

A pilot study on perception of home glucose testing of diabetic patients in India

SUPERVISOR:

DR. MAMTA CHAUHAN

STUDENT:

PRARTHITA MUKHERJEE



Overview



Background : India is second in housing the largest number of diabetic patients around the globe and the number is still rising. Patients with diabetes often measure their blood glucose at home to detect hypoglycemia and to adjust insulin dose as needed for better diabetic care management.

Aim : To understand the perception of home glucose testing of diabetic patients in India

Methodology : An analytical cross-sectional design was used with survey method which was conducted through a questionnaire from 100 participants chosen through convenient sampling.

Result : While glucometers were found to be very convenient and advantageous to overall diabetes management there still are complaints regarding the same and respondents lists out the disadvantages and barriers in this study, they face with using the glucometers. Awareness levels among respondents were found out to be a significant area government needs to work upon to have a holistic approach towards changing the negative perceptions people have towards glucometers.

Conclusion : In order to improve patient outcomes and manage diabetes holistically a complex multidisciplinary approach is needed. Proper monitoring of diabetes on a regular basis is needed to understand the effects of hypoglycemia and hyperglycemia. A systematic approach needs to be implemented where there has to be a collaborative approach from the government, consumers, endocrinologists, diabetes nurse educators, clinical nurse specialists, dieticians, pharmacists and data analysts to manage diabetes as a menace to the society.

Introduction

- Diabetes is a chronic condition which consists of a phenomenon of high blood glucose levels. India is seeing a steep rise in the number of diabetic patients.
- In India, it was discovered that 9.4% of adults had diabetes. Of these, 15.7% had their diabetes under control, 36.1% were receiving medication, and 45.8% were aware of their diabetes status. Urban areas had a 14.3% prevalence of diabetes, compared to 6.9% in rural areas. Women were found out to have higher chances than males to suffer from diabetes (10.2% vs. 8.5%), but more women had recently been diagnosed (6.0%). In addition, diabetes affected 44.2% of individuals with high cholesterol and 16.3% of those with hypertension.
- The key is early detection. Raising Awareness Treatment and Control (ATC) is essential to lowering its impact. The socioeconomic gradient at ATC is significant.
- The management of diabetes requires consistent monitoring, medication, lifestyle modifications, and attention to healthcare provider recommendations.
- Self-monitoring of blood glucose levels by people is an important part of intense glycemic therapy.
- Blood-glucose monitoring (BGM) devices have proven to be advantageous to patients suffering from diabetes in different ways. By allowing patients and physicians to quickly diagnose acute hypoglycemia or hyperglycemia and by empowering patients with more self-care, these devices enable therapy changes and patient protection.

Methodology



Quantitative research

Research design: Analytical cross-sectional study design

Sampling method: Convenient sampling

Sample size: 100 respondents

Study area: India

Tool: A survey was conducted with a close-ended questionnaire

Analysis: MS Excel

Research Questions:

- How accurate do individuals perceive home glucose testing devices to be in comparison to laboratory-based testing in India?
- What are the barriers to adopting home glucose testing as a regular practice in India?

Objectives

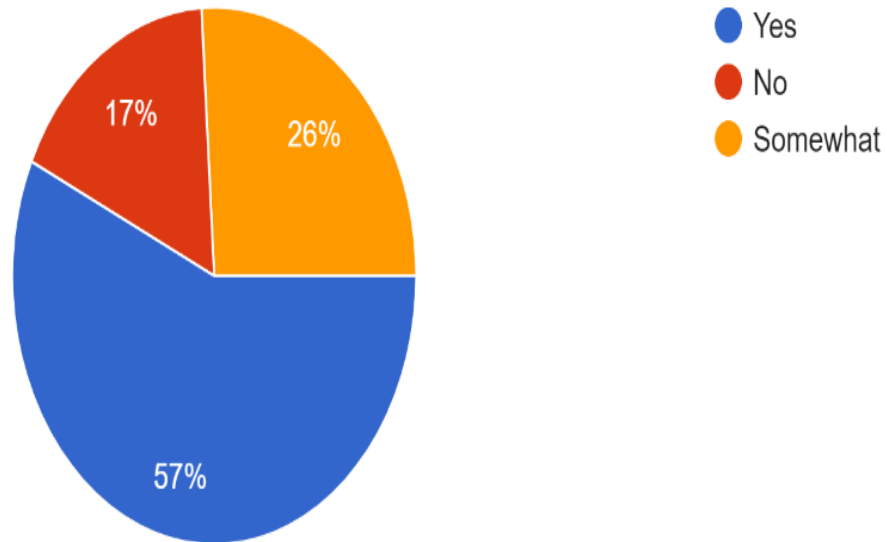


- To study the common perceptions and attitudes of individuals in India towards home glucose testing.
- To understand how the perception of home glucose testing impact self-care behaviors and diabetes management in India.

Results & Discussion

Fig 1. Awareness of respondents on Glucose monitoring Test

Are you aware of necessary steps involved to conduct home glucose monitoring test with the necessary test kits?



