ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF DIABETES AND ITS MEDICATION AMONG DIABETIC PATIENTS.

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Abstract: This study aimed at assessing patients' knowledge, attitude, and practice regarding diabetes and its medication among patients with diabetes and identifying factors that increase knowledge. Thorough interviews were conducted in various diabetes clinics and hospitals in Vadodara and Anand. Patients were provided with a questionnaire in both English and Gujarati. Utilizing the Chi Square Method, the collected data underwent thorough analysis. The findings revealed a commendable level of awareness among patients regarding the effects and proper usage of diabetes medication, along with a keen understanding of associated complications. Moreover, patients demonstrated a clear recognition of the significance of regular checkups and follow-ups for effectively managing their health. Despite these positive indicators, a notable disparity emerged between patients' perceptions and their actual practices. Specifically, many patients appeared to overlook essential aspects of diabetes management, such as adhering to scheduled eye examinations. This underscored the necessity of addressing barriers hindering patients from translating their knowledge and positive attitudes into consistent health practices. By targeting these obstacles, the potential exists for substantial enhancements in diabetes management outcomes, ultimately improving the overall well-being of affected individuals. Henceforth, there is a need for patient counseling during checkups and the dispensing of medicine.

Index Terms – Diabetes, Knowledge, Attitudes, Practices, Medication, Awareness, Side effects, Routine examinations, Monitoring, Health behaviors, Patient counseling

I. INTRODUCTION:

Global lifestyles have drastically changed as a result of urbanization, industrialization, along with demographic transition. As a result, diseases linked to lifestyle choices, such as diabetes mellitus, have become a significant public health issue. Chronic hyperglycemia is a hallmark of diabetes, which can be caused by a variety of hereditary and environmental factors working in combination. 10–16% of people in cities and 5.33–6.36% of people in rural areas are impacted.

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys and nerves. Type 1 diabetes, known as juvenile diabetes or insulin-dependent diabetes, is a chronic condition in which the pancreas produces little or no insulin by itself. The most prevalent kind, type 2 diabetes, usually affects adults and is brought on by insufficient or resistant insulin production in the body. Self-care in the form of adherence to diet and drug regimens, blood glucose monitoring, self-administration of insulin, maintenance of optimum weight, blood

pressure, recognition of symptoms associated with glycosuria and hypoglycemia etc. are crucial elements in secondary prevention.

The study aimed to enhance knowledge among diabetes patients by evaluating their understanding, attitudes, and practices related to diabetes and medication through interviews and questionnaires in Vadodara and Anand hospitals and clinics. Analysis revealed good awareness of medication side effects and proper use, alongside recognition of potential issues. However, many patients overlooked critical aspects like regular eye exams, highlighting the need to address barriers preventing patients from translating knowledge into consistent health behaviors. Counseling during medical consultations is crucial to improve diabetes care outcomes and overall health management.

II. RATIONALE

- As per the present situation, there are certain doubts, complication, lack of knowledge and understanding regarding Diabetes and its medication.

- To determine Patient's knowledge about the diseases and medication through a KAP questionary regarding Diabetes Disease information and Medication information.

- KAP: Knowledge, Attitude and Practice Questionary.

- This report contains the results of a survey to determine diabetes patient perception of the availability and adequacy of preventive and clinical care to control diabetes.

- To identify loopholes in the existing situation and suggest options for bridging the gap between healthcare patient.

III. REVIEW OF LITERATURE

Table 1: Review of Literature

Sr. No.	ARTICLES	PURPOSE (AIM)	OUTCOMES
1	Assessing the knowledge, attitudes and practice of type 2 diabetes among patients of Saurashtra region, Gujarat Viral shah , Nishit (1)Shah 2009 Jul-Aug;	The aim of the study was to assess the knowledge, attitude and practice of patients with type 2 DM in Saurashtra region.	A total of 238 (79.33%) patients out of 300 were included for final analysis. Out of these 238, 120 (50.42%) were males. 178 (74.78%) were Hindu by religion, 53 (22.26%) were Muslim. 192 (80.27%) cases were from urban area while 46 (19.32%) were from rural area. Age wise distributions of all patients were shown in Table 1. Mean age of patients was 55.82±10.2 years (95% CI 54.5-57.1) with mean weight of 64.52±10.96 Kg (95% CI 62.8-66.2). Mean duration of diabetes was 8.2±6.8 years (95% CI 7.2-9.1). Detail characteristics like occupation, family income and education, and their treating doctor are shown in Table 2.
2	Knowledge, attitude and practice (KAP) of general population of Vadodara towards	In today's era, lifestyle- related diseases such as diabetes mellitus have	We can conclude that the responders had good knowledge but poor attitude and practice towards diabetes. We can overcome this by increasing quality of health education and

	diabetes Sangita Rathod, Santosh Kumar, Gunvanti B. Rathod ,Pragnesh Parmar (2): 20-03-2018	become a significant public health concern. This common metabolic disorder leads to various complications, including vascular issues. This study aims to evaluate the baseline knowledge, attitude, and practices (KAP) regarding diabetes among the general population of Vadodara.	improving applicability of scope of health education at all level.
3	Knowledge attitude and practice (KAP) of diabetes in Mathura Uttar Pradesh - An observational study. Dr. Jyoti Goyal November - December, 2019	Objective of this study is determining the knowledge, attitude and practice regarding type 2 diabetes in diabetics as well as non-diabetic and also determine the knowledge versus practice gap among diabetics. There is almost no study of this kind from Uttar Pradesh region of India.	Knowledge of symptomatology of diabetes and requirement of self-monitoring of blood glucose at home was adequate among most of the study subjects and uniformly distributed among diabetics and Nondiabetics. More than 80% of diabetics were not aware about hypoglycemia symptoms and its treatment. Training of health care providers and large-scale education and awareness campaigns are the need of the hour for this region to further improve the knowledge and to improve self-care practices among all Diabetics.
4	KAP – Knowledge, Attitude, and Practice & Prevalence Study of Diabetes Mellitus among Morning Walkers in the City of Ahmedabad Roshani Chandrethia (3)	This present study is to know awareness of the diabetes risk factors & management among morning walkers of the city of Ahmedabad and to know the prevalence of diabetes cases among the general population of Ahmedabad.	Variables other than knowledge and attitude have a role in illness management. Poor self-management, a lack of desire, insufficient social support, or a lack of resources needed for sustained lifestyle adjustment behaviour are all potential explanations.
5	Diabetes-related knowledge, attitude and practices (KAP) of adult patients with type 2 diabetes mellitus in the Free State province, South Africa Corina walash 31 Dec 2019 (4)	To compile a demographic, anthropometric and knowledge, attitude and practices (KAP) profile of adult patients with T2DM in the public health sector of the Free State province, South Africa.	Poor knowledge, a negative attitude and poor practices related to diabetes were observed in a very high percentage of participants, which may contribute to morbidity and mortality. The fact that knowledge was associated with attitude indicates that interventions aimed at improving knowledge could benefit patients in more than one way. Interventions to equip patients to successfully manage their condition are urgently required.
6	Knowledge, attitude, and practices of insulin use among type 1 diabetes patients in North India – A cross-sectional study Manisha Gupta Shivendra Verma	The objective of the study was to assess knowledge, attitude, and practices (KAP) of insulin use and its effects in T1DM patients	There is an unmet need to enhance KAP domains of T1DM care and insulin administration, as the deficiencies in each domain are quite prevalent despite long term insulin use. Regular interactions with patients in the form of group meetings, patient to patient interaction and live demonstrations

			Saurabh Agarwal (5) 2021-06-16		may alleviate fear of injection, poor compliance and incorrect techniques.

7	Knowledge, Attitude and Practice about Diabetes among Diabetes Patients in Western Nepal Dinesh K Upadhyay, Subish Palaian, P, Ravi Shanka, Pranaya Mishra November 26, 2007	To study the demographic details of diabetes patients and their knowledge, attitude and practices (KAP) regarding diabetes in Nepal.	The KAP scores of the patients were low. This suggests the need for educational interventions to improve the knowledge, attitude and practices of the diabetes patients Altogether 182 patients were enrolled in the study. Among these, males were 103 (56.59%) and females were 79 (43.41%). The greatest number of patients were in the age group of 51-60 years [69 (37.91%)] followed by 61-70 years [40 (21.98%)], 41-50 years [31 (17.03%)] and 31-40 years [13 (7.14%)]. Twenty-five patients (13.74%) were above 70 years of age. The mean SD age of the patients was 56.9 12.55 years
8	Assessment of patients' knowledge, attitude and practice regarding diabetes mellitus in a tertiary care hospital in eastern India alak kumar das, debadrita ghosh, jinia ghosh. 25 october 2022	Proper assessment and understanding of knowledge, attitude, and practice (KAP) among diabetic population towards this disease are important as diabetes needs lifelong adoption of healthy lifestyles for prevention and control. We aimed to evaluate the knowledge, attitude, and practice of diabetic patients regarding their disease in a tertiary care centre	Present study reflects that diabetic patients require support and guidance for practicing better disease management. The role of a clinical pharmacist, as well as clinical activities such as patient counseling and pharmaceutical care program may aid in improving patients' KAP of diabetes management.
9	Knowledge, attitudes and practices of diabetes amongst diabetes patients at a primary health care centre in durban, south Africa akm monjurul hoque*, me hoque, sandhia singh, yugeshin chinnasamy and maariyah hoque (6)	Diabetes Mellitus (DM) is a significant public health issue in South Africa and worldwide, often poorly managed. Lifestyle modification is key for prevention and management, depending on the knowledge, attitude, and practices of both patients and the general population. This study aims to explore these aspects among DM patients.	The knowledge and practice levels of lifestyle modifications and control of type 2 diabetes mellitus patients attending Kwa Da beka Community Health Centre were generally poor. Nevertheless, majority of these patients have positive attitude toward healthy lifestyle habits which could potentially be harnessed and translated into healthy lifestyle practices. Health education intervention through Health Care Workers might improve the knowledge, attitudes and practices of the DM patients regarding DM.
10	Diabetes-related knowledge, attitude, and practice among outpatients of a tertiary hospital in north-western Nigeria uhammad, fakhraddeen	One of the challenges facing the management of diabetes is the misconception and inadequate knowledge about the disease. We assessed the level of diabetes-related	He study has demonstrated poor diabetes-related KAP among patients living with diabetes mellitus in a resource-limited setting. The study has also highlighted the significant role; a patient's level of education and income plays in the management of diabetes. The study has further emphasized that the poor KAP was associated with poor

