Journal of Pharmaceutical Research International

33(63A): 225-229, 2021; Article no.JPRI.74890
ISSN: 2456-9119
(Past name: British Journal of Pharmaceutical Research, Past ISSN: 2231-2919, NLM ID: 101631759)

Adherence of Insulin Therapy in Diabetic Mellitus Patients in a Tertiary Care Hospital

R. Ahalya [a≡] and Mahendra Kumar [bφ*]

[a] Saveetha Medical College & Hospitals, Saveetha Nagar, Thandalam, Chennai, Tamil Nadu-602 105, India.
[b] Department of General Medicine, Saveetha medical College & Hospitals, Saveetha Nagar, Thandalam, Chennai, Tamil Nadu-602 105, India.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i63A35239

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/74890

Original Research Article

Received 25 October 2021
Accepted 28 December 2021
Published 29 December 2021

ABSTRACT

Aim and Objective: The aim of this study is to evaluate the adherence of Insulin therapy in Diabetic mellitus patients and to identify the factors leading to poor adherence of Insulin therapy among diabetic patients in a tertiary care hospital.
Methodology: A prospective study was carried out in the department of medicine in Saveetha medical college from January to June 2021.
50 diabetic patients were included in the study and their adherence to Insulin therapy was monitored and the patients with low adherence were assessed for the cause so that appropriate interventions can be taken to improve its adherence.
Results: The study enrolled about 50 patients out of which 23 of them had low Insulin adherence. The main reasons for low adherence were expense of Insulin(40%),lack of knowledge of administration(36%), and others factors include family problems, having faith over alternative medicines and fear of side effects.
Conclusion: Given the great prevalence of primary non-adherence and the variety of reasons for it, it is evident that these treatment barriers must be removed. Dedicated diabetes instructors at each diabetes clinic, as well as the availability of low-cost insulin and blood glucose monitoring devices for the disadvantaged, are essential to achieving this goal.

[≡] *IV MBBS Student;*
[φ] *Dr., Associate Professor;*
**Corresponding author: E-mail: mahindran1985@gmail.com;*

Keywords: Insulin; diabetes; non-adherence; barriers; medications.

1. INTRODUCTION

Diabetes is a chronic noncommunicable disease characterized by an increase in plasma blood glucose (hyperglycaemia) which affects an estimated 69 million people in India [1].The main aim of diabetes management is to maintain a good glycemic control thereby reducing the possible micro and macro-vascular complications. To maintain a good glycemic control requires a good adherence to medical regime (oral diabetic drugs and insulin), diet, physical activity and proper self care [2,3]. There is a growing priority to improve the medical adherence to control this epidemic.

Non-adherence in taking medication can occur from unintentional factors like irregular access to oral hypoglycemic agents and Insulin and from Intentional factors like increasing complexity of regimen, fear of side effects of drugs and lack of perception of the benefits from taking medication by the patients [4-7].

Non adherence to treatment can lead to worsening of clinical conditions and poor outcome. As diabetes is a chronic disease that requires long treatment process with regular check ups, a study is being conducted in our tertiary care hospital to determine the adherence of insulin therapy in diabetic patients and to study the various factors affecting it, which will help to improve the quality of care given to the patients.

2. METHODOLOGY

A cross-sectional study was undertaken at a tertiary care hospital's medicine outpatient department (OPD). Patients with Type 2 diabetes who had been on insulin therapy for one or more years and were 18 years or older were included in the study. For the study, a convenience sample of 50 patients with a confirmed diagnosis of diabetes mellitus was chosen. Patients were encouraged to come to the hospital once a month for basic checkups and medication. To collect information, we conducted interviews with them and used a validated, semi-structured questionnaire. Gender, education, age, place of residence, occupation, marital status, and socioeconomic class were among the sociodemographic characteristics recorded in the survey. We also gathered data on behavioral factors including alcohol and tobacco use, as well as diabetes treatment specifics like length of treatment, drugs used, and comorbidities. Morisky's medication adherence scale was used to assess adherence to diabetes medications (MMAS Questionnaire). It's an eight-point structural scale. High adherence is indicated by a score of >8, medium adherence is shown by a score of 6-8, and low adherence is indicated by a score of 6-8. HbA1c levels of adhered and non-adherent patients were also compared to see how severe diabetes was in both groups and how it affected insulin adherence.

3. RESULTS

A total of 50 patients are included in our study after obtaining an informed consent from them. The study summarised that age group between 61-75yrs had the highest number of diabetic patients.

Females (62%)had higher preponderance of diabetes as compared to males and majority of them were rural dwellers(76%).Nearly less than half of patients were illiterate (28%) and nearly half of them had secondary education(34%). More then half of the patients (33%) had income of less then 10000.

Table 1. Sociodemographic details of participants

Sociodemographic details of participants	
Age in years	**n(%)**
25-35	6(12%)
36-60	10(20%)
61-75	23(46%)
>75	11(22%)
Gender	
Male	19(38%)
Female	31(62%)
Place of residence	
Rural	38(76%)
Urban	12(24%)
Educational status	
Illiterate	14(28%)
Primary	11(22%)
Secondary	17(34%)
Graduate and above	8(16%)
Monthly income	
5000-10000	33(66%)
>10000	17(34%)

Around 31(62%) of them had diabetes for more then >5 years, 15(30%) had for between 1-5 years and 4(8%) had for less than 1 year.

