



A Study On Awareness Of Diabetes And Perception Of People On Affordability And Availability Of Antidiabetic Medicines In Vadodara

¹Supriya Jadhav, ²Paresh Patel,

¹, Student of MBA, Department of Faculty of Management Studies, Parul University, Vadodara, Gujarat-391760 ², Assistant Professor, Department of Faculty of Management Studies, Parul University, Vadodara, Gujarat-391760

Abstract: This study assessed knowledge about diabetes and the public perception of the affordability and availability of antidiabetic medicines in Vadodara. A cross-sectional survey was carried out among the residents of different socioeconomic strata using a structured questionnaire. Their findings show that even though most participants are aware of diabetes and its complications, there are still knowledge gaps in prevention and long-term management. Many respondents reported that regular antidiabetic medications were too expensive, particularly among low-income groups. Availability of medicines in public healthcare facilities is erratic. Private pharmacies may be better stocked, but their prices tend to be prohibitive. The study also highlights a paucity of awareness regarding government schemes and subsidies. Literacy and income stood out as major determinants for both awareness and access. Overall, the study establishes the need for amped-up health education and an improved public healthcare infrastructure. Awareness campaigns, more distribution of essential medicines, and assistance for the disadvantaged are recommended.

Keywords –Cross-sectional survey, Knowledge gaps, Prevention, Long-term management, Low-income groups, Public healthcare facilities, Private pharmacies, Government schemes, Subsidies, Literacy, Income, Awareness, Health education, Healthcare infrastructure, Awareness campaigns, Essential medicines

I. INTRODUCTION

Background:

Diabetes is among the most widespread non-communicable diseases in global records and has not only medical but also enormous economic problems. India has been termed the "diabetes capital of the world," where the burden is really increasing, particularly in cities and semi-urban areas. One of these cities is Vadodara in Gujarat, which has joined the list of diabetic patients through growing urbanization, lifestyle change, inactivity, and unhealthy dietary patterns. Most of the time, despite the advancements in modern medicine that have led to effective treatment, the general level of awareness regarding diabetes symptoms, complications, prevention, importance of early diagnosis, and so forth, among the average individual is pretty low. Low awareness leads to delay in diagnosis and poor management of disease. Moreover, one crucial factor that determines whether a patient can follow the treatment is the cost and availability of anti-diabetes medications. Poor access to affordable drugs particularly at the lower socio-economic groups tends to deprive many patients of effective glycemic control, thus predisposing them to long-term complications. Vadodara, a city growing speedily and with a diverse community, would be an apt setting to study such issues. The study, assessing the levels of awareness and perceptions regarding costs and availability of diabetes medicines, will be primarily aimed at assessing gaps in knowledge and health care access. This would prove resourceful to the policy makers, health care providers, and public health initiatives with regard to the most effective ways

of designing programs for diabetes awareness and accessibility according to specific needs of the local populations.

Problem Statement:

Diabetes is on the forefront of public health issues in India, with increasing numbers of people being affected by it each year. Despite the fact that this issue has been rising, awareness about prevention and management of diabetes is still very low, especially in the community. In Vadodara, lack of awareness about the disease and its long-term complications may make it difficult to maintain effective control. Coupled with this is the affordability and availability of antidiabetic medicines, two problem areas for patients. Many are unable to have easy access to regular and affordable treatment. These barriers can lead to medication nonadherence and dismal health outcomes. The present study aims to assess the awareness, perceptions, and accessibility issues regarding antidiabetic medicines among people of Vadodara.

Objectives:

- To evaluate the level of awareness and knowledge of the general public about diabetes in Vadodara.
- To assess the public perception regarding affordability of antidiabetic medications in Vadodara.
- To examine the availability and accessibility of antidiabetic medicines in various health care facilities in Vadodara.
- To Identify any socio-demographic factors influencing the knowledge, affordability and accessibility of antidiabetic medicines

Hypothesis

Based on our initial research, we propose the following two hypotheses:

1. Awareness and Literacy Factors Hypothesis:

Null Hypothesis (H_0): There is no significant association between literacy levels and awareness about diabetes among the population of Vadodara.

Alternative Hypothesis (H_1): Peoples with higher education (Bachelor's or Master's) are more likely to have awareness about diabetes compared to those with a high school education.

Suggested Test: Chi-Square Test for Independence

2. Consumer Response on Branded and Generic Anti-Diabetic Medication Hypothesis:

Null Hypothesis (H_0): The Branded and Generic Anti Diabetic medication has no significant impact on consumer purchasing decisions for anti diabetic drugs.

