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## Science as a Consecration to the Diabetics

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### Abstract

Insulin, a hormone produced by the  $\beta$  cells of Langerhans in the pancreas, regulates metabolism by allowing glucose uptake in our body from carbohydrates and hence helps in maintaining the blood glucose level. During diabetes treatment, insulin injections are provided to allow the body to process sugar and avoid complications from hyperglycemia. Growth of the global insulin market is propelled by several factors like increasing global prevalence of diabetes; rise in decrepit and obese populations and most importantly by propagation of diabetes management awareness and government impetus. According to 2017 census, Chengamanad, having a total population of 29,576 revealed, out of 14,475 males and 15,101 females, 25,132 are literates who are aware about Diabetes, its types and the necessity of insulin uptake for its treatment. The global insulin therapeutics market is expected to register a CAGR of 8.0% during forecast period, 2018 to 2023. North America dominates the market, due to its growing diabetic and obesity instances and even India is among the top five market leaders for insulin today. The increasing trend of awareness about diabetes and insulin is majorly due to the knowledge transfer about the disease through mass media such as television and newspapers that has whole heartedly contributed to public awareness. Family members and friends followed by doctors also play a very important role in distributing information about the disease especially to the people of the backward community. Although increasing literacy rate and distribution of knowledge is contributing to better public awareness; emphasis still needs to be given on periodic screening for diabetes and intake of insulin dosages correctly by patients if at all necessary. This report focusses on the contribution of knowledge transfer through different sources towards the increasing awareness of diabetes leading to the dynamic increase in Global insulin market.

### Article Info

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### Keywords

Insulin; Diabetes; Knowledge Transfer; Increase; Market

### Introduction

Diabetes is a medical disorder that sparks off due to insufficient insulin production by the  $\beta$  cells of Langerhans of the pancreas (Type I) or due to its defective response (Type II). Under normal conditions, level of blood glucose in the body is tightly controlled by insulin, a hormone produced by the pancreas. When the blood glucose hauls up, the hormone insulin is released

from the  $\beta$  cells of pancreas to standardize the glucose level. In diabetic patients, the absence or insufficient production or faulty response of insulin causes hyperglycemia.

Patients diagnosed predominantly by Type II Diabetes are advised lifestyle and diet changes which include routine exercises and nutritional balanced diet. But lifestyle changes and oral drugs for Type 2 diabetes are

dubious to be a perpetual resolution. Over time, the pancreas tends to produce further less insulin until eventually it cannot meet the body's entail. Ultimately insulin, either in injected or infused dosage, is the most efficacious treatment for Type 2 diabetes. Diabetes mellitus (Type 1 and Type 2) is one of the most frequently encountered afflictions by the skilled medical experts. Globally, it is approximated its ubiquity among adults was 4% in 1995 and this is anticipated to elevate to 5.4% by 2025. Compared to other parts of the world, India has a higher prevalence of the disorder; North America being the leader.

Scientific education is one of the paramount constituent in ensuring better investigation and control of diabetes. There is also evidence to show that increasing awareness regarding diabetes and its hurdles has significant benefits including increase in consent to treatment, thereby decreasing the complications associated with diabetes. Although there have been small regional studies on the subject of diabetes awareness in India, there is no data at a national level or indeed even in a whole state of India on the awareness about diabetes.

## **Results and Discussion**

### **The increasing worldwide statistics of diabetes is a concern**

Diabetes is one of the most endemic diseases across the world and India being termed as the "Diabetic capital of the world" with as many as 50 million people suffering from type-2 diabetes; indeed has a challenge to face in the forthcoming years. A common illusion states that diabetes is non-fatal; but WHO reckons deaths of 80% diabetics in low and middle-income countries and projects that such deaths will double between 2019 and 2030.

Not only in India, it is surmised that approximately 415 million people are diabetic worldwide which implies 1 out of 11 in the world's adult population suffer from this malady out of which 46% cases are undiagnosed. This figure is expected to soar up to 642 million people worldwide by 2040 (Fig. 1-4).

