Barriers and Myths to Initiate Insulin Therapy for Type 2 Diabetes Mellitus at Primary Health Care Centers of Hyderabad District

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Abstract: Majority of patients with type 2 diabetes mellitus in Hyderabad district who attend primary health care centers have unsatisfactory glycemic control. Insulin is rarely prescribed despite it is being indicated for type 2 diabetic patients with inadequate metabolic control on maximum oral anti-hyperglycemic (OAH) therapy. This study examined barriers and myths to initiate insulin therapy in poorly-controlled type 2 diabetic patients on maximum oral anti-hyperglycemic (OAH) therapy in primary health care centers at Hyderabad district. Six focus-group discussions and twelve in-depth semi-structured individual’s interviews were conducted with 541 medical officers serving at 67 primary health care centers of Hyderabad district. The discussions and interviews have been transcribed and common themes were identified and categorized. Patient, doctor and system barriers for initiating insulin therapy in type 2 diabetes mellitus were identified. Patient’s barriers were mistaken beliefs (myths) about insulin, fear of injections, faith over traditional healers and herbs, non-compliance, poor knowledge of disease and its progression, poor socio-economic conditions and age of the patients. Doctor’s barriers include lack of knowledge about insulin, unawareness of practical guidelines for insulin therapy, language barriers between doctors and patients and fear of hypoglycemia and obesity. System’s barriers were excessive workload, short consultation time, lack of continuity of care and financial constraints. Recommendations to overcome barriers include further education of doctors and medical staff for initiating insulin therapy and use of standardised guidelines via regular CME programmes at district level. Furthermore, a patient-centered approach with excellent communication between doctors and patients can be achieved by re-organizing and updating various aspects of the health system. Further study is required to apply these recommendations and to assess patient’s and nurse’s perceptions for initiating insulin therapy.

Keywords: Type 2 diabetes mellitus · Barriers and myths · Primary health care centre · Medical officers · insulin therapy · Diabetic educators · Traditional healers

INTRODUCTION

Diabetes Mellitus is a growing global health concern. Type 2 diabetes mellitus poses a major global health threat, especially in the developed as well as developing countries of the world [1]. World-wide prevalence of type 2 diabetes mellitus has been estimated to rise from 150 million to 225 million by the end of 2010 and to as many as 300 million by 2025 [2,3]. Increasing prevalence of diabetes is predominantly because of changes in lifestyle, obesity, physical inactivity and aging of populations [4].

According to IDF (International Diabetes Federation), Pakistan is at the seventh rank on diabetes prevalence list. In Pakistan 6.9 million people are affected by diabetes mellitus with IDF estimating that it will grow to 11.5 million by 2025 unless preventive measures are taken to control the disease [5]. Various studies conducted in Pakistan have reported 7-11% prevalence of diabetes mellitus [6,7]. Although many patients with type 2 diabetes require exogenous insulin therapy to achieve acceptable glycemic control [8], often it is neither prescribed and patients are reluctant to initiate treatment with it. Patient’s fear of the side effects of insulin therapy and it’s perceived intrusiveness into their lifestyle may contribute to such reluctance, resulting in both physiological and psychological stress [9,10]. Nevertheless, it is well known that culture is a significant determinant of health and that

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an individual's cultural health-beliefs and practices invariably affect his/her treatment selection, compliance and outcome [11]. With the increasing number of patients with type 2 diabetes and the fact that about 90% of diabetes care is being delivered via the primary care setting [12], the burden on the primary-care provider has increased. However, it is well known that type 2 diabetes is a progressive disease and most patients will eventually require insulin in order to reach their HbA1c goal [13]. In the United Kingdom Prospective Diabetes Study (UKPDS), 60% of participants required insulin to achieve target HbA1c, by the end of the study [14].