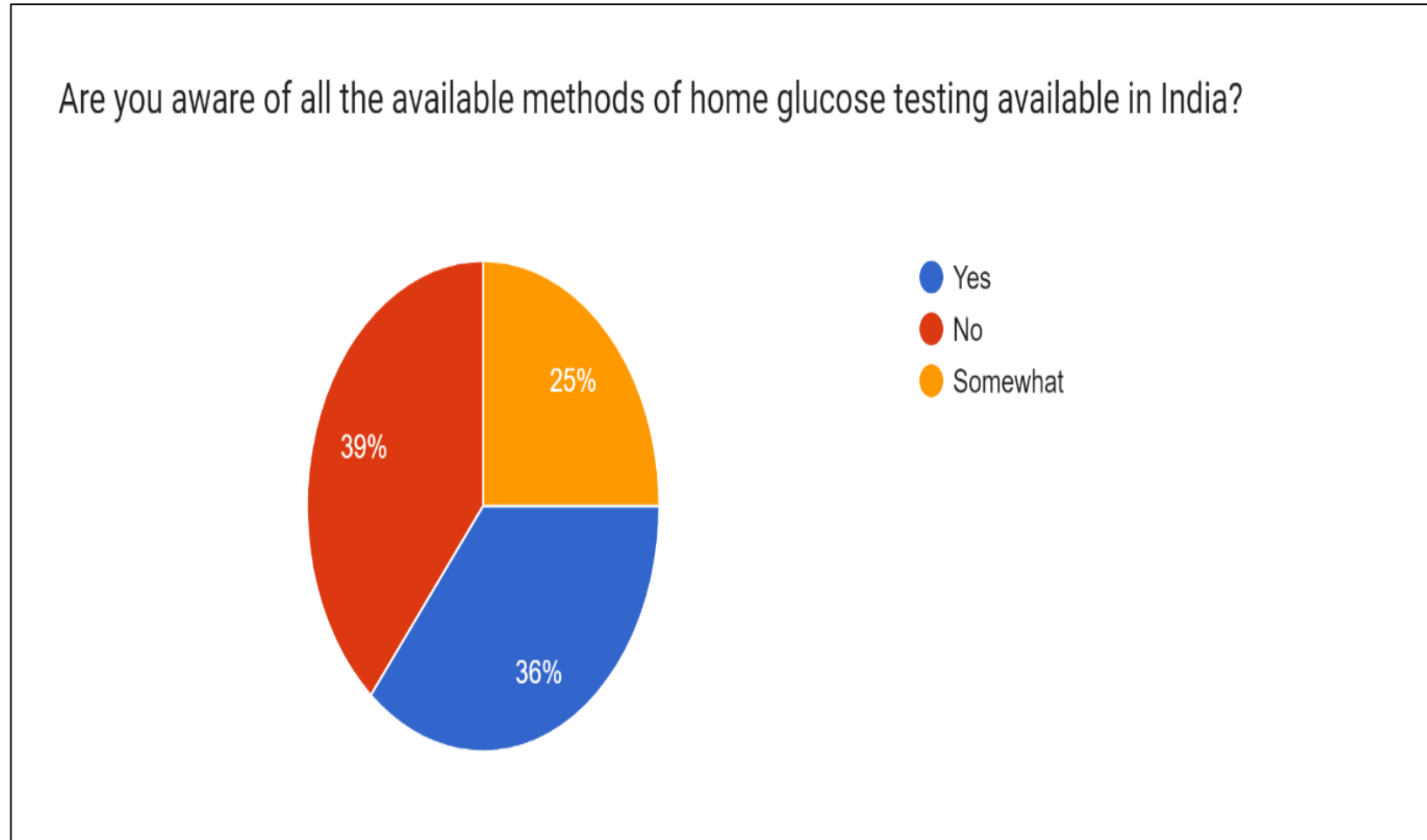
- 57% respondents -aware of how to conduct home glucose monitoring test with necessary test kits
- 26% reported that they somewhat know of the process
- 17% are not aware

What needs to be done?

- A lot needs to be worked in terms of spreading awareness
- An individual needs to be aware of every procedure that is being administered on their body.

Results & Discussion

Fig 2. Awareness of respondents on all Alternative Home Glucose Testing methods



- 36% - aware respondents
- 39% - not aware
- 25% - somewhat aware

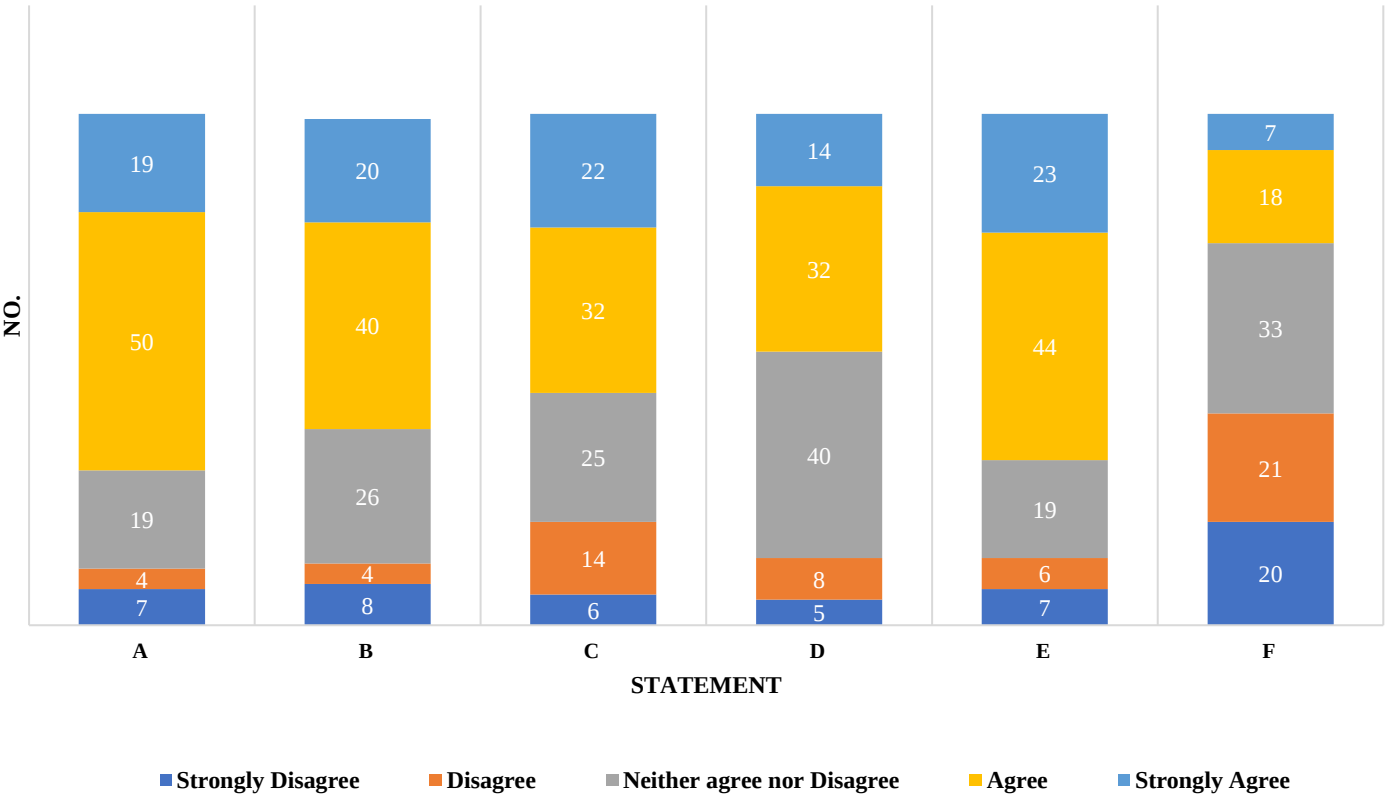
Do patients and consumers really put any effort to educate themselves about the disease they are suffering from?

