Insulin Myths and Impact of Round-Tree Group Education Programme on Acceptance of Insulin in Persons with Diabetes: A Study from the Himalayas

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Abstract

Background: Insulin is the natural treatment of diabetes mellitus. It is the oldest, most potent and natural therapy of diabetes mellitus; if used timely and in appropriate doses. Most diabetic patients either do not receive it or do not receive it timely. This study was conducted to assess the myths about insulin therapy among type 2 diabetes patients and the impact of open-air discussion on its acceptance in the rural areas of Himachal Pradesh.

Methodology: Study was conducted in 21 rural areas of the state. 909 non-pregnant diabetic adults were surveyed through 32 diabetes camps organized between April 2008 to August 2013. The date and place of camp decided one month in advance. Group education programmes, including ‘lectures’ and “round tree” discussions conducted.

Results: The mean age was 53.94 ± 6.87 years (27-84 years). 49.91% (279) were eligible for insulin therapy (59.49% male) based on A1C >9 %, and/or >7% despite maximum doses of oral hypoglycemic drugs. Only 7.88% (13 males and 9 females) agreed to take insulin at first suggestion. Economic status and educational standard inversely related to the acceptance of insulin. After this educational activity, 34.76% (67 males and 30 females) more patients agreed for insulin therapy, increasing total number to 42.65%.

Conclusion: This study reveals the myths regarding insulin and suggests that community-based group education programs help increase in acceptance of insulin. Sensitization of local health care providers is necessary to ensure persistence with insulin therapy.

Editorial Viewpoint

• Initiation of insulin therapy meets a lot of psychological resistance from the patients.
• This community based study has demonstrated increased acceptance of insulin through community-based group education programmes.

Introduction

Diabetes has emerged as a major public health concern worldwide associated with serious long-term consequences with ever-rising incidence and prevalence. According to recent estimation from International Diabetic Federation (IDF), approximately 382 million people world-over had diabetes in 2013 and expected to increase to approximately 592 million by 2035. Approximately 63.1 million Indians are living with diabetes, about one-half of them are unaware of their disease and the number with diabetes is projected to increase to 109 million by year 2035. This pandemic; knows no geographical boundaries and lofty Himalayas are no exception. Himachal Pradesh is a remote Himalayan state of India located at an elevation of 350 meters (1,148 feet) to 6900 meters (22,966 feet) above level; where diabetes is emerging as a major public health concern like other parts of India. Primary care providers (PCPs) are the main source of health care for most diabetic patients in this Himalayan state. Lack of access to updated treatment protocols, clinical inertia, lack of time spent with diabetic patients due to the overburden...
of communicable diseases in conjunction with peculiar socio-geographical conditions poses formidable challenges in the management of diabetic patients in this region of the country.

Beta cell dysfunction and insulin resistance are the main physiological defects responsible for the development of hyperglycemia in type 2 diabetes. The defects in beta cell dysfunction seems to be progressive; as newly diagnosed diabetic patients had 50% loss of beta cell function and they had further 25% loss of beta cell function over next 6 years. Consequently, up to 60% of patients will require insulin therapy within 6-10 years of initial diagnosis for good glycemic control.

Insulin is the natural treatment of diabetes mellitus. It is the oldest, most potent and natural therapy of diabetes mellitus; if used timely and in appropriate doses. Unfortunately, it is one of the most underused medical therapies of humankind and is not used early enough or aggressively enough to achieve glycemic goals that have been proven to reduce morbidity and mortality. Most diabetic patients either do not receive it or do not receive it timely. Most primary care providers prefer to delay initiation of insulin therapy until necessary and there is reluctance on the part of patient to take insulin therapy until the last resort. Beliefs and perceptions about diabetes and its treatment and consequences of insulin therapy are the factors responsible for this resistance among diabetic patients. This study was conducted to assess the myths about insulin therapy among type 2 diabetic patients and the impact of open-air discussion on its acceptance in the rural areas of Himachal Pradesh.

**Material and Methods**

This mixed method study was conducted in 21 rural areas of the state, located 50 to 400 kilometers from the capital, at 2200 to 10,000 feet altitude (Figure 1). An arduous 12-15 hours journey navigated to reach 10,000 feet destination in tribal area for organizing a camp. Nine hundred and nine (59.73%) non-pregnant diabetic adults were surveyed through 32 diabetes camps organized between April 2008 to August, 2013. The date and place of camp decided one month in advance, and people informed through newspapers, pamphlets, banners, social workers, public representatives and health providers. Detailed history, weight, height, waist circumference, body mass index were recorded. Fasting and/or random blood glucose, glycated hemoglobin, lipid profile and blood pressure measured.

