IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

A SURVEY REPORT ON KNOWLEDGE AND AWARENESS ABOUT INSULIN DEPENDENT DIABETES MELLITUS IN OBESITY PATIENT OF WARDHA REGION IN 2024

Akash S. Kapse*, Abhijit N. Daf*, Roshankumar G. Satsure*, Dr. Prasad P. Jumade, Dr. Dinesh S. Wanjari

[1]**Department of Pharmacology,* [2, 4, 5*]*Pharmaceutical Chemistry,* [3*]*Pharmaceutics of*

Agnihotri Institute of Pharmacy, Wardha and Agnihotri College of Pharmacy, Wardha, (MS) India-442001

Abstract:

A major cause of chronic illness and premature death, diabetes kills one person every ten seconds and claims more lives annually than HIV/AIDS. Data collection techniques vary greatly over the world. Recent research projects that by 2025, the proportion of people with diabetes would rise from 4% in 1995 to 6.4%. An imbalance in energy intake compared to expenditure is the main cause of obesity, and it is this imbalance that results in insulin resistance and Type 2 Diabetes Mellitus (T2DM). Studies have shown that implementing new lifestyle habits can cut the risk of diabetes by 60%. When long-term calorie restriction is implemented in rhesus monkeys, the incidence of diabetes and prediabetes is greatly reduced. The results and literature analysis have previously demonstrated that people are still ignorant of the symptoms, causes, and indicators of type 1 diabetes, particularly insulin-dependent diabetes. We therefore intended to use a series of twelve questions, written in the vernacular languages of English, Hindi, and Marathi, to assess the patients' knowledge and awareness. Given that the Wardha region is in the middle of the nation and has a diverse population in terms of education, knowledge, lifestyle, and diet, the sample size consisted of 100 patients from various hospitals as well as people who are interested in the area. Before asking the objective-based questions, the doctor's and the patients' consent was obtained. After completing the survey the data was analyzed and it was found that although the patients are aware of few things but most were having some myths and misconceptions. More than half of the people were unaware about the complications, risk factors and their day to day care. So research study revealed that there should be better counseling especially to clear their doubts and myths. As the sample size was less, we can conduct such survey in large number of population from different demographics.

1. Introduction:

Diabetes, which is linked to polyuria and weight gain was first recorded by the Egyptians. The term diabetes mellitus was first used by the Greek physician Aertaeus. Diabetes means "to pass through" in Greek, whereas mellitus, the Latin word for honey, denotes sweetness. Diabetes, which claims more lives each year than HIV/AIDS and causes about one death every ten seconds, is a major cause of chronic disease and untimely death. With the rise in industrialization and obesity, diabetes has spread like wildfire around the world. Because criteria and methodologies vary, it is difficult to measure its prevalence correctly. The methods used to collect data differ widely across the globe. Studies conducted recently indicate that by 2025, the percentage of persons with diabetes is predicted to increase from 4% in 1995 to 6.4%. The number of people in developed nations will rise by 42%, from 51 to 72 million, while in developing nations; the number of people will rise by 170%, from 84 to 228 million. An estimated 380 million persons worldwide will have diabetes by 2025, up from 194 million in 2003. The nations most impacted by this epidemic in 2025 will be the USA, China, and India. [1]Obesity is primarily caused by an imbalance between energy intake and expenditure, and this imbalance is what leads to insulin resistance and Type 2 Diabetes Mellitus. According to studies, adopting new lifestyle practices can reduce diabetes risk by 60%. Diabetes and prediabetes are significantly less common in rhesus monkeys when they are subjected to long-term calorie restriction. These findings offer compelling evidence that the onset of obesity, insulin resistance, and type 2 diabetes is significantly influenced by excessive food consumption. Through a negative feedback loop, the blood glucose levels are controlled. Glucagon and insulin are released during this procedure. The pancreatic B cells release insulin in response to elevated blood glucose levels. Two chains make up the polypeptide insulin. Disulfide bridges connect I (A and B). Pro-hormone concertizes (PC I and PC 2) and exo-protease carboxypeptidase synthesize it from pro-insulin. These enzymes are involved in the production of C-peptide and insulin.[2]

Types of Diabetes Mellitus:

Diabetes comes in two primary forms: The immune system of the body attacks the beta cells of the pancreas, preventing the synthesis of insulin, resulting in type 1 diabetes mellitus (formerly known as insulin-dependent diabetes). Though it can sometimes happen later in life as a result of genetics, infections, or chemicals, this variety is most frequently seen in kids and teens.
The body's inability to adequately respond to insulin produced by the pancreas results in type II diabetes, formerly known as non-insulin-dependent diabetes. With about 90% of cases occurring globally, it is the most prevalent type of diabetes. Although adults are the primary victims, teens are increasingly experiencing it more frequently. [3]

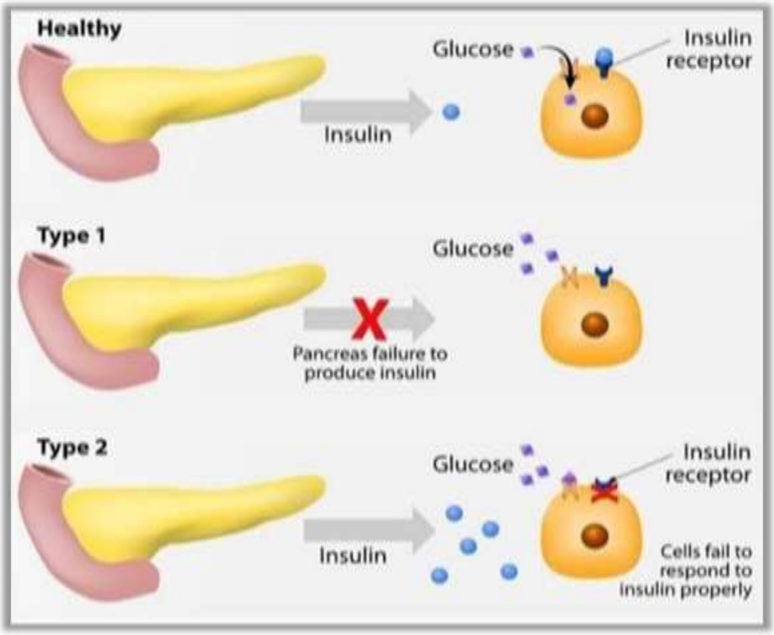


Fig. 1: Types of Diabetes Mellitus

Obesity: Overweight and obesity are caused by an excessive buildup of body fat, which has a detrimental impact on one's physical and emotional health. This is a significant public health issue in both developed and underdeveloped countries. Different life phases have varied insulin sensitivity. For instance, insulin resistance manifests itself during adolescence, pregnancy, and old age. Changes in lifestyle that affect insulin sensitivity include eating more carbohydrates and exercising more. One important contributing factor to the emergence of metabolic disorders is obesity. Hormones, glycerol, and other compounds such as NEFAs, proinflammatory substances, adiponectin, cytokines, and leptin are released by fat tissue, which impacts metabolism. These compounds are secreted in greater amounts by fat people. It is believed that the onset of type 1 diabetes is impacted by both genetic and environmental variables, as evidenced by twin studies. The importance of environmental influences is highlighted by the rise in type 1 diabetes cases among immigrants who relocate to areas with higher incidence rates. Numerous factors, including not nursing, exposure to cow's milk protein, and specific diseases like enterovirus or rubella, have been studied as type 1 diabetes causes. None of these triggers, although, has been shown to be the exact reason..[4,5]

