Int. J. Curr. Res. Med. Sci. (2024). 10(1): 7-10

International Journal of Current Research in Medical Sciences

ISSN: 2454-5716

(A Peer Reviewed, Indexed and Open Access Journal)

www.ijcrims.com

Review Article

Volume 10, Issue 1 -2024

DOI: http://dx.doi.org/10.22192/ijcrms.2024.10.01.003

A Mini review of Insulin Therapy: Misconceptions in the Perspective of Bangladesh

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Abstract

Adverse reactions, negative perceptions regarding insulin and reluctance regarding insulin taking instead pills is observed among the low income settings like Bangladesh. There is a debate among the general masses on anti-diabetic pills vs. insulin in consideration of efficacy, taking pills is easier than insulin therapy, insulin is uncomfortable , apprehension (fear of needle) and negative cultural attitudes. Hypoglycemia is another fear or barrier for the popularity of insulin though it is maintainable by determining proper dosage of insulin and food intake. Instead of low acceptance and barriers, still insulin is considered as the most effective hypoglycemic or anti-diabetic agent. In these review we will focus on the efficacy of insulin, negative perceptions and misconceptions of insulin in the developing country like Bangladesh.

Keywords: insulin, diabetic pills, insulin therapy, anti-diabetic agent

Introduction

In 2021 the world had celebrated centenary for the ground-breaking discovery of insulin that has made the once fatal diabetes into medically manageable condition. It has been a long period the insulin lifesaving insulin therapy discovered.

Origin of Insulin:

The term ‘diabetes’ was coined by Demetrius of Apamea around the first century BC based on the Greek term *diabainein* meaning ‘siphon’ due to the symptoms of polyuria and polydipsia. In the 1600s, ‘mellitus’ was added to indicate that urine sweetness differentiated this condition from other causes of polyuria. However, it took nearly another 100 years to link the polyuria and polydipsia of diabetes mellitus with excessive glucose in both the blood and urine. In 18889, working evidence got that the pancreas controlled carbohydrate metabolism. The discovery of insulin was historic. Professor Michael Bliss in his 1982 history described the happening as “medical miracle” or “magical elixir of life”. Frederick G Banting , a surgeon who have no

formal research experience and Charles Herbert Best, a medical student discovered insulin in 1921. Banting and his co-researcher Best started a research project with the support of University of Toronto. Dr. Bestproposed to perform surgical ligation of pancreatic duct to isolate the organ's internal secretion for the diabetes treatment. This incredible scientific journey was ended by successful extraction of pancreatic insulin by a biochemist, James Collip in 1921.[1]

In the words of the late historian Professor Michael Bliss, "The discovery of insulin at the University of Toronto in 1921–1922 was one of the most dramatic events in the history of the treatment of disease. Insulin's impact was so sensational because of the incredible effect it had on diabetic patients. Those who watched the first starved, sometimes comatose, [patients with diabetes] receive insulin and return to life saw one of the genuine miracles of modern medicine. They were present at the closest approach to the resurrection of the body that our secular society can achieve, and at the discovery of what has become the elixir of life for millions of human beings around the world."[2]

Diabetes in Bangladesh:

Diabetes mellitus, simply known as diabetes, is a chronic disease that occurs when blood glucose or blood sugar level increase to a greater extent. When pancreas does not produce enough insulin or the body cannot effectively use the insulin it produces, blood glucose becomes too high that results diabetes. Insulin is a hormone produced by our pancreas, which balance blood glucose. Insulin helps glucose to be used in cell for energy production. There are two types of diabetes identified generally. There are main types of diabetes- type 1, type 2 and gestational diabetes. Type 2 diabetes or diabetes mellitus (T2DM) is one of the most common types of diabetes worldwide. According to the prediction of International Diabetes Federation, 700 million people will have diabetes worldwide by 2045.[3] Developing and low income countries have been found a rapid increase in diabetes than developed countries. Several studies conducted on Bangladesh has shown high diabetes prevalence among the adults and is escalating over time. Younger adults with diabetes (aged >35 years) also have significant portion.[4]

The national prevalence of diabetes in Bangladesh is 6.9% which is increasing at an alarming rate. Though the prevalence of type 1 diabetes mellitus (T1DM) is low in this area, the prevalence of gestational diabetes and young-onset type 2 diabetes mellitus (T2DM) is very high. Bangladesh is 8th in the world in terms of number of diabetic patients. Insulin is a crucial component of diabetes management, although the proportion of insulin users in Bangladesh is not high. Unfortunately, there is no reliable statistics on insulin users in Bangladesh. 42.49% patients with diabetes use insulin in a single-center study, unfortunately, reliable statistics on insulin use are lacking in Bangladesh.[5]

There is controversy about the risk or benefit of insulin. Efficacy and safety of insulin vs. hypoglycemic drugs is still a debate. More research work and long term studies are needed in this very public health issue. Research is ongoing. Long term clinical trials are needed to determine the efficacy of insulin vs. anti-diabetic drugs.[6]

Myths and Misconceptions about Insulin:

Insulin is used only late stages of diabetes and using insulin means very bad condition of diabetes or the last treatment. Most of the people believe insulin is only for people with advanced and serious diabetes. However, insulin can be used in the early period of diabetes. Insulin is pushed later only for the reluctance of the patients.

It is thought that insulin is addictive or once patients start using insulin, they have to use it for lifetime. Actually insulin is not a drug one can be addicted to, it is a hormone which typically produces in the body. When someone has diabetes, pancreas is unable to produce sufficient insulin or no insulin. Then insulin therapy is done to help make up the lack of insulin.