**Results**

Glycated hemoglobin (A1C) was measured in 559 patients (60.64% male). The mean age was 53.94 ± 6.87 years (27-84 years) with a mean of 55.43 ± 1.39 years in males and 51.74 ± 2.56 years in females. The mean fasting blood glucose was 164.50 ± 31.16 mg/dl (165.71 ± 32.09 in males; 163.82 ± 32.16 in females). The average A1C was 8.71 ± 2.034 (8.74 ± 2.34 % for male and an average of 8.61± 2.04 % for female). The mean duration of disease was 3.83 ± 1.06 years, ranging from to 9 month-24 years. Only 21.64% had A1C <7% and 42.75% had severely uncontrolled blood glucose with an A1C of >9%. 49.91% (279) were eligible for insulin therapy (59.49% male) based on A1C >9 %, and/or >7% despite maximum doses of oral hypoglycemic drugs. Only 7.88% (13 males and 9 females) agreed to take insulin at first suggestion. 92.11 % (153 males and 104 females) disagreed for insulin injection at first suggestion; citing the following reasons: They have heard from others that:

- Insulin leads to “Addiction” (“Habit”- in local language) meaning by: insulin injection started once has to continue lifelong for control of sugar (83%).
- Insulin injection is the “last resort” in the treatment of diabetes and usually given in the last stage of disease and it is too early to begin insulin: they believe (64%).
- Injection fear and lack of self-confidence in injecting insulin are also reasons for not accepting insulin injection in 24% and 17% respectively.
- Hypoglycemia and weight gain were not reasons for not accepting insulin.

Economic status and educational standard “inversely” related to the acceptance of insulin (only 5% above 10 standards and 6% high socio-economic status patients accepted insulin) and found big hindrance for initiation of insulin. Group education programmes, including ‘lectures’ and “round tree” discussions conducted, in open air, in the village square, involving patients, their family, and community members. The benefits of early and timely initiation of insulin in glycemic control and the time immemorial myths inebriated in the minds of diabetic patients and their family members were discussed in the “round tree” open education programme. To build – up the confidence in self-injection of insulin “a live- demo” was conducted in groups among diabetic patients and confidence of self-injection was also demonstrated. Most common comment after live demonstration and self injection of insulin was “How is it so easy
challenge in maintaining optimal glycemic control. Much of the burden of diabetes is due to its chronic micro and macro vascular complications. Early diagnosis followed by prompt aggressive treatment to achieve optimal glycemia control is associated with a lower incidence of micro and macro vascular complications. Different International diabetes organizations such as American Diabetes Association (ADA), the American Association of clinical Endocrinology (AACE), and the European Association for the study of diabetes (EASD) all have set aggressive goals in their guidelines for glycemia control. Despite, strong recommendations for aggressive glycemia control to reduce micro and macro-vascular complications; 2 out of 3 and 1 out of 2 fail to meet the AACE and ADA target hemoglobin (A1C) goal of 6.5% and 7.0% respectively, in US. In real-world setting, the traditional stepwise approach is followed in diabetic management i.e. the sequence of lifestyle modification, monotherapy, combination of non-insulin therapies, and finally treatment with insulin. In this “treat to failure” approach many years or even decade is lapsed without having target A1C goals achieved and substantial glycemic burden is carried for years; before insulin is initiated.