Signs and symptoms of Diabetes Mellitus:

- High blood sugar or hyperglycemia
- Frequent urination or polyuria
- Increased thirst or polydipsia
- Increased hunger or polyphagia
- Fatigue
- Weight loss
- Blurring of vision

Risk Factors: for T2DM)

- Obesity or overweight
- Age over 45 years
- Family history of diabetes
- Hypertension
- Dyslipidemia (high cholesterol level)

2. Diagnosis of type 1 Diabetes Mellitus:

Laboratory Tests:

1. Blood Glucose Level[1]
2. Haemoglobin A1c (HbA1c)

Type 1 Diabetes Mellitus

Diagnosis

	Hemoglobin A1C (HbA1c)	Fasting Blood Sugar Test	Random Blood Sugar Test
Normal	< 5.7%	< 100 mg/dL	N/A
Prediabetes	5.7 - 6.4%	100 - 125 mg/dL	N/A
Diabetes	≥ 6.5%	> 125 mg/dL	≥ 200 mg/dL

[1]

Diagnosis of type 2 Diabetes Mellitus:

Laboratory Tests:

1. Fasting Plasma Glucose (FPG) Test:[1]
2. Oral Glucose Tolerance Test (OGTT):[1]
3. Random Plasma Glucose Test:[1]

Type 2 Diabetes Mellitus

Diagnosis

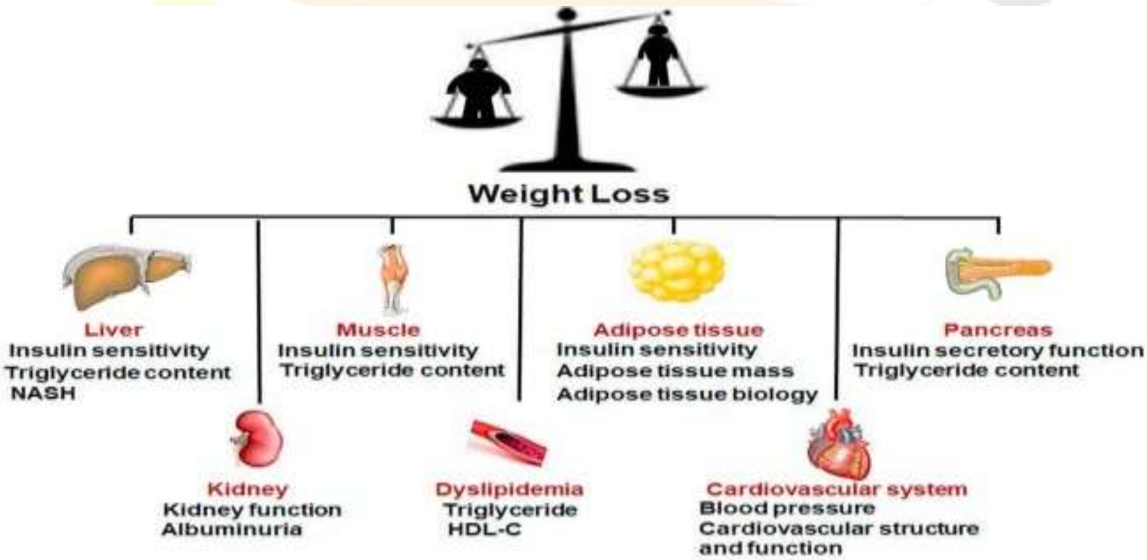
	Hemoglobin A1C (HbA1c)	Fasting Blood Sugar Test	Oral Glucose Tolerance Test	Random Blood Sugar Test
Normal	< 39 mmol/mol	< 5.6 mmol/L	< 7.8 mmol/L	N/A
Prediabetes	39 - 47 mmol/mol	5.6 - 6.9 mmol/L	7.8 - 11.0 mmol/L	N/A
Diabetes	≥ 48 mmol/mol	≥ 7.0 mmol/L	≥ 11.1 mmol/L	≥ 11.1 mmol/L

3. Treatment:

Dietary Management: An essential part of diabetes management is following the right diet. Medication alone won't yield the intended effects; it needs to be paired with dietary changes and physical activity. Patients can manage their weight and prevent overindulgence in food by adhering to a healthy diet. They will be able to properly control their blood sugar levels within the usual range and maintain a healthy nutritional status as a result. Patients with diabetes should also exercise caution to prevent hypoglycemia. To guarantee that oral hypoglycemic medications are used effectively, it's also critical that they keep an eye on their cholesterol levels and address any anomalies.

These dietary guidelines are recommended for people with diabetes: 10% of energy should come from saturated fat, while the remaining 25–35% should come from fat. Intake of cholesterol ought to be less than 300 mg every day. Consuming protein can account for 10% to 15% of total energy; pregnant women and children require more protein. It is recommended to consume both plant- and animal-based protein. 50–60% of total calories should come from carbohydrates; the quantity consumed should be considered more important than the fiber content. [6]

Exercise therapy: This encourages the body to use fat and carbs that have been accumulated. Exercise that combines both active and passive physical activity can help people lose weight and increase their body's sensitivity to insulin. Along with dietary adjustments, these activities must be included. Exercise should be customized based on each person's health and level of fitness. Less vigorous and more passive kinds of physical activity are recommended for people with heart conditions or other health difficulties instead of intense exercise. Educating people with diabetes about the possibility of low blood sugar and how to avoid it is also crucial.[6].



\

Oral Antidiabetic medications:[10]

Class	Drug name	Mechanism of action
Biguanides PO	Metformin	Increase glucose uptake by muscles, decrease glucose production by liver. Type 2 only
2ndgeneration sulfonylureas PO	Glipizide, Glyburide	Increase insulin release from pancreas, may also encourage tissue to be receptive to insulin. Type 2 only
Meglitinides (glinides) PO	Nateglidines, repaglinides	Increase insulin resistance from pancreas. Type 2 only
Thiazolidinediones (glitazones) PO	Pioglitiazones, rosiglitazones	Decrease insulin resistance, increase glucose uptake by muscles, may decrease glucose production by liver. Type2 only
Alphaglucosidase Inhibitors PO	Acarbose, migitol	Slow down carbohydrate absorption and digestion Reduce postprandial increase. Type 2 only

Injectable Antidiabetic medication:[10]

Name of drug	Daily dose range (unit/day)	Action
Glargine	10-16	Long acting
Lispro insulin	16-18	Rapid acting
Regular (Humulin)	14- 34	Short acting

