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A Review on Survey Study of diabetic patients worldwide

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Abstract

Diabetes is a chronic condition affecting millions worldwide. Despite advances in treatment, diabetes patients often face significant challenges in managing their condition. We calculated that 16.1% of people had diabetes (15.9– 16.1%). As diabetes mellitus is one of the most challenging public health problem in 24 century, Understanding the degree of population knowledge of a disease condition is crucial for future development, early disease detection, and disease prevention. Globally, estimates suggest that approximately 425 million adults aged 20 to 79 years are currently living with diabetes, and this number is expected to increase to 629 million by 2045 [2]. According to the World Health Organization (WHO), approximately 69.2 million people were living with diabetes in India in 2015, and this number is expected to reach 98 million by 2030, making India the country with the highest incidence of diabetes after China. Depending on the type of diabetes you have, blood sugar monitoring, insulin, and oral medications may be part of your treatment. A healthy diet, a healthy weight, and regular physical activity are also important parts of diabetes management.

Keywords

Diabetes in India,early Dignosis, prevalence rate, Type II diabetes, hyperglycemia, diabetes complications,diabetes treatment with herbs

Introduction

100 million people globally (6% of the population) suffer with diabetes mellitus (DM), the most prevalent endocrine condition. It is brought on by insufficient or inefficient insulin production by the pancreas, which causes blood glucose levels to rise or fall. Numerous bodily systems, including the heart, kidney, blood vessels, eyes, and nerves, are type1.[1]Diabetes is a worldwide

issue that has terrible effects on people's lives, society, and economy.

The expected rise in mortality and morbidity associated with the disease's consequences is a significant worry regarding the diabetes epidemic.

Type 2 diabetes is closely associated with obesity and a sedentary lifestyle, and it has a significant genetic component.[2] One Pregnant women with gestational diabetes have an increased risk of problems for both the mother and the fetus during pregnancy and delivery.

hown to be harmed by it. Less than 1% of women and even fewer men have a chance of reaching global targets for halting the rise in the incidence of diabetes by 2025, per the 2016 Noncommunicable Disease Risk Factor Collaboration study.[3]

Epidemiology

1. This would have increased to 552 million by 2030. Type 2 diabetes is becoming more prevalent worldwide, with 80% of those who have the disease residing in low- and middle-income nations. 4.6 million people died from DM in 2011.[4]By 2030, 439 million individuals are predicted to develop type 2 diabetes. Because of environmental and lifestyle risk factors, the incidence of type 2 diabetes varies significantly between geographic regions.
2. It is anticipated that throughout the next 20 years, the prevalence of DM in adults of which type 2 DM is becoming more prevalent—will rise, with emerging nations accounting for the majority of these Increases, with the majority of patients being between the ages of 45 and 64.[5]