	yahya; iliyasu, garba (7)	knowledge, attitude, and practice (KAP) among patients with diabetes in North-western Nigeria.	long-term glycemic control which could lead to the unfortunate outcome of diabetes regarding complications.
11	Knowledge, attitude and practice regarding type 2 diabetes mellitus among diabetic patients residing in an urban field practice area of Patil medical college, Vijayapura Tanuja. p. pattankar (8) 28th June, 2017	Type 2 diabetes mellitus is on the rise, especially in developing countries like India, where it's become a leading cause of illness and death worldwide. India, once unaffected, now faces a diabetes crisis with over 50 million cases, earning it the nickname "diabetes capital." Factors driving this surge include lifestyle shifts, urbanization, and westernization. Risk factors include age, gender, and family history.	Knowledge of diabetic patients was not up to the mark but attitude and practices were fairly good. Hence, the gap exists in knowledge, attitude and practice of type 2 diabetic patients. Public health Programs involving educational interventions and behavioural change has to be more actively indulged in urban slums to reduce the morbidity due to Type 2 DM and for proper management of the disease.
12	Knowledge, attitude and practice of diabetic patients. Zi Yang Lian	This cross1sectional study aims to assess the Knowledge, Attitude and Practices (KAP) towards DM and the association between the patients' KAP and control of DM among patients with type II DM (T2DM).	Factors beyond knowledge and attitude contribute to disease management. Plausible factors could be poor self1management, lack of motivation, inadequate social support or lack of resources that are necessary for sustained life style modification or behaviour change. A patient/self1empowerment approach to diabetes care may enhance the efficiency of DM prevention and control programs in countries that experience DM as a major public health problem.
13	Knowledge, Attitude and Practice of Diabetes Management among Patients with Type II Diabetes Mohamed Azmy Khafagy (9) February 2022	To assess KAP in adult patients with T2DM and correlate it with socio-demographic factors. And also, to evaluate different factors affecting KAP among the studied population that would help in the development of prevention programs in Egypt.	The overall level of KAP concerning diabetes is poor. Rural residence is associated with poor knowledge and poor practice, while obesity is associated with poor practice. Levels less than university education are associated with poor attitude. The present study suggests the need of structured educational campaigns with a prioritized focus on poorer, rural and less educated groups to prevent diabetes and its complications.
14	Knowledge and Attitude towards Risk Factors and Complications of Diabetes among Housekeeping Staff at a Tertiary Care Center in India Sushma H. Nayak, Saleena	This study aimed to assess the knowledge and attitude towards risk factors and complications of diabetes among housekeeping workers.	The findings revealed that the overall level of knowledge about diabetes among housekeeping staff is poor, but the overall attitude is positive. There was a weak correlation between knowledge and attitude scores. Coordinated educational initiatives focusing on lower socioeconomic background, rural, and less educated

	Ummer Velladath, Kalaivani Manokaran, Venilla Jaganathan, Anju Muraledharan 10		individuals are needed to avoid diabetes and its complications
15	Impact of medication therapy management on knowledge, attitude and practice among diabetic patients B.M. Athira M. Karthikeyan (11) June 2017	The objective of the study was to assess the impact of knowledge, attitude and practice on medication therapy management in diabetic patients in South Kerala, India. This study was designed exclusively to identify the pharmacist's role in patient care using the pharmacist-led MTM programme.	Overall, the study results revealed the importance of implementing a pharmaceutical care programme like MTM in diabetics and the potential positive impact it can have on the patient care. MTM is a core aspect of pharmaceutical care which should be definitely implemented in a country like India. From our study we conclude that, MTM process can significantly improve Knowledge, attitude and practice in diabetic patients. Small sample size and short duration are limitations of the study which were not adequate to implement and evaluate a programme like MTM. If MTM is adopted as a pharmaceutical care system within the hospital setting with proper follow up and documentation, it could definitely have immense impact on the profession of pharmacy, giving it an even greater place in the medical management of patients.
16	Knowledge, Attitude, and Practice of Diabetes Mellitus Fatemeh Mousavi Parisa Shojaei (12) July 27, 2021	This research aimed to estimate the knowledge, attitude, and practice (KAP) of the general public, because of diabetes mellitus	The results of this study showed that we need to increase the knowledge and attitude of patients with diabetes about a healthy lifestyle, including regular exercise, a healthy diet, and weight loss.
17	Knowledge, attitudes, and practices concerning diabetes Alharbi, Meshari Mubarak Almazyad, Mohammad Alatni, Basmah Alharbi, Bakr Alhadlaq, Abdulaziz (13) 2018/07/02	This study aimed to evaluate the knowledge, attitudes, and practices of fourth- and fifth-year medical students concerning patients with Diabetes.	In this study, > 50% of the participants had good DR knowledge, and their attitudes and practices were generally excellent. Moreover, the participants' age was a significant factor in terms of their practices concerning DR. Given knowledge levels were found to be poor for a good proportion of participants, more targeted education is required to improve their knowledge base in regard to DR. Medical faculties have a significant role in the education of medical students to ensure greater awareness of DR.
18	Determinants of knowledge, attitude and practice in patients with both type 2 diabetes Mohammed Alvis Zibran, (14) May 1. 2019	In Fiji, Type 2 diabetes mellitus (T2DM) and chronic kidney disease (CKD) are amongst the top four causes of premature mortality, disability and death. This study aims to identify the determinants of knowledge, attitude and practice (KAP) in T2DM patients with CKD in Fiji in 2018.	This research identified high-risk groups with low levels of knowledge, attitude, and practice (KAP). Targeted public health interventions can now be designed for these groups. The study's results can inform public-health policies, enabling the implementation of tailored strategies to improve KAP within these populations. Health promotion activities are crucial for enhancing KAP, and conducting interventional studies among at-risk groups can lead to significant improvements in health outcomes. Further research, including clustered randomized intervention trials, is needed to identify and test strategies for

		improving management and outcomes in high-risk patients.
19	An online knowledge-attitude-practice survey in the community about diabetes mellitus in India Raja Chakraverty, Kalyan Samanta.	To address the rising burden of Diabetes mellitus in India, it is crucial to understand the knowledge, attitude, and practices (KAP) of all relevant stakeholders. This survey aims to assess the KAP of the community regarding diabetes mellitus, focusing on the knowledge of laypersons, which has been lacking in Indian studies.	This study reveals that laypeople have appropriate knowledge and attitude regarding diabetes mellitus to some degree but there are important lacunae and practices are often found wanting. These issues need to be addressed in sustained public sensitization and motivational campaigns to improve the future and treatment outcomes of Diabetes mellitus in India.
20	Assessment of the level and associated factors with knowledge and practice of Diabetes Mellitus among Diabetic Patients attending at Felege Hiwot Hospital, Northwest Ethiopia Solomon Asnakew Feleke	A study at Felege Hiwot Hospital in Ethiopia surveyed 410 diabetic patients to gauge their knowledge and practices concerning diabetes mellitus. Results revealed that around half of the participants possessed good knowledge, and about 37% demonstrated good practices. Younger age correlated with better knowledge and practices.	Among the diabetes patients. Age, Educational status, duration of DM therapy and DM types were the factors associated with good knowledge of participants. Ages, Sex, educational status, marital status, monthly income, duration of DM therapy were the factors associated with good practice of participants
21	Assessment of Knowledge, Attitude and Practices of Diabetics Awais Mustafa Muhammad Akhtar Parvez (15)	To determine the frequency of diabetics taking care of their foot and its impact on foot health	Foot care knowledge and practice was significantly high among our study population. Many diabetics have basic knowledge regarding the diabetic foot ulcers. Media based education especially TV ads are the most effective means of educating diabetics regarding such risks and hazards.
22	Knowledge, Attitudes and Practice of Diabetes in Rural Bangladesh: The Bangladesh Population Based Diabetes. Ormsby, Gail (16) 2014-10-14	To assess the Knowledge, Attitudes and Practice (KAP) amongst the general community regarding type 2diabetes mellitus (DM) in rural Bangladesh.	Knowledge of diabetes and its risk factors is very limited in rural Bangladesh, even in persons diagnosed with type 2 DM. The development of public health programmes to increase knowledge of diabetes and its complications is required to assist people living in rural Bangladesh to control and management of diabetes.
23	A descriptive study of knowledge and attitude of diabetes mellitus and its management in rural population Yashaswini L S (17)	This study was taken up to assess the knowledge and attitude of people in Rural India towards dm.	Spreading knowledge regarding diabetes and its management in the form strict adherence to prescribed medications, diabetic diet, and regular physical activity will motivate individuals with diabetes to visit hospitals

	25-08-2021		regularly. This is an important step in preventing diabetes-related complications.
24	A Study on Assessment of Attitude and its Impact on Practice in Patients with Diabetes Mellitus Potha Amulya Redd (18)	This study explores how the attitudes of diabetes patients impact their management practices. DM, a metabolic disorder, is marked by high blood sugar levels and linked to various complications. Effective management, crucial for preventing complications, relies on patients' attitudes towards their condition.	The study directs the significant evidence on the role of pharmacists in providing Diabetes care, however the provision of such services remains inconsistent.
25	Knowledge and Practice Among Type 2 Diabetes Patients from a Village in Guntur District of Andhra Pradesh N. Samson Sanjeeva Rao (19) 02/09/2014	This cross-sectional study, conducted from January to June 2013, assessed knowledge and healthcare practices among Type 2 diabetes mellitus patients in a rural community in Andhra Pradesh. It included all known Type 2 DM patients visiting the NRI Medical College Rural Health Center in Peddaparimi village, within the Dept. of Community Medicine's field practice area.	Massive diabetes education programmes are needed in rural India. Doctors need to spend more time educating their DM patients on important issues like diet, alcohol use, complications of DM, role of exercise etc.
26	Knowledge, attitude, and practices with respect to disease surveillance among urban private practitioners in Pune, India Revati K. Phalkey Mareike Kroll (20) 01 Oct 2015	Participation of private practitioners in routine disease surveillance in India is minimal despite the fact that they account for over 70% of the primary healthcare provision. We aimed to investigate the knowledge, attitudes, and practices of private practitioners in the city of Pune toward disease surveillance. Our goal was to identify what barriers and facilitators determine their participation in current and future surveillance efforts.	In conclusion, there is unanimous agreement among the important stakeholders that urban disease surveillance needs strengthening and that private practitioners (including alternate medicine) should be well integrated in future systems. Although the current knowledge among the practitioners is inadequate, their overall positive attitude and willingness to cooperate is clearly evident. Efforts from the city/state authorities should be directed toward developing simplified reporting mechanisms (preferably electronic formats) while providing clear guidelines and reporting procedures. Organizing CMEs to strengthen practitioner knowledge and awarding CME points to those who report cases regularly appear as two pragmatic and feasible solutions and should therefore be piloted in the city.
27	Awareness of Chronic Complications of	Diabetes mellitus (DM) is a prevalent non-	Present study indicates that the rural population of Rewa district possesses a good