### **The escalating insulin demand reflects in the flourishing market**

Currently, approximately 100 million people around the world need insulin, the unavailability of which may lead to premature death. Hence it is now essential to establish

a market to meet the demands of this 100 million and more population of diabetics. Rising ubiquity of diabetes is one of the important factors that revitalize the growth of the CIS insulin market. With the increasing demand and the flourishing market, the government supports and rising R&D in insulin product is projected to unveil remunerative growth in this industry.

The CIS insulin market is predominated by North America followed by European regions. Regional segmentation includes the current and forecast demand of CIS insulin in Asia Pacific, Latin America, and Middle East & Africa with its further bifurcation into major countries including U.S. Germany, France, UK, China, Japan, India and Brazil. Asia Pacific is expected to witness significant growth over the prognostication period.

### **Contribution of the scientific world towards the acceptance of insulin by majority**

#### **Insulin pills for diabetes management: a stepping stone towards early cure**

Indian scientists have done what medical science has been trying to achieve since 1930 – an insulin pill for diabetics; one of the biggest achievement in the world of scientific research. Since the crucial discovery of artificial insulin, millions of diabetics have had to inject themselves with this life-saving drug. Recently Indian scientists have formulated a new long-sought insulin pill that is expected to be a savior of the pain of daily shots (Fig. 5-7).

#### **National programs and awareness campaigns for prevention and control of diabetes**

This agitating scenario of increasing Diabetes has led the Indian Government to start the National Diabetes Control Programme on an experimental basis during the seventh five year plan in 1987 in some districts of Tamil Nadu, J & K and Karnataka, but due to scarcity of funds in subsequent years this programme could not be amplified further in remaining states. However, during 1995-96, a sum of 12 lakh rupees was assigned for the programme and subsequently in 1997-98 an allocation of one core was made (Fig. 8).

The objectives of the Programme are:  
Prevention of diabetes through identification of high-risk subjects and early intervention in the form of health education.