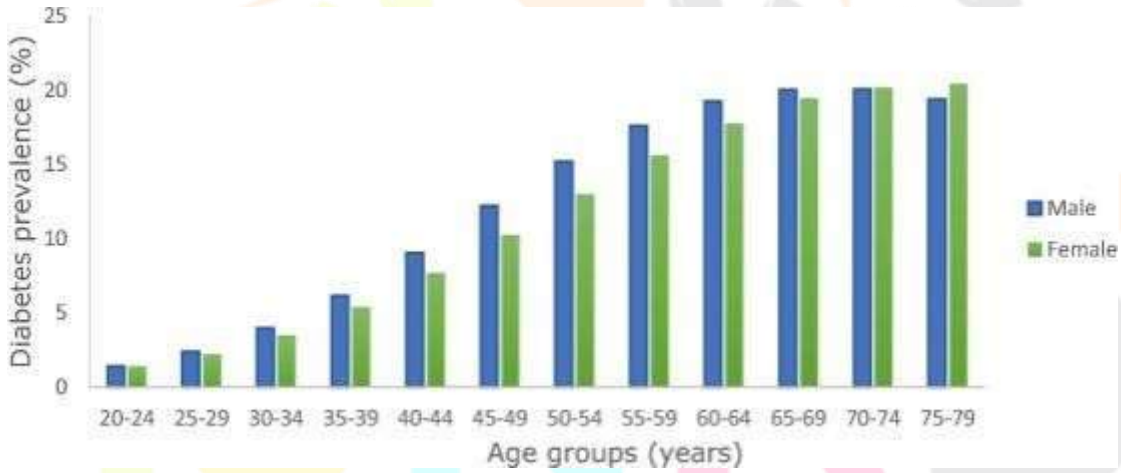


Fig.Epidemiology of diabetes: A global view

Pathophysiological aspect

Insulin insensitivity brought on by insulin resistance, decreased insulin synthesis, and ultimately pancreatic beta- cell loss are the hallmarks of type 2 diabetes. This results in less glucose being transported into the adipose, muscle, and liver cells. Hyperglycemia causes an increase in the breakdown of fat.[6,7] Patients with type 1 diabetes are typically young (children or teenagers) and not obese when their symptoms initially appear.

First-degree relatives of an index case have a 10-fold higher prevalence of this genetic propensity, which is strongly correlated with certain histocompatibility antigens According to research on identical twins, people who are genetically susceptible also need to be exposed to environmental factors like viral infections.

Pancreatic B celmay be harmed by viral infections, which can also reveal antigens that start an inflammatory reaction that keeps getting Only when over 90% of the B cells have been killed does the patient become clearly diabetic. This kind of insulin insufficiency reduces long-term potentiating and may result in memory and learning impairments. Insulin resistance and decreased insulin production are two factors that are associated with type 2 diabetes and play a significant role in its pathophysiologiy.

These patients often appear in adulthood and are frequently obese; as B-cell activity deteriorates with age, the incidence increases gradually. In this case, tau hyperphosphorylation and Aβ plaque development are both caused by insulin resistance. Insulin and Aβ compete for the insulin-degrading enzyme during hyperinsulinemia, which
causes Aβ buildup and plaque development.

Reduced insulin receptor signaling causes tau hyperphosphorylation17, Akt inhibition, and GSK-3βdephosphorylation (activation).[8,9]