	Diabetes among Patients with Type 2 Diabetes in rural population of Rewa (MP) Dheerendra Kumar Mishra, Umesh Pratap Singh.	communicable disease affecting both affluent and non-affluent populations globally. This study focused on assessing the level of awareness regarding chronic complications of diabetes among patients with Type 2 Diabetes in the rural population of Rewa, Madhya Pradesh.	understanding of certain diabetic complications such as neuropathy, coronary artery disease (CAD), non-healing ulcers, kidney disease, and sexual dysfunction. However, their knowledge of other significant complications of diabetes is lacking. Therefore, it is crucial to initiate awareness campaigns about diabetes complications within the general population. These campaigns aim to encourage individuals to report any potential complications of diabetes to their physicians. By doing so, early identification of complications can be achieved, allowing for prompt management and treatment initiation. Such proactive measures are essential in promoting better health outcomes for individuals living with diabetes.
28	Awareness of Diabetic Patients towards Diabetes Mellitus: A Survey Based Study Anjali Singla Taruna Sharma Nidhi Kaeley 31-10-17	This study investigates awareness levels of Type 2 diabetes among patients and evaluates treatment adherence. With rising prevalence and associated health risks, understanding and adherence are crucial for effective prevention and control.	Diabetes mellitus poses a significant health and economic burden, especially in India where awareness among patients is generally low. A recent study revealed poor understanding of complications and self-care practices among many patients, impacting their ability to manage the condition effectively. To address this, awareness programs, patient counselling, and education emphasizing lifestyle changes are recommended.
29	Awareness of anti-diabetic treatment in type 2 diabetes mellitus patient attending tertiary care hospital Dr. Narayana Murthy, Dr. Satyanarayana N 24 Sept. 2017	To evaluate the level of awareness in type 2 diabetes mellitus patients regarding the disease, medications, management and its complications	The study revealed that the awareness is very poor among the uneducated in comparison with the educated patients and also in new patients (1 – 5 yrs.) in comparison to old patients (> 6 yrs.) about the disease, its complications. And also, about the drugs prescribed and the complications due to them. Most of the patients in our study also lacks in required lifestyle modifications to prevent the progression and complication of the disease.
30	Assessment of quality of life of type-2 diabetes mellitus patients in tertiary care teaching hospital in North India Dr. Aditya Parashar, 13 December 2019	This study examines the quality of life of type 2 diabetes patients using a specific instrument. Despite effective management options, poor disease control and treatment adherence can lead to life-threatening complications in diabetes mellitus, an endocrine disorder primarily characterized	QOL instrument for Indian diabetes patient's instrument helped to evaluate the patient's physical strength, psychological strength of the patient during disease condition, the response provided from the family members and relatives, the economic status of the patient and its effects on their living.

		by insufficient insulin secretion.	
31	Assessment of Knowledge, Attitude and Practices Regarding Life Style Modification among Type 2diabetic Mellitus Patients Attending Adama Hospital Medical College, Oromia Region, Ethiopia Abdulkadir Mustefa Dr. Thirumurugan G (21)	To assess knowledge, attitude and practice of Life Style Modification management of type 2 DM in Adama Medical College Hospital patients following diabetic clinic.	The discussion on the findings of this study shows that the knowledge and attitude levels of lifestyle modifications among type 2 diabetes mellitus patients attending Adama Medical College Hospital were generally high. However, practice of the patients regarding LSM still not sufficient as more than half of the patients had no good practices. The study also found out that there was significant positive correlation (r = 0.0184, p = 0.048) between knowledge and practice, very significant positive correlation (r = 0.517, p = 0.000) between attitude and practice and a weak nonsignificant correlation (r = 0.098, p = 0.293) between knowledge and attitude.
32	Validation of diabetes-related awareness instrument (DRAI) to measure diabetics awareness towards risk factors and prevention strategies. Pooja Kansra, Sumit Oberoi, Cherry Bhargava, Pardeep Kumar Sharma (22)	This paper aims to create and validate the Diabetes-Related Awareness Instrument (DRAI), a tool designed to gauge diabetic patients' awareness regarding risk factors and prevention strategies, crucial for effective healthcare management.	The study establishes the Diabetes-Related Awareness Instrument (DRAI) as reliable and valid for assessing diabetic patients' awareness regarding diabetes mellitus, its risk factors, and prevention strategies. With Cronbach's alpha values exceeding 0.70 for all constructs and favourable results from exploratory and confirmatory factor analyses, the instrument demonstrates strong psychometric properties.
33	Self-care Related Knowledge, Attitude, and Practice and Associated Factors Among Patients with Type 2 Diabetes in JMC, Ethiopia yimer Mekonnen (23) 05 Feb 2021	To assess the knowledge, attitude and practice towards diabetes self-care with the associated factors among patients with type 2 diabetes mellitus (T2DM) in Jimma Medical Center, Ethiopia.	The findings of this study showed that the level of knowledge, attitude and practice toward diabetes self-care among T2DM patients were found to be optimal. Factors associated with good knowledge of diabetes self-care were living in urban and attaining tertiary education level. Earning higher monthly income and presence of other comorbidities were associated with positive attitude toward diabetes self-care. Being male was associated with good self-care practice. This study identified the existence of knowledge level difference between urban and rural residents. It also indicated self-care practice difference between male and female patients. Clinicians should pay great attention for these affected groups in order to empower them to diabetes self-care.
34	A Study to Assess Knowledge, Attitude and Self Care Practices Regarding Type - 2 Diabetes Mellitus among the Patients (Type - 2 Dm) in Selected Hospitals of Guwahati, Assam with	The objectives are: 1. Assess knowledge, attitude, and self-care practices in Type 2 Diabetes Mellitus patients. 2. Identify correlations between knowledge and attitude.	The conclusion drawn based on the findings of the present study which showed that majority of the Type 2 Diabetes Mellitus patients had moderately adequate knowledge, average attitude and average selfcare practices regarding Type - 2 Diabetes Mellitus. Thus, it can be inferred that due to lack of adequate knowledge on Type - 2 Diabetes Mellitus the patients had average

	a View to Prepare an Information Booklet Pampi Kakati, Dr. Bibi Bordoloi, Juri Phukan	3. Identify correlations between knowledge and self-care practices. 4. Identify correlations between attitude and self-care practices in Type 2 Diabetes Mellitus patients.	attitude which ultimately affected the selfcare practices regarding Type - 2 Diabetes Mellitus. The study findings also revealed that significant moderately positive correlation was found between knowledge and attitude; knowledge and selfcare practices; attitude and self-care practices among the patients with Type - 2 Diabetes Mellitus. It can be inferred that adequate knowledge leads to good attitude among the patients with Type - 2 Diabetes Mellitus.
35	Knowledge, attitude, and practice on insulin administration among diabetic patients and their caregivers, Cross-sectional study Anu Sunny (24) October–December 2021	To assess the knowledge, attitude, and practice (KAP) on insulin administration among diabetic patients and their caregivers.	The patients average age was 55.74 years. The results showed that the mean KAP score was 65.05, which is less and most of the patients had not controlled their glycaemic levels. Effective education regarding insulin administration and glycaemic control improves the KAP among patients or caregivers.
36	Knowledge, attitude and practice of self-care among diabetic patients at Jimma University Medical Centre Diabetic Clinic, Jimma, Oromia region, South West Ethiopia: A survey study Vinod V. Bagilkar (25) Nov dec 2020	A study was conducted at Jimma University Medical Centre in Oromia region of southwest Ethiopia from March to May 2019 to assess the knowledge, attitude, and practice of self-care among diabetic patients. The study included all diabetic patients attending the clinic during the data collection-period. Convenient sampling used, and information gathered through face-to-face interviews.	The commonest age group affected by diabetes mellitus was the age group 50-59 years which indicates most of them are type II DM patients. Significant number of patients learns about diabetic diet. There is gap between diabetic patients who know about diabetic diet and who eat diabetic diet. Most of the patients carry insulin in buried pot with water in any container. Significant number of patient's participation to exercise was generally poor. Regarding patients' attitude, there is favourable (positive) attitude especially on that of diet and exercise.
37	Knowledge, Attitude and Practice Regarding Ramadan Fasting and Related Determinants in Patients with Type 2 Diabetes at a Saudi Diabetes Clinic Ahmed Abdulrahman Alsunni (26) 22 Mar 2023.	This study was carried out in type 2 diabetes mellitus (T2DM) patients to assess their knowledge, attitude and practice about fasting during Ramadan and to identify the sociodemographic determinants of the knowledge, attitude and practice.	We conclude that male gender, positive family history of diabetes and education more than secondary school are determinants of knowledge, attitude and practice regarding fasting during Ramadan in the T2DM patients. We found a significant knowledge practice gap that needs attention. We recommend further strengthening of the Pre-Ramadan education programs by making them more inclusive especially for female patients, the less educated and those with a negative family history of diabetes.
38	Knowledge, Attitude and Practice Towards Insulin-Self Administration Among Diabetic Patients	The study aimed to assess knowledge, attitude, and practice towards insulin self-administration among	While the patients had good knowledge, good practice, and a favourable attitude to insulin self-administration, it does not match sufficient thus, to achieve a maximum level the hospital should develop several strategies

	Attending Bedele Hospital, Southwest Ethiopia, 2019/2020 Melese Workneh Fego Gezahegn Mamo Aga 28 Sep 2022	diabetic patients at Bedele Hospital in southwest Ethiopia.	like constant information education communication.
39	Knowledge, attitude, and practice of patients with diabetes towards diabetic nephropathy, neuropathy and retinopathy Dia, Akilil (27) March 2022.	This study aims to assess KAP regarding diabetic microvascular complications, including prevalence, health-seeking behavior, and sources of information.	Awareness campaigns should be tailored accordingly to retard the microvascular complications.
40	Awareness of diabetic retinopathy among diabetes mellitus patients visiting a hospital of North India Tripathi, Alka Agarwal, Richa (28) April 2022	To assess the awareness of diabetic retinopathy among diabetic mellitus patients visiting a hospital in North India.	Most of the participants were aware of DR but there existed major deficits in the knowledge and behaviour of diabetic patients toward management of DR. There is a need to create awareness about DR and emphasize the importance of retinal screening to reduce visual disability caused by diabetes.
41	Knowledge, Attitude, and Practices (KAP) of Diabetics Towards Diabetes and Diabetic Retinopathy in Riyadh, Saudi Arabia: Cross-Sectional Study Abdulrahman Al-Yahya, Alwaleed, Abdulrahman Almizel and Barri ORCID Icon & Fadwa Al Adel (29) 21 Nov 2022	This study in Riyadh, Saudi Arabia, aimed to assess the knowledge, attitude, and practices (KAP) of diabetic patients regarding diabetes and diabetic retinopathy, recognizing the importance of early detection and intervention in managing this prevalent disease and its complications.	It is important to improve education and awareness of DM and diabetic retinopathy among diabetics, as it's essential for controlling the disease and reducing its complications, by improving patient compliance to treatment and follow-up.
42	Knowledge, attitude, and practice of type 2 diabetic patients toward Diabetes Miletus and its cardiovascular complications in Alahsa Eman El Sheikh Zainab Mohammed Al-Omran (30)	Diabetes mellitus (DM) is a progressive metabolic disorder with a close association with cardiovascular disease (CVD). CVD is considered the most prevalent cause of mortality and morbidity in diabetic populations. This study aims to determine the knowledge, attitude, and practice of type 2 diabetic patients toward cardiovascular complications of DM in Alahsa, Saudi Arabia.	In conclusion, the complications of DM considered as major health problem among diabetic patients. In our current study, more than half of the participants had good knowledge regarding DM and its complications. Age, gender, educational level, and family history of DM were significant predictors of awareness about complications of DM. However, because incidence and prevalence rates of diabetes in Saudi Arabia are increased, further more attention and awareness are needed. The emphasis is on prevention of complications of DM, and awareness about recognizing the early symptoms of DM complications, it is important in order to help us in early identification of diabetic complications.
43	Knowledge towards diabetes and its	This study at the University of Gondar	This study has demonstrated a higher level of awareness regarding diabetes and its chronic