Alternative Hypothesis (H_1): The Branded Anti Diabetic medications are more likely purchased by consumer compared to Generic anti diabetic medication.

Suggested Test: Chi-Square Test for Independence.

2. Literature Review

1. **“An Expert Opinion on Diabetic Care for Lower-Income Patient Groups in India: In Relation to the Availability and Affordability of Diabetic Medication”. Sanjay Kalra , Atul Dhingra.(2025)**
This expert opinion is plausible, as it suggests providing an individualized, cost-effective approach to diabetes treatment, such as metformin combinations, to empower patients. It reflects the importance of continued medical education (CME) for health care providers in the face of the majority of low-income populations .These CME sessions bring justice to the discrepancies between providers and patients as far as clinical knowledge is concerned. Customized care contributes to better patient outcomes and optimal disease management. Patient education essentially covers understanding the disease and prevention. Though affordability plays a great role, patients being well informed can take them very far .The report translates into equal, accessible diabetes care for better health outcomes.

2. **“Availability, price and affordability of essential medicines for managing cardiovascular diseases and diabetes: a statewide survey in Kerala, India”.** Abhishek Sharma, Gautam Satheesh.(2020) This study is state that Availability of CVD and anti-diabetic medicines in public healthcare of Kerala is very poor as revealed by the study. In private, it is expensive for many important medicines to the public. It requires immediate government action to curb the increasing burden of non-communicable diseases. Streamlining the medicine supply chain in public facilities is paramount. Policies should mandate generic prescribing and favor FDC therapy. Allow pharmacists to effect brand substitution and ensure price transparency. Encourage public awareness and use of government discount schemes to improve access.
3. **“The Availability, Pricing, and Affordability of Essential Diabetes Medicines in 17 Low-, Middle-, and High-Income Countries”.** Zaheer-Ud-Din Babar & Sara Ramzan.(2019) This study is state that Availability of all four essential diabetes drugs was suboptimal in both primary and secondary care pharmacies. Facilities in any one of the 17 countries lacking branded product availability would not be the city's concern. The generic form of insulin was badly available; however, we also had lower monthly treatment costs as compared to the international market. The median price ratios and affordability of the four medicines were reasonably acceptable in most of the countries surveyed. There is still the need to change the ad hoc study-the ad hoc study culture- to standardized methodologies study to support medicine evidence-based decision.
4. **“Availability and affordability of essential medicines for diabetes across high-income, middle-income, and low-income countries: a prospective epidemiological study”.** Prof. Clare k chow, Weihong hu.(2018) A study in Shaanxi Province revealed that most anti-diabetic medicines fail to meet the WHO's 80% availability target. Originator brands (OBs) are priced exorbitantly, making them unaffordable for many, especially rural residents. In contrast, generic medicines are more affordable and show higher availability in private pharmacies. However, public hospitals display low availability of these generics. The price disparity between OBs and generics significantly affects patients' access to essential medicines. To improve accessibility and affordability, especially in rural areas, effective health policies are needed. These should focus on promoting the use of generics and ensuring their consistent availability in both public and private sectors.
5. **“A qualitative study on perceptions and practices of diabetes prevention and management in rural south India”.** Lakshmi, Natarajan; Anjana, Ranjit Mohan.(2023) Limited knowledge about diabetes and its prevention characterized the many participants. Hospital visits were few and far between, with little or no adherence to the prescribed diet and medications. Most were living alone or were expected to rely on family for meals, causing it to become difficult for them to comply with a diet regimen. Most did not know that diabetes, indeed, is preventable, indicating a large gap in their awareness. Much variation was observed in the participants' approaches in diet, medication, and follow-up care, although some expressed interest in becoming "Diabetes ambassadors" for awareness creation in rural areas. This gives an idea of a possible community-based diabetes educational approach. These perceptions will inform primary healthcare worker functions regarding better care and prevention of these underserved areas.
6. **“Ethiopian patients' perceptions of anti-diabetic medications: implications for diabetes education”.** Bruck Messele Habte, Tedla Kebede (2017) The purpose of this study is to explore medication-related perceptions of adult patients with type 2 diabetes attending treatment in public hospitals of urban centers in central Ethiopia. Understanding patients' perceptions of their medications is critical for developing a diabetes education program that considers local contexts and beliefs to enhance adherence. Education programs should consider patients' concerns about medication adverse effects and reasons for use so as to improve their adherence and health outcomes.
7. **“A Review: A Comparative Study of Branded and Generic Anti- Diabetic Drugs”.** Anuksh Telrandhe, Ketki Phadnis(2024) It goes on now to review the current market scenario of antidiabetic drugs, comparing marketed products with their generic versions at this time of increasing global blood pressure burden. Efficacy, safety, and all market forces affecting drug utilization will be analyzed. Review will also highlight issues from the sales data, trends, and patronage behavior, such as cost-effectiveness, adherence, and provider preference with respect to the drugs they prescribe. Industry policy and health system influencing drug choice and regulatory framework will also be touched in this research. Thus, this reflects the intricate making of decisions in chronic disease management. By

