**J Young Pharm, 2016; 8(2): 141-143**
A multifaceted peer reviewed journal in the field of Pharmacy
www.jyoungpharm.org | www.phcog.net

*Original Article*

# Insulinophobia : Existence of an Infamous Reality In Primary Health Care

**Krishnan Vengadaragava Chary,[1] Porchelvan Swaminathan[2]**
[1]Department of Pharmacology, Saveetha Medical College, Chennai-602105, INDIA.
[2]Department of Preventive and Social Medicine, Saveetha Medical College, Chennai-602105, INDIA.

**ABSTRACT**

**Objective:** To study the knowledge and approach towards insulin use among primary care physicians. **Method:** This observational study was conducted using a validated questionnaire among primay care physician who had complete their bachelor of medicine and bachelor of surgery and involved in primary care practice at government and private sectors. Physicians with additional specialization were not invited for the study. **Results:** Among 125 physicians response , Thirty seven (29.6%) physicians responded insulin requirement many not be needed for type II diabetes patients initially irrespective of their blood sugar level and Thirty seven (29.6%) has second opinion to initiate insulin for type II diabetes patients. Significant difference is seen among physicians with less than five years of experience in terms of calculating insulin requirement (p-0.028) initiating insulin regimen (p-0.001) for diabetic patients. 89 (71.2%) physicians are worried of hypoglycaemia to initiate insulin regimen by themselves. **Conclusion:** More training and encouragement is needed among primary care physician to initiate insulin therapy among diabetes patients which in turn reduces overall diabetes related morbidity and mortality. Special Training should be given from the period of internship regarding diabetes management using insulin protocol.

**Key words:** Diabetes mellitus, Insulin regimen, Insulin use in primary care, Insulinophobia, Underutilization of insulin.

**Correspondence :**

**Dr. Krishnan Vengadaragava Chary,**
Department of Pharmacology, Research Coordinator, Saveetha Medical College, Chennai- 602105, INDIA.
Phone no: + 91 98949 30069
**E- mail:** doctorkrishforu@gmail.com

**DOI:** 10.5530/jyp.2016.2.16

## INTRODUCTION

The term would have been new 'diabetes mellitus 'when it was coined John Rollo, British General Surgeon in 1978[1] whereas now diabetes mellitus is one common of the most common medical term used by medical professionals as well as laymen. Urbanization, faulty food practice and food fads, sedentary life style paved the way for diabetes mellitus to conquer the mankind massively. It is estimated India will have more than seventy millions of diabetes patients by 2030, the numerical undoubtedly magnanimous.[2]

Concerning the available treatment options, the first and foremost medicine was discovery insulin by Noble laureates Banting and Best in 1921. It is needless to mention that when compared to any other oral hypoglycaemic agents discovered so far, none is as efficacious as insulin in lowering blood sugar. Despite being the first discovered drug, insulin is underutilized in the management of diabetes mellitus.[3] In the past the major barrier to utilize insulin was inducing auto antibodies by itself. Insulin resistance by auto antibodies was successively superseded with the advent of newer insulin derivatives. The other reasons for aforesaid statement are, need of parental administration, cost, non acceptance by patients and physician unpreparedness. Many studies had been done on factors influencing insulin utilization whereas only few documented studies left on the side on physician's reluctance and archaic approach towards insulin. Few studies concluded that insulin is not being initiated at right time in management of diabetes mellitus by medical professionals. Hence this cross sectional assessment was done to assess primary care physician knowledge and approach on insulin use in their practice.[5,6,7,8]

## MATERIAL AND METHODS

This was conducted as a cross-sectional study using a well constructed validated questionnaire by experts in the field of general medicine, pharmacology and bio statistics. Appropriateness was confirmed with cronbach alpha value of 0.81 before commencing the cross sectional assessment. Study protocol was approved by institutional ethics committee which is registered with Central drug standard control organisation (CDSCO) (ECR/724/Inst/TN/2015). Questionnaire was administered to the primary care physicians who had done with bachelor of medicine and bachelor of surgery without any specialization and indulged themselves in treating patients. Data was collected with relevant demographic details, year of completion of their degree, total experience, details of any training attended in diabetic care and questions pertaining to the knowledge and their approach to use in their patient care. Study questionnaire was sent by email among the participants and their response was archived for analysis.

