Emedica: A New Approach To Diabetes Management

Dr Deepak Nagpal[1*], Hemant Rohera[2]

[1*]Dean and Professor and Head Department of Oral Pathology and Microbiology, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur. Email- deepaknagpal2013@gmail.com
[2]Director, Rohera Health care Technologies Pvt Ltd, Pune, Email -hrohera27@gmail.com

Abstract:

Type 2 diabetes mellitus is one of the major health concerns throughout the globe. Conventional treatments, including lifestyle modifications and pharmacotherapy, are essential for glycemic control and preventing complications. However, adherence to these treatments is often limited, highlighting the need for alternative strategies. Various alternative medicinal approaches have been used with variable outcomes. In this study we present a novel scientific approach through using an innovative device eMedica. The study has shown an improvement in the sugar levels including Hb1AC levels after the use of device, making a new path in management of disease.

Keywords: type 2 diabetes mellitus, glycemic control, alternate medicine, eMedica, Hb1AC

Introduction:

India is home to the second highest number of diabetics in the world. In the age group of 20–79 years, there are 74.9 million diabetics in India in 2021, which is expected to rise to 124.9 million by 2045. According to a recent report by the National NCD Monitoring Survey (NNMS), the prevalence of diabetes in India was 9.3% in 2018[1-3]. Similar estimates were provided by the IDF, where diabetes prevalence was estimated at 9.6% in 2021 and is expected to rise to 10.4% by 2030[4].

Diabetes, a chronic metabolic disease characterized by elevated blood glucose levels, is becoming increasingly common worldwide and has a significant impact on health- related quality of life. Type 2 diabetes (T2DM), characterized by insulin resistance and insufficient insulin production, poses a major public health challenge and requires comprehensive treatment strategies[5-6]. Conventional treatments, including lifestyle modifications and pharmacotherapy, are essential for glycemic control and preventing complications. However, adherence to these treatments is often limited, highlighting the need for alternative strategies. Complementary and alternative medicine (CAM) offers potential cost-effective and accessible approaches for managing T2DM. Key herbal remedies like cinnamon, fenugreek, and bitter melon, along with dietary supplements like chromium, magnesium, and vanadium, have shown promise in glycemic control. Mind-body therapies, including yoga, tai chi, and meditation, contribute to improved hemoglobin A1c and fasting blood glucose levels. Research supports the integration of CAM with conventional therapies, demonstrating enhanced clinical efficacy and reduced economic burden[7-12].

One of the innovative scientific approaches using intracellular current infusion device- Emedica has shown a very effective outcome[13-17]. Here we present a study, were in patients along with conventional therapy were given support using eMedica device, which has given an drastic improvement in their routine sugar maintenance.

Methodology:

A total of 400 type 2 diabetic patients were involved in the study. The age range was from 37 years to 65years. All participants informed consent and their willingness to participate in the test module was taken prior. The patients where explained the mechanism of action of the device with its benefit of being non-invasive and using without compromising the routine work. Their pre enrolment blood sugar levels and Hb1AC was recorded for comparison with post treatment. The participants received the support therapy immediately after enrolment and were observed for their change in blood sugar management. The participants received a one hour therapy by the device eMedica daily for 120 days.

Their HBs1AC prior was recorded for confirmation purpose and post therapy monitoring.

The patients were on their routine medications and all the other confounding factors such as diet, work, and exercise were unaltered.

Results:

The statistical analysis was carried out with comparison on pre and post enrolment blood sugar findings. The participants showed statistical significant improvement in the blood sugar levels which was clearly reflected through the change in Hbs1Ag levels after use of the eMedica device consistently for 120 days.

The average age of participants in the diabetes study is **50.59 years**. This value represents the central tendency of the age distribution among the study participants.

Pre-eMedica treatment vs. Post-eMedica Treatment vs. 2-Hour Post-eMdica treatment

1.Pre-eMedica Blood Sugar Level:

• **Highest Average BSL:** The pre-meal blood sugar level is the highest among the three measurements, with an average of **204.8 mg/dL**.