Need to be aware of :

- Non-invasive methods
- CGMs.

Results & Discussion

Fig 3. Perception on Home Glucose level monitoring



A) Home glucose monitoring is convenient. 50% agreed to the statement only 11% respondents did not agree to this or strongly disagreed. 19% strongly agreed to glucometers being very convenient.

B) Home glucose monitoring helps in better diabetes management. 40% agreed, 20% strongly agreed and 12% disagreed or strongly disagreed.

C) Home glucose monitoring makes me/patient skeptical due to the finger prick method. 54% reported that they have been scared of finger pricking. This has a lot of repercussions on the use of glucometers.

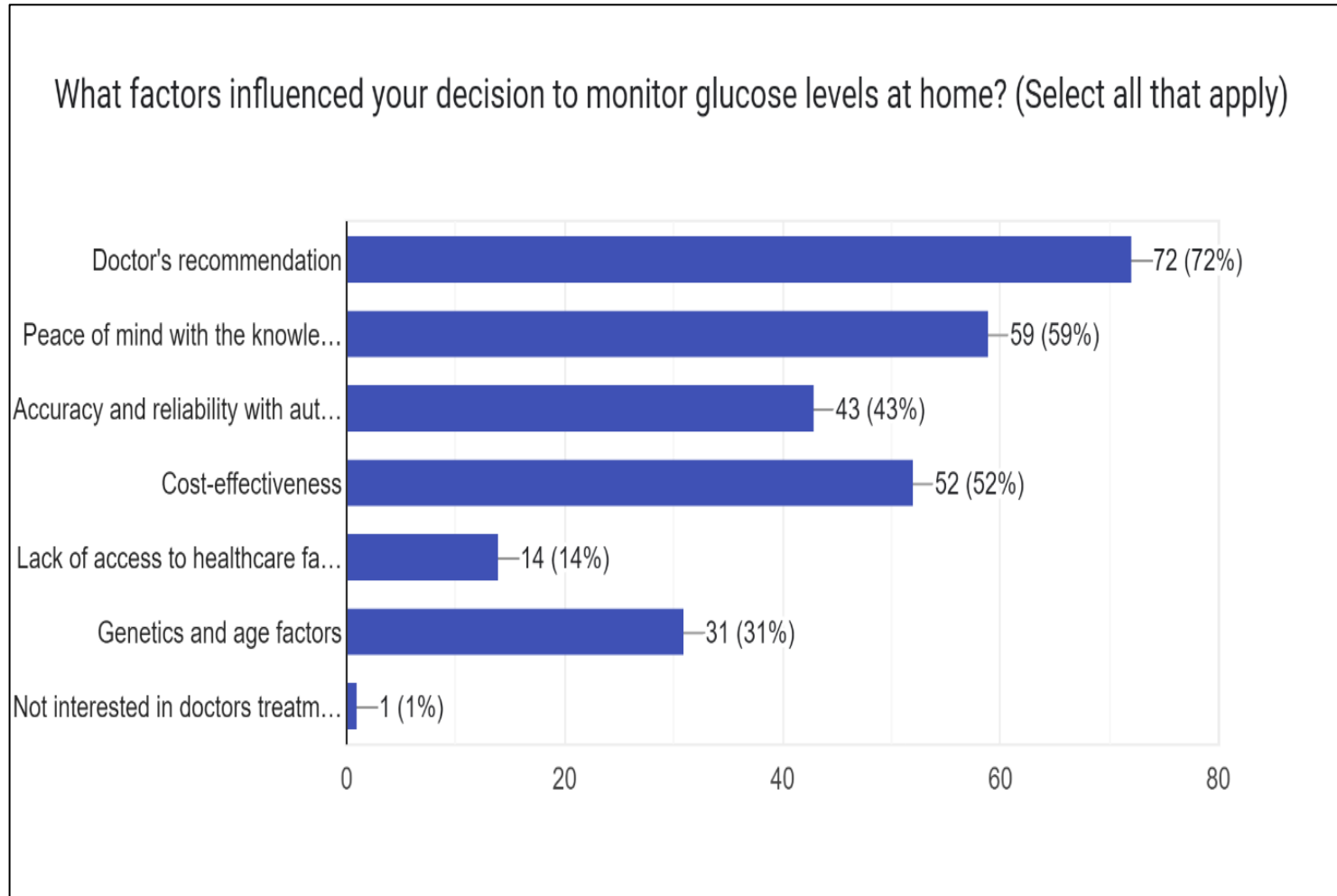
D) Home glucose monitoring is accurate and reliable. While the major chunk of 40% were neutral about the accuracy and reliability, 46% expressed their lack of faith in the process.