	chronic complications and associated factors among diabetes patients in University of Gondar comprehensive and specialized hospital, Gondar, Northwest Ethiopia Meaza	Comprehensive Specialized Hospital in Ethiopia aimed to evaluate diabetic patients' understanding of diabetes mellitus and its chronic complications, emphasizing on diabetes-related health issues.	complications. Age, educational status, duration since diabetes diagnosis, and occupational status have a significant association with the patient's awareness of chronic complications of diabetes.
44	Knowledge, Attitude and Practice of Patients with Gestational Diabetes Mellitus Regarding Gestational Diabetes Mellitus: A Cross-Sectional Study Jie Tan (31) Lumeng 25 Sep 2023	Self-monitoring of blood glucose levels and changes in diet and lifestyle play important roles in the management of gestational diabetes mellitus (GDM).	In conclusion, results of this study provide important insights into the knowledge, attitudes and practices of women with GDM in China regarding GDM and its management. We anticipate that these findings and those of other surveysCitation14, Citation15, Citation35 will facilitate the development and implementation of education and training programs to improve the self-management of GDM by women in China.
45	Diabetic foot wound care practices among patients visiting a tertiary care hospital in north India Samreen Khan Anurag Srivastava Khushboo Juneja Reena Rani (32) 2016-09-30	The present study was carried out to assess knowledge, attitude and practices of Diabetic Foot Wound Care among the patients suffering from Diabetic Foot and to correlate them with the socio-demographic	The results highlight areas especially Health education, use of safe footwear and life style adjustments, where efforts to improve knowledge and practice may contribute to the prevention of development of Foot ulcers and amputation.
46	Knowledge, attitude and practice regarding eye complications and care among Omani persons with diabetes - A cross sectional study Khandekar, Harthy, Harith (33) May Aug 2010	We present the level of knowledge, Attitude and Practice (KAP) among diabetic patients regarding eye complications and their care.	Knowledge about eye complications and care is satisfactory among persons with diabetes. However, levels of attitude and practice were less than desired and should be improved. This could strengthen program approach for early detection and care of eye complications of diabetes in Oman.
47	Knowledge, Attitude, and Awareness among Diabetic Patients in Davangere about the Association between Diabetes and Periodontal Disease riveni avinkote 5; Mehta, Dhoom Singh (34)	This study aims to assess the awareness, attitude, and practices of diabetic patients in Davangere city regarding their periodontal health. Understanding this association can lead to public health campaigns and lifestyle modifications to prevent complications.	Association of DM and periodontal disease must be made aware to the general public and as well as also to the medical fraternity, who in turn can guide and motivate the patient for better diabetic control by maintaining good oral health. More dental health campaigns and awareness programs need to be conducted in India.
48	Pharmacist led intervention towards management of type 2	Diabetes mellitus, marked by high blood sugar due to insulin	The study concluded that group A which received a conventional therapy along with pharmacist education showed a better

| diabetes mellitus and assessment of patient satisfaction of care - A prospective, randomized controlled study Kiran Kumar Rathinam Paulin C. Varughese September–(35) October 2021. | issues, is managed by drugs, but adherence is crucial for controlling glucose levels. A comprehensive approach is needed for better patient outcomes. | advancement in health and played a key role in maintaining the patient's HbA1C levels within the normal range of (4.5–6%) which proves the efficacy in pharmacist Interventions. This supports the role of pharmacist in providing a range of extended diabetes care services and hence this study revealed the importance of pharmacist role in providing the holistic care. |

IV. METHODOLOGY

Questionnaire: An offline KAP Questionaries was prepared. It was in 2 languages: English and Gujarati henceforth making it feasible to all. Hospitals and Diabetic Clinics of Vadodara and Anand were visited for the survey. The Questionnaire comprised of a total 22 Questions. It is mainly divided in two sections:

1. Information regarding Diabetes
In case of information regarding the disease it is further divided in two sections:
A. Knowledge Based (5 Questions)
B. Attitude Based (4 Questions)

2. Information regarding Diabetes Medication.
In case of information regarding Diabetes Medication it is further divided into 3 sections:
A. Knowledge Based (4 Questions),
B. Attitude Based (4 Questions) and
C. Practice Based (5 Questions).

Responses were obtained in YES and NO format.

Sample Size Calculation: The Sample size / Number of participants (Diabetic Patient) was calculated using Sample size calculator:

$$\text{Necessary Sample Size} = (Z\text{-score})2 * \text{StdDev}*(1\text{-StdDev}) / (\text{margin of error})2$$

Here,
- **Necessary Sample Size:** Minimum data points needed for accurate estimates.
- **Z-score:** Higher = More confident, Needs more data.
- **StdDev:** Higher variability = Needs more data.
- **(1-StdDev):** Adjusts for uncertainty in estimating StdDev.
- **Margin of Error:** Smaller error = Needs more data.
- Formula balances precision (Z & Margin) with population variability (StdDev).

$$\text{Sample Size} = (1.96)^2 \text{ x } 0.5 \text{ x } 0.5 / (0.05)^2 = 384$$

- **Approx. 420 Patients selected so that in case of error the sample size determined remains stable!**

The Participants enrolled in the study meet the following criteria: A total of **420 participants (Diabetic Patients)** agreed to take part in this survey. Each participant that meets the inclusion criteria was given an explanation of the purpose and importance of study. Interviews took place during the afternoon and evening hours so as to maximize availability of the diabetic patients. Prior to the form filling consent of the patient was taken, after that patient's personal information was to be filled like Full name with just initials, Age and Gender by taking care of confidentiality. After this the patient was asked to fill the form just by tick marking in the Yes or No box next to the Questions.

Data (Response) obtained from this study was then transferred and analysed using Microsoft Excel 2021. The response answers regarding the Knowledge and Attitude towards Diabetes and Knowledge, Attitude and Practice towards its medication was reviewed and categorized into different outcomes. Categorized data was further analysed using the Chi square tests. The level of significance used for the statistical analysis was P < 0.05.

Chi Square Test:

Dependent Variables: Knowledge and Attitude towards Diabetes and Knowledge, Attitude and Practice towards its medication.

Independent variable: name, age and gender.

Pearson chi-square (X2) was used to determine association between people's characteristics such as name, age, gender, Knowledge and Attitude towards DIABETES and Knowledge, Attitude and Practice towards its medication. The level of significance used for the statistical analysis was P < 0.05.

$$X^2 = \sum \frac{(\text{Observed value} - \text{Expected value})^2}{\text{Expected value}}$$
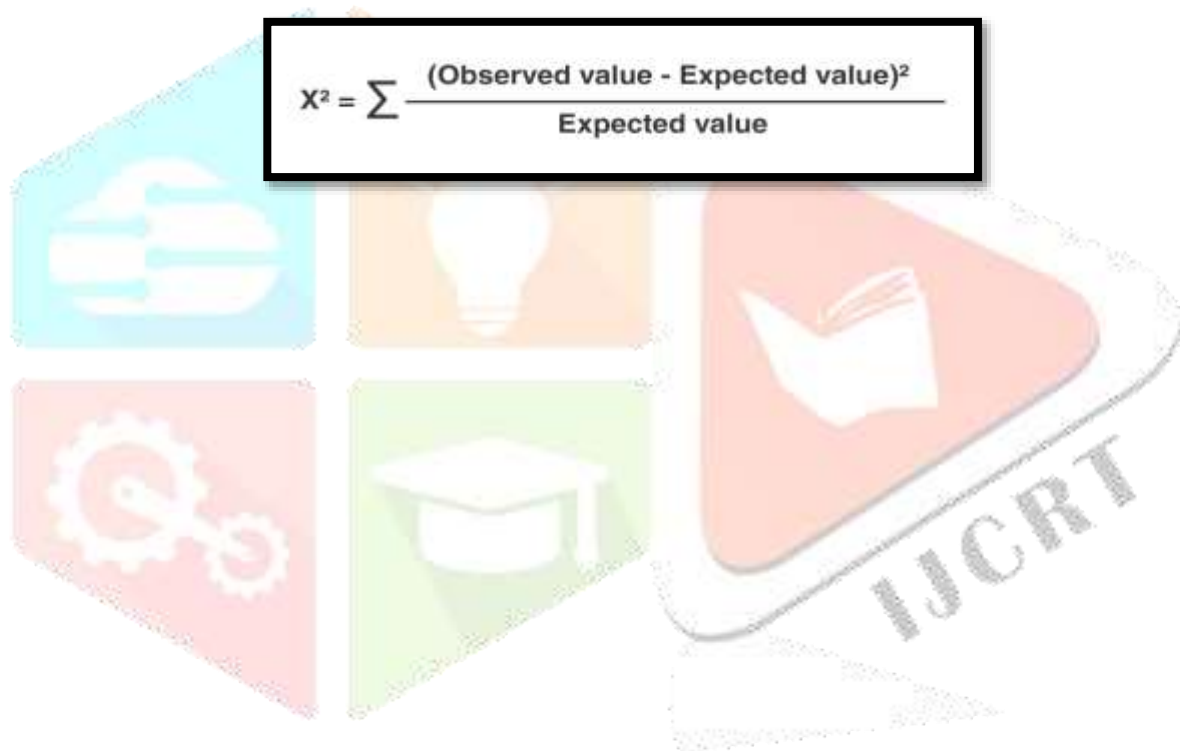
V. KAP QUESTIONNAIRE:

ANAND PHARMACY COLLEGE

Assessment of Knowledge, Attitude and Practice of Diabetes and its Medication

Disclaimer: I have read and understood the information provided, and have had the opportunity to ask questions. I realize that my involvement is completely voluntary, and am free to leave at any time, for any reason, and at no expense.

(સ્વીકૃતિ: મેં આપેલી માહિતી વાંચી અને સમજી લીધી છે અને મને પ્રશ્નો પૂછવાની તક મળી છે. મને ખ્યાલ છે કે મારી સંડોવણી સંપૂર્ણપણે સ્વૈચ્છિક છે, અને કોઇપણ સમયે, કોઇપણ કારણસર, અને કોઇપણ ખર્ચ વિના છોડવા માટે સ્વતંત્ર છું.)

Patient's SIGN: _____

NAME: _____   AGE: _____   GENDER: _____

DISEASES RELATED QUESTIONNAIRES

KNOWLEDGE-BASED (This section contains Questions to determine the patient's knowledge about Diabetes)	YES	NO
Diabetes is a condition in which blood contains a high amount of glucose? ડાયાબિટીસ એવી સ્થિતિ છે જેમાં લોહીમાં ગ્લુકોઝનું પ્રમાણ વધુ હોય છે?	☐	☐
Do you know which signs and symptoms are observed in Diabetes? શું તમે જાણો છો કે ડાયાબિટીસમાં કયા ચિહ્નો અને લક્ષણો જોવા મળે છે?	☐	☐
Is it necessary for a diabetes patient to have his/her eyes checked yearly? શું ડાયાબિટીસના દર્દીએ દર વર્ષે તેની આંખોની તપાસ કરાવવી જરૂરી છે?	☐	☐
Do you know, if Diabetes is not treated will cause heart disease? શું તમે જાણો છો, જો ડાયાબિટીસની સારવાર ન કરવામાં આવે તો હૃદય રોગ થશે?	☐	☐
Is the major cause of Diabetes Heredity and Obesity? શું સ્થૂળતા અને વારસાગત પરિબળો ડાયાબિટીસના મુખ્ય કારણો છે?	☐	☐

ATTITUDE-BASED (This Section contains Question which determine Patient's attitude towards Diabetes)	YES	NO
Do you exercise regularly? શું તમે નિયમિત કસરત કરો છો?	☐	☐
Are you following a controlled and Planned diet? શું તમે નિયંત્રિત અને આયોજિત આહારનું પાલન કરો છો?	☐	☐
Do you think you should undergo regular checkups with your physician for Diabetes? શું તમને લાગે છે કે તમારે ડાયાબિટીસ માટે તમારા ચિકિત્સક પાસે નિયમિત તપાસ કરાવવી જોઇએ?	☐	☐
Have you properly understood your disease? શું તમે તમારી બીમારીને બરાબર સમજ્યા છો?	☐	☐