Almost half of the participants 23(46%) delayed initiation of insulin therapy, while 27(54%) initiated insulin treatment immediately after their doctor's first prescription. The participants who delayed the insulin initiation were interviewed for the barriers in the initiation of insulin therapy.

Table 2. Barriers to Insulin initiation

Barriers To Insulin Initiation	n(%)
Lack of knowledge and other personal barriers	18(36%)
Financial barriers	20(40%)
Side effect related barrier	13(26%)
Family related barriers	7(14%)
Healthcare system related barrier	5(10%)

Lack of understanding regarding insulin delivery routes, insulin dose adjustment, injection site rotation, and skepticism about the therapeutic benefits of insulin were the most significant hurdles to insulin introduction. Fear of hypoglycemia, a lack of family support for insulin administration needle phobia, the expense of insulin, the cost of blood glucose monitoring, and the preference for alternative medications over insulin were all significant impediments.

The levels of HbA1c in Insulin non adherent patients are more as compared Insulin adherent patients.

4. DISCUSSION

In the current study, individuals with uncontrolled T2DM had a significant proportion of delayed insulin therapy initiation (23;46 %).Our study showed that glycemic control among Insulin adherent patients was well with 40% of them had HbA1c level <7.5 whereas in Insulin non adherent patients 34% had HbA1c >7.5.

Similar findings were seen in a recent study by Hosomura et al., [8] 29.9% of patients refused insulin therapy when recommended for the first time, with the refusal rate being particularly high among those with poorly managed diabetes (Hb1Ac 9%).

In a study conducted in Iran, there was a significant association between forgetfulness and adherence to insulin therapy in patients with diabetes, to evaluate adherence to insulin therapy in patients with diabetes and underlying factors affecting insulin non adherence among patients with T2DM. (24.9%) of T2DM patients (n=507) were adherent to insulin injections, whereas (46.3%) and (28.8%) were assessed to have medium and low adherence to insulin therapy, respectively [9].

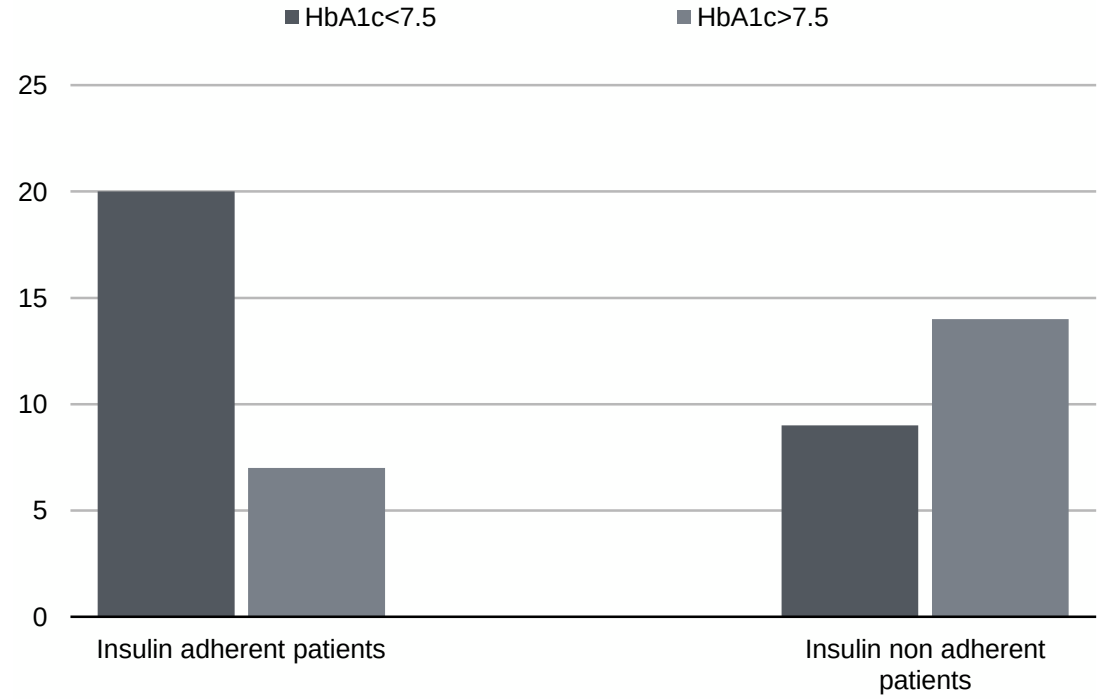

Fig. 1. Levels of glycosylated hemoglobin (HbA1c) in Insulin adherent and non adherent patients

A study conducted in Turkey [10] to examine insulin treatment adherence in type 2 diabetic patients started on various insulin regimens found a significant relationship between age and adherence , with the majority of younger patients non-adherent .Gender and adherence have a significant relationship according to this study. Females made up more than half of the non-adherents (78, 66.7%) which is similar to our study.