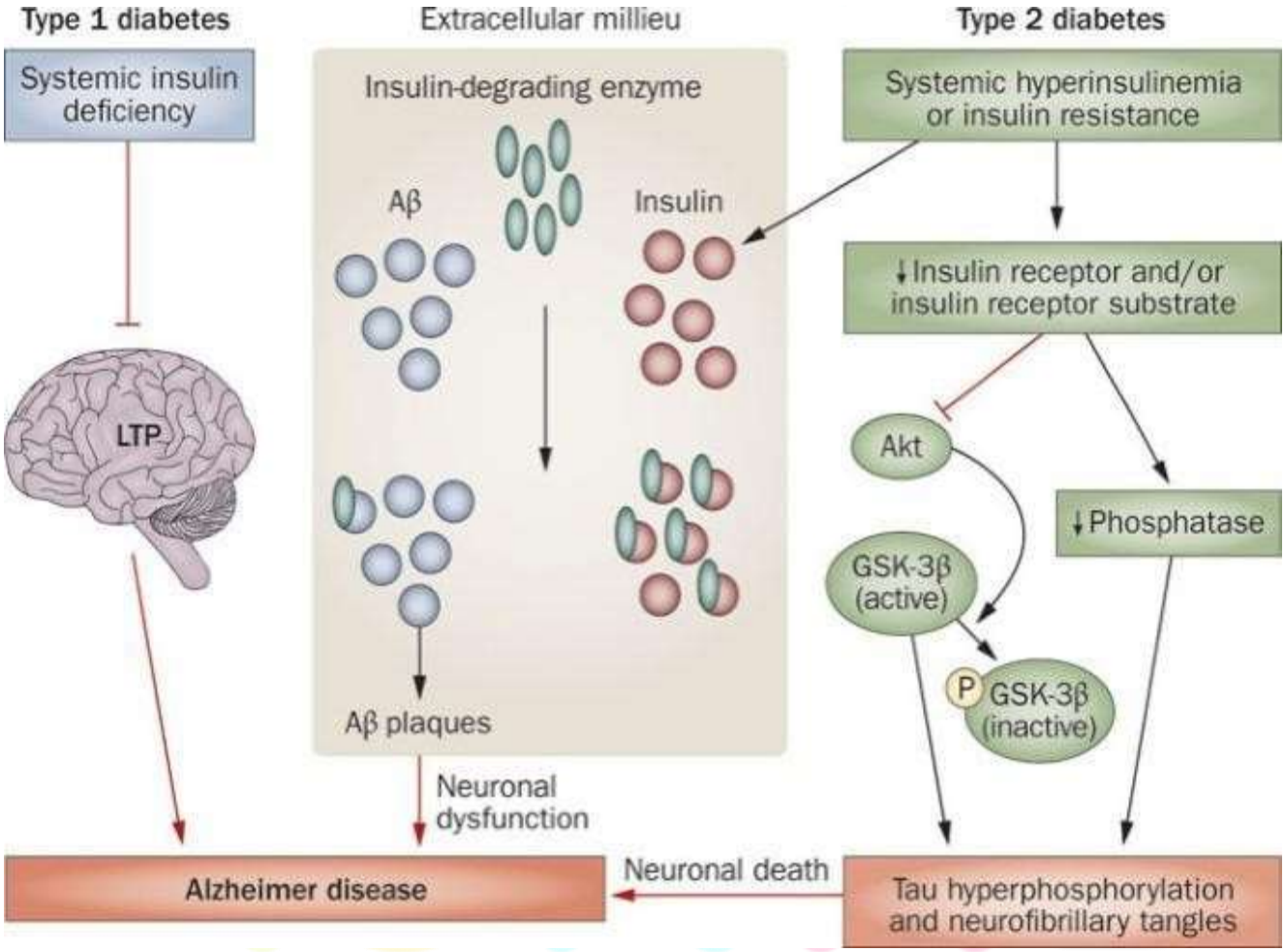


Fig.Pathophysiology of Type I and Type II diabetes. Abbreviations: Aϐ- Amyloid-ϐ,GSK-3ϐ-glycogen Synthase kinase 3ϐ, LTP- long term potentiation, P-Phosphate