MEDICATIONS RELATED QUESTIONNAIRES

	YES	NO
KNOWLEDGE-BASED (This section contains questions to determine the Patient's knowledge regarding Diabetes Medications)		
Do you know which medication you are taking for Diabetes? શું તમે જાણો છો કે તમે ડાયાબિટીસ માટે કઇ દવા લઇ રહ્યા છો?	☐	☐
Do you know what your diabetes treatment includes? શું તમે જાણો છો કે તમારી ડાયાબિટીસની સારવારમાં શું સમાવેશ થાય છે?	☐	☐
Do you know when and how to take your Diabetes medicines? શું તમે જાણો છો કે તમારી ડાયાબિટીસની દવાઓ ક્યારે અને કેવી રીતે લેવી?	☐	☐
Do you take any other medicine for diabetes apart from your regular medicines? શું તમે તમારી નિયમિત દવાઓ સિવાય ડાયાબિટીસ માટે બીજી કોઇ દવા લો છો?	☐	☐

	YES	NO
ATTITUDE-BASED (This section contains questions to know the patient's Attitude towards his/her diabetes medication)		
Are you aware that your blood sugar level drops back to normal after taking your diabetes medication? શું તમે જાણો છો કે તમારી ડાયાબિટીસની દવા લીધા પછી તમારું બ્લડ સુગર લેવલ સામાન્ય થઇ જાય છે?	☐	☐
Do you think missing a dose of your diabetic medicine will have a negative impact on your body? શું તમને લાગે છે કે તમારી ડાયાબિટીસની દવા ની ડોઝ ચૂકી જવાથી તમારા શરીર પર નકારાત્મક અસર પડશે?	☐	☐
Do you undergo regular follow-ups as per schedule? શું તમે શેડ્યૂલ મુજબ નિયમિત ફોલો-અપ કરો છો?	☐	☐
Do you consume any other system of medicine other than the prescribed allopathy for Diabetes? શું તમે ડાયાબિટીસ માટે સૂચવેલ એલોપેથી સિવાયની અન્ય કોઇ પદ્ધતિની દવાનું સેવન કરો છો?	☐	☐

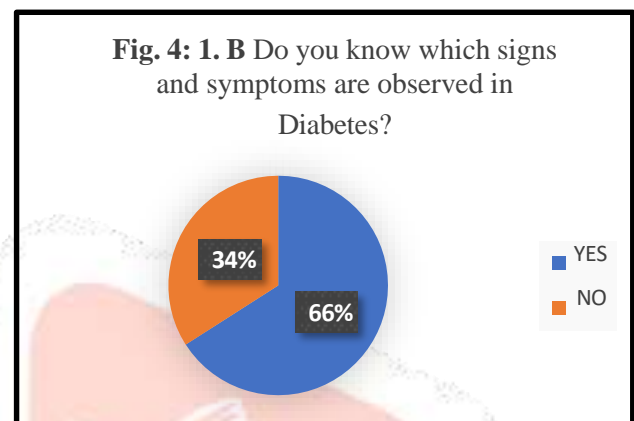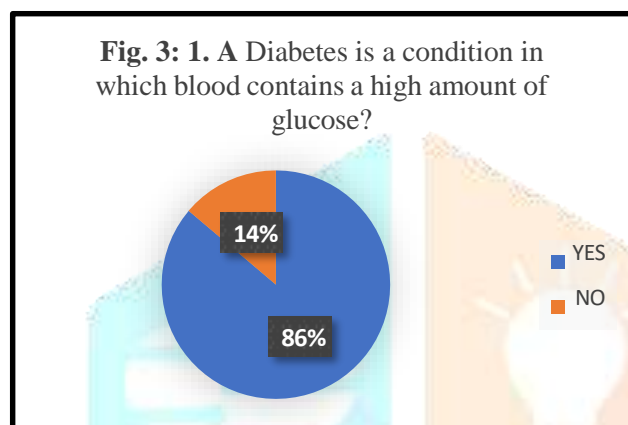|	YES	NO
PRACTICE-BASED		
Was your blood sugar level checked at your last visit to the physician? શું તમારી ચિકિત્સકની છેલ્લી મુલાકાત વખતે તમારું બ્લડ સુગર લેવલ તપાસવામાં આવ્યું હતું?	☐	☐
Do you regularly refill your prescription? શું તમે તમારા પ્રિસ્ક્રિપ્શનને નિયમિતપણે રિફિલ કરો છો?	☐	☐
Did you visit your physician as per the scheduled time? શું તમે નિર્ધારિત સમય મુજબ તમારા ચિકિત્સકની મુલાકાત લીધી હતી?	☐	☐
Was your Blood Pressure checked at your last visit to the physician? શું ડૉક્ટરની તમારી છેલ્લી મુલાકાત વખતે તમારું બ્લડ પ્રેશર ચેક કરવામાં આવ્યું હતું?	☐	☐
Was your eye checkup done recently? શું તમારી આંખની તપાસ તાજેતરમાં કરવામાં આવી હતી?	☐	☐

Investigator's Sign: _____
(With Name)

VI. RESULT:

A survey regarding assessing patients' knowledge, attitude and practice regarding Diabetes and its Medication among patients with Diabetes and to identify factors that increases knowledge.

A total of 420 patients participated in the survey in offline mode. From these we
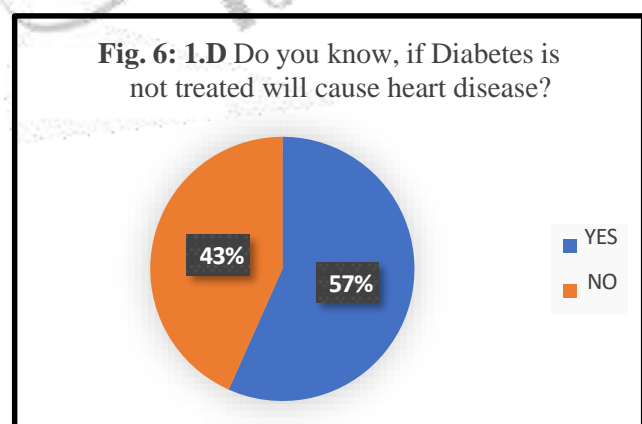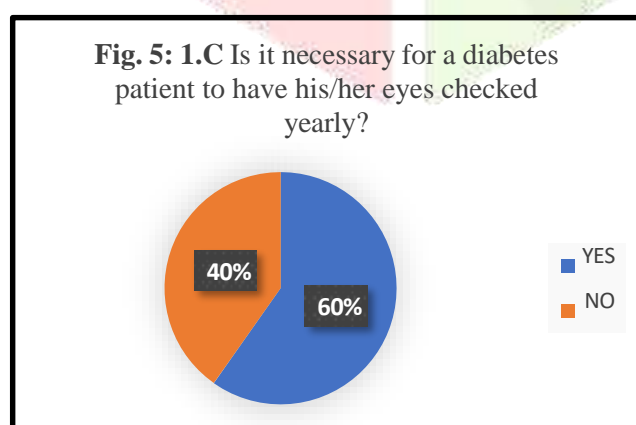found the following criteria as shown in the table.
The data obtained from the survey is shown below by different graphs:

Graphs like: Pie chat and Bar graphs.

GRAPHS

Q.1 Assessment of Knowledge Related Questions about Diabetes.

Fig. 3: 1. A Diabetes is a condition in which blood contains a high amount of glucose?

Fig. 4: 1. B Do you know which signs and symptoms are observed in Diabetes?

1.A The majority of patients (86%) were aware that diabetes is characterized by high levels of sugar in the blood. However, a small portion (14%) did not have this understanding.

1.B From the responses of the 420 patients, it was found that a majority, 66%, were aware of the signs and symptoms of diabetes, while a significant minority, 34%, were not familiar with them.

Fig. 5: 1.C Is it necessary for a diabetes patient to have his/her eyes checked yearly?

Fig. 6: 1.D Do you know, if Diabetes is not treated will cause heart disease?

1.C Based on the answers of the 420 individuals, it was clear that 60% believed it was necessary for diabetic patients to have their eyes checked early, while 40% did not share this belief.

1.D Drawing from the feedback of the 420 respondents, it might be stated that 57% held the belief that untreated diabetes could lead to heart disease, whereas 43% did not hold this belief.

Fig. 7: 1.E Is the major cause of Diabetes Heredity and Obesity?
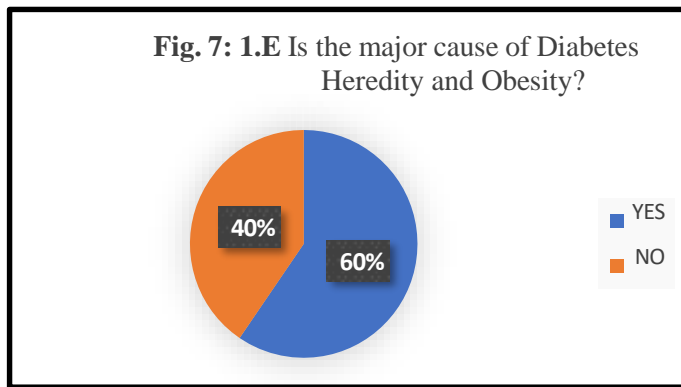
1.E Considering the input provided by the 420 participants, it could be inferred that 60% held the view that hereditary factors and obesity were significant contributors to diabetes, while 40% did not hold this perspective.

KNOWLEDGE BASED (This section contains questions to determine patients' knowledge about Diabetes)

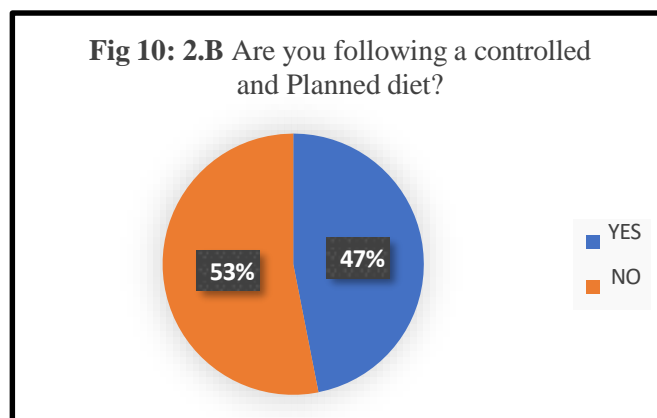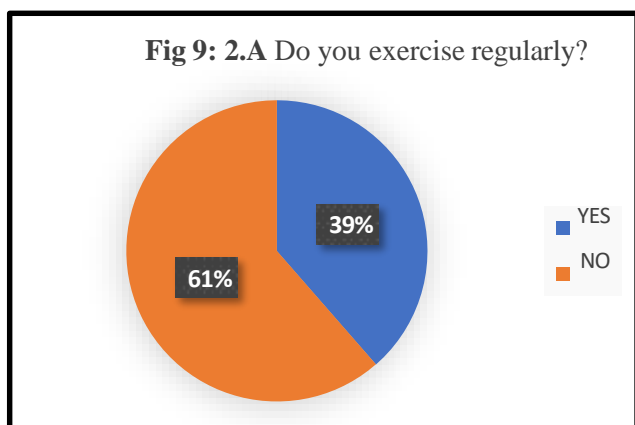**Table 2.A** Statistical Analysis of Knowledge Based data on Diabetes