In addition, insulin is safe, effective and potent medication to achieve glycemic goals, yet it is not prescribed earlier because many myths and barriers held by patients and primary health care providers alike regarding insulin use that can present challenges to start insulin therapy. Common barriers and myths to initiate insulin therapy in type 2 diabetes mellitus at primary health care level in Hyderabad district have been attributed to financial and time constraints, poor patient's compliance, language and cultural differences and lack of medical-staff's knowledge with regard to diabetes care. In Hyderabad District, majority of patients with type 2 diabetes receive suboptimal care at primary level. Many deficiencies have been reported such as suboptimal glycemic and blood pressure control, infrequent assessment of complications and failure to advance therapy to achieve therapeutic goals. Complication rate due to type 2 diabetes mellitus is very high in our area because of genetic susceptibility, earlier age of onset of disease, poor preventive measures at primary health care level and insufficient resources and time. Complications are known to increase with age of the patient, duration of disease and severity of uncontrolled diabetes. In an urban facility-based setting in Pakistan, 19.8% of the diabetics were suffering from coronary artery disease (CAD), 6.2% had major cerebro-vascular accident (CVA) and 2.1% had diabetic foot [15]. Another study revealed that 25% of diabetics who present to health care facilities in Pakistan have retinopathy [16].

As attainment of appropriate glycemic control is critical to improve outcome in patients with type 2 diabetes mellitus, this qualitative study was conducted to identify and explore barriers and myths to initiate insulin therapy in patients with poorly controlled type 2 diabetes mellitus who were being prescribed maximum doses of oral medication by medical officers at primary health care centers of Hyderabad district.

MATERIALS AND METHODS

There are 67 primary health care centers in Hyderabad district. They are under administrative control of Executive District Officer (EDO) health Hyderabad district and providing primary health services for a population of approximately 1.36 million. There are 541 medical officers working at these primary health care centers of Hyderabad, having job experience ranging from six months to twenty years. They are categorized as junior medical officers having job experience of 1-5 years, senior medical officers with 6-15 years experience and chief medical officers having more than 15 years of job experience.

Six focus group-discussions followed by twelve in-depth individual semi-structured interviews have been conducted with medical-officers in primary health care centers at Hyderabad district. All interviews were recorded on audiotape and transcribed verbatim. Informed and written consent from participants and approval from ethical committee has been taken. The data was collected from 1st November 2008 to 30th June 2009.

Sampling was purposeful with intention of including medical officers of various ranks but with similar practice experience in each group. Twenty five medical officers have been contacted and invited to participate in each group. There were finally 6-20 participants per group representing all ranks of medical officers. An interview guide has been made which include questions on:

- Whether patient's knowledge, culture and/or socio-economic status affected doctor's decision to prescribe insulin.
- Doctor's experience and feelings for initiating insulin therapy and patient's reactions to such therapy.
- Medical Officer's perception with regard to attitudes of the fellow-doctors. Each group discussion was led by one of five qualitative researchers. A note-taker had observed and recorded non-verbal reactions and interactions of the participants.

In-depth individual interviews were conducted with twelve medical officers who had not participated in the focus group discussions. Work experience of the medical officers ranged between 2-20 years. The interviews involved a series of open-ended questions derived from focus group discussion analyses. Questions focused on
doctor’s knowledge and experience related to insulin therapy, usage of guidelines for insulin therapy and perception of health system factors influencing insulin therapy. Interviews were conducted by 1 of 3 qualitative researchers.

The data has been analyzed immediately after each focus group discussion according to grounded theory methodology. Common themes have been identified, coded and categorized first within focus group discussions and then separately for individual interviews. The inter relationship of different categories were examined to generate more conceptual understanding of barriers to insulin therapy. Validity has been enhanced by comparing researcher’s finding to those of two independent investigators who analyzed both groups. Results of the in-depth interviews were further validated by feedback to the participants.