combining a clinical and market perspective, the review shall present the insights that would help in the conversion and clinical thinking of health providers, policy-makers, and all thought-stakeholders. Finally, it serves to guide decision-making in the faces of dealing with hypertension treatment and health resource planning.

8. “Cost Analysis Study of Oral Antidiabetic Drugs Available in Indian Market.” Nisharani Jadhav, Manisha Bhosale, Charles Adhav.(2020) The average percent variation in price is quite wide with regard to different brands of the same drug manufactured in India. Hence, it should be emphasized that evaluation and management of marketing drugs should maximize the therapy benefit while minimizing negative individual and economic consequences. To find out the price difference between different brands of a similar compound in oral anti-diabetes medicines by calculating percentage variation of cost for evaluating the cost of oral anti-diabetic entirely against its other brand names by one active compound.

9. “Study of variation in price of various antidiabetic drugs available in Indian market”. Amit Padmakar Date, Harshal M. Mahajan.(2014) This Study highlight that there is a huge differential price criterion among the antidiabetic drugs manufactured by different companies. Some measures by the government should work in the direction of some uniformity in the price. These things may be beneficial to some extent in reducing the economic burden on the patients and may ease the dilemma of the physician in prescribing an efficacious, safe, and cost-effective drug suiting the socioeconomic status of the patient.

10. “Cost variation analysis of oral anti-diabetic drugs available in Indian market” Veena D R, Jagadish S.(2022) this study shows that There is a wide difference existing in the cost of various oral anti-diabetics available in Indian Market by different brands. The physicians must be aware of these variations and prescribe medicines accordingly, while considering the financial status of patient and also to promote adherence to treatment.

11. “Cost variation analysis of Oral Hypoglycaemic agents available in Indian market: An Economic Perspective” Salman Hussain.(2015) This report say that their study findings showed a very high fluctuation in the minimum and maximum price of oral hypoglycaemic agents which is being manufactured by several companies across the different brands. Results of our study make the prescriber informed about various brands and their price variations. So the prescriber can chose the cost effective oral hypoglycaemic agents for a patient to achieve rational prescribing. This will help in reducing the economic and health burden on both patient as well as the healthcare system.

3. Research Methodology

3.1 Research Design

Descriptive Cross-Sectional Research Design will be utilized for this study. To assess awareness levels and perception of people on affordability and availability. Data collection at one time is done in the sample population of Vadodara. The study holds analytical research nature such as comparing awareness levels across demographics.

3.2 Data Collection

A primary data is collected by Face-to-face interviews, Online surveys (Google Forms or similar), Telephonic interaction.

A secondary data set consists of information gathered from pre-existing sources, such as various reviews, published research paper and secondary data sets themselves.

3.3 Sampling Techniques:

The study employed a General population of Vadodara, especially adults (age 18+) with or without diabetes. combining stratified sampling for quantitative data and purposive sampling for qualitative data.

3.4 Data Analysis & Interpretation:

In this Research, researcher tried to analyses and interpret the collected data by using various statistical tools. Following is the Presentation of Data Analysis & interpretation

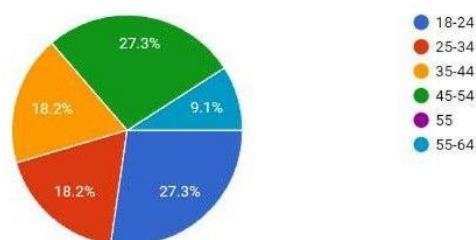
It includes demographic like age, educational qualification, Awareness, availability & affordability perception and barriers. a questionnaire has been conducted to know awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara.

1. Interpretation:

The details of survey awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara have been illustrated in a pie chart with a sample size of 70 respondents. It is found that the most common age group, which is 18-24 years old, had a major representation with 27.3% of respondents and the least representation of the age group years was with 9.1%.