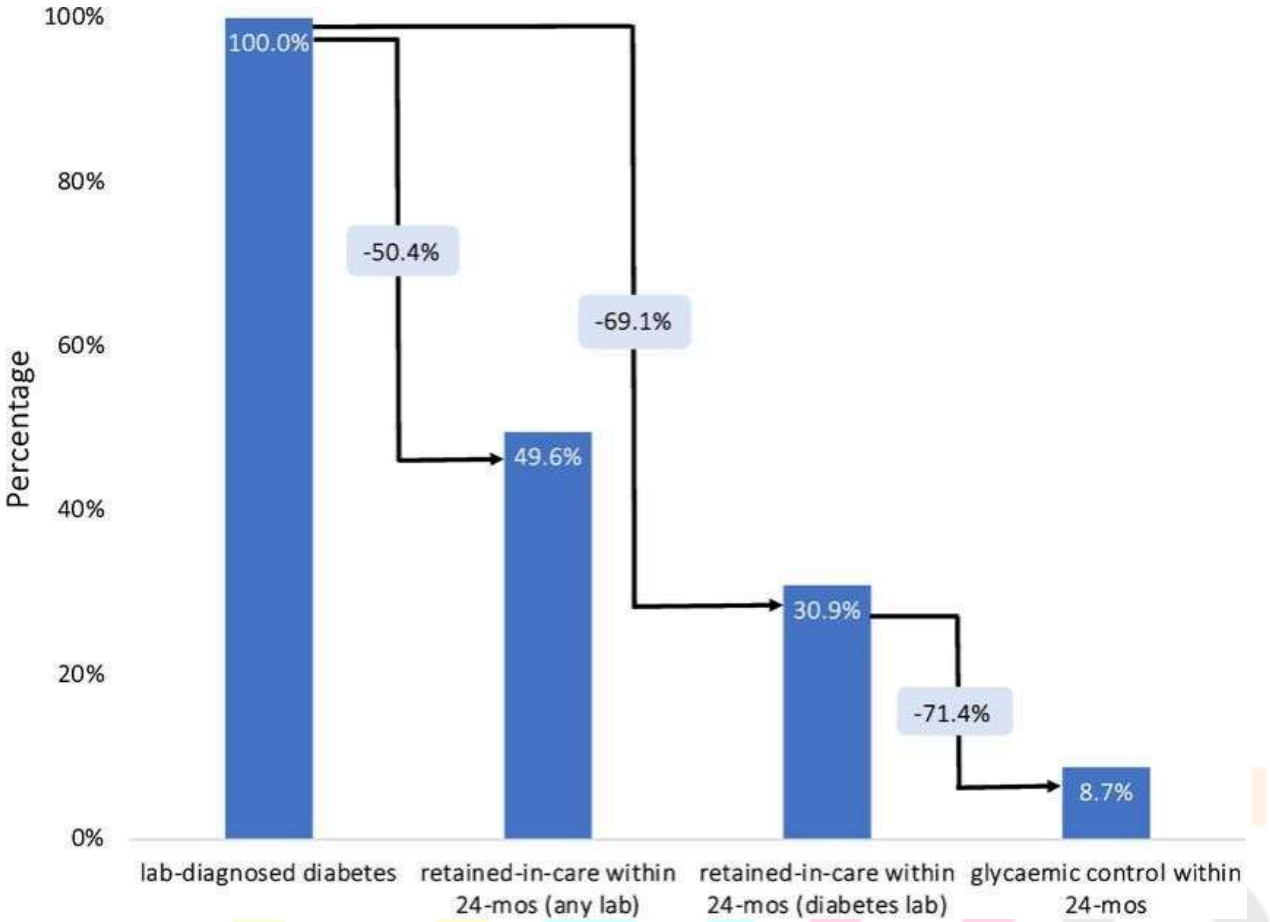
Dignosis

Although postprandial blood sugar, random blood sugar, and glucose tolerance tests are also used todetermine blood sugar, the American Diabetes Association (ADA) recommends using the fasting glucose
concentration in regular diabetes screenings. At least one of the following criteria must be met in order to diagnosediabetes:

- Polyurea, polydipsia, inexplicable weight loss, and other signs of diabetes are present, along with a casual plasma glucose level of 11.1 mmol/L (200 mg/dL).

➢ When no calories are consumed for at least eight hours, fasting plasma glucose levels typically fall between 70 and 110 mg/dl. The clinical phases of diabetes mellitus (normoglycemia, impaired glucose tolerance/impaired fasting glucose (IGT/IFG), and diabetes) as well as the etiological kinds are included in

the World Health Organization's (WHO) classification.The WHO group contains the classification that was previously known as gestational impaired glucose tolerance (GIGT) and GDM: fasting glucose = 7.0 mmol/L (126 mg/dL) and/or 2-h glucose = 7.8 mmol/L (140 mg/dL) following a 75-g OGTT 4. This group is identical.[8]



Diabetes in Indian

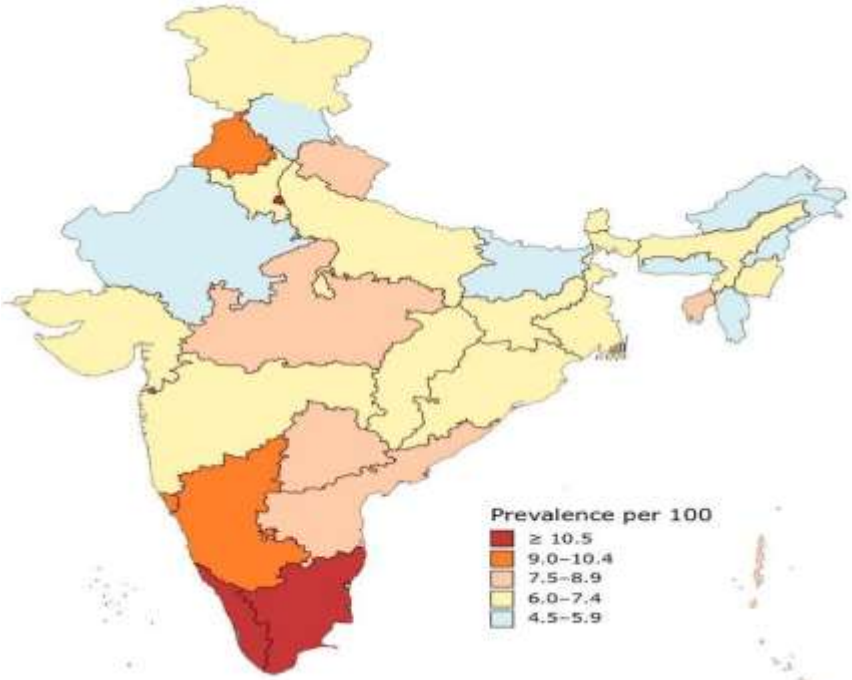


Fig. Prevalence of diabetes in Indian states [10]