2.Post-eMedica Blood Sugar Level:

• **Moderate Average BSL:** Following a eMedica treatment, the average blood sugar level slightly decreases to **175.045 mg/dL**.

3.2-Hour Post-eMedica Blood Sugar Level:

• **Lowest Average BSL:** Two hours after eMedica treatment, the blood sugar level drops further to the lowest average of **150.94 mg/dL**.

The data indicates a decreasing trend in blood sugar levels from pretreatment with eMedica to 2hour post treatment. Starting from the highest pretreatment levels there is a significant reduction post treatment and decreases further two hours after treatment.

This pattern suggests effective glucose metabolism and insulin response post-treatment with eMedica among the participants.

Key Observations from Data Analysis:

• **Age Range**: The data covers individuals aged from 25 to 84 years.

• **Mean Blood Sugar Levels**: The average random blood sugar level across all age groups is approximately 160.06 mg/dL, with a standard deviation of 30.17 mg/dL.

Highest and Lowest Levels:

• **Lowest Average Levels**: Observed around the age of 30, with levels around 130 mg/dL.

Highest Average Levels: Peaks at age 84, reaching up to approximately 238 mg/dL.

Statistical Summary:

• **Mean Hb1AC-Pre:** 8.00

• **Mean Hb1AC-Post:** 6.12

• **Standard Deviation (Pre):** 0.62

• **Standard Deviation (Post):** 0.21

Key Observations:

• There is a **mean decrease of 1.87** in the Hb1AC levels from pre to post measurements across all participants.

• The **minimum decrease** observed is 0.60, while the **maximum decrease** is 3.40.

Visual Analysis:

• The line plot visualization clearly shows a **downward trend** from the Hb1AC-Pre' values to the Post' values for each participant.

• The pre-values are consistently higher across the board compared to the post- values, indicating an overall improvement in the Hb1AC levels post-intervention.

Observation : The data and visual analysis conclusively show that the Hb1AC levels of participants have generally improved from the pre to the post period. This suggests that the intervention by eMedica between the two measurements were effective in reducing Hb1AC levels, which is typically a desired outcome in diabetes management.

• The histogram provided shows the distribution of Hb1AC-Post values among participants in a diabetes study.

• The x-axis represents the Hb1AC-Post value ranges, and the y-axis represents the frequency of participants within those ranges.

Key Observations:

• **Most Common Range:** The majority of participants have Hb1AC-Post values in the range of **5.25 to 5.75**. This range has the highest frequency, indicating that most participants have relatively lower post-treatment Hb1AC levels.

• **Decreasing Frequency with Increasing Hb1AC-Post Values:** There is a clear trend where the frequency of participants decreases as the Hb1AC-Post values increase. This suggests that the treatment or intervention was effective for a larger portion of the study group in lowering the Hb1AC levels.
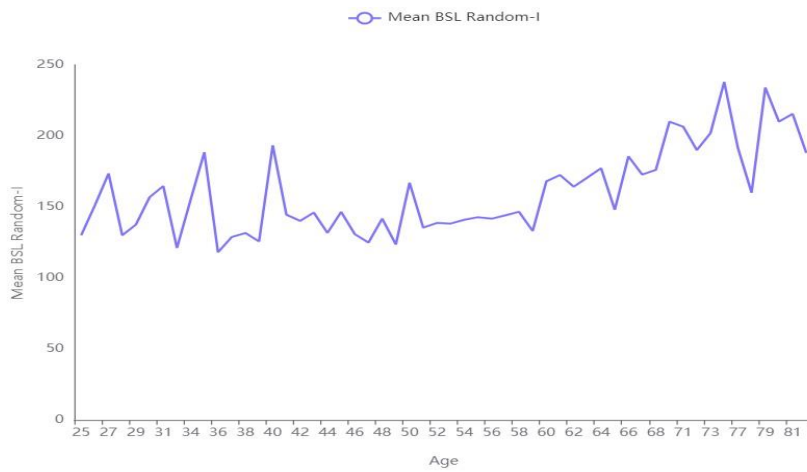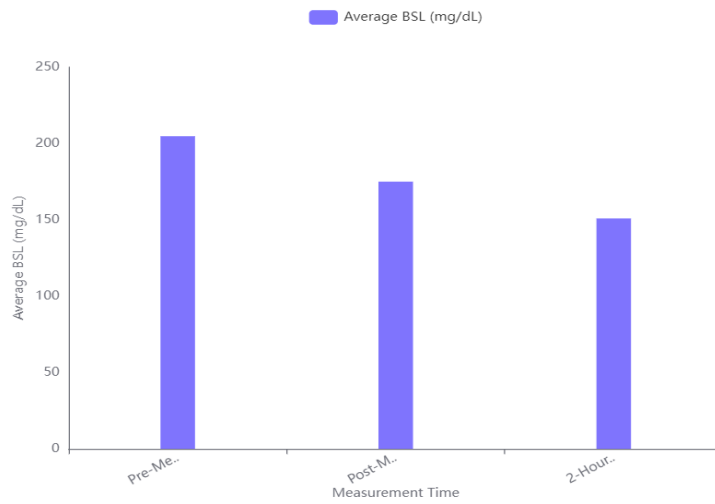
Figure 1: Mean Blood sugar Random