Age group	No of responds	Percentage of Respondents
18-24	19	27.3%
25-34	12	18.2%
35-44	12	18.2%
45-54	18	27.2%
55-64	9	9.1%

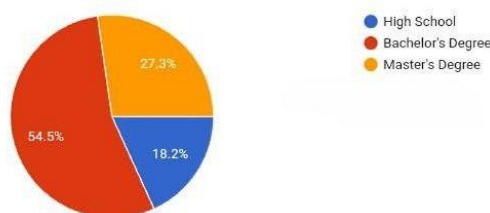
1. Age Group

2. Interpretation

The pie chart illustrates concerning the survey on the awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara and had 70 respondents. Having bachelor's and masters also being the highest level of education, with percentage of 54.5% & 27.3. This shows the people are well educated.

Level of education	No of respondents	Percentage of Respondents
High school	13	18.2%
Bachelor's	38	54.5%
Masters	19	27.3%

2. Education Level



3. Interpretation: The pie chart illustrates a survey concerning awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara and had 70 respondent. The majority of the participants are given 100% .It describes all participants have knowledge about diabetes.

Awareness about Diabetes	No of respondents	Percentage of respondents
Yes	70	100%
No	00	-

3. Do you know about diabetes?

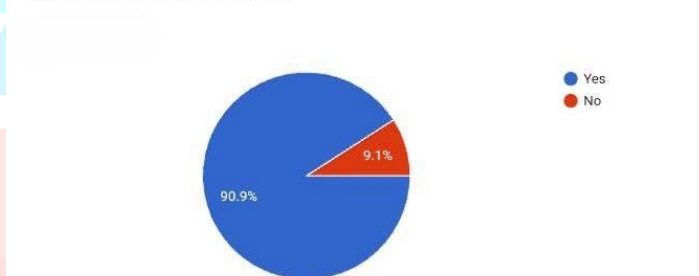


4. Interpretation

The pie charts illustrate what the survey showed regarding awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara with 70 respondents. Majority of participant 90.9% reported that they or someone they know family or acquaintance is affected by diabetes or uses antidiabetic medication.

Do you or your family member affected by diabetes or use anti diabetic medication	No of respondents	Percentage of Respondents
Yes	63	90.9%
No	7	9.1%

4. Do you or any of your family members/acquaintances diagnosed with diabetes or use antidiabetic medication?

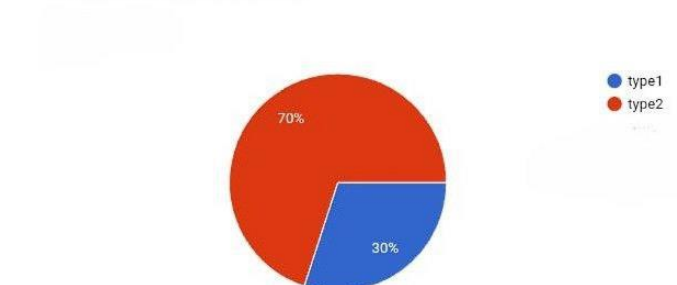


5. Interpretation

The pie chart demonstrates the questionnaire or survey awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara with a sample of 70 respondents. The 70% people have or they know about type 2 diabetes and 30% people have or they know type 1 diabetes

Type of Diabetes	No of Respondents	Percentage of Respondents
Type 1	49	70%
Type2	21	30%

5. If yes then type of diabetes

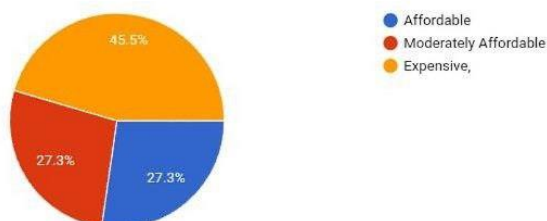


6. Interpretation

The pie chart illustrates the survey conducted on the awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara 70 respondents were surveyed in total. The majority, 45.5% of respondent find difficult to afford antidiabetic medication while 27.3% says its affordable and 27.3% are not sure.