Fig.1 Risk factors involved due to Diabetes

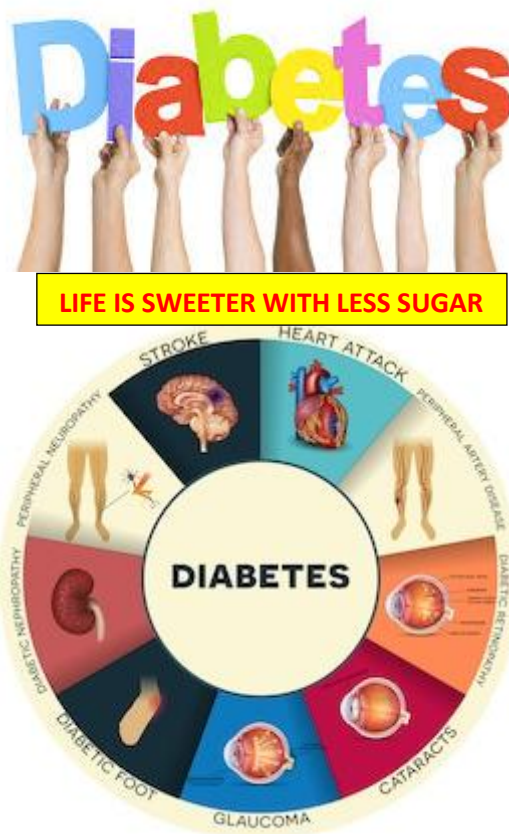


Fig.2 Revenue generation percentage from leading insulin markets

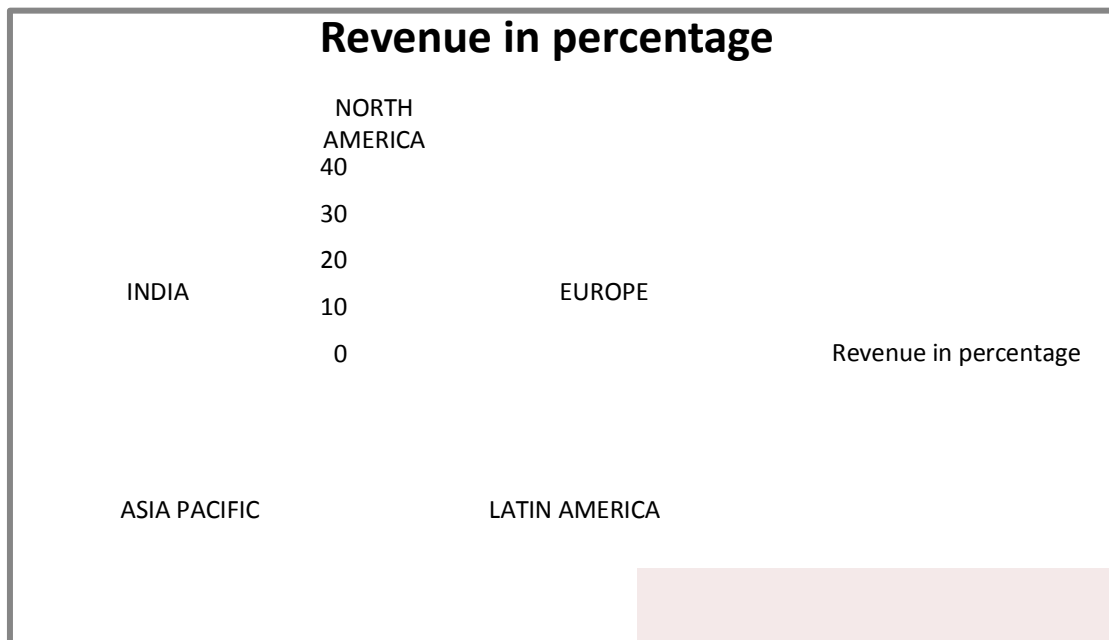


Fig.3 Percentage of diabetics in India in 2017 (n=10442)