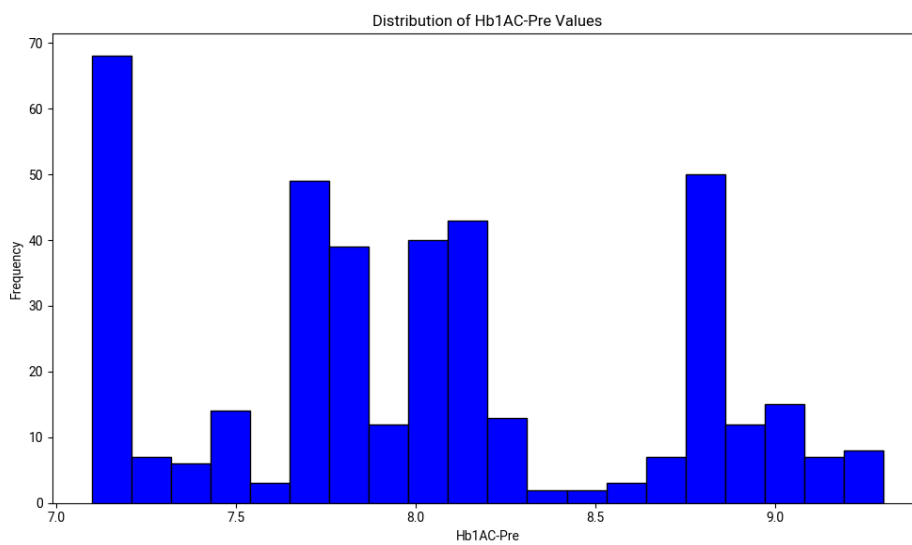**Figure 2: Average Blood sugar reports pre and post eMedica therapy**
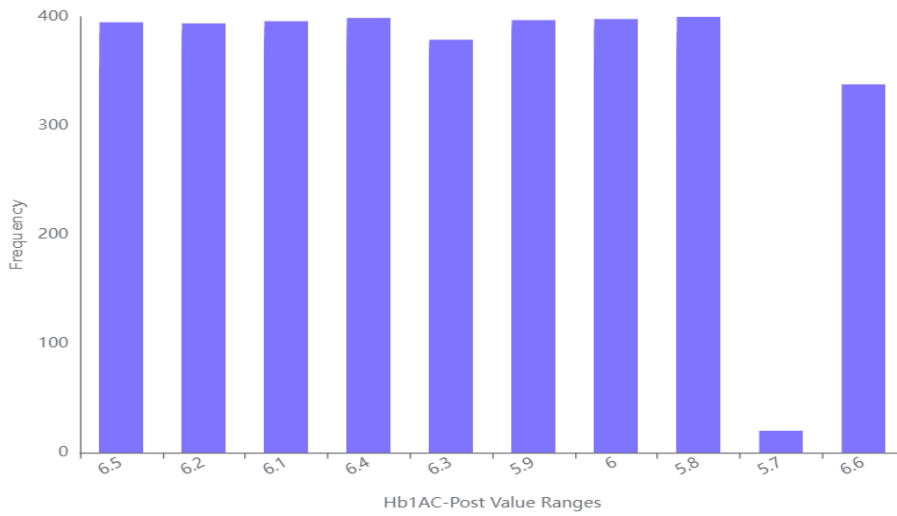