Affordability of antidiabetic Medicine	No of respondents	Percentage of respondents
Affordable	19	27.3%
Moderately affordable	19	27.3%
Expensive	32	45.5%

6. How would you rate the affordability of your antidiabetic medication?

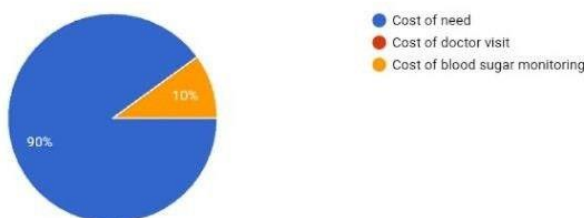


7. Interpretation

The Pie Chart speaks volumes about the Survey awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara and having 70 respondents. The 90 per cent of the sampled participant says cost of need is a factor affecting on affordability of antidiabetic medicine and rest are showing 10 percent cost of blood sugar monitoring.

Factors affecting affordability of antidiabetic medicine	No of respondents	Percentage of respondents
Cost of need	63	90%
Cost of blood sugar monitoring	7	10%
Cost of doctor visit	--	--

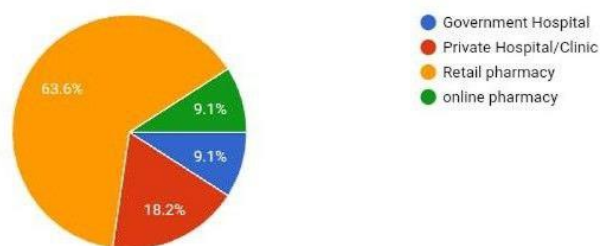
7. What factors affect the affordability of antidiabetic medicines for you?



8. Interpretation: The pie chart illustrates the awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara with 70 respondents. Majority of people 63.6% purchasing antidiabetic medicines through retail pharmacy, 18.2% from private hospital/clinic and rest 9.1% from online and government hospital.

Antidiabetic medicine purchase source	No of respondents	Percentage of respondents
Government hospital	7	9.1%
Private hospital/clinic	13	18.2%
Retail pharmacy	43	63.6%
Online pharmacy	7	9.1%

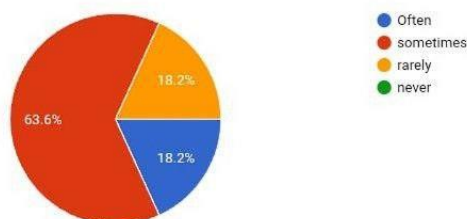
8.How do you typically obtain your antidiabetic medication?



9.Interpretation: The survey of awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara amounted to a total of 70 respondents, as shown in the pie chart. Majority of respondents 63.6% sometimes and 18.2% often face shortage or unavailability of antidiabetic medicine and 18.2% rarely.

<u>Unavailability or shortage of antidiabetic medication</u>	<u>No of respondents</u>	<u>Percentage of respondents</u>
<u>Often</u>	<u>13</u>	<u>18.2%</u>
<u>Sometimes</u>	<u>44</u>	<u>63.6%</u>
<u>Rarely</u>	<u>13</u>	<u>18.3%</u>
<u>Never</u>	<u>0</u>	<u>0%</u>

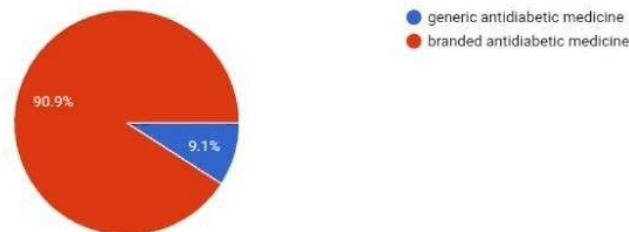
9.How often do you face shortages or unavailability of your prescribed antidiabetic medication?



10.Interpretation: The Pie Chart Illustrates about a survey of 70 respondents concerning awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara. The majority respondents prefer 90.9% branded antidiabetic medicine over 9.1% generic antidiabetic medicine.

Type of Anti diabetic medicine	No of respondents	Percentage of respondents
Generic	63	90.9%
Branded	7	9.1%

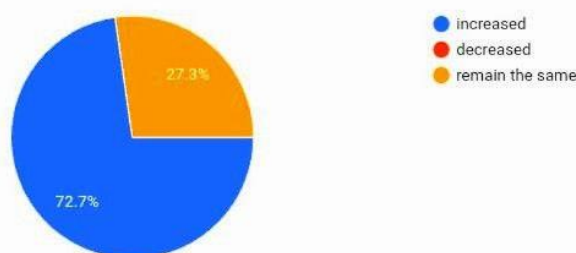
10. which type of antidiabetic medicine you usually prefer?