4. Objectives:

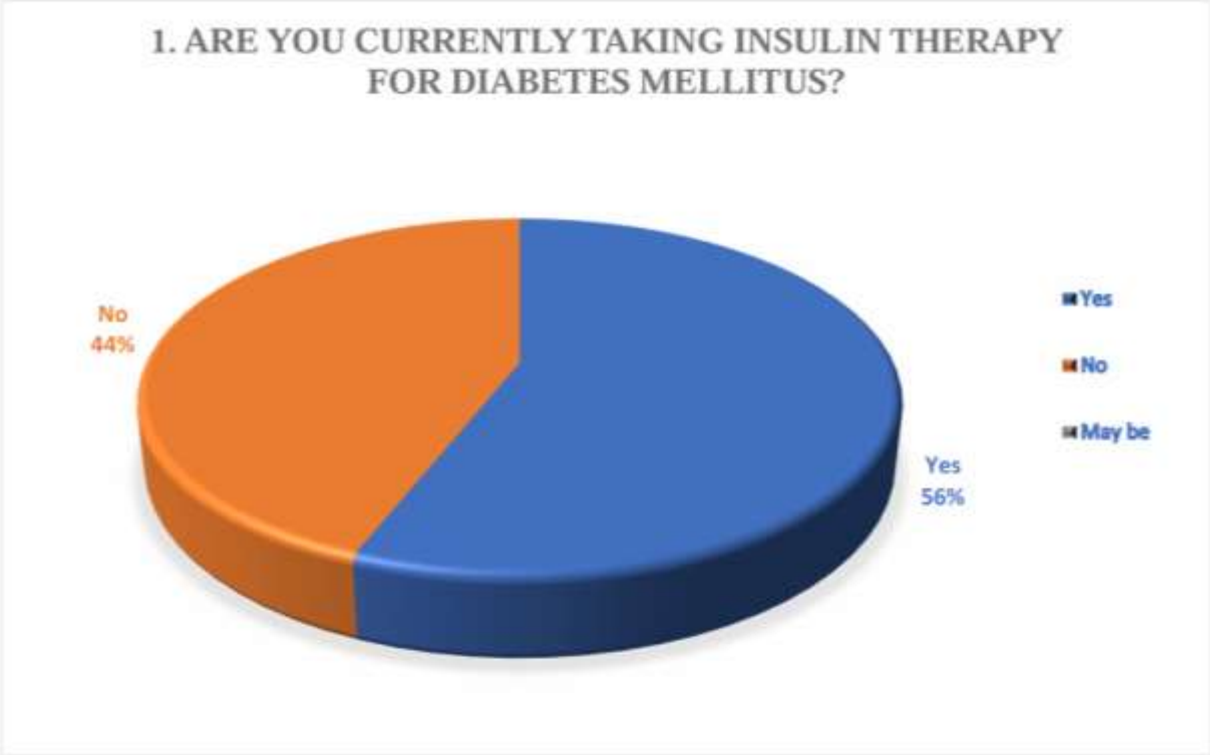
Following a thorough assessment of the literature, it was discovered that patients have many misconceptions and that there are gaps in their knowledge and awareness of DM. A research was designed to assess diabetics' awareness using this methodology. The Wardha (both urban and rural) that is located in the population center of the country was chosen.

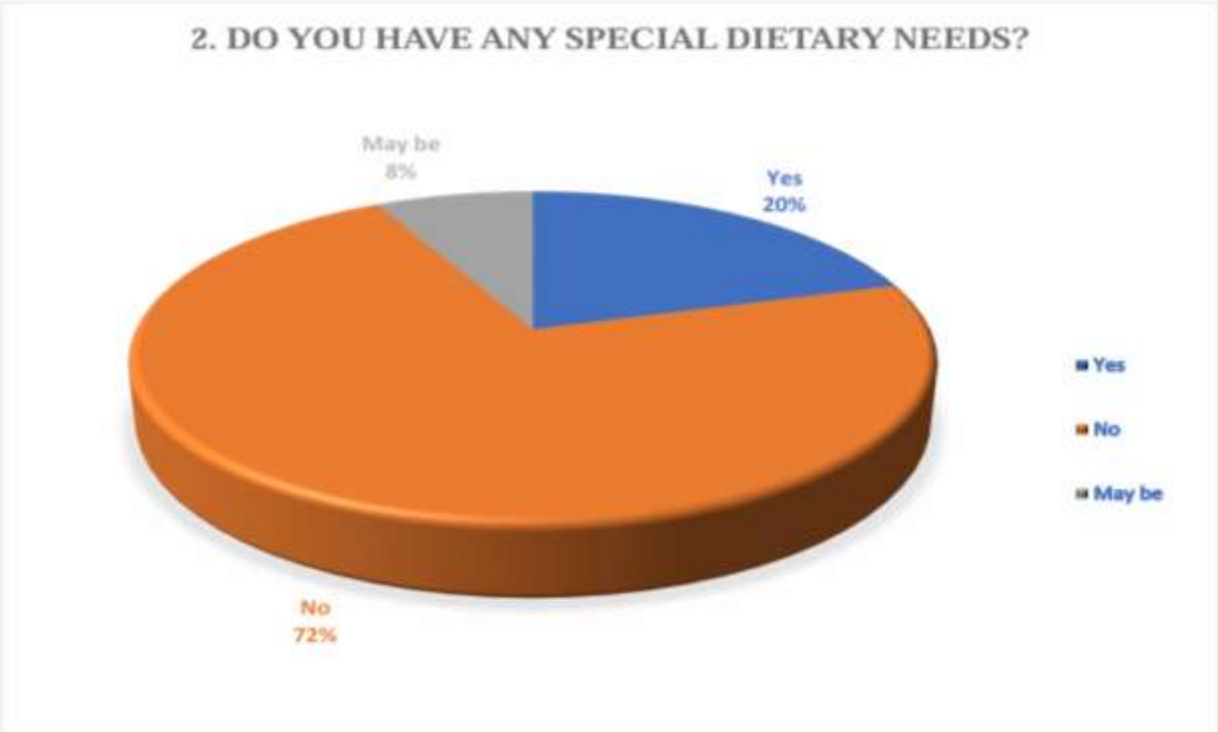
A series of 12 objective-style questions was developed based on a review of the literature in order to assess the knowledge and awareness of the 100 insulin-dependent patients that made up the sample. First, the hospitals were asked for permission to conduct the survey, and with the prior approval of all the doctors and patients, the survey was completed in Target locations for the survey included the mixed-age Acharya Vinoba Bhave Rural Hospital in Wardha, the Mahatma Gandhi Institute of Medical Sciences in Sewagram, Wardha, the Harne Hospital in Wardha, and Dr. Mohale's Clinic in Wardha.