E) Home glucose monitoring saves time and effort. 67% agreed to this statement.

F) Home glucose monitoring is a burden. This statement received mixed responses. 33% had centralized views on this. 25% agreed to this and 41% disagreed.

Results & Discussion

Fig 4. Factors Influenced in monitoring Glucose level at Home



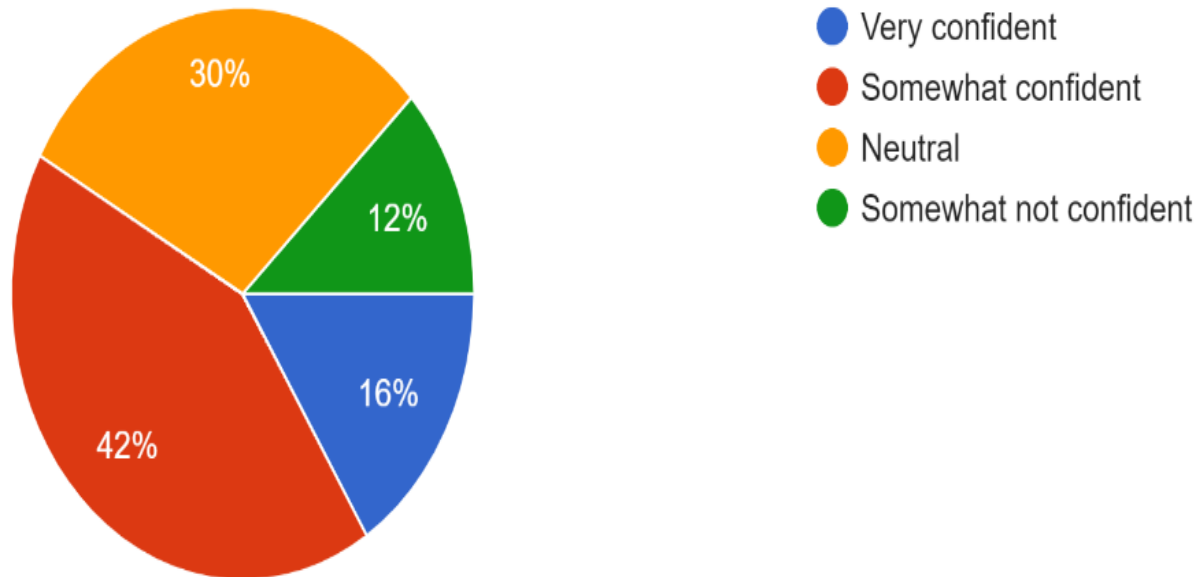
Major drivers pushing respondents for home testing

- Doctor's recommendation - 72%
- Peace to mind knowing their regular blood glucose levels – 59% (instant modifications to lifestyle and diet)
- Cost-effectiveness – 52% (compared to lab testing)
- Accuracy and reliability - 43% (sense of autonomy)
- Genetics- 31%

Results & Discussion

Fig 5. Confidence Level of using home glucose monitoring Device

How confident are you in the accuracy of home glucose monitoring devices compared to laboratory-based testing?