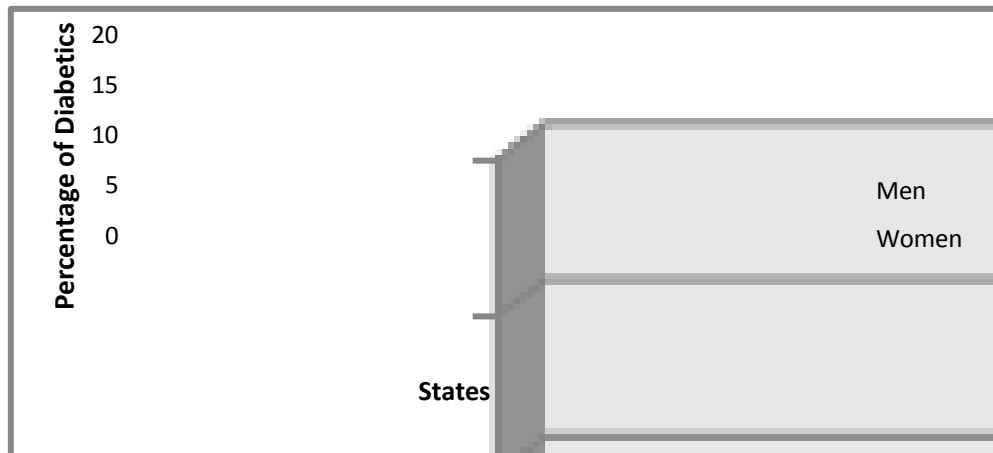


Fig.4 Current and projected prevalence rates for diabetes worldwide

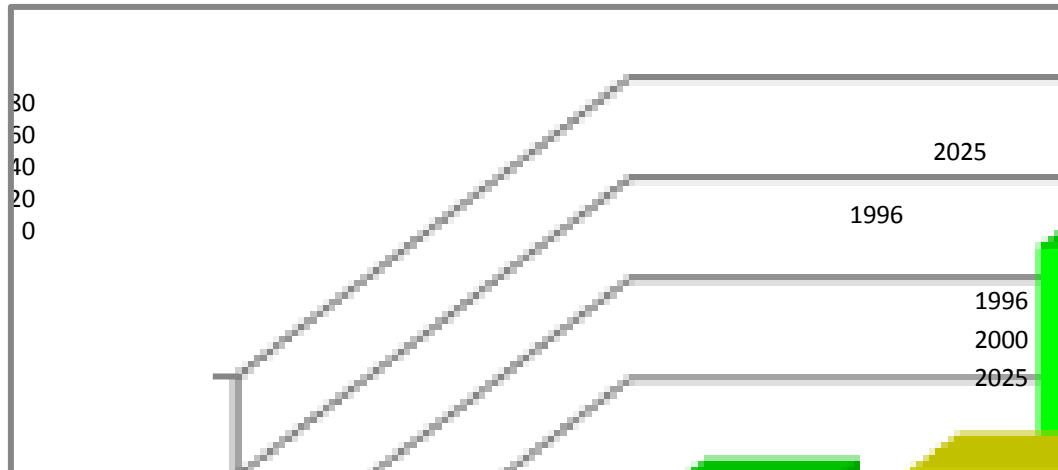
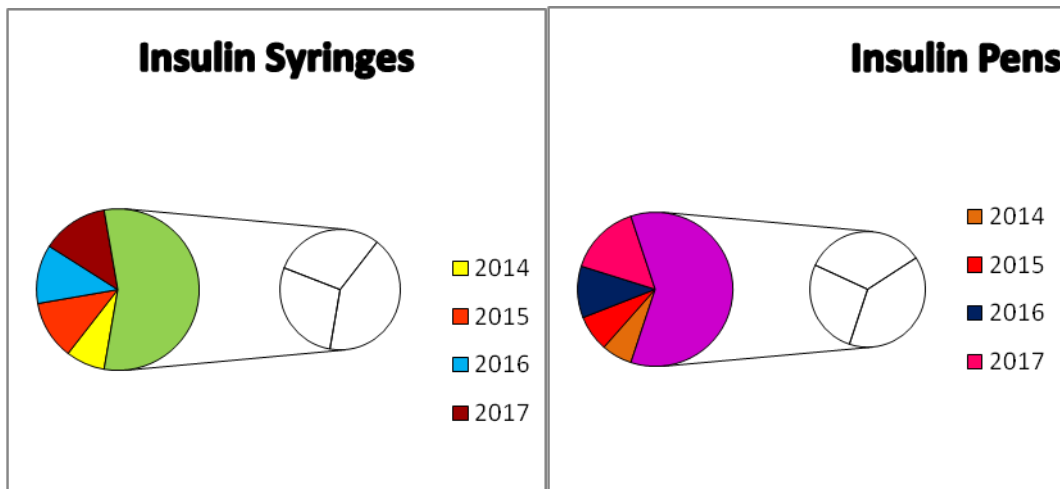