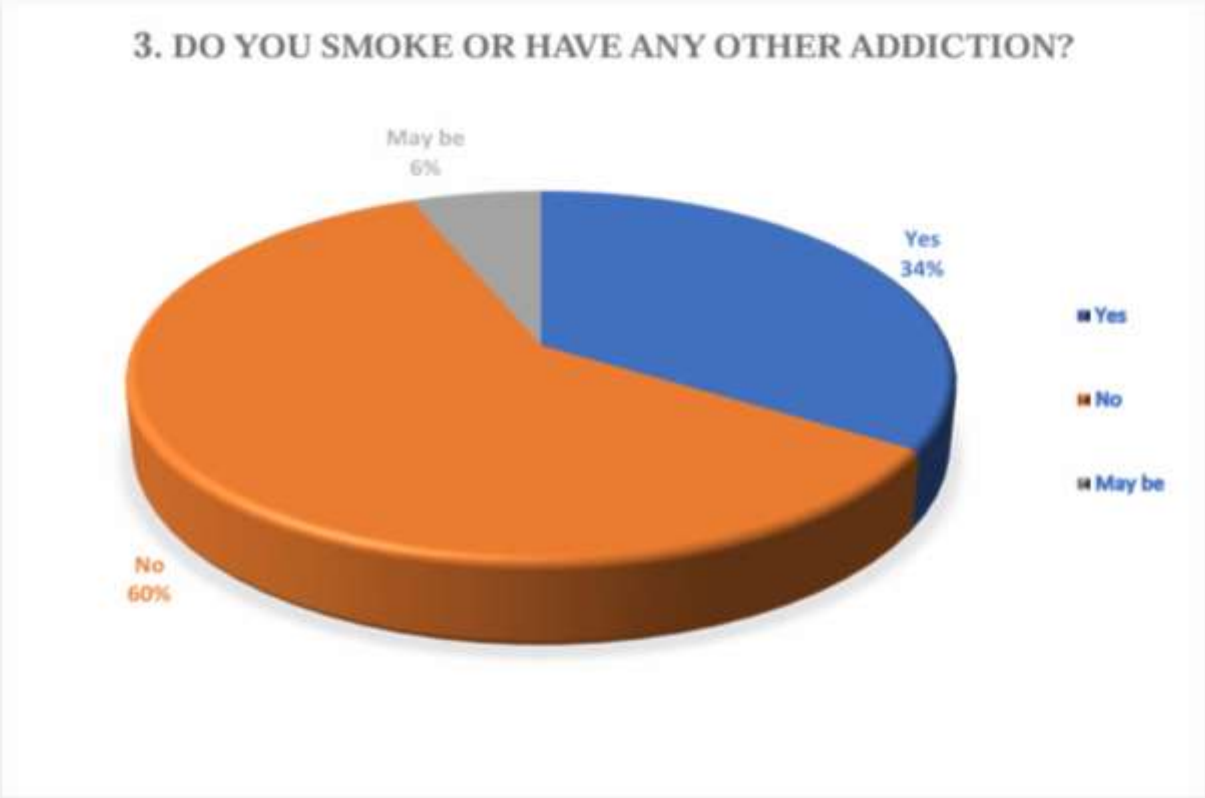
The framed questionnaire utilized was as followed particularly in the vernacular languages i.e. English, Hindi & Marathi for better understanding of patients with objective answers like Yes/?No/May be.

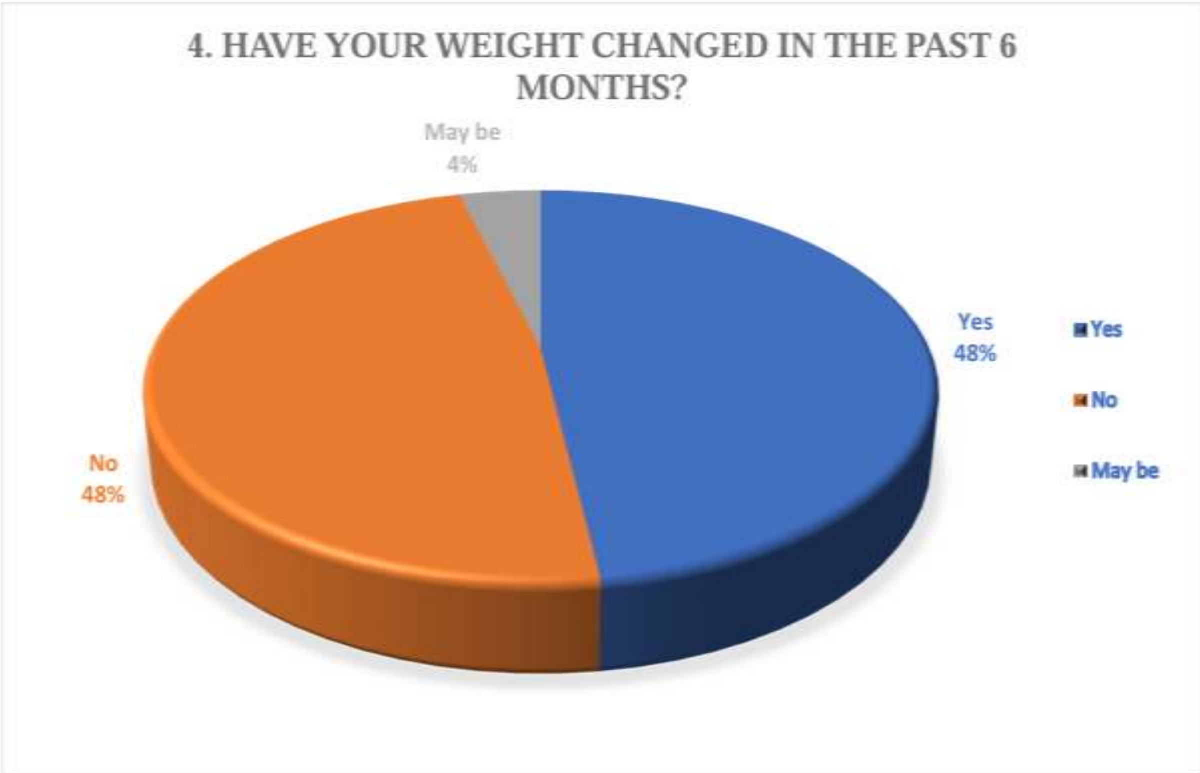
1) Are you currently taking Insulin therapy for Diabetes Mellitus?
2) Do you have any special dietary needs?
3) Do you smoke or have any other addiction?
4) Have your weight changed in the past 6 months?
5) Do you take daily Insulin injection for your diabetes?
6) Do you feel hungry several times a day?
7) Do you know advantages of daily exercise in Diabetes?
8) Do you know that family history of Diabetes is one of the reasons for Diabetes?
9) Do you think that Diabetes is associated with obesity?
10) Do you think that Diabetes can make you blind?
11) Do you know how can you control your Diabetes?
12) Do you think other complications can occur due to diabetes?