In India, diabetes India is the second most affected country in the world, after China[10], with an estimated 100 million [9] individuals (1 in 10 Indians) officially diagnosed with diabetes. [3] In addition, diabetes, hyperglycemia, renal disease, and other consequences of diabetes claimed the lives of 700,000 Indians in 2020. India is home to one in six (17%) diabetics worldwide.[9]As of October 2018, India's population accounted for roughly 17.5% of the world's total.[11]The International Diabetes Federation predicts that by 2045, there will be 134 million.

Approximately 90 to 95% of Indians with a diagnosis had type 2 diabetes, while type 1 diabetes is less common in India than in western nations. In India, only over one-third of people with type 2 diabetes have a body mass index higher than 25.[12]According to a 2004 study, the environmental and lifestyle changes brought about by

industrialization and rural-to-urban migration may be the cause of the high prevalence of type 2 diabetes among Indians.[13]Asian cultures now consume more animal-based meals for energy intake as a result of this lifestyle shift.This shift has been observed in India,[14] where 32% of urban dwellers and 17% of rural dwellers get their

energy from animal fats.[15]

Additionally, these alterations take place earlier in life, increasing the likelihood of chronic, long-term issues

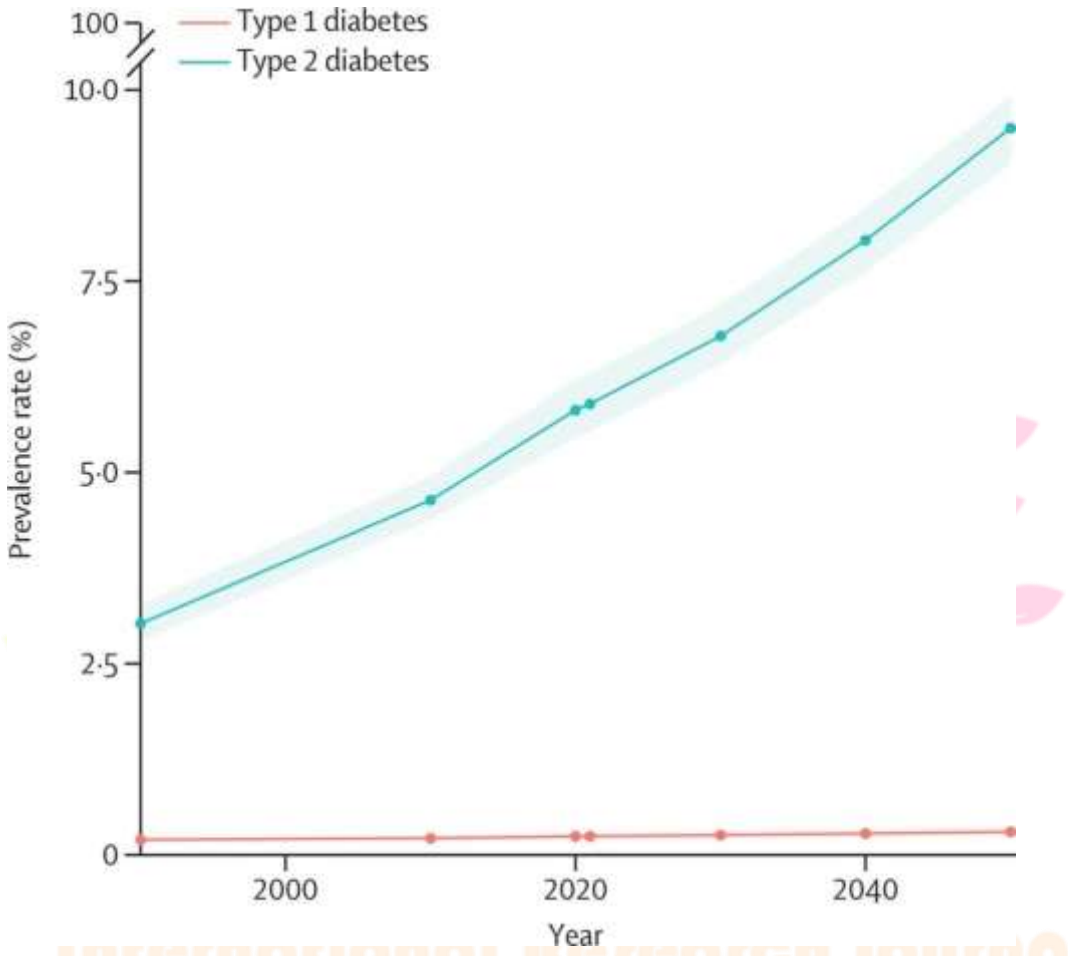
.The International Diabetes Federation (IDF) estimates that 88 million people in Southeast Asia and 463 million people worldwide have diabetes in 2020. India is home to 77 million of these 88 million individuals.[16]The IDF