## RESULTS

Our study enrolled 125 physicians, 57 female and 68 male primary care physicians with an average of 8.3 years of experience. Thirty-seven (29.6%) physicians answered insulin may not be required in initial stage of type II diabetes patients irrespective of glycemic status and forty seven (37.6 %) of participants rely on prescribing maximum doses of oral hypoglycaemic agents than starting insulin for their diabetes patients. Significant difference is seen among physicians with less than five years of experience in terms of calculating insulin requirement (p-0.028) initiating insulin regimen( p-0.001) for diabetic patients. Forty eight (38.4%) physicians expressed their ability to manage diabetes patients during surgeries and fifty-seven (48.6%) physicians admitted themselves having confident and skill to manage gestational diabetes. 89, (71.2%) of physicians conveyed us they are worried about hypoglycaemic complications to initiate insulin treatment. Our Study results are depicted in Table 1.

**Table 1: Physician response to the questions regarding knowledge and tendency to insulin use by themselves**

| Question | Physicians with less than 5 years of experience –No 50 | Physicians with more than 5 years of experience-No 75 | 'p' value with odds ratio (95%CI) |
|---|---|---|---|
| Do you think insulin might be in needed in some of type II diabetes patient from the time of diagnosis? | Yes–36 (72%)<br>No-4 (28%) | Yes-52( 69.3%)<br>No-23 (30.7%) | 0.749 ( 0517-2.043) |
| Do you think addition on insulin helps to achieve good glycemic control instead of prescribing them maximum doses oral hypoglycaemic agents? | Yes–29 (58%)<br>No–21 (42%) | Yes-49 (65.3%)<br>No-26 (34.7%) | 0.407 (.351-1.530) |
| Do you know any one recognised method of calculating insulin requirement for a patient? | Yes-26 (52.0%)<br>No 24 (48%) | Yes-47 (62.6%)<br>No-28 (37.4%) | 0.236 (0.312-1.334) |
| Can you initiate insulin regimen on your own for your diabetes patients? | Yes-11(34%)<br>No-39 (66%) | Yes-43 (69.3%)<br>No-32 3(0.7%) | 0.001** ( 0.093-0.412) |
| Are you confident to make a change on insulin regimen on your own if required for your patient? | Yes-17( 34.0%)<br>No-33 (66%) | Yes-52 (69.3%)<br>No-23 (30.7%) | 0.001** ( 0.106-.0489) |
| Are you confident to diagnose hypoglycaemic and hyperglycemic emergencies ? | Yes-38 (76%)<br>No-12(24%) | Yes 57 (75.9%)<br>No-18(24.1%) | 1.00 (0.433-2.331) |
| Are you worried of hypoglycaemia to initiate insulin for your patient ? | Yes-41(82.0%)<br>No-9 (18%) | Yes 48(64%)<br>No 27 (36%) | 0.029 (0. 165-0924) |
| Are you confident to make /monitor euglycemia in a diabetic patient before and after surgery using insulin on your own ? | Yes-11(22%)<br>No-39 (78%) | Yes-37 (49.3%)<br>No-38 (50.7%) | 0.002 ( 0.129-0.650) |
| Are you confident to make/monitor insulin regimen for gestational diabetes? | Yes-14 28.0%<br>No-36 72% | Yes-43 57.3%<br>No-32 42.7% | 0.001 ( 0.134-0.624) |
| Have you attended any training with regard to insulin dose and regimen to be used for diabetes patients? | Yes-22 (44.0%)<br>No-28 (56%) | Yes-56 (74.7%)<br>No-19 (25.3%) | 0.001 (0.124-0572) |