Sr. No.	QUESTION	YES	NO
Q.1 A	Diabetes is a condition in which blood contains a high amount of Glucose?	362	58
Q.1 B	Do you know which signs and symptoms are observed in Diabetes?	277	143
Q.1 C	Is it necessary for Diabetes Patient to have his/her eyes checked yearly?	251	169
Q.1 D	Do you know, if diabetes is not treated will cause heart disease?	238	182
Q.1 E	Is the major cause of Diabetes Heredity and Obesity?	250	170

❖**KNOWLEDGE OF STUDY PARTICIPANTS TOWARDS DISEASE:**

Fig 8: KNOWLEDGE ABOUT DIABETES
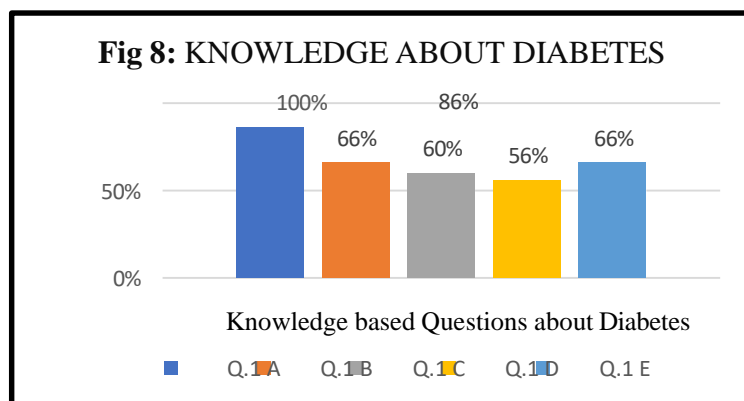
Of the 420 patients, 86% understood diabetes as a condition with high blood glucose, 66% were aware of its signs and symptoms, 60% know about the importance of eye check-ups, 56% acknowledge the risk of heart disease if untreated, and 66% recognize heredity and obesity as major causes.

Q.2 Assessment of Attitude related Questions about Diabetes.

Fig 9: 2.A Do you exercise regularly?

Fig 10: 2.B Are you following a controlled and Planned diet?

2.A Reflecting on the responses from the 420 people, it was inferred that most, 61%, were not involved in regular exercise, while 39% did participate in physical activity consistently.

2.B Taking into account the opinions of the 420 individuals, it can be interpreted that a slight majority, 53%, reported not following a controlled and planned diet, while 47% indicated that they were.

Fig 11: 2.C Do you think you should undergo regular checkups with your physician for Diabetes?

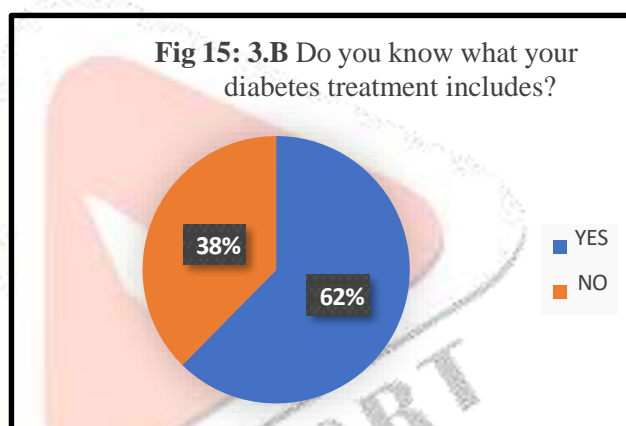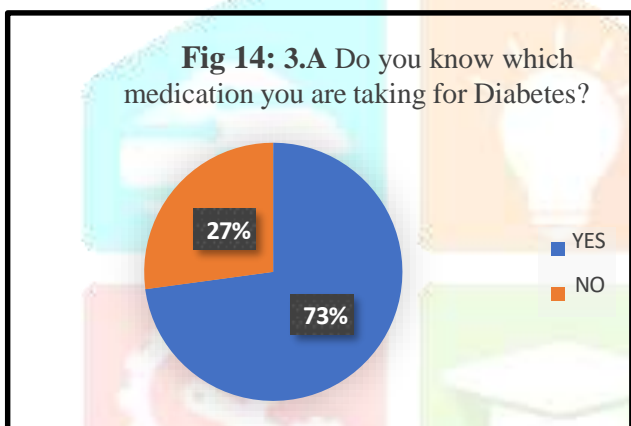Fig 12: 2.D Have you properly understood your disease?
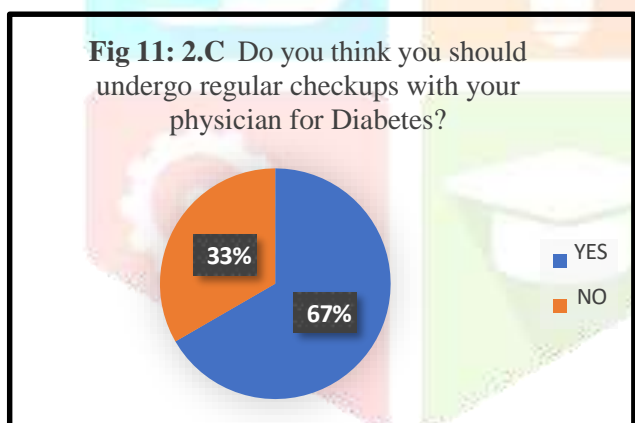
2.C From the responses of the 420 patients, it could be interpreted that the majority, 67%, believed they should undergo regular checkups with their physician for diabetes, while 33% did not share this belief.

2.D Evaluating the viewpoints expressed by the 420 respondents, it seems that 62% felt they understood their disease well, while 38% weren't so sure about their understanding.

ATTITUDE BASED (This section contains question to determine patients' attitude about Diabetes)

Table 2.B Statistical Analysis of Attitude Based data on Diabetes

Q.2 A	Do you exercise regularly?	162	258
Q.2 B	Are you following a controlled and planned diet?	197	223
Q.2 C	Do you think you should undergo regular checkup with your physician for Diabetes	280	140
Q.2 D	Have you Properly understood your disease?	260	160

❖ **Attitude of study participants towards Diseases**

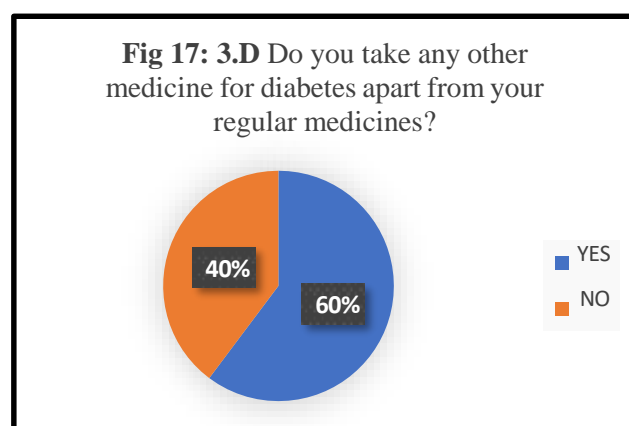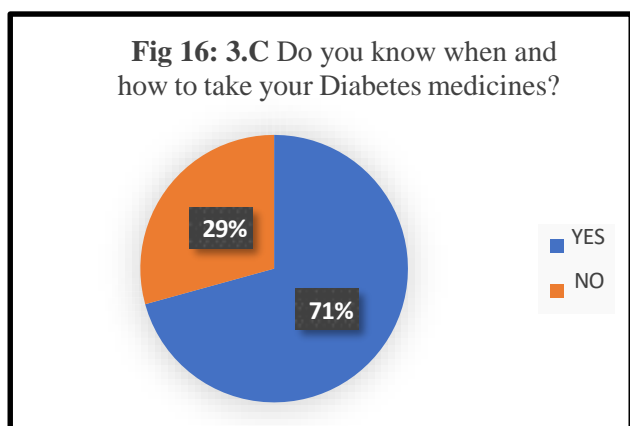**Fig 13:** ATTITUDE ABOUT DIABETES
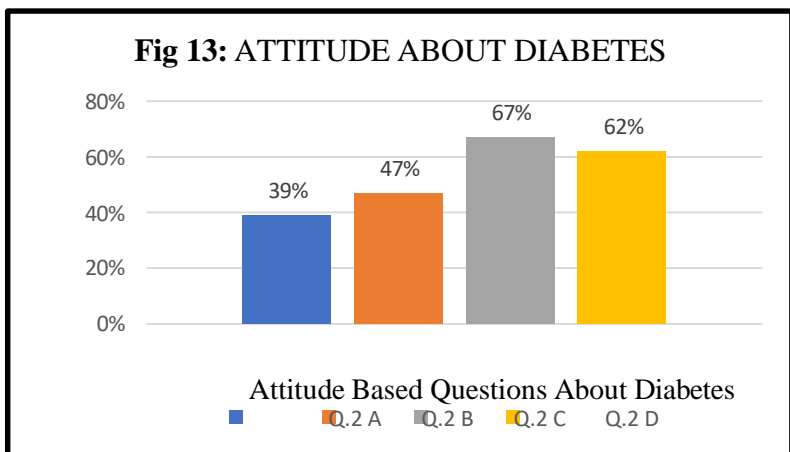
Out of 420 participants, 73% have knowledge about diabetes medication, 62% understand its treatment, 71% know when and how to take the medicines and 60% consume other medicines apart from their regular diabetes medication

Q.3 Assessment of Knowledge related Questions about Diabetes Medication

Fig 14: 3.A Do you know which medication you are taking for Diabetes?

Fig 15: 3.B Do you know what your diabetes treatment includes?

3.A 73% of the 420 diabetic patients were aware of the medicines they were taking for diabetes, while 27% were not familiar with their diabetes medications.

3.B 62% of the 420 diabetic patients knew the components of their diabetes treatment, while 38% were unaware.

Fig 16: 3.C Do you know when and how to take your Diabetes medicines?

Fig 17: 3.D Do you take any other medicine for diabetes apart from your regular medicines?

3.C 71% of the 420 diabetic patients knew when and how to take their diabetes medicine, while 29% did not.

3.D From the responses of the 420 diabetic patients, it appeared that 60% took additional medicine for diabetes beyond their regular medications, while 40% did not.

