Prevalence and factors affecting opposition of insulin initiation among type2 DM patients at Ain Shams University hospitals

Thesis

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List of Abbreviations

Abb.	Full term
%	Percentage
AACE	American Association of Clinical Endocrinologists
ACE	American College of Endocrinology
ADA	American Diabetes Association
DAWN study	Diabetes Attitudes, Wishes, Needs study
DM	Diabetes Mellitus
HbA1C	Glycated hemoglobin
IDF	International Diabetes Federation
ITAS	Insulin Treatment Appraisal Scale
N	Number
OHA	Oral Hypoglycemic Agents
PIR	Psychological Insulin Resistance
RBS	Random Blood Sugar
SD	Standard Deviation
SMBG	Self Monitoring of Blood Glucose
T2DM	Type2 Diabetes Mellitus
USA	United States of America
WHO	World Health Organization

Abstract:

Background: Despite the rapid development of new antidiabetic medications, glycemic control is not improving .One of the obstacles to diabetes management is delayed initiation of insulin therapy in poorly controlled T2DM patients.
Objectives: To measure the prevalence of insulin opposition among Egyptian type 2 diabetes patients, uncontrolled, on two or more oral hypoglycaemic combination therapy and to assess factors associated with insulin opposition.
Methodology: A cross sectional study was conducted in outpatient clinics at Ain Shams University hospitals using a purposive sample of 103 type 2 diabetic patients (on maximum tolerated oral glucose-lowering therapy, and with HbA1c ≥9% in the last 6 months or random blood glucose ≥300–350 mg/dL),using a structured interview questionnaire .
Results: About half (55.3 %) of the study sample were unwilling to start insulin in spite of poor glycemic control. Comparing unwilling and willing participants, the negatively stated items that differed significantly between the 2 groups were concern about insulin being a lifelong therapy(84.2 %vs. 43.5%), Keeping insulin as a last resort (77.2% vs. 50), belief that taking insulin is a sign that diabetes had become worse (75.4% vs. 63 %,), feelings of personal failure in diabetes self-management (71.9 %vs. 63%),concerns about less flexible life (59.6 %vs. 52.2%), concerns about time & effort with daily injections (29.8% vs. 13 %) and expected harm from insulin therapy (28.1% vs. 13 %).The positively stated items that differed significantly between unwilling and willing participants were about the role of insulin in improving energy level (22.8% vs 50%), improving health (28.1% vs. 60.9%) and preventing complications of diabetes (42.1% vs. 67.4%).In univariate analysis, factors associated with lower prevalence of opposition to initiate insulin therapy included family history of insulin use, previous physicians' recommendations on insulin within the previous 6 months, history of hypoglycemic attacks and longer duration of diabetes disease. Mean total Insulin Therapy Appraisal scale (ITAS) score was higher in unwilling participants compared to those willing (unwilling 47.2 vs. willing 41.6, p=0.000).
Conclusions: Unwilling participants have many negative attitudes concerning initiating insulin therapy. Exploring these attitudes can help address their concerns and promote the timely initiation of insulin.
Recommendations: There should be a physicians' training program to look beyond the initial refusal to the shift to insulin therapy by assessing the knowledge of and underlying beliefs of the participants regarding insulin therapy .This will thorough patients' health education about insulin. Thus, clinicians may help their patients begin insulin treatment sooner and improve compliance, thus facilitating target glycemic control

Keywords: insulin therapy, Diabetes mellitus, prevalence, attitudes, risk factors.

INTRODUCTION

Diabetes mellitus is one of the largest global health emergencies of the 21st century ***(International Diabetes Federation, 2015)***. It affects more than 415 million adults worldwide. This number is expected to surge to 642 million by 2040 ***(International Diabetes Federation, 2015).*** Between 2010 and 2030, number of adults with diabetes would increase by 54 % globally 20 % in developed countries and 69 % in developing countries ***(Shaw et al., 2010)***.

Among the top ten countries for number of people with diabetes aged 20-79 years, Egypt ranks the eighth country, with 7.8 million diabetic patients. By 2040; Egypt is expected to be the seventh country with 15.1 million diabetes patients ***(International Diabetes Federation, 2015)***.According to WHO 2016, the national prevalence of diabetes among total population is 16.2% ***(World Health Organization, 2016)***.