42% - Somewhat confident
16% - confident
12% -somewhat not confident

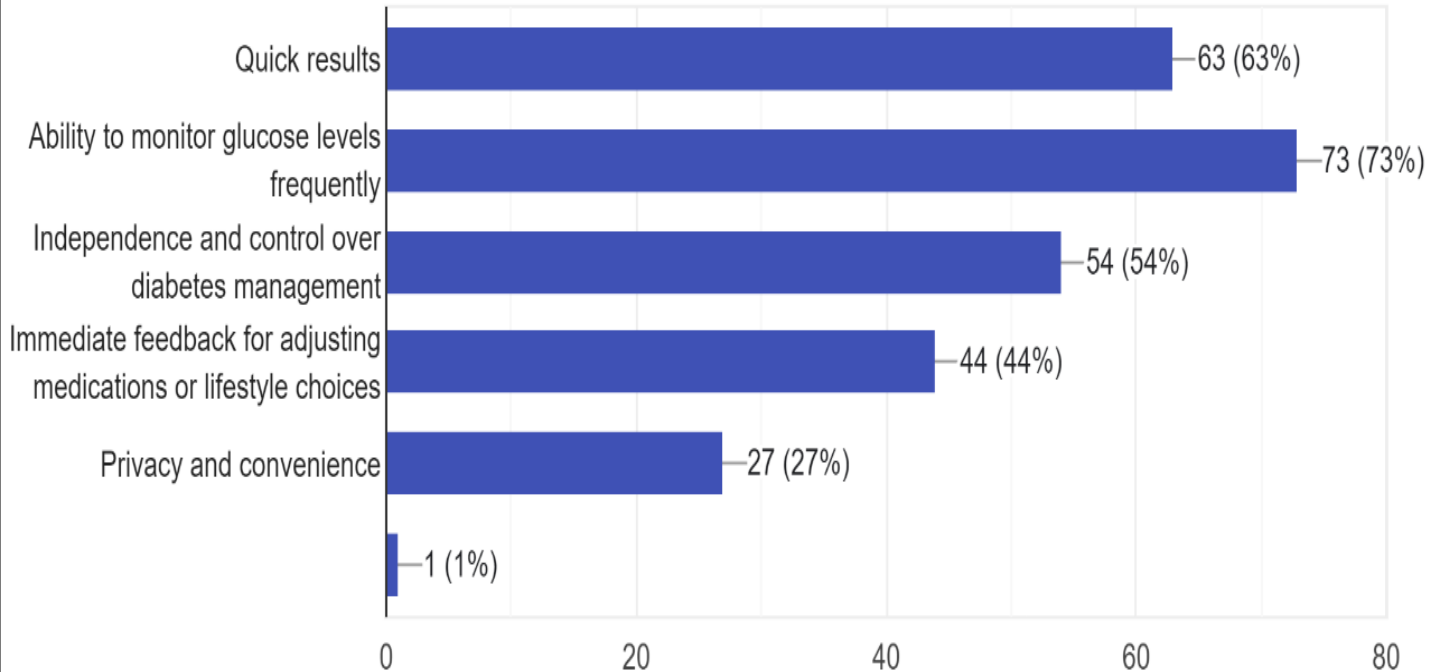
Laboratory-based testing –

- Sample is taken from a vein in your arm and processed to eliminate red blood cells so that only the plasma is analyzed in a lab test run
- Conducted by healthcare professionals

Results & Discussion

Fig 6. Opinion of Advantage of using home glucose monitoring

What are the main advantages of home glucose monitoring, in your opinion? (Select all that apply)

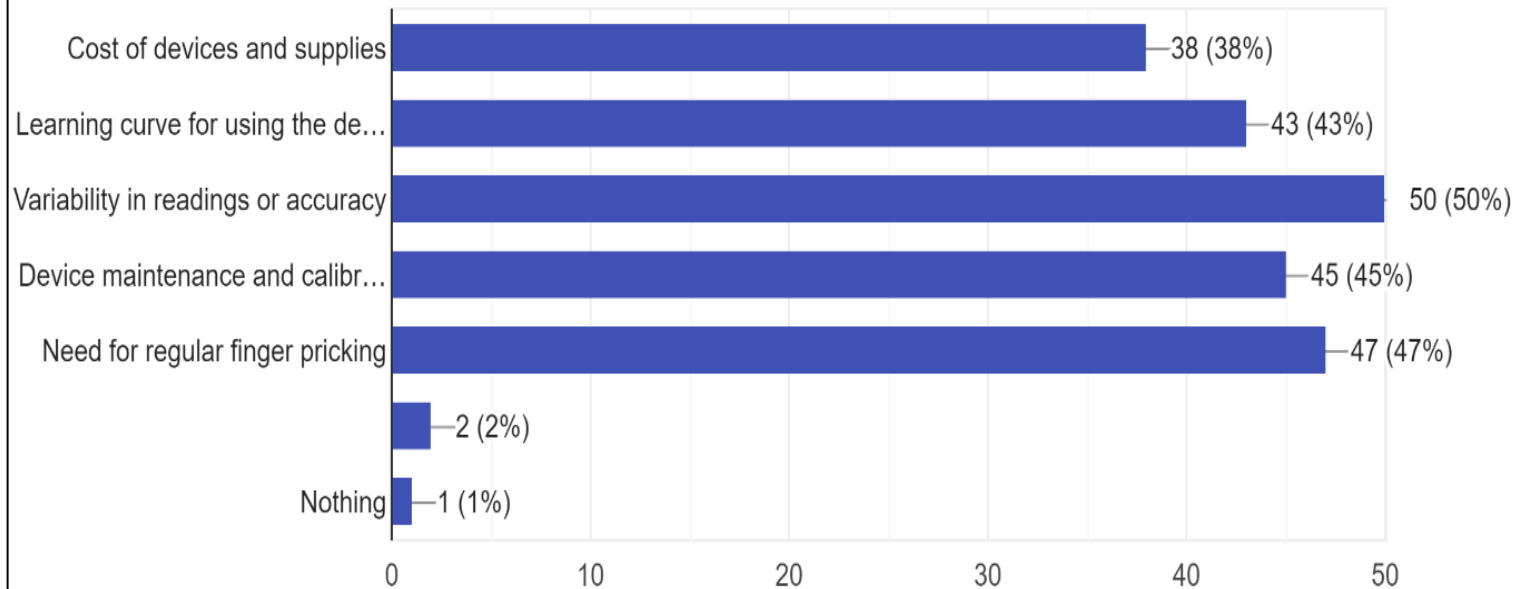


1. Ability to monitor glucose levels frequently – 73%
 2. Quick results – 63%
 3. Independence and control over diabetes management – 54%
 4. Immediate feedback mechanism – 44%
- Gives the sense of autonomy
 - Can do their reading in their personal space and time
 - Convenient for most part
 - Gives an upper hand in diabetes care management in the care continuum

Results & Discussion

Fig 7. Opinion of Disadvantage of using Home glucose monitoring

What are the main disadvantages or challenges of home glucose monitoring, in your opinion?
(Select all that apply)