RESULTS

This study identified various barriers and myths for initiating insulin therapy in Type-2 diabetes mellitus at primary health care centers of Hyderabad district, which fell into three main categories:

A. Patient’s related
B. Doctor’s related
C. System’s related

A) Patient’s Related:

• Medical Officers stated that majority of their patients have resisted and unwilling for initiating insulin therapy due to fear of needles and pain from injections. One doctor mentioned that a female patient had resisted for insulin therapy because it would disturb personal relationships with her husband.
• Many doctors mentioned that most of their patients were non-compliant with pharmacotherapy. This is probably because of cost of medication, timing and dosing, poor socio-economic status and unavailability of glucometers at home. Furthermore, patients did not understand progressive nature of the disease and long-term impact of hyperglycemia.
• Poor socio-economic status among many patients has exacerbated medical-officer’s fear of hypoglycemia. For example doctors were very much concerned that their patient’s ability to diabetic care was seriously affected by factors such as limited financial resources, inability to refrigerate the insulin, irregular meal patterns and lack of transport and access to emergency help. Furthermore, glucometers were also beyond the range of most patients.
• In addition, age of the patients was another factor leading to difficulties for initiating insulin therapy. Since most of the elderly are isolated, having poor vision from aging and/or complications of diabetes and also poor memory as well as family support, making insulin therapy a difficult option for this age group.

B) Doctor’s Related:

• Majority of doctors did not know the benefits of insulin therapy in patients with poorly controlled Type 2 diabetes mellitus. This is because half of the participants were unaware about the practical guidelines for initiating insulin therapy. Furthermore, doctors have received much attention regarding the management of acute complications of diabetes at undergraduate level rather than on practical diabetes care at primary health care setting.
• Many participants were agreed that most patients did not have necessary knowledge regarding progressive nature of the disease and exact time at which insulin should be started safely.
• Language differences, lack of appropriate educational material for patient’s preferred language and suspected interpretation by interpreters were identified as barriers for communication and patient’s education.
• In addition, doctors were more concerned that majority of patients have extra-ordinary faith over traditional healers and herbs than in conventional drugs.
• Doctors expressed their believe that insulin is not beneficial in obese patients and infact, it may exacerbate obesity, while others questioned it’s value in established complications.
• Participants were reluctant to initiate insulin therapy fearing that it may induce hypoglycemia in the patients. This factor combined with lack of knowledge, confidence and support from other doctors and nursing staff inclined them to shift the responsibility for initiating insulin therapy to tertiary care hospitals.
Table 1: Selected Quotes from Study Participants-patient’s and Doctor’s Barriers

**Barriers Perceived By Patients;**

- Insulin is the last resort in the medical management of type 2 diabetes mellitus. Moreover, insulin usage is associated with addiction and no other drug will be effective once insulin is taken. These were remarks of many patients regarding insulin usage.
- I discussed with them, what insulin is, why they need insulin and how it works and they are afraid of pain from needles. That is why they give as an objection.
- There is no way that I can go on insulin because my husband will divorce me if I go on insulin (patient’s statement).
- They have wrong ideas about insulin as they have been told by their friends and relatives that they should never start insulin or they will get fatty and it is all downhill from there.
- They know somebody who takes insulin and then got leg amputation, their perception was that insulin will be responsible for leg amputation, not diabetes.

**Doctor’s Knowledge, Beliefs and Fears;**

- Not all doctors have confidence to make decision themselves and they want a specialist or somebody more senior to make that decision for them.
- Insulin is not beneficial because when (patients) came hospital for treatment, they already have got complications, so you are not going to reverse them.
- We are worried about the risk of hypoglycemia by insulin usage.
- Initiating insulin to a patient who is not compliant on diabetic diet and who has morbid obesity is generally not a very good idea.

Table 2: Selected Quotes from Study Participants- System’s Barriers

- We often turn peoples away because there are no doctors to follow them up and no continuous supply of medication at primary health care level. Even if you want to keep somebody on insulin, you are thinking, “Are we going to be able to supply insulin continuously”?
- You only have an average of 3 minutes per patient, by the time you have examined them and found out that they are diabetic and what their glucose level is, you cannot possibly educate somebody in 2 minutes (or less).
- I find that when I kept a patient on insulin, he might accept the notion originally. But as soon as I explained him that he will have to come back after every one week, this become a serious barrier for him.