## DISCUSSION

Regardless of country, 'insulino phobia' which is the term used to describe physician secondary thought to prescribe insulin is conspicuous. A study conducted by Hayes *et al* among the primary care physicians of United States reported only fifty two percentage of doctors showed positivity regarding knowledge and use of insulin in patient care setting versus 43.2% of our study is slightly lower than the report mentioned above.[10,11]

The significant aspect of our study is that considerable number of physicians has opinion that insulin may not be required for the start up treatment of newly diagnosed type II diabetes mellitus patients. There are various guidelines advocated early insulin therapy must be initiated for diabetes patients with very high glycosalated haemoglobin values. Initiation of early insulin therapy is found to reduce glucotoxicity and improves insulin sensitivity.[13,14] In contrast to current approach, instead of prescribing maximum dose of oral hypoglycaemic agent adding small dose basal insulin is highly beneficial to reduce fasting blood sugar as well as average blood sugar level of a patient throughout the day.[15,16] Another significant aspect of our study, significant number (n-89, 71.2%) physicians opted 'yes' for not initiating insulin to avoid unexpected hypoglycaemia among their patients. Hypoglycaemia, though dreaded is not common with newer long insulin analogues, namely insulin glargine and degludec. These basal, termed as 'peak less' insulin analogues offers excellent control on blood sugar, provide sufficient basal insulinization to reduce hepatic glucose output. Physicians who are naive can start their patients with basal insulin analogues with little or no risk of antecedent hypoglycaemia.[17,18,19]

In our study, significant difference is existing with respect to years of experience among primary care physicians regarding insulin use which is understandable. Physicians, knowledge on various types of insulin, pharmacokinetic profile of insulin, ability to frame basal/bolus regimen is significantly more among physicians with not less than five years of experience. This calls for adequate training all physicians especially who are involved in primary care. India, such a populous country where our patients demand lies at primary health care setting most often.[20] Providing standard guidelines and insulin dosing protocol will facilitate our physicians to exercise their diabetic care. These measures will also make our physicians skilled to manage diabetes during surgical procedures and during gestational diabetes.

We also suggest a special training programme is must at the level of internship, this improves confident of young physicians to overcome hesitancy to initiate insulin. Also, educating our patients to adhere the insulin regimen given by physicians and stocking of various insulin analogues at primary health centres is essential combat diabetes epidemic of our country.[21,22,23]

## CONCLUSION

Underutilization of insulin in diabetes mellitus treatment is quite evident, our primary care physicians must be encouraged more to initiate insulin for their diabetic patients rather than titrating maximum doses of oral hypoglycaemic agents. It is well known fact, for a matter any disease, successful control is possible when primary health care is strengthened.

## ACKNOWLEDGEMENT

We acknowledge Dr. Kannan R , Associate Professor of Medicine, Saveetha Medical College for his inputs while framing study questionnaire.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## ABBREVIATIONS USED

None.

## ABOUT AUTHORS

**Dr. Krishnan Vengadaragava Chary:** Did his post graduation from prestigious Stanley Medical College . He is an eminent pharmacologist , well known for his teaching skills in college and PG entrance coaching . He has won many prizes including a best poster in IPS conference at Bangalore. He is research coordinator of Saveetha Medical College and consultant for few ethics committee and contract research organization at Chennai. He has five SCOPUS , PUBMED indexed publications. He is reviewer of Science and Engineering Research Board ( SERB), Govt of India and in few biomedical journals. He has authored a chapter of Pharmacology in book entitled TARGET JIPMER , 1st ed, 2013 published by Wolters Kluwer.

**Dr. Porchelvan Swaminathan:** Is having twenty two years of experience in Biostatistics. He is serving as advisor, examiner of biostatics in many universities and research sectors. He has guided many PhD scholars and many international publications in his credit.