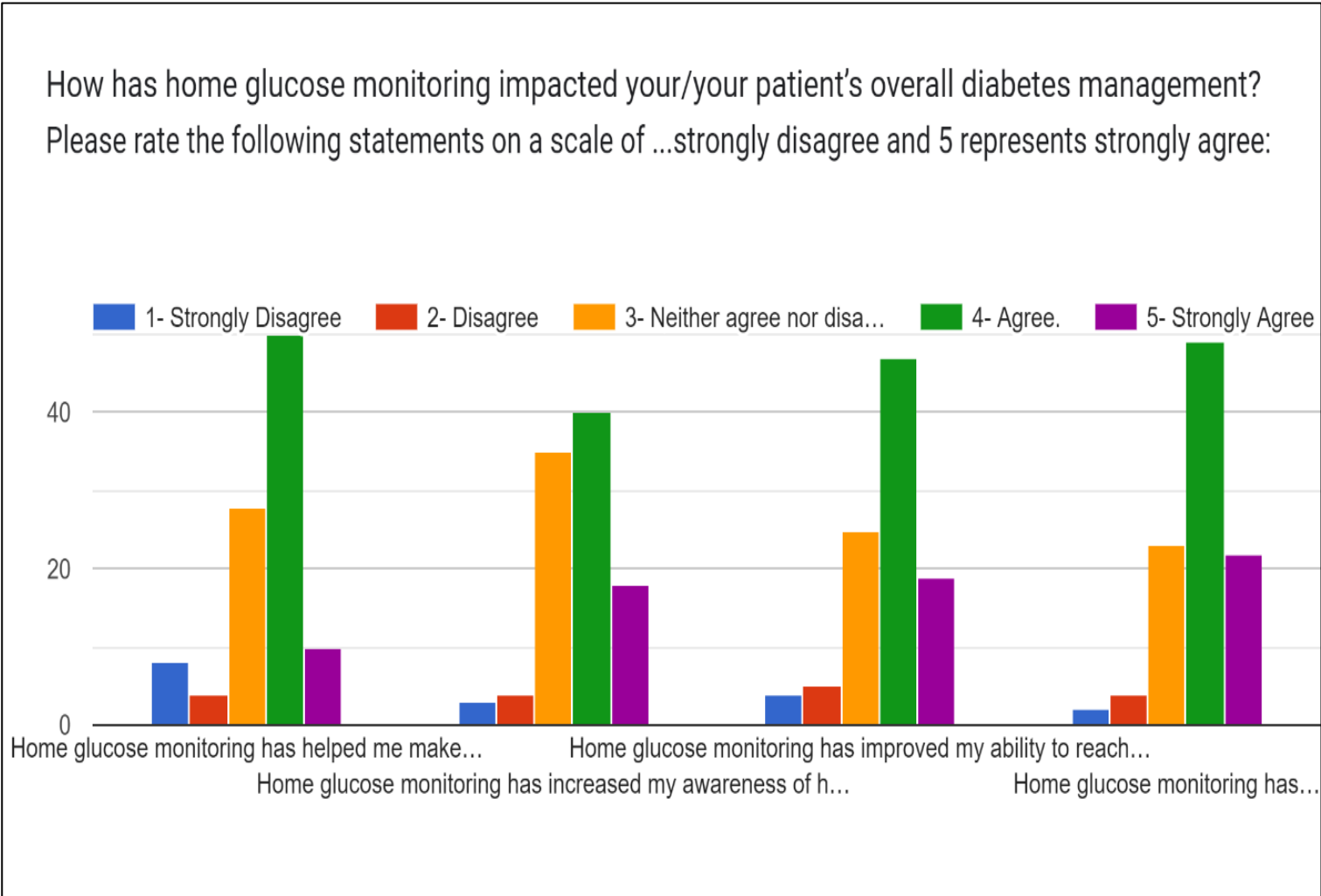


1. Variability in readings or accuracy (50%)
2. Need for regular finger pricking. (47%)
3. Device maintenance and calibration (45%)
4. Learning curve for using the device (43%)
5. Cost of devices (38%)

- Painful procedure - creates a psychological barrier
- Irregular fasting procedures - leads to variability in reading or accuracy
- Chances of infection
- Battery changing and maintenance from moisture can be difficult especially for patients falling in an older age group.
- Regular test strips buying

Results & Discussion

Fig 8. Impact of home glucose level monitoring on Patents’ diabetic management



a) Home glucose monitoring has helped me make better treatment decisions. Almost 50% has agreed to this statement.

b) Home glucose monitoring has increased my awareness of how my body responds to different foods and activities. 40% agreed to this statement.

c) Home glucose monitoring has improved my ability to reach and maintain target glucose levels. Around 43% agreed to this statement.

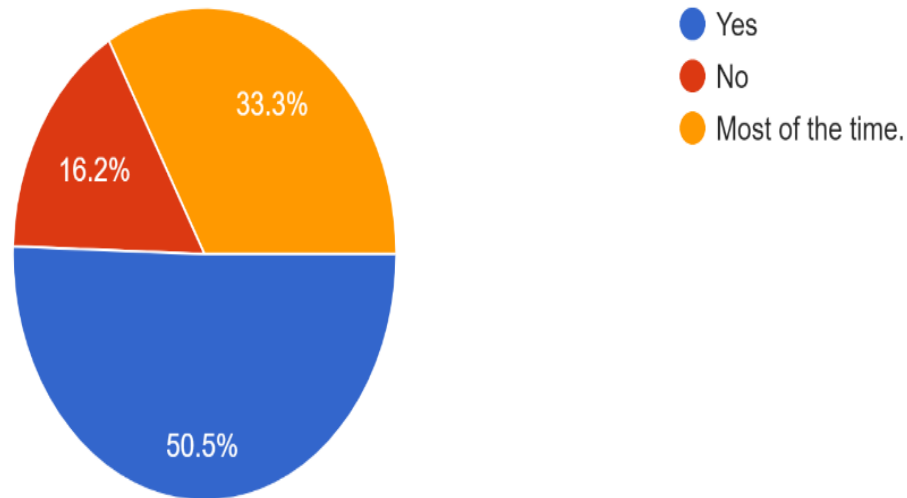
d) Home glucose monitoring has positively influenced my motivation to manage my diabetes. 49% agreed majorly to this statement.