**C) System’s Related (Table 2):** Numerous system related barriers regarding initiation of insulin therapy were mentioned in Table 2. Participants explained that an effective health system should be necessary for initiating insulin at primary health care level.

- Over-crowding and excessive work-load at primary health care centers, short consultation time, rapid staff turnover and lack of continuity of care by the same doctor were barriers identified by all participants.
- Additional factors were inadequate resource for health system leading to shortage of insulin supply, scanty dietitians available for counseling and lack of functional and good quality glucometers and constraints on ordering relevant tests such as glycated haemoglobin (HbA1c).
- Lack of availability of clear clinical guidelines regarding insulin therapy was also cited as a barrier.
- Poorly managed appointment systems and long-waiting times as a result of excessive patient load contributed to lack of continuity of care which in turn decreases patient-doctor relationship.

**DISCUSSION**

This study identified numerous patient, doctor and system barriers and myths for initiation of insulin therapy in Type 2 diabetes mellitus. Many of the themes identified were similar to the barriers for optimal diabetes care documented in other countries. These included medical officer’s lack of knowledge and need for further education related to diabetes care, lack of adherence to evidence-based guidelines, few opportunities for Continuing Medical Education (CME), fear of hypoglycemia, patient’s non-compliance and financial and time constraints. Similar findings have also been reported from South Africa and United States [17-23].

Medical Officer’s reluctance to initiate insulin in primary care setting was mainly due to perceived lack of patient compliance, as adherence with current treatment may obviate the need for insulin. Patient’s adherence with therapy is a complex issue, but the manner in which diabetes care is structured, delivered and financed will have a major impact on the ability of patients to manage their diabetes. Patient’s care by the medical officers in this study were of low socio-economic status and the care was characterized by long waiting times and short duration of
contact with different medical officers, although the services and medications were free. Cultural differences between patients and doctors have hampered self-care practices. Regardless for non-compliance, the medical officer’s understanding, and effective action to improve adherence need to be greatly improved. Good communication and mutual decision-making between doctors and patients are likely to improve adherence to the regimen [24].

Failure in communication centers mainly round the perception and expectation of doctors and patients. Patient’s factors include; misconceptions about the disease and medication, feeling well, questioning the necessity of continuing treatment, physical and social vulnerability and lack of control over their lives and doubts about access and availability of treatments. An additional reason for patient’s lack of adherence to diabetes treatment was their believes on traditional healers and alternative drugs like homeopathic medicines. A trusting doctor-patient relationship is important so that patients will be encouraged to tell doctor what alternative drugs they are using and may allow for negotiations around the continued use of allopathic treatment. Misconceptions such as insulin should be used as a last resort, as it causes addiction and/or tolerance and may sometimes lead to amputation and death which can be addressed through education sessions. These sessions should involve patients on insulin therapy who relate the benefits which they have experienced. There was a strong perception that poor socio-economic conditions have impeded patient’s compliance with treatment. Lack of refrigerators to store insulin was cited as another barrier. Fortunately, insulin does not need to be refrigerated but merely kept in a cool place. Slight loss of potency may occur after a bottle has been in use for over thirty days if stored at room temperature. The participants expressed concern about un-employments and poverty. However, in a UK study [25], glycemic control was not related to age, lifestyle, attitude, social class, or knowledge of patients but rather to better facilities, mini-clinics and doctors with special interest in diabetic care. In addition, education on self-care and blood glucose monitoring will improve glycemic control in diabetic patients.

In our setup, majority of patients were very poor and they cannot afford glucometers so as to monitor glycemic control and hence disease progression. Therefore, medical allowances should be given to patients in order to attend diabetic clinics at primary care level for blood glucose monitoring and adjustment of insulin dose. Unfortunately, the latter may be problematic owing to transport costs and loss of earning. This is in accordance with the study in South Africa [26].