Insulin is harmful to kidneys and other organs. This is a misconception as the complications.

Complications are related to diabetes not insulin therapy. Biologically insulin produces in our body. So, it's a natural process. Drugs have some side effects but insulin may have no. Instead creating complications, insulin therapy may delay the complications of diabetes. More researches are needed on the efficacy of insulin therapy vs. drug.

Use of insulin is very complex procedure and it can't be managed at home. There is a fear of injection. It is thought that insulin injections are always painful and horrific. Truly, the needles are so thin that the pain is minimal or even can be totally painless. Injecting insulin multiple times in a day is annoying and unpleasant to some people. But it takes not many weeks to adjust the dose and used to with the maintenance of insulin as well as used to needle. So, insulin is not overcomplicated.

Insulin therapy causes weight gain- it is another conception regarding insulin therapy. It is true that in some cases some people who are administrated to insulin therapy, tend insulin therapy may cause weight gain. A research work to explore determinants of excessive weight gain after initiation of insulin therapy in T2DM, show that one out of 10 patients (10.0%)gained 5 kg weight or more. The earliest determinants of excessive weight gain were weight change (inversely) and HbA1c change in the two years prior to insulin therapy ($p < 0.001$). Patients that lost weight parallel with HbA1c rise in the two years pre-insulin, showed the most pronounced weight gain. Of these patients, roughly one out of five (20.3%) gained 5 kg weight or more. This research study was performed respective observational involvement cohort study. 5086 newly insulin users patients was observed. 5 kg or more than 5 kg was the determinants of excessive weight gain in the first year after the initiation of insulin therapy. So, insulin therapy will increase weight it's not true grossly. Clinicians and patients should be aware of excessive weight gain after starting of insulin therapy.[7]

If physician advises the patient to initiate insulin, patient thinks it as personal failure to manage blood glucose level. But it is not a personal failure. The goals of diabetes management are timely diagnosis and the prevention of complications. The treatment of diabetes is individually oriented, depends on the patient's age, body weight, disease weight and so on. Clinical trials have shown that sulfonylureas and insulin are beneficial with respect to patient-relevant endpoints, but comparable data from clinical trials are not yet available for any other anti-diabetic drug (except metformin). So, for individuals treatments will be vary from drug to insulin to maintain recommended HbA1c target range of 6.5% to 7.5%.[8]

Conclusion

More researches are needed on efficacy of drug and insulin to diagnose diabetes. Most of the patients in our country do not use insulin; dependency on drug is observed. Misconceptions of insulin injections are high. It is true that there are particular complications of insulin injection but efficacy is better Negativities and misconceptions regarding insulin have to be removed by providing effective insulin education. Proper strategies of concerning people, eradicating misconceptions and negativities regarding insulin may lessen the fear, reluctance of insulin taking and improve glycemic status.

Conflict of Interest: There is no conflict of interest.

References

[1] E. K. Sims, A. L. J. Carr, R. A. Oram, L. A. Dimeglio, and C. Evans-molina, "diabetes therapy," vol. 27, no. 7, pp. 1154–1164, 2022, doi: 10.1038/s41591-021-01418-2.100.

[2] G. F. Lewis and P. L. Brubaker, "The discovery of insulin revisited: Lessons for the modern era," *J. Clin. Invest.*, vol. 131, no. 1, pp. 1–9, 2021, doi: 10.1172/JCI142239.

[3] S. Babu, "An update on diagnosis and therapeutics for type-2 diabetes mellitus," *Bioinformation*, vol. 19, no. 3, pp. 295–298, 2023, doi: 10.6026/97320630019295.

[4] M. A. B. Chowdhury, M. Islam, J. Rahman, M. J. Uddin, and M. R. Haque, "Diabetes among adults in Bangladesh: changes in prevalence and risk factors between two cross-sectional surveys," *BMJ Open*, vol. 12, no. 8, pp. 1–9, 2022, doi: 10.1136/bmjopen-2021-055044.

[5] A. B. M. Kamrul-Hasan *et al.*, "Insulin injection practice and injection complications - Results from the Bangladesh insulin injection technique survey," *Eur. Endocrinol.*, vol. 16, no. 1, pp. 41–48, 2020, doi: 10.17925/EE.2020.16.1.41.

[6] S. Erpeldinger *et al.*, "Efficacy and safety of insulin in type 2 diabetes: Meta-analysis of randomised controlled trials," *BMC Endocr. Disord.*, vol. 16, no. 1, pp. 1–15, 2016, doi: 10.1186/s12902-016-0120-z.

[7] M. A. Edens, P. R. van Dijk, E. Hak, and H. J. G. Bilo, "Determinants of excessive weight gain after the initiation of insulin therapy in type 2 diabetes mellitus: Retrospective inception cohort study (ZODIAC 60)," *Diabetes Res. Clin. Pract.*, vol. 200, no. April, p. 110719, 2023, doi: 10.1016/j.diabres.2023.110719.

[8] A. F. H. Pfeiffer and H. H. Klein, "Therapie des diabetes mellitus typ 2," *Dtsch. Arztebl. Int.*, vol. 111, no. 5, pp. 69–82, 2014, doi: 10.3238/arztebl.2014.0069.

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How to cite this article:
Samia Jahan Shefa. (2024). A Mini review of Insulin Therapy: Misconceptions in the Perspective of Bangladesh. Int. J. Curr. Res. Med. Sci. 10(1): 7-10.
DOI: http://dx.doi.org/10.22192/ijcrms.2024.10.01.003