbA1c higher than proposed by evidence-based guidelines. About one-half of the physicians reported that they updated their knowledge about T2DM guidelines from the internet. [22]

While the current guidelines still promote the use of insulin in treating the gestational Diabetes mellitus because of potential long-term effects of oral hypoglycaemic agents on the fetus, there is still a role for these agents, particularly in environments where close monitoring or with patient compliance may be an issue, only about a 25% of physicians incorporating oral hypoglycaemic agents in the treatment of GDM. In contrary, about 60% of physicians were willing to use insulin analogs in GDM therapy. [22]

The key factors that led to greater adherence with guidelines of T2DM as reported by most general practitioners are; enhanced knowledge, improved motivation, and a greater sense of responsibility, which lead to consequent enhancement in diabetes care. Additionally, improving communication with patients and consulting specialists and diabetes nurse educators were also essential factors. Some general practitioners were refused to consult with specialists, particularly with diabetes nurse educators and nutritionists. Most of the general practitioners reported that some patients were refused to change or improve their lifestyles through weight loss or maintain physical activity. [17]

In 2020, there are many causes for the fact that the treatment of patients is not usually consistent with evidence-based guidelines. The most crucial factor of the physician's non-adherence are not providing adequate treatment. This may be because of physicians' lack of experience or lack of familiarity with a guideline. However, non-compliance may also be caused by a deliberate decision to counteract the guideline with which the physician may disagree, in general, or for specific individuals. [16]

Adverse drug effects and non-adherence with medication appear to be the most critical factors associated with poor adherence to guidelines. In chronic care, general practitioners have to manage the disease for a long time, and that any medication has to match up to other health goals and is affected by psychosocial issues [21].

Improving the physician guidelines adherence can be maintained by various ways, such as the use of computerized point of care reminders and participation of physicians in the T2DM pay for performance program, which increases the opportunity of patients to take examination and tests according to guidelines [21].

Patient-associated factors of adherence to evidence-based guidelines in Diabetes mellitus type 2

The factors contributing patients' compliance to evidence-based guidelines are: Health education about the disease pathogenesis and control is the primary factor, but other patient-specific factors such as race, ethnicity, or education are also important. However, some patients with T2DM do not want to be aware of their disease, or they minimize their chronic disease symptoms and consider it as usual, e.g., as a result of aging. Patients' fears of adverse drug events certainly also play a role in non-adherence to prescribed therapies. Additionally, insufficient information about the patient including incomplete patient's history, conflicting information, neglected disagreements, or a disturbed communication between the patient and the physician may cause poor adherence to the guidelines.[23]

Wesselink *et al.* found that approximately two-thirds of diabetic patients do not want to know about evidence-based guidelines or treatment choices. About one-fifth of the patients stated that they do not need the medication therapy they should in fact receive for treatment. This might reflect specific knowledge deficits regarding the burden of the diseases or their complications. They found that the patient socio-demographic characteristics were not related to guideline adherence, so that the compliance was not significantly differentiated in specific population groups [18].

The patient's deficient awareness and minimizing the complications of having and living with the disease are factors associated with poor adherence. General practitioners felt that a structured consultation and follow-up in a multidisciplinary team might help to increase the compliance to the guidelines. It was known that the physician's efforts do not usually meet the patients' expectations. This induces physicians' disappointment and causes a paternalistic attitude, which may induce anxiety and depression in the diabetic patient. Physicians usually believe that the best way to increase the adherence of patients is by shocking the patients, and threatening from the disease risk factors. [24]

In Saudi Arabia, Al Harbi et al. assessed a cross-sectional study to investigate the adherence to American Diabetes Association (ADA) standards of diabetic care in a primary care center. They found poor adherence with many ADA standards of diabetic care among patients with T2DM treated. The achievement of health outcome standards, either singly or combined, is lower than the guidelines adherence rates. However, they found improvement in adherence during the follow-up period.[25]

Lui et al. performed a study to investigate the factors associated with rural patient compliance with diabetic eye screening. The factors were classified into environmental, social, and specific factors. The significant factors were infrequent use of healthcare, long travel distances to obtain care, income, trusting communication with medical staff, family members' encouragement, fear about diabetes complications, and the burden of diabetes treatment. Improving patient education, patient trust in their

physicians, and, e.g., teleophthalmology in case of long travel distances may increase the adherence in diabetic eye screening in rural communities. [26]

Conclusion:

Type 2 diabetes mellitus is a chronic disease characterized by dysregulation of the body metabolism and caused by disturbed insulin secretion, insulin resistance or both. Evidence-based guidelines for T2DM are performed for a reduction in the burden of the disease and its complications. Following the evidence-based guidelines improve health outcomes, improve the quality of life, increasing efficiency, improving adequate clinical decisions, supporting quality improvement activities, support optimal care. Physicians' lack of knowledge and lack of familiarity with the guideline is the most common contributing factors leading to the non-adherence. The specialty is also an associated factor as confidence in controlling T2DM patients was more common in endocrinologists or diabetologists rather than the other specialties. The key factors that led to greater adherence with guidelines of T2DM as reported by most general practitioners are; enhanced knowledge, improved motivation, and a greater sense of responsibility, which lead to consequent enhancement in diabetes care. Additionally, improving communication with patients and consulting specialists and diabetes nurse educators were also essential factors. Improving the physician guidelines adherence can be maintained by various ways, such as the use of computerized point of care reminders and participation of physicians in the T2DM pay for performance program, which increases the opportunity of patients to take examination and tests according to guidelines.

The factors determining patients' compliance to evidence-based guidelines are: Health education, knowledge, education, patients' fears of adverse drug, the relationship between the patient and their health providers.

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