reports that the population's prevalence of diabetes is 8.9%. India has the second-highest rate of type 1 diabetes in children, after the US, according to IDF estimates. Among the SEA area, it also accounts for the highest percentage of incidence cases of type 1 diabetes among children.[17]

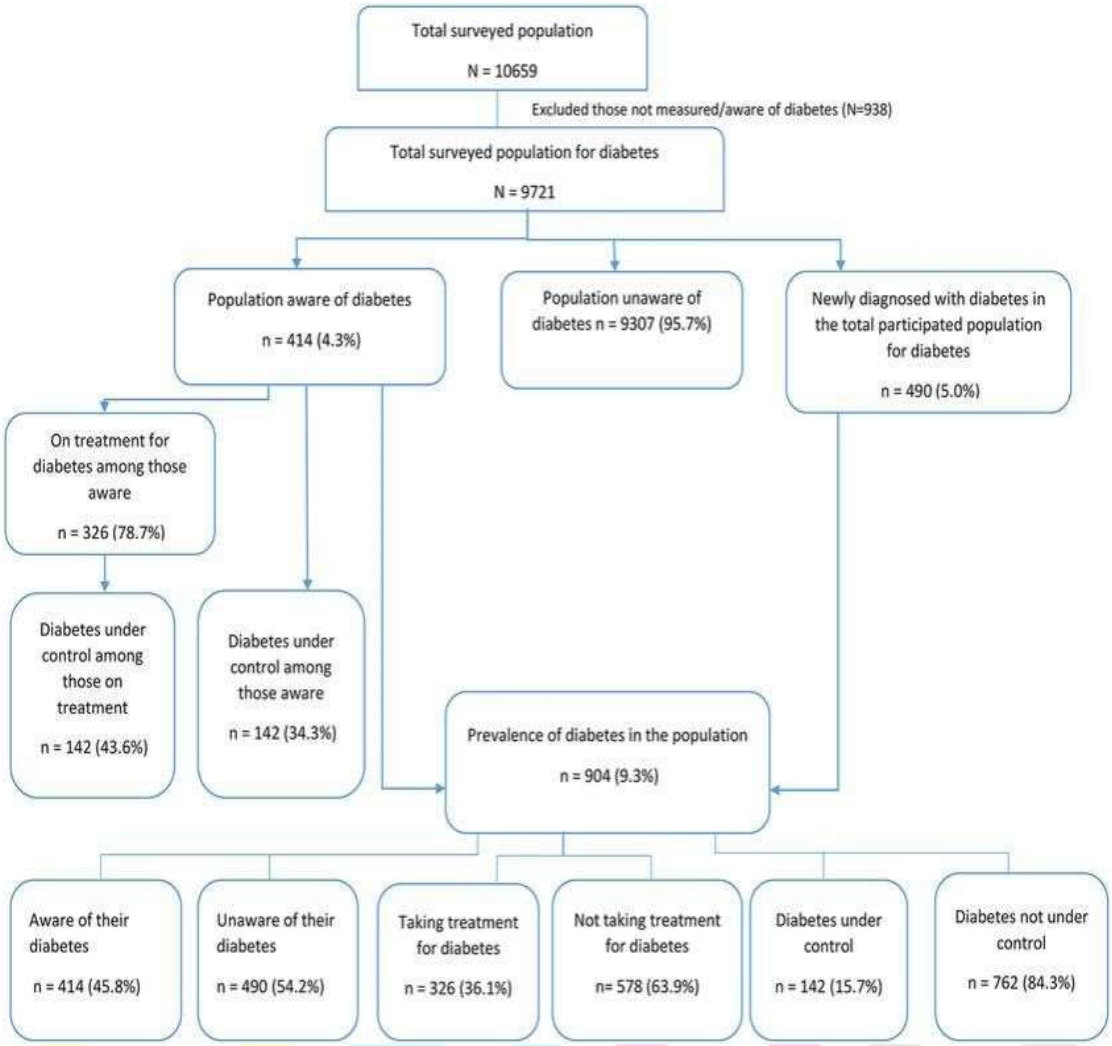
Between 1990 and 2016, there were 65 million diabetics in India,[18] up from 26 million in The Ministry of Health and Family Welfare's 2019 National Diabetes and Diabetic Retinopathy Survey report states that the