In conclusion, home glucose monitoring have had quite a positive impact in overall diabetes management.

Results & Discussion

Fig 9. Experience on Time-Gap for monitoring glucose level

Do you always properly maintain the time gaps and necessary actions needed to monitor the fasting and postprandial blood glucose levels?



- 50% - maintain the necessary gaps and fasting measures
- 50% - doesn't maintain or are inconsistent.

Concerning situation :

Variability and reliability issues →

Affects healing process →

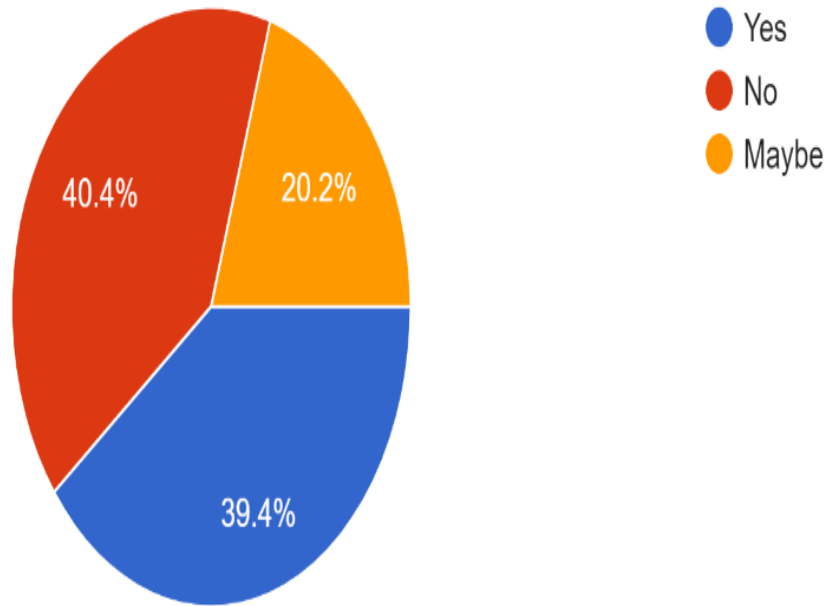
Lessens down autonomy →

Decreased faith for false readings

Results & Discussion

Fig 10. Barriers of affording glucose monitoring at home

Have you encountered any barriers to affording glucose monitoring devices for home use?



- 40% - have not faced any issues
- 39% - faced issues
- 20% - Not sure

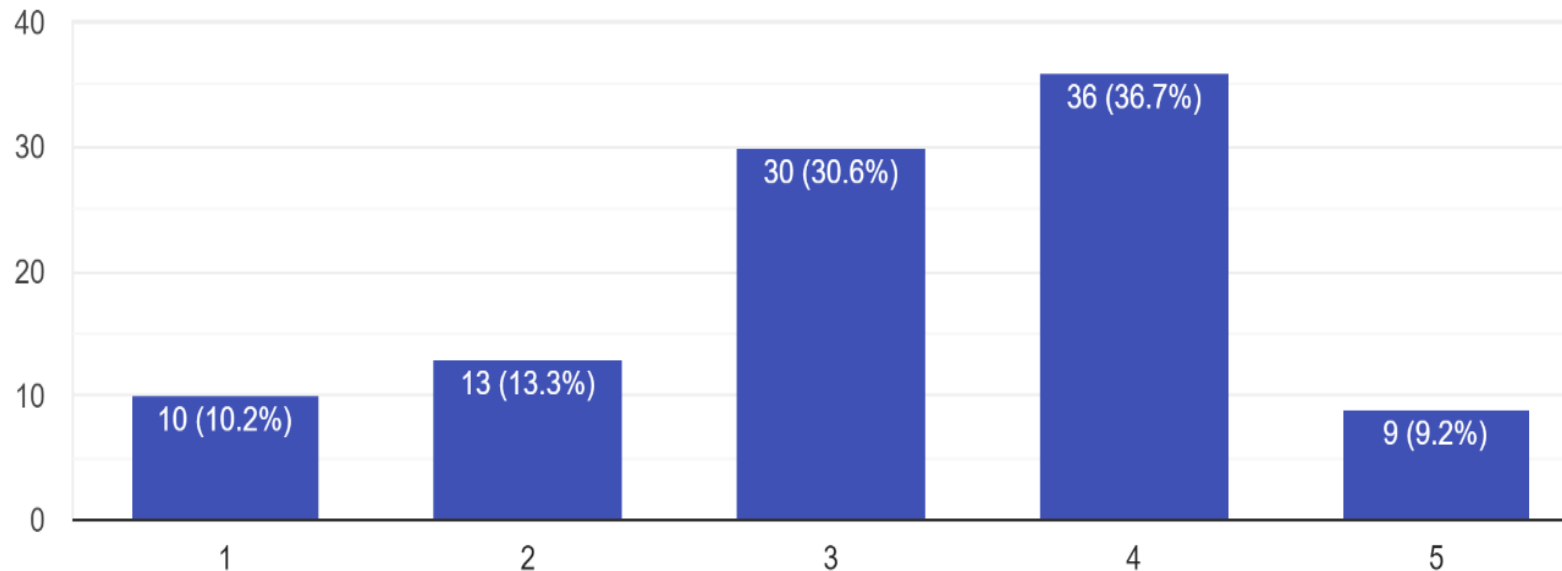
Why the issue is being faced?