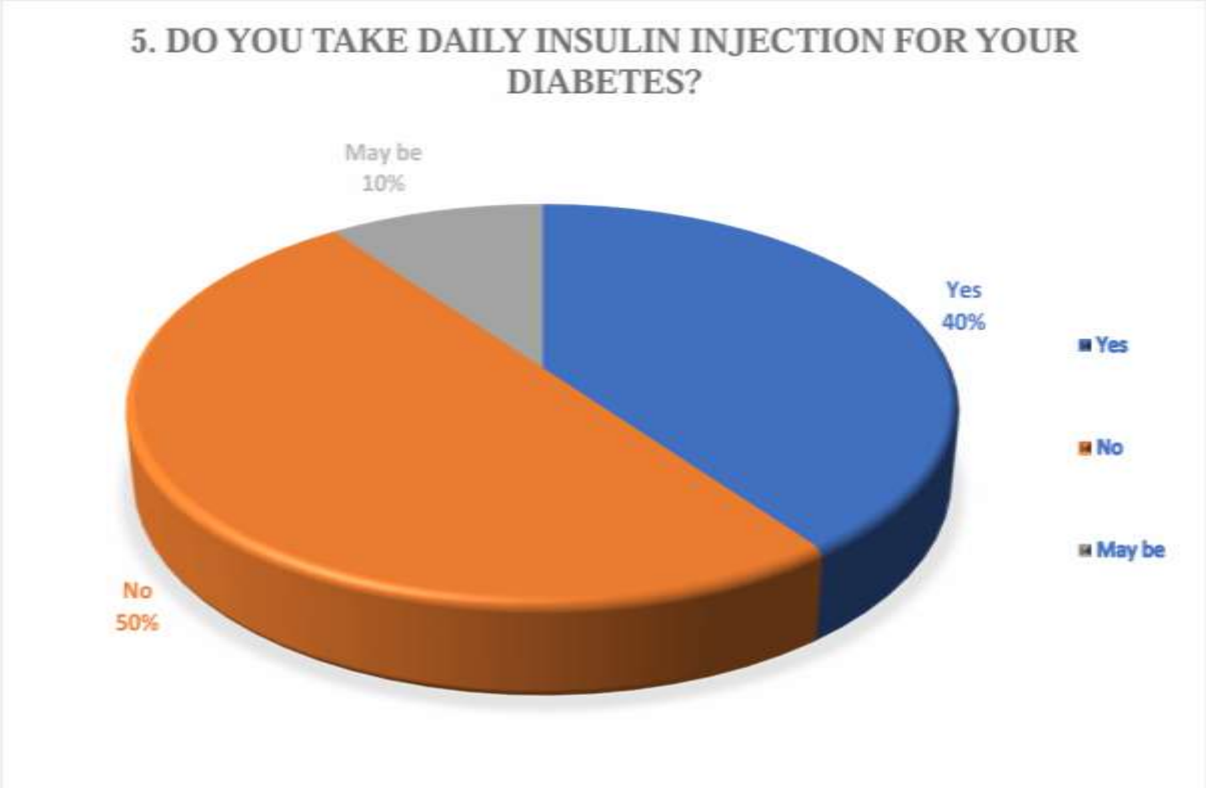
5. **Results:**

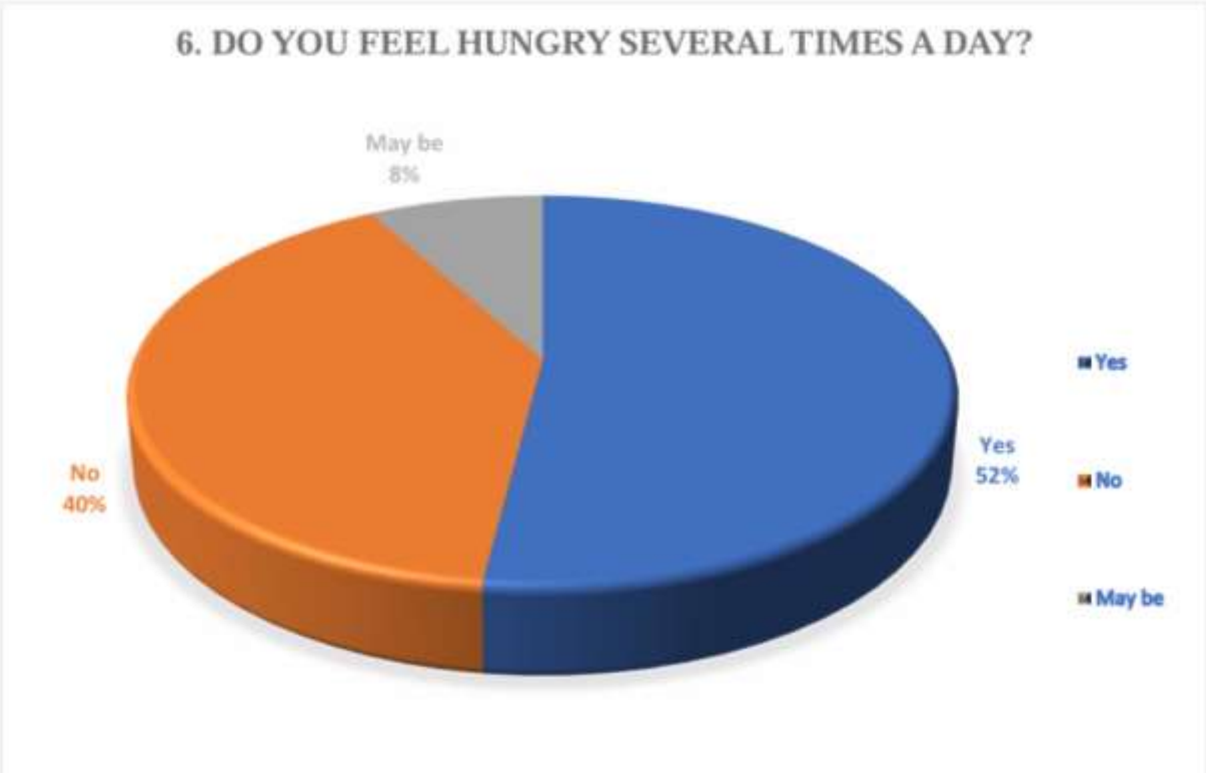

1. ARE YOU CURRENTLY TAKING INSULIN THERAPY FOR DIABETES MELLITUS?
No 44%
Yes 56%
Yes
No
May be

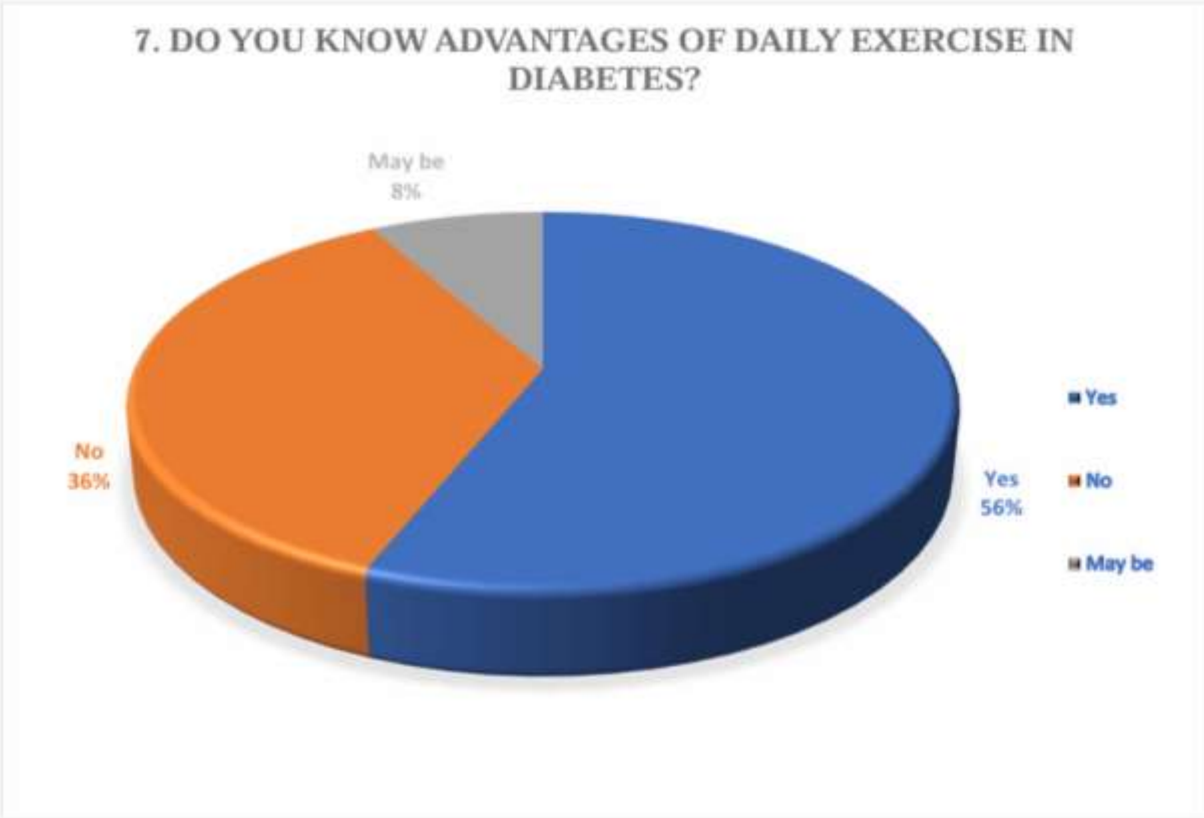

2. DO YOU HAVE ANY SPECIAL DIETARY NEEDS?
May be 8%
Yes 20%
No 72%
Yes
No
May be

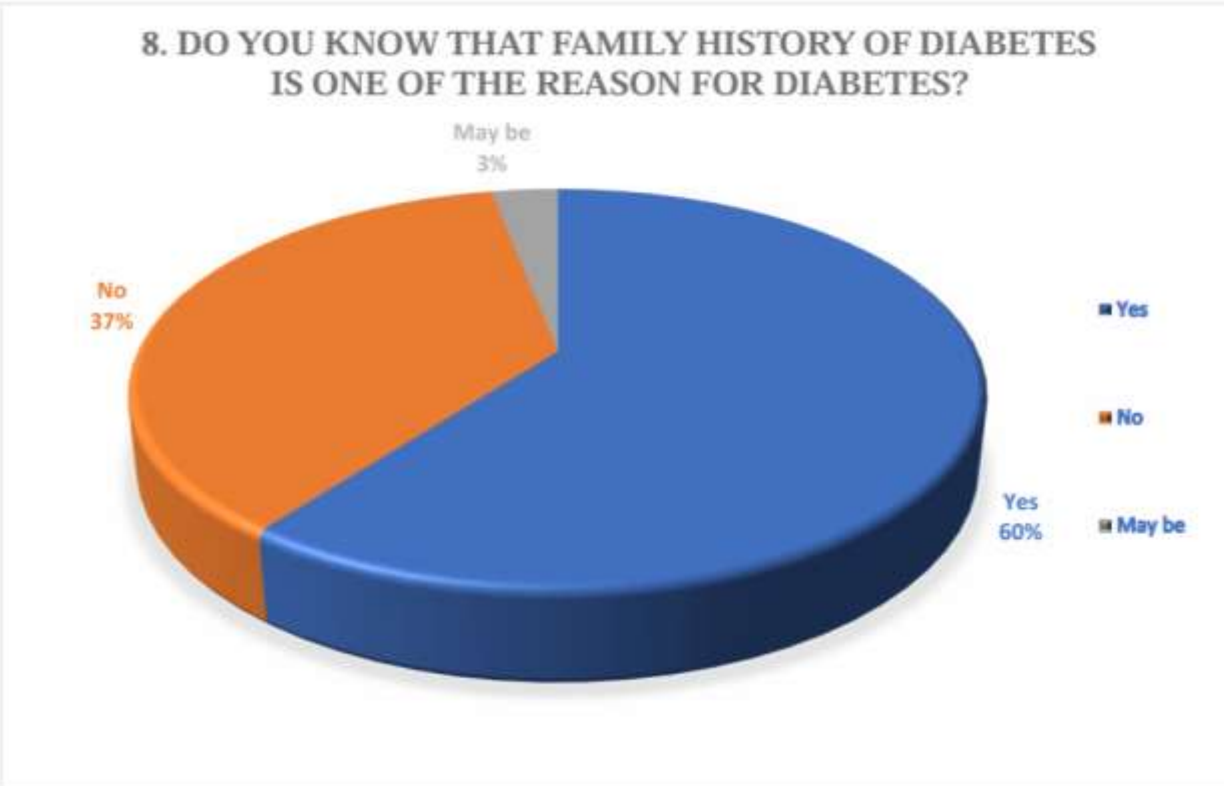

3. DO YOU SMOKE OR HAVE ANY OTHER ADDICTION?
May be
6%
Yes
34%
No
60%
Yes
No
May be

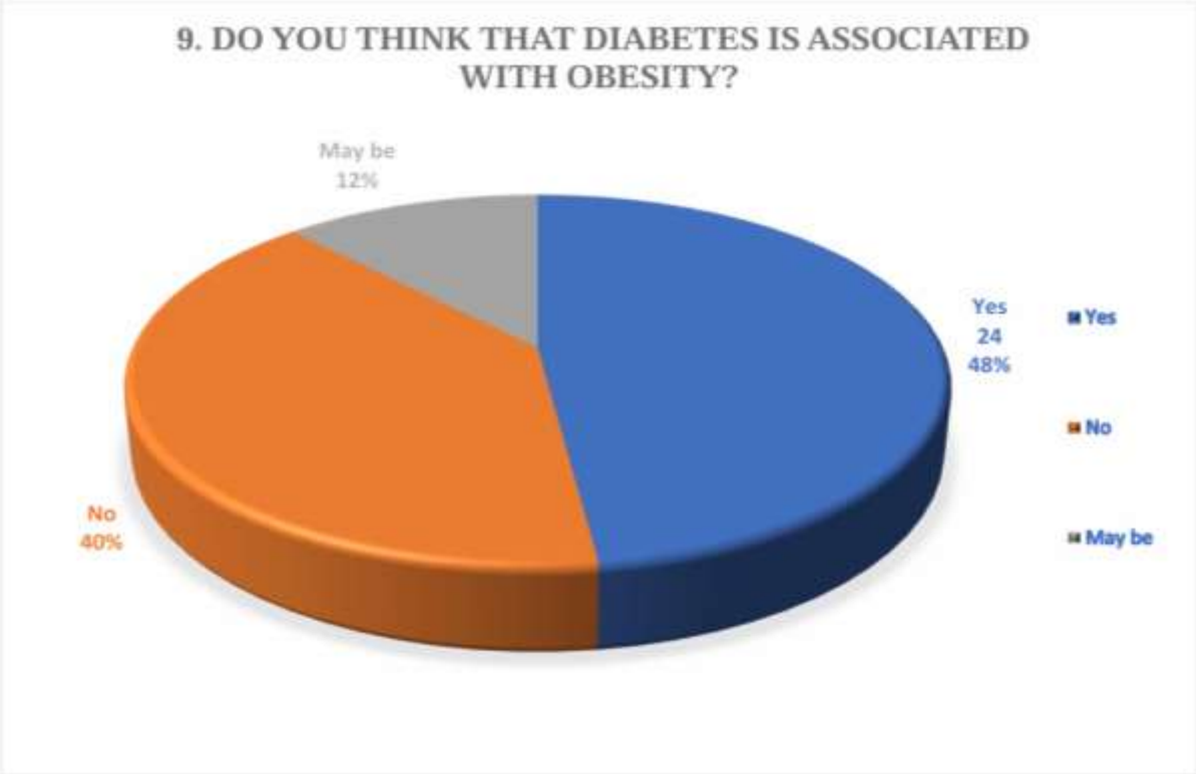

4. HAVE YOUR WEIGHT CHANGED IN THE PAST 6 MONTHS?
May be
4%
Yes
48%
No
48%
Yes
No
May be

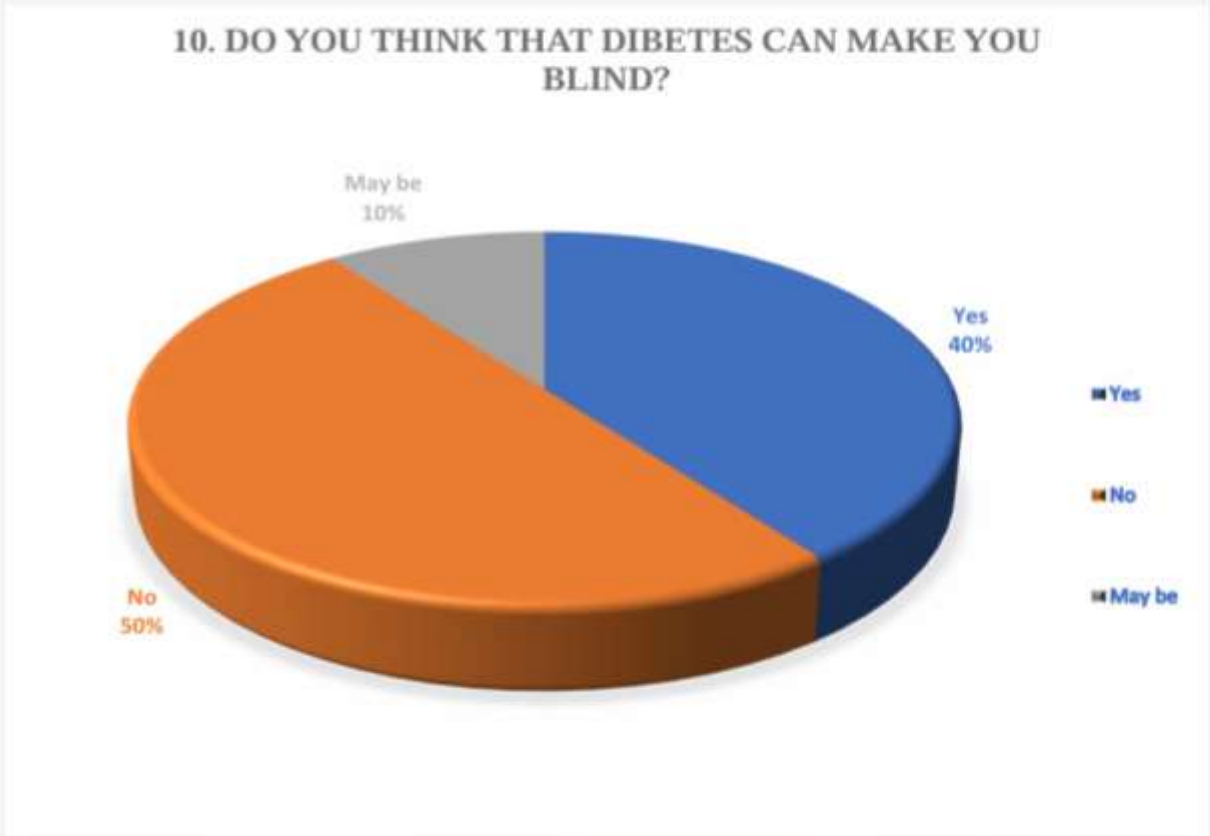

5. DO YOU TAKE DAILY INSULIN INJECTION FOR YOUR DIABETES?
May be 10%
Yes 40%
No 50%
Yes
No
May be

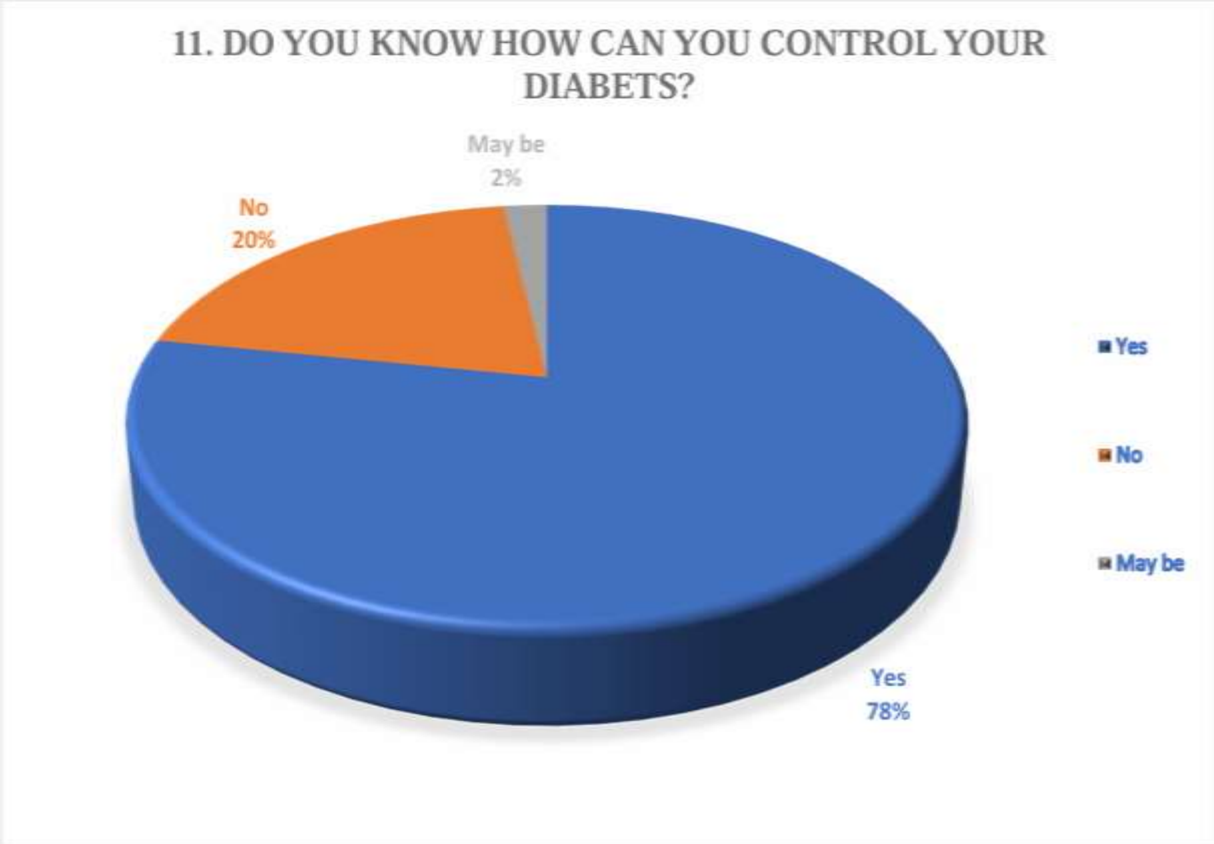

6. DO YOU FEEL HUNGRY SEVERAL TIMES A DAY?
May be 8%
Yes 52%
No 40%
Yes
No
May be

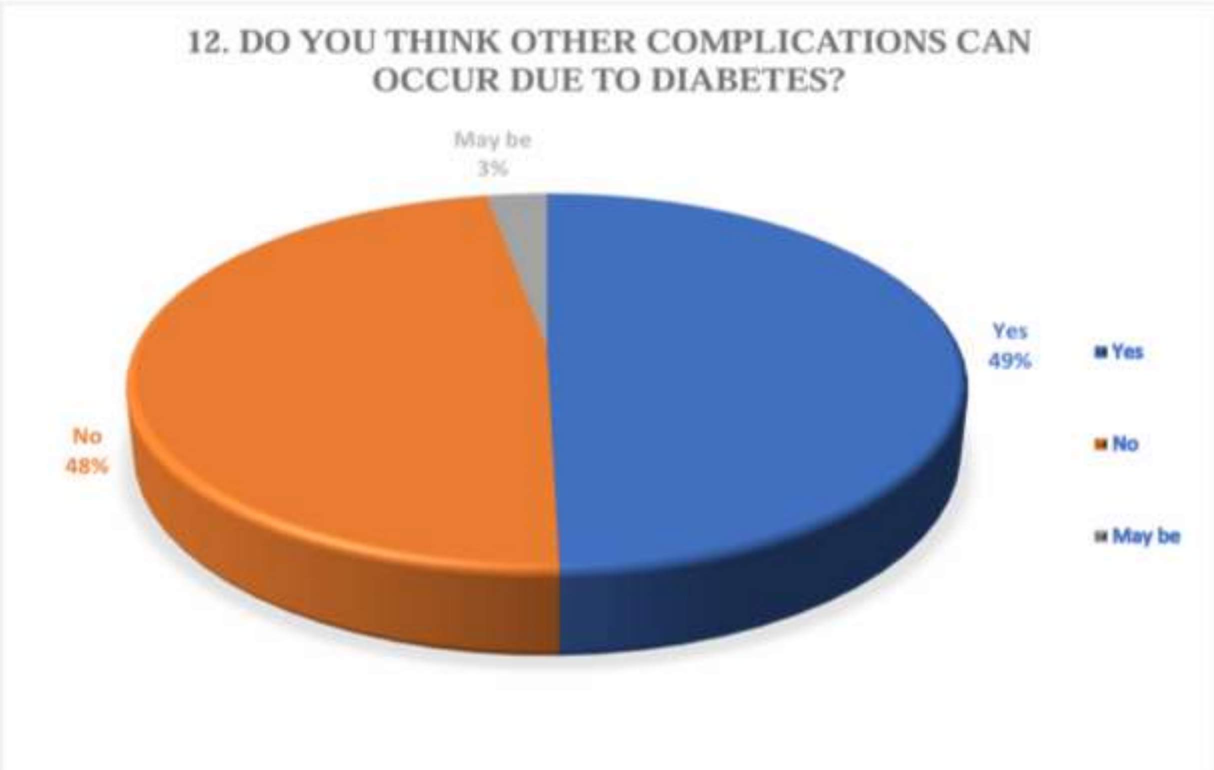

7. DO YOU KNOW ADVANTAGES OF DAILY EXERCISE IN DIABETES?
May be
8%
No
36%
Yes
56%
Yes
No
May be


8. DO YOU KNOW THAT FAMILY HISTORY OF DIABETES IS ONE OF THE REASON FOR DIABETES?
May be
3%
No
37%
Yes
60%
Yes
No
May be


9. DO YOU THINK THAT DIABETES IS ASSOCIATED WITH OBESITY?
May be 12%
Yes 24 48%
No 40%
Yes
No
May be


10. DO YOU THINK THAT DIBETES CAN MAKE YOU BLIND?
May be 10%
Yes 40%
No 50%
Yes
No
May be


11. DO YOU KNOW HOW CAN YOU CONTROL YOUR DIABETS?
May be 2%
No 20%
Yes 78%
Yes
No
May be


12. DO YOU THINK OTHER COMPLICATIONS CAN OCCUR DUE TO DIABETES?
May be 3%
No 48%
Yes 49%
Yes
No
May be

6. Discussion:

The relationship between identity, goal-setting, and goal attainment was the main focus of this study. Assessments were also conducted on the influence of support group identification on the relationship between social identity and goal setting, and goal setting and goal achievement as mediated by goal self-efficacy. Additionally, a study was done on the many kinds of interactions that take place online and their results. By administering an online survey to two distinct groups—those receiving online diabetic support and those who weren't—the study's objectives were tested. The study's objectives were tested using a range of statistical methods.

The majority of people do not know how to prevent diabetes mellitus. The patient is not taking proper medication after the diabetes. Throughout the survey we convivence the people the importance of the medication and diet which can control and maintain the diabetes level. Most ofpatient are not maintaining glucose level in their body. The importance of the regular exercise and their other health issue were also observed and evaluate. The 70 to 80 % of patient are overweight that makes of higher risks of type to diabetes mellitus .We aware the patient to maintain the weight that may lead to diabetes and other disease like hypertension ,joint pain , back pain ,etc.

The main outcome of this study was that identity does play a major part in the goal process. The results acquired through several statistical tests were largely consistent. The subsequent section provides a summary of the primary discoveries made during this study. The results of the study also have implications for the aim behaviors of health care delivery. A subset of study participants did not report collaborating with their healthcare provider while creating goals. While it is possible for people to create their own goals, working with a healthcare professional to do so can facilitate the process and probably produce better outcomes. Holding oneself responsible to another individual can boost drive and prevent obstacles. By addressing patient-reported impediments and encouraging patients to develop goals, healthcare Experts are able to increase goal self-efficacy.

7. Conclusion:

An assessment of Type 1 and Type 2 Diabetes among obese patients requiring insulin was carried out in hospitals in the Wardha district. The high percentage of patients utilizing insulin in the results suggests a significant prevalence of Type 1 Diabetes. Even though a large number of patients are aware of dietary requirements, further nutritional education is required. Lifestyle choices like smoking are widespread, emphasizing the importance of careful attention.

People's understanding of diabetic consequences, including blindness, varies, which emphasizes the need for improved patient education. Even while there is some awareness now, there is still room for development in several areas. Comprehensive programs providing lifestyle support, education, and monitoring should be given top priority by healthcare providers. We can reduce complications, improve patient quality of life, and improve diabetes control by filling in these gaps.

8. References:

1. Kaul K, Tarr JM, Ahmad S 1, Kohner' EM, Chibber' R. *INTRODUCTION TO DIABETES MELLITUS*.