KNOWLEDGE BASED (This section contains questions to determine patients' knowledge about Diabetes Medication)

Table 2.C Statistical Analysis of Knowledge Based data on Diabetes Medication
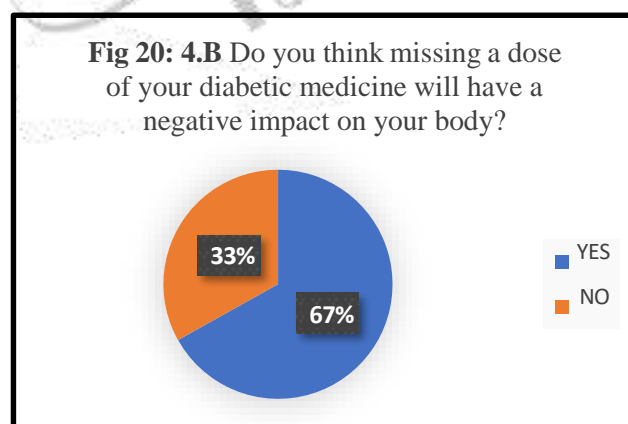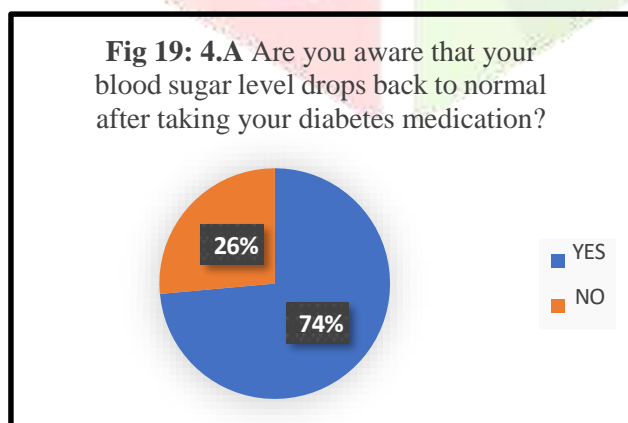
Q.3 A	Do you know which medications you are taking for Diabetes?	306	114
Q.3 B	Do you know what your Diabetes treatment includes?	262	158
Q.3 C	Do you know when and how to take your Diabetes Medications?	297	123
Q.3 D	Do you take any other medicines for Diabetes apart from your regular medicines?	253	167

❖ **Knowledge of study participants towards its Medication:**
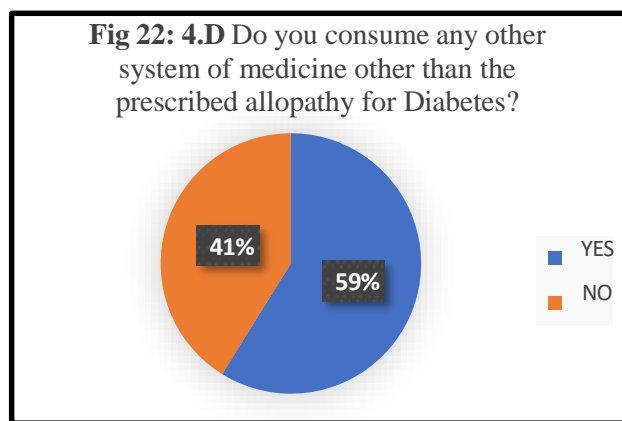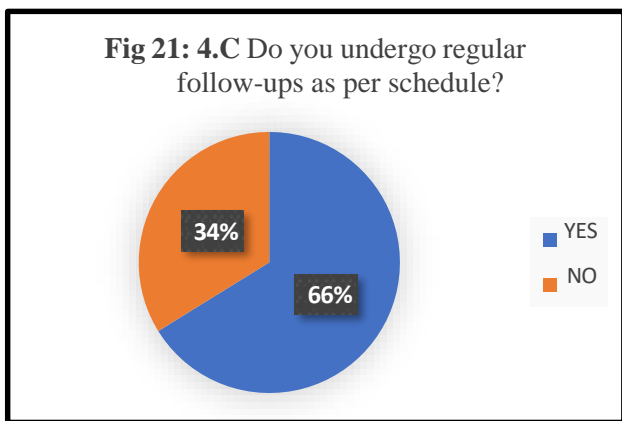

Fig 18: KNOWLEDGE ABOUT DIABETES MEDICATION
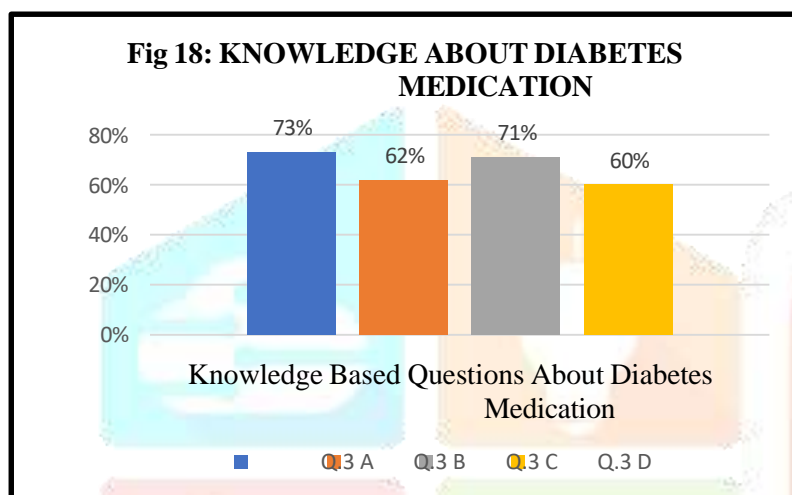
Among the 420 patients, 39% exhibit a positive attitude towards exercise, 47% adhere to controlled and planned diets, 67% regularly attend physician check-ups for diabetes, and 62% possess a comprehensive understanding of the diseases.

Q.4 Assessment of Attitude Related Questions About Diabetes Medication

Fig 19: 4.A Are you aware that your blood sugar level drops back to normal after taking your diabetes medication?

Fig 20: 4.B Do you think missing a dose of your diabetic medicine will have a negative impact on your body?

4.A Among the 420 diabetic patients surveyed, 74% were aware that their blood sugar levels returned to normal after taking diabetes medication, while 26% were not.

4.B In the survey of 420 patients, it was found that 67% thought that skipping a dose of their diabetes medication would harm their body, while 33% disagreed.

Fig 21: 4.C Do you undergo regular follow-ups as per schedule?

YES 66%
NO 34%

Fig 22: 4.D Do you consume any other system of medicine other than the prescribed allopathy for Diabetes?

YES 59%
NO 41%

4.C Synthesizing the information shared by the 420 participants, 66% attend regular follow-up appointments as scheduled, while 34% do not, indicating a mix of adherence levels to scheduled appointments within the diabetic population.

4.D Reviewing the perspectives of the 420 individuals, 59% reported having consumed other systems of medicine alongside prescribed allopathic treatment for diabetes, while 41% did not.

ATTITUDE BASED (This section contains question to determine patients' attitude about Diabetes Medications)

Table 2.D Statistical Analysis of Attitude Based data on Diabetes Medication

Q.4 A	Are you aware that your blood sugar level drops back to normal after taking your Diabetes Medication?	309	111
Q.4 B	Do you think missing a dose of your diabetes medicine will have a negative impact on your body?	281	139
Q.4 C	Do you undergo regular follow ups as per schedule?	278	142
Q.4 D	Do you consume any other system of medicine other than the prescribed allopathy for Diabetes?	167	177

❖ **ATTITUDE OF STUDY PARTICIPANTS TOWARDS ITS MEDICATION:**

Fig 23: ATTITUDE ABOUT DIABETES MEDICATION

Attitude Based Questions about Diabetes Medications

Q.4 A — Q.4 B — Q.4 C — Q.4 D
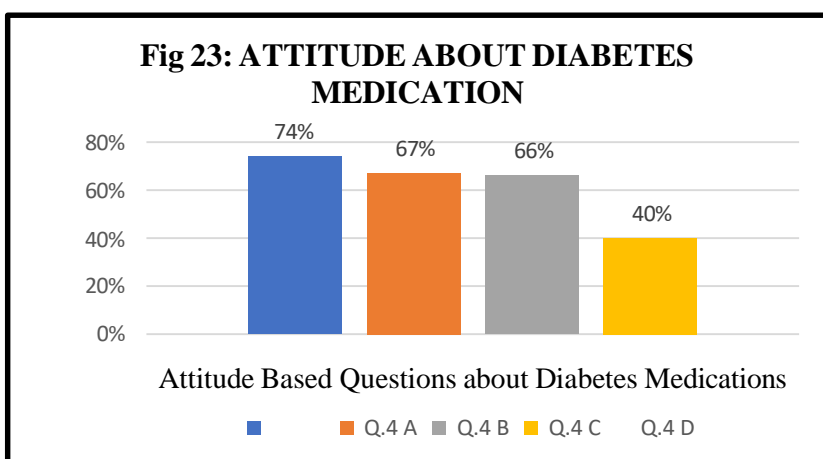
Of those 420 patients, 74% were aware that medication can normalize blood sugar levels, 67% believe missing a dose can harm, 66% undergo regular follow-ups, and 40% use alternative medicines alongside the prescribed diabetes medication..
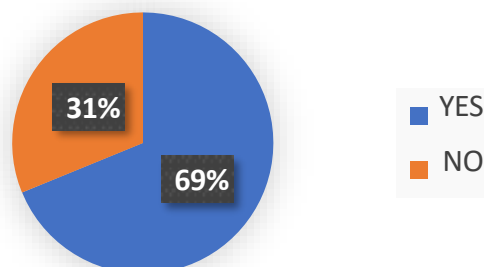
Q.5 Assessment of Practice Related Questions About Diabetes Medication:

Fig 24: 5.A Was your blood sugar level checked at your last visit to the physician?
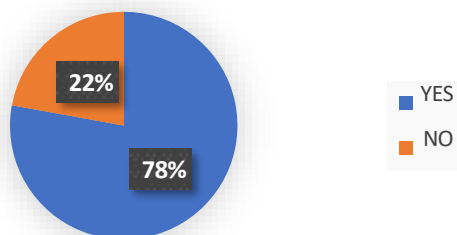
Fig 25: 5.B Do you regularly refill your prescription?

5.A Among the 420 diabetic patients surveyed, 78% had their blood sugar levels checked at their last physician visit, however, 22% did not have their blood sugar levels.

5.B Analysing the data collected from the 420 people, 69% reported regularly refilling their prescriptions, while 31% did not.

Fig 26: 5.C Did you visit your physician as per the scheduled time?
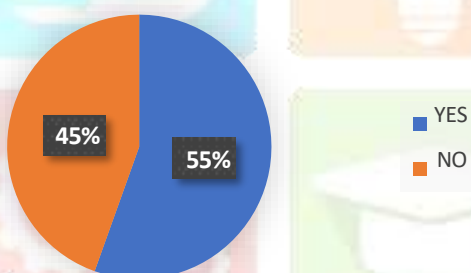
Fig 27: 5.D Was your Blood Pressure checked at your last visit to the physician?
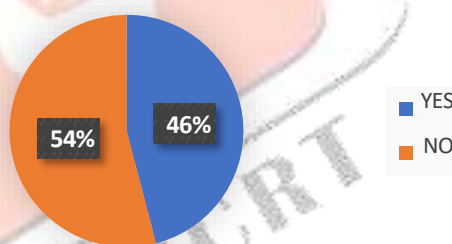
5.C Among the 420 patients surveyed, 55% visited their physician as per the scheduled time, while 45% did not adhere to their scheduled appointments.

5.D Among the 420 patients surveyed, it was found that only 46% had their blood pressure checked at their last visit to the physician, while the remaining 54% did not undergo blood pressure monitoring during their recent physician visit.

Fig 28: 5.D Was your eye checkup done recently?
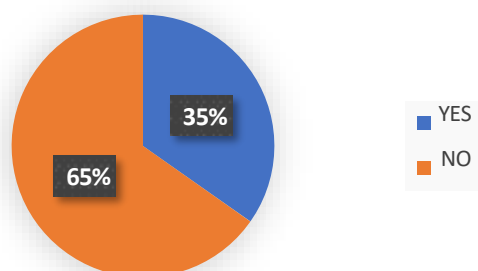
5.E Examining the insights shared by the 420 respondents, it was found that only 35% had their eye check-up recently, while the majority, 65%, did not undergo eye examinations.