Similar findings were seen in the study of, Praveena Vasam et al. [11] and the study of Suresh k Sharma et al. [12] reported a high rate of delayed initiation of insulin therapy among patients with uncontrolled T2DM (46.7%) with a male preponderance.

The delay in insulin initiation is a multifactorial phenomenon. Physician concern for the risk of hypoglycemia and weight gain, a lack of resources (e.g. staff and material), a high workload, and ambiguity of roles in the primary care team were among the other barriers identified in this review [13].

Patients' lack of knowledge about insulin administration routes; insulin dose adjustment and injection site rotation; doubt about insulin's clinical benefits; fear of hypoglycemia; cost of insulin; lack of family support; needle phobia; and preference for alternative medical systems were identified as major barriers to insulin initiation in our study.

It has become important to improve the adherence of insulin therapy among patients to reduce the complications and increasing number of patients which is estimated to be 87 million by 2030 [14]. As a result, developing interventions to improve patient Insulin adherence and maintain long-term persistence necessitates at least a basic grasp of the factors that influence patient non-adherence to Insulin. This is especially true when the determinants are modifiable risk factors that can be targeted for positive improvements once identified.

5. CONCLUSION

According to the findings of study, Insulin adherence was low, that is mainly attributed to lack of knowledge among patients and financial barriers and there is a need to focus on improving adherence among type 2 diabetes patients because it leads to improved clinical outcomes and fewer problems. As a result, there is a clear need to enhance health-care systems to ensure that Insulin are available on a consistent basis, as well as to provide health education to patients and their families, emphasizing the importance of Insulin adherence. Other issues, such as side effects or drug unavailability, that contribute to non-adherence among diabetic patients should be investigated, and solutions developed to increase adherence.

CONSENT

Further informed written consent was obtained from all the patients before they were included in the study.

ETHICAL APPROVAL

Before starting the study, the Institution Review Board of Saveetha University has approved our protocol, later grant sanction form was obtained from HOD's of all department.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. International Diabetes Federation. IDF diabetes atlas. 7th ed. Brussels: International Diabetes Federation; 2015.
2. Karter AJ, Moffet HH, Liu J, Parker MM, Ahmed AT, Ferrara A, Selby JV. Achieving good glycemic control: initiation of new antihyperglycemic therapies in patients with type 2 diabetes from the Kaiser Permanente Northern California Diabetes Registry. Am J Manag Care. 2005;11:262–270.
3. Rhee MK, Slocum W, Ziemer DC, Culler SD, Cook CB, El-Kebbi IM, Gallina DL, Barnes C, Phillips LS. Patient adherence improves glycemic control. Diabetes Educ. 2005;31:240–250.
4. World Health Organization. Global Report on Diabetes. Geneva: World Health Organization; 2016.
5. Sankar UV, Lipska K, Mini GK, Sarma PS, Thankappan KR. The adherence to medications in diabetic patients in rural Kerala, India. Asia Pac J Public Health. 2015;27:NP513–NP523.
6. Basu S, Khobragade M, Kumar A, Raut DK. Medical adherence and its predictors

in Diabetes Mellitus patients attending government hospitals in the Indian Capital, Delhi, 2013: A cross sectional study. Int J Diabetes Dev Ctries. 2015;35(Suppl 2):95–101.
7. Odegard PS, Gray SL. Barriers to medication adherence in poorly controlled diabetes mellitus. Diabetes Educ. 2008;34:692–697.
8. Hosomura N, Malmasi S, Timerman D, et al. Decline of insulin initiation in people with uncontrolled diabetes mellitus. Diabet Med. 2017;34:1599–602.
9. Farsaeia S, Radfarb M, Heydaric Z, Abbasic F, Qorbanie M. Insulin adherence in patients with diabetes: Risk factors for injection omission, Prim Care Diabetes. 2014;8(4):338-345.
10. Yauvani DGG, Ozcan S, Deyneli O. Adherence to insulin treatment in insulin-naive type 2 diabetic patients initiated on different insulin regimes. Patient prefer Adherence. 2015;9:1225-1231.
11. Vasam P, Kommoju HL, Govathoti D, Kolanedi AP, Krishna G, Reddy L. A study on assessment of medication adherence and its factors amoung elderly patients in-out patient Department in Tertiary Care Hospital. Int Res J Pharm. 2015;6(9):649-55.
12. Suresh K Sharma, Ravi Kant, Sanjay Kalra, Ravin Bishnoi. Prevalence of primary Non-adherence with Insulin and Barriers to Insulin initiation in patients with Type 2 Diabetes Mellitus.European Endocrinology. 2020;16(2):143-7.
13. Bin Rasheed A, Chenoweth I. Barriers that practitioners face when initiating insulin therapy in general practice setting and how they can be overcome. World J Diabetes. 2017;8:28–39.
14. Raut MS, Balasubramanian J, Anjana RM, Unnikrishnan R, Mohan V. Adherence to insulin therapy at a tertiary care diabetes center in South India. Journal of Diabetology. 2014;1(4):1-5.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/74890