2. Chang YC, Hee SW, Hsieh ML, Jeng YM, Chuang LM. The role of organelle stresses in diabetes mellitus and obesity: Implication for treatment. *Analytical Cellular Pathology*. 2015;2015. doi:10.1155/2015/972891
3. Amin N. An Overview of Diabetes Mellitus; Types, Complications, and Management. *International Journal of Nursing Science Practice and Research*. 2018;4:1. doi:10.13140/RG.2.2.16638.25924
4. Chang YC, Hee SW, Hsieh ML, Jeng YM, Chuang LM. The role of organelle stresses in diabetes mellitus and obesity: Implication for treatment. *Analytical Cellular Pathology*. 2015;2015. doi:10.1155/2015/972891
5. Al-Goblan AS, Al-Alfi MA, Khan MZ. Mechanism linking diabetes mellitus and obesity. *Diabetes, Metabolic Syndrome and Obesity*. 2014;7:587-591. doi:10.2147/DMSO.S67400
6. *Effect of Obesity on the Response to Insulin Therapy in Noninsulin-Dependent Diabetes Mellitus*.;1997. https://academic.oup.com/jcem/article/82/12/4037/2865978
7. Al-Goblan AS, Al-Alfi MA, Khan MZ. Mechanism linking diabetes mellitus and obesity. *Diabetes, Metabolic Syndrome and Obesity*. 2014;7:587-591. doi:10.2147/DMSO.S67400
8. *Effect of Sitagliptin on Obese Patients with Insulin Treatment-Induced Diabetes Mellitus*.
9. Klein S, Gastaldelli A, Yki-Järvinen H, Scherer PE. Why does obesity cause diabetes? *Cell Metab*. 2022;34(1):11-20. doi:10.1016/j.cmet.2021.12.012
10. Nahar N, Dubey S, Joshi A, Phadnis S, Sharma VK. *Association of Anthropometric Indices of Obesity with Diabetes, Hypertension and Dyslipidemia: A Study from Central India*.