prevalence among those over 50 was According to the DHS survey, among persons under 50, [19]the prevalence of diabetes is a 6.5%

and prediabetes is 5.7%. 16.9% of diabetics aged up to 50 were found to have diabetic retinopathy, which is a condition that compromises vision.[20] According to the report, the prevalence of diabetic retinopathy was 18.6% in people aged 60–69, 18.3% in people aged 70–79, and 18.4% in people aged 80 and above. [21]The age group of 50–59 years had a lower frequency of 14.3%.[18] States like Tamil Nadu and Kerala, which are economically and epidemiologically developed and have a large number of research institutes that carry



out prevalence studies, are known to have high rates of diabetes.[22] In India, there are four subgroups or clusters of individuals with type 2 diabetes, two of which are specific to the nation. These subgroups may require different treatments and have varying levels of risk for problems.[23,24]



FIGFIGURE. Survey response rates in diabetes care cascade among adults (18–69 years) in India.

Treatment

Insulin and medications for oral hypoglycemia

Since nature is so effective at reducing postprandial hyperglycemia and avoiding hypoglycemia in between meals, insulin therapy should try to emulate it.[25] Insulin injections can be administered intramuscularly or intravenously, and the site of administration is equally crucial for improved and safe action of insulin. There are various forms of insulin available,

including human, cow, and hog insulin. Insulin treatment has side effects and problems. Weight gain and hypoglycemia are the two main side effects that occur when an incorrect insulin dosage is administered and when meals and insulin injections are not timed correctly.[26,27]

Increased truncal fat and muscle bulk are the causes of weight gain, which is an inevitable side effect of beginning insulin therapy for uncontrolled diabetes. Reduced energy losses from

glycosuria are another factor contributing to this.[28,29] Oral hypoglycemic medications include biguanides like metformin and phenformin and sulphonyl ureas like glibenclamide and glipizide.

Sulfonylureasca stimulates the release of insulin from pancreatic ß-cells, which results in hypoglycemia. When they attach to ß-cell plasma membrane sulfonylurea (SUR) receptors, adenosine triphosphate (ATP)-sensitive potassium channels close, depolarizing the cell

membrane. Voltage-gated channels are then opened, permitting calcium ions to enter and the subsequent release of produced insulin granules. When sulfonylureas are given acutely to patients with type 2 diabetes, the pancreas releases more insulin, and this may raise insulin