Diabetes is associated with complications, categorized as micro vascular or macro vascular complications ***(Stolar, 2010; Fowler, 2008; Skyler, 2004).*** Macro vascular complications include multiple forms of cardiovascular disease, including coronary artery diseases (CAD) and cerebro vascular diseases (CVD**)** ***(Dokken, 2008).*** Micro vascular complications include retinopathy, neuropathy and nephropathy ***(Martz, 2017).***

In Egypt, Diabetes is considered the eleventh most important cause of premature mortality in Egypt. It is also the sixth most important cause of disability burden in Egypt ***(Herman et al., 2012).*** According to WHO 2016, Diabetes accounts for 1% of total deaths in Egypt ***(World Health Organization, 2016)***.

Type 2 diabetes accounts for 90–95% of all diabetes ***(Diabetes Care, 2017).*** It is a chronic disorder characterized by progressive deterioration of the pancreatic β cells that secrete insulin, resulting in worsening hyperglycemia over time ***(Kahn et al., 2009).***

Because of the progressive nature of type 2 diabetes, patients eventually reach a stage when oral hypoglycemic agents, alone or combined, fail to achieve the required glycemic level and insulin therapy becomes essential for adequate glycemic control ***(Saleem et al., 2016, Wong et al., 2011).***

The American Diabetes Association and the European Association for the Study of Diabetes identified insulin replacement therapy as a key component for effective diabetes management ***(Nathan et al., 2009).*** Therefore, at any stage of inadequate glycemic control, insulin can be added to either montherapy or dual or triple therapy ***(American Diabetes Association, 2016).***

Despite the increasing prevalence of diabetes and the various medications including insulin, glycemic control does not appear to be improving even in developed nations ***(Davidson, 2005).*** About 50% of T2DM patients with poor control did not timely start insulin and the initiation was usually three to five years after failure of oral hypoglycemic agents ***(Rubino et al., 2007; Nichols et al., 2007).***

There are many factors delaying insulin initiation, including those caused by healthcare providers and its system, as well as the patients themselves ***(Lee et al., 2012; Peyrot et al., 2010; Kruger and Spollett, 2009).***

Psychological insulin resistance is defined as psychological opposition to initiate insulin use ***(Woudenberg et al., 2012; Wong et al., 2011; Rubino et al., 2007),*** as well as to its subsequent titration ***(Jenkins et al., 2011).***

Psychological insulin resistance is not a psychological disorder, but rather a term that describes a strong negative attitude towards insulin therapy ***(Brod et al., 2009; Polonsky et al., 2005; Peyrot et al., 2005; Bogatean and Hâncu, 2004).*** It includes misconceptions regarding insulin, emotional distress and resistance towards intensive treatment ***(Brod et al., 2009; Polonsky et al., 2005; Peyrot et al., 2005; Bogatean and Hâncu, 2004).***

Thus, psychological insulin resistance can prevent patients from taking the insulin they need, cause glycemic levels to increase beyond the recommended targets and put patients at risk of developing complications ***(Nathan et al., 2009; Larkin et al., 2008).***

To address this issue, a global study called Diabetes Attitudes Wishes and Needs (DAWN) study was conducted in 13 countries, where 57% of T2DM patients, who were not using insulin, were worried about starting insulin ***(Peyrot et al., 2005).***

In the Western community, among insulin naïve patients, 28-39% expressed insulin opposition ***(Woudenberg et al., 2012; Larkin et al., 2008; Polonsky et al., 2005).*** However, higher proportion was reported by Asian studies, quoting prevalence between 51–70.6% ***(Nur Azmiah et al., 2011; Wong et al., 2011).***

Therefore, it is important to assess the magnitude of, and the reasons for, opposition to insulin initiation. A better understanding of the barriers to insulin, from the patient's perspective, will assist clinicians by providing needed information that can be used for patient education ***(Brod et al., 2014).***

The present study aims to measure the prevalence of opposition to initiate insulin among T2DM patients with poor