Fig.5 Rising market of insulin products with time in India



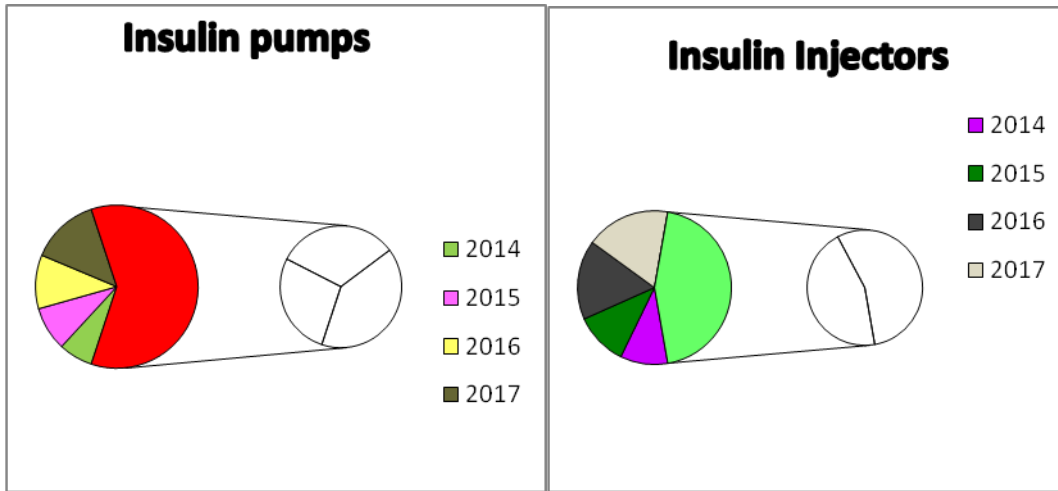


Fig.6 Global insulin market leaders

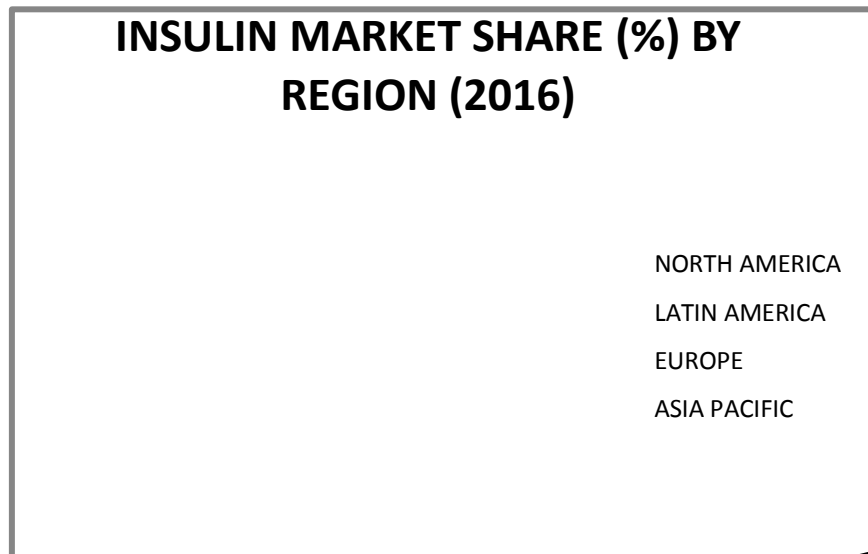


Fig.7 Insulin pills to cure diabetes without the injection pains



Fig.8 Go blue; support diabetes prevention



Fig.9 Herbal remedies for diabetics; a major footfall of scientific research



Early diagnosis of disease and appropriate treatment; reduction of morbidity and mortality with reference to the high-risk group;

Prevention of acute and chronic metabolic, cardiovascular, renal and ocular complications of the disease;

Provision of equal opportunities for physical attainment and scholastic achievement for the diabetic patients; and

Rehabilitation of those partially or totally handicapped diabetes people.

### Scientific herbal remedy

Complementary treatments using herbal medicines draw the consciousness of many diabetics. Umpteen numbers of Ayurvedic herbs claim to reduce blood glucose level, therefore being less dependent on insulin injections by taking herbal medicines is indubitably alluring. However, the selection of herbs might depends on several factors, including the stage of advancement of diabetes, types of artifacts that the consumer are having, availability, reasonability as well as the safety profile of the herbs (Fig. 9).

Preclinical studies have crossed the doorstep of laboratories and reached to the bed-side of the patients. Several clinical studies in human patients have been conducted in recent years, reported that medicinal plants such as *Scoparia dulcis*, *Cinnamomum cassia*, *Ficus racemosa* bark and *Portulaca oleracea* L. seeds were shown to have antidiabetic potential. Subsequent research on laboratory on herbal products has reached to the diabetic patients by the brand name of Diabecon, Glyoherb and Diabeta Plus.

Thus, herbal supplements can be used as an adjuvant or as favorable alternative therapy for diabetic condition.

The International Diabetes Federation (IDF) has recently concluded its World Diabetes Day campaign. This year-long awareness campaign, run by the IDF with the support of the World Health Organization (WHO), aims at informing the public of the causes, symptoms, complications and treatments associated with the condition. There are many such organizations that conduct such campaigns with the motive of transferring and spreading knowledge believing in "Prevention is better than cure". Scientific awareness and contribution of scientific research aims to make a Diabetes free India.

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