11.Interpretation: The pie chart illustrates a survey, conducted about awareness of diabetes and perception of peoples on affordability and availability of antidiabetic medicines in Vadodara comprising 70 respondents. The majority of respondent 72.7% are agree that price of antidiabetic medicine is increased.

Changes in price of antidiabetic medicine in recent year	No of respondents	Percentage of respondents
Increased	50	72.7%
Decreased	--	--
Remain the same	20	27.3%

11. Have you noticed any changes in the prices of antidiabetic medications in recent years?



4. KEY FINDINGS:

1. Demographic characteristics:

- The highest number of respondents was primarily in the age group of 18 to 24 (27.3%) and 45 to 54 (27.2%).
- However, the education attainment was relatively high, with 54.5% having a Bachelor's degree and 27.3% with a Master's degree.

2. Awareness:

- Pretty significantly, all of them, that is 100% respondents, reported awareness of diabetes.
- In all ways, 90.9% had a personal or family history with diabetes.
- Most respondents (70%) were more familiar with Type 2 diabetes.

3. Affordability:

- Antidiabetic medications are expensive to 45.5% of the respondents.
- There are only 27.3% who considered that the medicines were affordable while another 27.3% were not sure.

- Cost of medicine was scored higher as an obstacle (90%), then 10% cost of blood sugar monitoring.

4.Availability:

- 63.6% got their medicines through retail pharmacies, whereas 9.1% utilized government hospitals.
- 63.6% had occasional unavailability, whereas 18.2% had frequent unavailability of antidiabetic drugs.

5.Brand Preference:

- 90.9% of the respondents, preferred branded medicines to generic ones, despite the fact that generic medicines are cheaper.
- 72.7% say they have noticed the increase in prices of such drugs lately.

Final Insights & Outlook

This research focuses on the finding that defines diabetes awareness and antidiabetic drug availability in Vadodara with some special trends reflected on the findings Everyone knew of diabetes, and a lot had some direct or indirect experience with it. Respondents thus gave a very high score in terms of awareness.

Half of them found the antidiabetic medicines costly, which indicates that a significant proportion is under a financial burden, particularly in poor households. Shortages of essential medicines still remain unresolved for almost half of the respondents. Thus, this disrupts the adherence to treatment and has long-term health outcomes.

Trust of consumers is high in branded medicines, and this will inhibit using cheaper, generic available, and effective medicines. Most respondents remarked that antidiabetic medicines continued to rise in prices, understood with the inflation impact and possible non-coverage areas in any price regulation or subsid highly on drugs.

Strategic actions to improve diabetic care in Vadodara are Awareness campaigns could also shift attention on Type-1 versus Type 2 diabetes going in for prevention and early detection. Policy interventions-they may aid in regulating the price or subsidization to low-income individuals so as to make it affordable.

Promotion of generic medicines with trust building education to the public would reduce treatment costs. Retail pharmacy improvements in the supply chain will mitigate shortages and ensure the continuous availability of antidiabetic drugs.

Conclusion:

The study investigated the level of awareness about diabetes and the availability as well as affordability of antidiabetic medicines in Vadodara. The findings show that while in general public awareness of diabetes is quite high, two key areas remain challenging: access to affordable medication and consistent drug availability. Many participants said they experienced difficulties in getting antidiabetic medicines because of high costs and erratic stockouts. Though branded and generic options are available, the popularity of branded medications far exceeds generics. This may be because patients presume that the quality and efficacy of the branded drugs are far better than generic ones. Hence, the findings emphasize the urgent need for targeted awareness programs, government support through subsidies or price control, and a strengthened supply chain for uninterrupted access to essential drugs. If these measures are taken, this will lead to improved diabetes management within the Vadodara area and lessen suffering endured by people living with this chronic illness.

Future Scope

Wider Geographical Coverage: Expanding the research to include rural areas and other cities in Gujarat or India could offer comparative insights into disparities in medicine accessibility and diabetes awareness

Longitudinal Studies: Conducting long-term studies to assess changes in awareness, availability, and affordability over time can help evaluate the impact of policy changes or public health interventions

Impact of Government Schemes: A focused evaluation of government programs like Jan aushadhi, Ayushman Bharat, or state-specific subsidies can provide insights into their effectiveness in making medicines more affordable.

Final note : The study provides the basis for further investigations and for the formulation of policies in diabetes management, access to medicines, and public health education. Future research building on the present findings has promising potentials for facilitating the development of a healthcare system for diabetes management that is more equitable and efficient in India.

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