Since it is a regular use product, for people coming from lower socio-economic background might face an issue in affording the devices and more so the test strips which needs to be kept replacing regularly.

Results & Discussion

Fig 11. Convenience of Using Glucometer

Please rate your convenience to use such devices on a scale of 1 to 5.



- 9% found extremely convenient Rated 5
- Almost 37% are still to some extent struggling – Rated 4
- 31% had neutral views Rated 3
- 23% have not found it convenient Rated 2 and 1

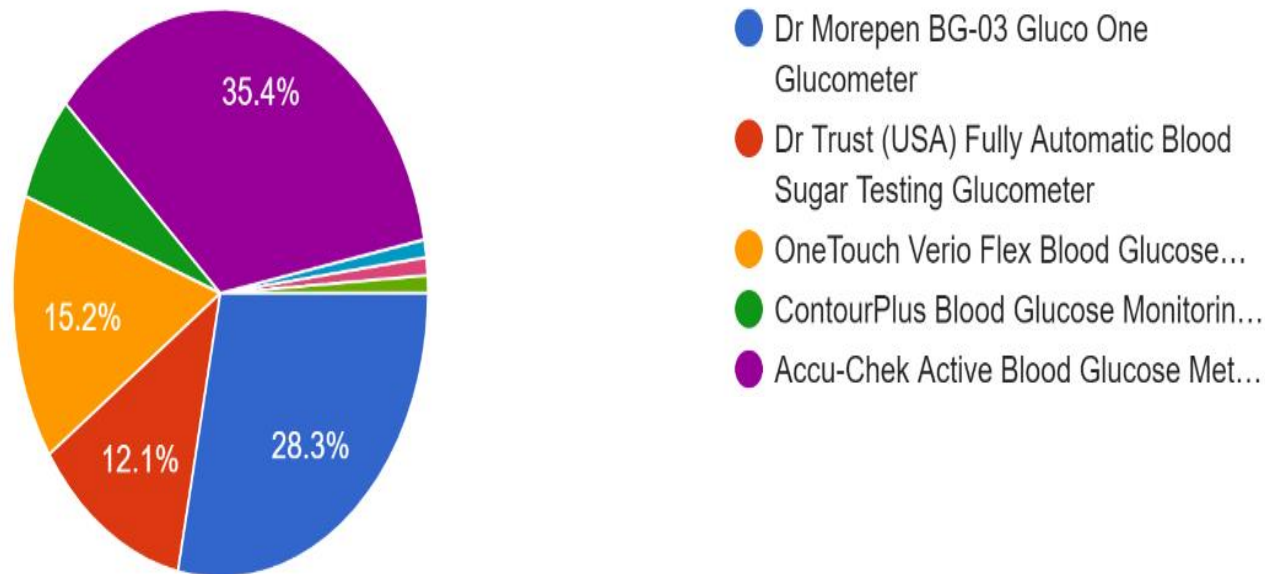
It shows their lack of dexterity when it comes to devices that respondents are using daily.

Or they must have unmet needs from current glucometers.

Results & Discussion

Fig 12. Preferable Brands of Market-available Glucometers

Which glucometer brand do you prefer the most?



Most used glucometer –

1. Accu-check Active Blood Glucose meter. 35.4%
2. Dr Morepen BG-03 Gluco One Glucometer 28.3%

Accu- check features:

- Test Time is just Five seconds
- Blood Sample Size is 1.5 microliter
- Has 10 test strips and 10 lancets
- Does not have a manual coding
- Stores up to 500 test results in its memory.

Recommendations



- Diabetes education has to be better monitored and implemented. Taking proactive for more compliance to the treatment mechanism Education needs to be very comprehensive, and it should include the wide range of knowledge on diabetes like risk factors, complications, diet control, physical activity, regular checkups, and screening.
- Respondents complained of its affordability which can be addressed with strengthening medical device reimbursement policies.
- Patients have showed concern regarding variability in readings which can lead to lesser faith in home glucose testing, but it was also seen that patients also do not follow all necessary fasting rules before testing which leads in reading variability. Patients need to have a proactive approach towards incorporating the glucose testing in their lifestyle.
- It has been understood that finger picking has been a hassle and has led to a hesitant nature in adopting regular finger pricking. Studies show that companies around the world have come up with efficient alternatives to address the issue. They have introduced noninvasive methods of glucose monitoring.
- Acceptability and affordability of Continuous glucose monitoring system (CGMS) need to be increased.
- India needs to adopt and adapt to these dynamic changes in the Diabetic medical device space in order to be at par with the rest of the world and also to ease the diabetic care platform for the patients in India.

Conclusion

- Medication adherence has been a real issue: Patients are the stakeholders hence onus is on them. They need to be active participants in the decision-making process to lead to better diabetic care management process.
- How people will perceive the home testing kits stems from how doctors or healthcare professionals guide them through the process or sensitize them to home glucose testing kits and procedure. They also need to add value to their prescription as they need to take into consideration of patients' clinical as well as socio-economic background before recommending the frequency and methods of usage of home glucose testing kits to diabetic individuals who are not on insulin.
- Need to manage diabetes holistically - a complex multidisciplinary approach is needed.
A systematic approach needs to be implemented where there has to be a collaborative approach from the consumers, government, endocrinologists, diabetes nurse educators, clinical nurse specialists, dieticians, pharmacists and data analysts to manage diabetes as a menace to the society.



Thank You