## REFERENCES


1. Lakhtakia R. The History of Diabetes Mellitus. Sultan Qaboos Univ Med J. 2013;13(3):368-70.
2. Kaveeshwar SA, Cornwall J. The current state of diabetes mellitus in India. Med J Aust. 2014;7(1):45-8.
3. Hartman I. Insulin Analogues: Impact on Treatment Success, Satisfaction, Quality of Life, and Adherence. Clinical Medicine and Research. 2008;6(2):54-67. doi:10.3121/cmr.2008.793.
4. Bardisi WM, Khorsheed MM, Magliah F, Magliah AF. Efficacy of insulin analogues in diabetic patients attending primary care centres. Saudi Medical Journal. 2015;36(7):829-33.
5. Randløv J, Poulsen JU. How Much Do Forgotten Insulin Injections Matter to Hemoglobin A1c in People with Diabetes? A Simulation Study. J Sci Technol. 2008;2(2):229-35.
6. Martha M. Funnell, MS, RN, CDE. Overcoming Barriers to the Initiation of Insulin Therapy. Clinical Diabetes January. 2007;25(1):36-8.
7. Choudhury SD, Das SK, Hazra A. Survey of knowledge-attitude-practice concerning insulin use in adult diabetic patients in eastern India. Indian J Pharmacol. 2014;46(4):425-9.
8. Wangnoo SK, Maji D, Das AK. Barriers and solutions to diabetes management: An Indian perspective. Indian J Endocr Metab. 2013;17(4):594-601.
9. Prasanna KKM, Dev NP, Raman KV. Consensus statement on diabetes in children. Indian Journal of Endocrinology and Metabolism. 2014;18(3):264-73.
10. Hayes RP, Fitzgerald JT, Jacober SJ. Primary care physician beliefs about insulin initiation in patients with type 2 diabetes. International Journal of Clinical Practice. 2008;62(6):860-8.
11. Lee YK, Lee PY, Ng CJ. A qualitative study on healthcare professionals' perceived barriers to insulin initiation in a multi-ethnic population. BMC Family Practice. 2012;13(1):28.
12. Baruah MP, Pathak A, Kalra S. A revisit to prevailing care and challenges of managing diabetes in India: Focus on regional disparities. Indian J Endocr Metab. 2014;18(3):254-63.
13. Das AK, Seshiah V, Sahay BK. Improving management practices and clinical outcomes in type 2 diabetes study: Prevalence of complications in people with type 2 diabetes in India. Indian J Endocr Metab. 2012;16(Suppl 2): S430-S1.
14. Chiasson J-L. Early Insulin Use in Type 2 Diabetes: What are the cons?. Diabetes Care. 2009;32(Suppl 2):S270-S4.
15. Swinnen SG, Hoekstra JB, DeVries JH. Insulin Therapy for Type 2 Diabetes. Diabetes Care. 2009;32(Suppl 2):S253-S9.
16. Nathan DM.: Initial management of glycemia in type 2 diabetes mellitus. N Engl J Med. 2002;347(17):1342-9.
17. U.K. Prospective Diabetes Study Group. U.K. Prospective Diabetes Study 16: overview of 6 years' therapy of type II diabetes: a progressive disease [published correction appears in Diabetes. 1996;45(11):1655]. Diabetes. 1995;44(11): 1249-1258.
18. Nichols GA, Koo YH, Shah SN. Delay of insulin addition to oral combination therapy despite inadequate glycemic control: delay of insulin therapy. J Gen Intern Med. 2007;22(4):453.
19. Ponte CD. Insulinophobia in the Acute Care Setting–How Sweet it is!. J Fam Med. 2014;1(1): 2.
20. Venkataraman K, Kannan AT, Mohan V. Challenges in diabetes management with particular reference to India. Int J Diabetes Dev Ctries. 2009;29(3): 103-9.
21. Rao M, Pilot E. The missing link–the role of primary care in global health. Global Health Action. 2014;7.
22. Rahman SMF, Angeline RP, David KV, Christopher P. Role of Family Medicine Education in India's Step Toward Universal Health Coverage. J Family Med Prim Care. 2014;3(3):180-2.
23. Karen L. Herbst, Irl B. Hirsch, Insulin Strategies for Primary Care Providers Clin Diabetes January. 2002;20(1):11-7.