Figure 3: Hb1Ac Pretreatment values

Figure 4: Hb1Ac Postreatment values Figure

5: the eMedica device

Figure 6: the eMedica device in application over the patients

Discussion: with the current rise in the lifestyle diseases and high work stress in the routine of the individuals type 2 Diabetes is on the continuous rise [1-4]. Prolonged hyperglycemia and its associated complications are becoming one of the important health concerns for the various health authorities [14-20]. Numerous alternate medications and procedures have been on the rise including herbal products, natural medicational nutrients such as use of garlic, bitter guard etc have been on the rise [7-12]. A more sustainable and reliable scientific approach is required to handle such chronic lifestyle metabolic disorder such as Type 2 Diabetes mellitus. Literature has shown that each function of the organ depends on the effective response by the specified cells. The cells give an effective response on the basis of its optimal cell charge frequency which clearly reflects the delayed response in geriatric cells due to its decreased physiological charge [15-20]. The eMedica device offers a novel approach to managing and potentially correcting metabolic dysfunctions such as Intracellular Fat Accumulation, Lipotoxicity, and Adipose Tissue Dysfunction, key contributors to insulin resistance and related conditions.

The eMedica device delivers a mild electrical current through the palm and sole, targeting the body's cells. This current stimulates metabolic activity at the cellular level, enhancing the breakdown and mobilization of stored triglycerides within muscle and liver cells. By promoting the utilization of these intracellular fats for energy, the device helps reduce the fat accumulation that interferes with insulin signaling, thereby improving insulin sensitivity.Excess free fatty acids within cells can lead to lipotoxicity, causing inflammation and damage to insulin receptors. The eMedica device's electrical stimulation is designed to improve cellular energy metabolism, which can help reduce the buildup of harmful fatty acids. This reduction in lipotoxicity may decrease inflammation and restore normal insulin receptor function, mitigating insulin resistance. Adipose tissue, especially in the abdominal area, can release inflammatory cytokines and hormones that disrupt insulin action. The eMedica device aids in improving blood circulation, which can enhance the removal of metabolic waste products and reduce inflammation. By improving the overall health of adipose tissue and promoting a balanced release of hormones, the device may help restore normal insulin function and reduce the risk of metabolic disorders.

Thus the Corrective Potential of the devise is through addressing the following issues— Intracellular fat Accumulation, lipotoxicity, and adipose tissue Dysfunction. The eMedica device has the potential to serve as a corrective measure for insulin resistance and its associated diseases. Improved blood circulation and targeted fat reduction at the cellular level may contribute to better metabolic health, making the eMedica device a valuable tool in preventing and managing conditions like type 2 diabetes, cardiovascular disease, and obesity-related complications.

The results of the participants in our present study has shown a clear positive change in the sugar levels which is confirmed by the reduction in the Hb1AC levels post treatment with eMedica. Bringing down the mean Hb1AC from 8 to 6.12 is a very strong indicator of the efficacy of the device.

Conclusion:

The current findings has shown a strong positive outcome and a potential new method to bring a strategic change in the method of long term management of chronic diseases such as Type 2 diabetes mellitus. Effective sugar controls and improved Hb1Ac within the specified span is promising and requires long term follow up in larger population. The key advantage of the devise is its mechanism of action. The cost of the management in longterm is much effective and sustainable giving a future perspective for large scale production and clinical application.

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