Medical Officer’s perception that insulin is not beneficial for patients with type 2 diabetes is quite surprising as it currently accepted that type 2 diabetes is a progressive disease for which majority of patients ultimately require insulin. Furthermore, the benefits of improved glycemic control on micro-vascular complications of diabetes are now evident regardless of mode of therapy (OAD or insulin). The concern that insulin might increase obesity is a valid one as good glycemic control with sulphonylureas or insulin will be associated with weight gain [14]. However, the degree of weight gain can be reduced by using combination of metformin with insulin rather than insulin alone or insulin/sulphonylureas, with at least equivalent glycemic control [27]. These issues highlight the need for and the importance of ongoing interactive CME sessions. The medical officer’s fear of inducing hypoglycemia with insulin therapy is also understandable, particularly in a setting where regular meals may not be affordable. However hypoglycemia may be preventable through patient’s education and cautious prescription by the doctor (starting with low-dose insulin) [28]. A family-orientated primary care approach using the maximum support from the family, friends, neighbours and the community may address medical officer’s concern about starting insulin therapy in elderly patients. The glucometers provided at primary health care centers are often faulty and wrong technique has been used for blood glucose estimation. This situation perceived to be problematic and need urgent attention. Furthermore, cost constraints on demanding glycated haemoglobin (HbA1c), with consequent reliance on a single random blood glucose level which may be affected by factors such as stress, size of the last meal and time interval from last meal, can be problematic when making the decision to initiate insulin therapy.

The usage of a combination of focus group discussions and in-depth individual interviews enhanced the validity of this study. Participant’s limitations with regard of expressing their fears in front of other colleagues were noticed, but individual interviews helped to provide some exploratory data. However, main defect in this research was exclusion of nurses and patients who could have provided more detailed views regarding barriers to initiate insulin therapy in type 2 diabetes mellitus.
RECOMMENDATIONS

There are many recommendations which should be undertaken to overcome the barriers and myths for initiating insulin therapy in poorly controlled type 2 diabetic patients who are on oral medications.

- Organization of uniform and practical guidelines by diabetologists, with active participation of primary health care providers regarding initiation of insulin therapy for type 2 diabetes would be of great value. It can be achieved by regular interactive workshops (CME programmes) at primary health care centers of Hyderabad District.
- Diabetic-educators can play a major role in keeping to-dispel barriers and myths by having conversations with patients that allay fears and misconceptions regarding insulin use. They can also enhance communications between type 2 diabetic patients and primary health care providers by promoting active self-management and hence maintaining glycemic control over the course of type 2 diabetes.
- A patient-centered approach may be useful in improving adherence to insulin therapy.
- Appropriate training of nursing staff regarding techniques of insulin injections, management of hypoglycemia, patient and family education regarding the progressive nature of the disease.
- Our health system should also be updated at primary care level. It will be useful to establish an appointment system that allow for continuity of diabetic care.

CONCLUSION

Type 2 diabetes mellitus is a complex, metabolic and progressive disorder. To achieve adequate glycemic control in order to avoid serious complications that may occur as a result of chronic hyperglycemia, a comprehensive team effort is required. Common barriers and myths to initiate insulin therapy for type 2 diabetes in primary health care level at Hyderabad were misconceptions about the disease and medication, financial and time constraints, lack of medical staff’s knowledge with regard to diabetes care, poor patient’s compliance and language and cultural differences about medical therapy.

Recommendations to overcome barriers include further education of doctors and medical staff in primary health care centers for insulin initiation and use of standardized guidelines via regular CME (Continuing Medical Education) programmes at district level. Thus insulin should be viewed as a valuable therapeutic tool for early intervention that allow patients to attain and maintain target level of blood glucose control.

Furthermore, a patient-centered approach with excellent communication between doctors and patients can be achieved by reorganizing and updating various aspects of the health system. This may improve patient’s knowledge about disease and medications, dispel misconceptions about insulin, enhance patient’s compliance to drugs and hence can help to overcome barriers and myths. Further study is required to apply these recommendations and to assess patient’s and nurse’s perception for initiating insulin therapy.

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REFERENCES