The more recent professional diabetes standard-of-care guidelines advocate insulin as the first line therapy in patients with initial A1C >9% and as the second step after failure on metformin monotherapy to achieve an A1C<7% in patients who are symptomatic or have A1C>8.5%. In treated patients whose A1C remains >7.0% despite life style modifications and non-insulin therapies; insulin therapy should be initiated. The Fenofibrate Intervention and Event Lowering in Diabetes (FIELD) trial observed that in a real-world setting for glycemic control; 32% of diabetic patients need insulin therapy in next 5-years after the diagnosis and; the need for insulin therapy doubled over 5-years. However, despite these observations, the proportion of people with diabetes (T1DM or T2DM) in US taking insulin or insulin with oral hypoglycemic agents is 12% and 14%, respectively. As was observed in our study, a major factor for this is attributed to resistance to take insulin among patients and resistance to prescribing insulin among health care providers; based on variety of beliefs and perceptions about diabetes and its treatment. Regardless of reason insulin therapy is often resumed as a last resort. The findings of our study does not support the previously proposed common misconceptions among diabetic patients about insulin therapy that included: the perception that initiating insulin represents a personal failure and disease has worsened, fear of hypoglycemia and weight gain, the complexity of insulin regimen that interferes in their lifestyle and fear of pain and needle phobia. One important observation noted in this study was that fear of hypoglycemia and weight gain, the complications most commonly highlighted in medical literature about insulin therapy and also observed in other studies were found missing in our study. The discordance between our study and previous studies suggests that attitude about diabetes and insulin therapy differs as a function of cultural and regional beliefs and perceptions. The Diabetes Attitude, Wishes and Needs (DAWN) study found that health care providers in general and primary care providers in particular prefer to delay initiation of insulin therapy until necessary and Indian physicians are among the most resistance of all nations to initiate insulin. How to initiate insulin and fear of hypoglycemia are the physician concerns that delay initiation of insulin therapy and similar concerns were observed.
in our study. However, delay in prescribing oral anti-diabetic agents had the strongest relationship with delay in prescribing insulin and this orientation reflect a lack of awareness about need to keep glycemic target at goal.12 Moreover, the propensity to use medications is an important determinant of prescribing behavior.16 Therefore it is important that for timely prescription of insulin, more general reluctance to prescribe diabetes medication need to be changed first among primary health care providers;17 through educational program as they assume a greater role in managing diabetes.

Motivational or educational interactions are a patient oriented rapport-building process to explore the patient’s belief about insulin therapy and then overcome these barriers gently in a systematic approach.18 In this study, the initial rapport-building interactions with the patients was able to identify patient’s barriers about insulin therapy and through open round tree discussion with the patients and their family members, we were able to overcome the barriers and were found to be effective.19 Through group discussion, it was possible to make them understand that insulin does not cause habituation and insulin does not act as a last resort, rather it prevent going into the last stage of complications. Through discussion, we were able to make them understand that need for insulin is a consequence of natural progression of the disease and is just another option like non-insulin therapies. Delivery of the message regarding the value of insulin therapy, in addition to providing encouragement and education in our study was able to overcome any reticence about insulin therapy; increasing the percentage of accepting insulin from 7% at first contact to 34% at the end of group discussion.20

A Building-up patient confidence by demonstrating how to inject insulin followed by self administration of insulin injection in presence of health providers help not only in removing needle anxiety but also dependency for injection on health care providers; a big barrier insulin therapy.21 In our experience most often, the patient’s response is “Oh that’s it?” “It did not hurt me even little!” Patient’s concern about insulin storage (insulin needs refrigerator for storage) and need to carry insulin vials, needles, and syringes are also the major barriers in insulin initiation and needs appropriate intervention. In addition, motivate patient for healthy life style changes such meal planning (in particular in between snacks to avoid hypoglycemia) and physical activities and importantly educate patient about hypoglycemia. Lastly, a simple patient driven insulin initiation algorithm that is flexible, simple, convenient and suits best to the patient lifestyle is preferred and can increase the rate of insulin acceptance.22 An eminent endocrinologist from Mumbai, Professor Shashank R Joshi’s quote is so true about Insulin in type 2 diabetes: “it is time to change and use insulin not just as a replacement hormone in Type 1 Diabetes, Gestational Diabetes or Secondary diabetes but in the garden variety type 2 diabetes”. He further said: “The real crux is early and optimal use of insulin beyond emergency hospital and replacement in office type 2 diabetes”.7 In accordance with it, our findings suggest that health care providers should try to identify specific beliefs about patient’s resistance to insulin therapy and address the beliefs through educational interventions to making insulin therapy easier in type 2 diabetes.

**Conclusion**

Insulin is not a universally accepted paradigm of diabetes management; though various international guidelines universally recommend timely initiation of insulin for glycemic control. No one kind of treatment paradigm benefits everyone. The most effective treatment paradigm is rarely superimposed but instead evolves and implemented with the participation from its recipients. The disconnection between patient’s perception of insulin therapy (Habit formation and used as last treatment option) as against the scientific evidence (hypoglycemia and weight gain) is evident in this study and needs public measures. This study reveals the myths regarding insulin, and suggests that community-based group education programmes help increase acceptance of insulin. Sensitization of local health care providers is necessary to ensure persistence with insulin therapy.

**References**