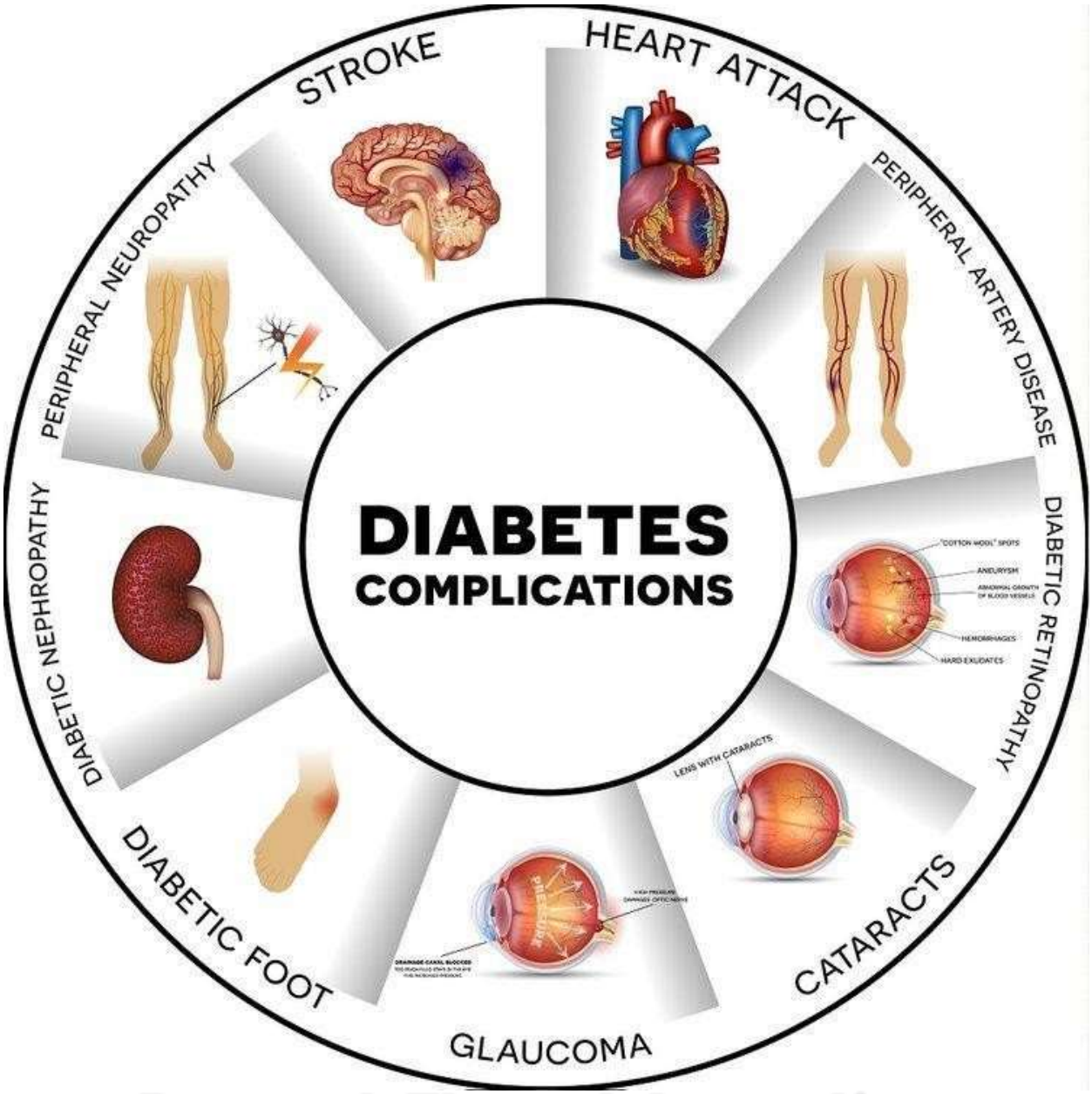
levels by decreasing the hormone's hepatic clearance. Initial studies showed that a functioning pancreas was necessary for the hypoglycemic activities of sulfonylureas.[30]

Diabetes treatment with herbs

Diabetes treatment with herbs With more research being done in the field of traditional medicine, plant-based medications that are eco-friendly, bio-friendly, affordable, and generally safe have emerged from the periphery to the mainstream in recent decades. The review by Atta-ar-Rahman, who has listed over 300 plant species recognized for their hypoglycemic qualities, is the most instructive of the many literature reviews on anti-diabetic herbal compounds written by various writers.The plants in this review have been categorized based on their botanical name, country of origin, parts used, and active agent type. Momordicacharantia(Family: Cucurbitaceae)[31] is one such plant. The World Health Organization has classified 21,000 plants that are used medicinally worldwide. Out of these 2500 species, 150 are

employed on a very considerable scale for commercial purposes in India. India, known as the "botanical garden of the world," is the world's largest producer of medicinal herbs.[32]

Complications of diabetes



Conclusion

This survey highlights the significant challenges faced by diabetes patients, including difficulties in managing their condition, dissatisfaction with treatment, and unmet needs. The

findings emphasize the need for more effective, patient-centered care, and highlight opportunities for healthcare providers, policymakers, and industry stakeholders to improve diabetes management and outcomes.

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