PRACTICE BASED (This section contains question to determine patients' adherence about Diabetes Medications)

Table 2.E Statistical Analysis of Practice Based data on Diabetes Medication

Q.5 A	Was your blood sugar level checked at your last visit to the physician?	326	93
Q.5 B	Do you regularly refill your prescription?	289	131
Q.5 C	Do you visit your physician as per scheduled time?	233	187
Q.5 D	Was your bloop pressure checked at your last visited to the physician?	193	227
Q.5 E	Was your eyes checkup done recently?	146	274

❖ **Practice of Study Participants towards Diabetes Medication:**

Fig 29: PRACTICE ABOUT DIABETES MEDICATION
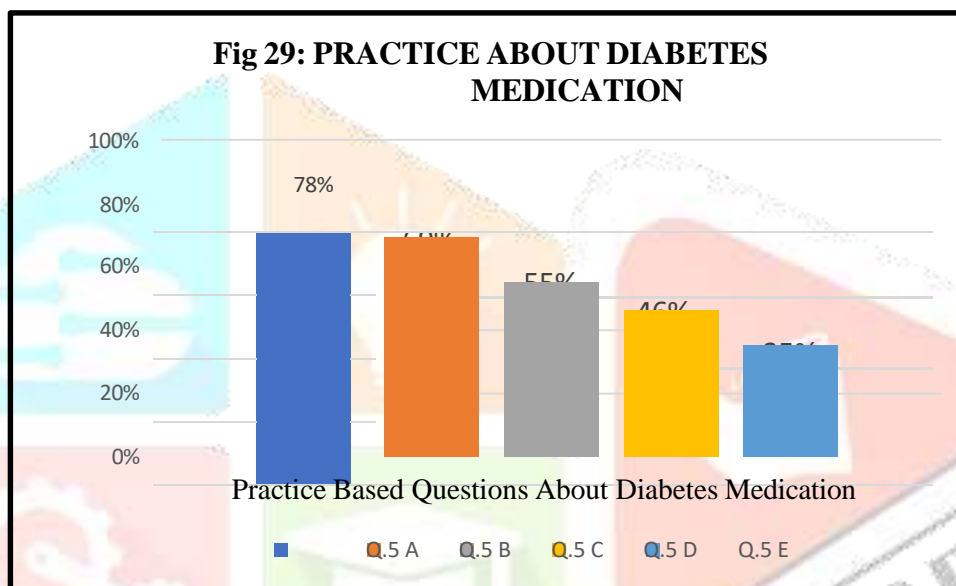
A total of 420 participants were included in the study, several key findings emerged. Firstly, the majority (78%) reported having their blood sugar levels checked during their last visit to the physician, indicating a high level of adherence to this aspect of their healthcare routine. Additionally, a significant portion (69%) reported regularly refilling their prescriptions, suggesting a commitment to maintaining their medication regimen. However, fewer participants (55%) reported visiting the physician as per their scheduled appointments, indicating potential areas for improvement in appointment adherence. Furthermore, less than half (46%) reported having their blood pressure checked at their last visit, highlighting a potential gap in cardiovascular health monitoring. Lastly, a minority (35%) reported undergoing eye checkups, indicating a lower level of engagement in preventative eye care among the participants.

CHI SQUARE TEST

The level of significance used for the statistical analysis was $P \leq 0.05$.

DISEASE VS PRACTICE ANALYSIS

Table 3.A: Disease vs Practice Chi Square Analysis

Sr. No. (Practice Questions)	Parameter (Practice Questions)	Knowledge + Attitude (About Diabetes among Diabetic Patients)		Chi Square calculated (X^2)	P-value < 0.05	Significant/ Not Significant
		HIGH	LOW			
Q.5 A	HIGH	245	81	31.9642	0.00	Significant
	LOW	41	53			
Q.5 B	HIGH	212	77	11.0414	0.00	Significant
	LOW	74	57			
Q.5 C	HIGH	176	57	12.5796	0.00	Significant
	LOW	110	77			
Q.5 D	HIGH	119	74	6.2737	0.01	Significant
	LOW	167	60			
Q.5 E	HIGH	91	55	3.0305	0.08	Not Significant
	LOW	195	79			

MEDICATION VS PRACTICE ANALYSIS

Table 3.B: Medication vs Practice Chi Square Analysis

Sr. No. (Practice Questions)	Parameter	Knowledge + Attitude (About Diabetes among Diabetic Patients)		Chi Square calculated (X^2)	P-value < 0.05	Significant/ Not Significant
		HIGH	LOW			
Q.5 A	HIGH	285	41	68.5402	0.00	Significant
	LOW	44	50			
Q.5 B	HIGH	242	47	14.9367	0.00	Significant
	LOW	87	44			
Q.5 C	HIGH	202	31	20.4672	0.00	Significant
	LOW	127	60			
Q.5 D	HIGH	141	52	5.2964	0.02	Significant
	LOW	188	39			
Q.5 E	HIGH	106	40	3.8281	0.05	Not Significant
	LOW	223	51			

VII. DISCUSSION:

The study provides valuable insights into the knowledge, attitudes, and behaviors of patients regarding diabetes management.

- **Knowledge about Diabetes:**
- The majority of patients demonstrate a good understanding of diabetes as a condition characterized by high blood glucose levels. This foundational knowledge is essential for effective self-management.
- Awareness of signs and symptoms, the importance of eye check-ups, and the risk of heart disease associated with untreated diabetes varies but generally shows room for improvement.
- Understanding of causes, including heredity and obesity, is relatively high, indicating recognition of risk factors.

- **Understanding of Treatment:**
- A considerable proportion of patients have knowledge about diabetes medication, its treatment, and the importance of adhering to prescribed medication regimens.
- However, there is a notable portion of patients who consume other medications alongside their diabetes medication, suggesting a potential need for further education on the importance of medication adherence and potential drug interactions.

- **Attitudes and Behaviors:**
- Positive attitudes toward exercise and adherence to controlled diets are moderate but could be improved, indicating opportunities for interventions to promote healthier lifestyle choices.
- Regular attendance at physician check-ups for diabetes is relatively high, indicating a commitment to ongoing monitoring and management.
- A significant proportion of patients recognizes the importance of medication in normalizing blood sugar levels and believes in the potential harm of missing doses. However, a notable portion also uses alternative medicines alongside prescribed medication, highlighting the need for education on the potential risks and benefits of such practices.

- **Healthcare Routine Adherence:**
- The high rate of blood sugar level checks during physician visits and regular prescription refills reflects good adherence to these aspects of healthcare routines.
- However, lower rates of appointment adherence and blood pressure checks suggest areas for improvement in comprehensive healthcare management and monitoring.
- The low rate of eye checkups indicates a need for increased awareness and promotion of preventative eye care among patients with diabetes.

- **Implications for Healthcare Providers:**
- Healthcare providers should prioritize patient education on the importance of medication adherence, lifestyle modifications, and regular health check-ups.
- Tailored interventions targeting specific knowledge gaps, attitudes, and behaviors identified in the study can help improve diabetes management outcomes.
- Collaborative efforts between healthcare providers, patients, and community resources are essential to address barriers to optimal diabetes self-management and improve overall health outcomes.

All in all, ensuring comprehensive understanding of diabetes and its associated risks, such as heart disease, is paramount. Emphasizing the importance of regular eye check-ups is crucial in diabetes

management. Additionally, it's vital to stress the significance of adhering strictly to prescribed medication and avoiding additional medications without consulting healthcare providers. Encouraging positive attitudes towards diabetes management, including regular exercise and diet control, is essential. Highlighting the importance of regular check-ups, blood sugar monitoring, and prescription refills underscores the need for comprehensive healthcare management. Prioritizing patient education on medication adherence and lifestyle changes while tailoring interventions to individual needs fosters collaborative efforts among healthcare providers, patients, and community resources.

Chi Square Analysis: Diseases VS Practice

To summaries, the chi-square test results indicate a significant correlation between knowledge and attitude levels of disease and practice. The results indicate that people with diabetes are likely to have higher knowledge and attitude levels, which are correlated and rated as HIGH for the Questions 5A to 5D whereas, for 5E no significant correlation, suggesting that knowledge and attitude levels may not be highly correlated with whether a person undergoes regular eye checkup.

Chi Square Analysis: Medication VS Practice

For the majority of the questions (Q.5 A to Q.5 D), the chi-square tests indicate a substantial correlation between knowledge + attitude levels of medication and practice. which are classified as HIGH or LOW among diabetes patients. However, there was no apparent association for Question Q.5 E. This suggests variability in the relationship between knowledge + attitude levels and their classification across different questions

VIII. CONCLUSION:

- There is a relatively high level of understanding among patients regarding diabetes, its symptoms, and the importance of regular check-ups.
- Awareness about medication and its management is reasonably widespread, with a significant portion understanding treatment and medication schedules.
- While there is a positive attitude towards some aspects like exercise and controlled diets, there's room for improvement in adherence to these behaviours.
- Adherence to medication, blood sugar monitoring, and prescription refills is relatively high, but there are areas of concern such as appointment adherence and cardiovascular health monitoring.
- Engagement in preventative eye care appears to be lower compared to other aspects of diabetes management, indicating a need for increased awareness and education in this area.

-

IX. PROBLEMS FACED DURING SURVEY AND ITS SOLUTIONS:

Table 4: Problems and Solutions

Problems Faced	Solutions
Low participant engagement	Address by increasing awareness through targeted outreach and providing information to patient.
Misinterpretation of questions	Ensure clarity and simplicity in survey questions through thorough testing and refinement.
Difficulty reaching certain demographics	Utilize innovative outreach strategies such as multilingual surveys.
Data entry errors	Implement rigorous quality control measures to minimize errors during data collection and entry.
Privacy concerns	Assure patients of confidentiality and implement strong data protection measures to address privacy worries.
Incomplete data	Encourage patients and minimize skipping of questions through clear instructions and patient-friendly questions.
Bias in responses	Mitigate by employing diverse sampling techniques and ensuring representation across demographic groups.
Survey fatigue	Combat by keeping surveys concise, relevant, and engaging to maintain patient's interest.
Feedback incorporation	Actively gather feedback from patients to improve survey design and administration processes.

X. LIMITATIONS:

- As a survey study using a convenience sample with limited number of people (the investigators were in contact with only 420 people), these findings need to be confirmed by large studies conducted in other practice settings.
- Respondents may not be fully aware of their reason for any given answer.
- Respondents may not feel encouraged to provide accurate and honest answer.
- When using questionnaires, there is a chance that some questions will be ignored or left unanswered.

XI. FUTURE STUDY:

- **Implement targeted education programs:** Develop educational initiatives focusing on areas of low awareness, such as the importance of eye check-ups and cardiovascular health monitoring, to increase patient understanding and engagement.
- **Improve appointment adherence:** Introduce reminder systems, appointment scheduling flexibility, and patient education about the importance of regular physician visits to improve appointment adherence among patients.
- **Enhance support for lifestyle changes:** Offer personalized counselling, support groups, and resources to encourage patients to adopt and maintain healthy lifestyle behaviours, including regular exercise and adherence to controlled diets.
- **Expand preventative care initiatives:** Increase promotion and accessibility of preventative care services, such as eye check-ups and blood pressure monitoring, to ensure comprehensive diabetes management and reduce the risk of complications.
- **Foster collaboration between healthcare providers:** Encourage multidisciplinary care approaches involving physicians, pharmacists, nutritionists, and other healthcare professionals to provide holistic support for diabetes management and address patients' diverse needs and concerns

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