Study on The Consumer Buying Behaviour Towards Blood Glucose Monitoring Devices

By

Stuti Kothari

Dissertation submitted for the partial fulfillment of the

MBA Pharmaceutical Management

Academic year, 2016-2018

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INSTITUTE OF HEALTH MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

TO WHOMSOEVER MAY CONCERN

This is to certify that **Stuti Kothari** student of MBA Pharmaceutical Management from The IIHMR University, Jaipur has undergone internship training at Boston Ivy Healthcare Solutions Pvt Ltd. on topic A study on the consumer buying behavior towards Blood Glucose Monitoring Devices from 5th Feb 2018 to 4th May 2018.

She has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific, and analytical.
The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.

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Boston Ivy™
COMMITTED TO QUALITY

Date: 10th May 2018

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To Whomsoever It May Concern:

This is to certify that Ms. Stuti Kothari, the student of Institute of Health Management Research (IIHMR), Jaipur has undergone Dissertation at BOSTON IVY HEALTHCARE SOLUTIONS Pvt Ltd (Medikabazaar) from 5th February 2018 to 4th May 2018. Her dissertation work involved "A study on the consumer buying behaviour towards Blood Glucose Monitoring Devices".

The candidate has successfully carried out the study assigned to her while working as "Intern" for the period of 3 months. Her approach to the study has been sincere, scientific & analytical.

This work is partial fulfilment towards the course requirements and is recommended for MBA in Pharmaceutical Management. This letter, is being provided at the express request of the Intern for her Dissertation, this in no way confers any direct or indirect liability on Boston Ivy Healthcare Solutions Pvt. Ltd

We wish her all the success in all her future endeavors.

Thanking you,
For Boston Ivy Healthcare Solutions Pvt. Ltd.

Vivek Tiwari

Authorized Signatory

BOSTON IVY HEALTHCARE SOLUTIONS PRIVATE LIMITED ★ MUMBAI

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THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "A study on the consumer buying behavior towards Blood Glucose Monitoring devices" has been submitted by Stuti Kothari under the supervision of Dr. Saurabh Kumar for award of MBA Pharmaceutical Management of the University carried out during the period from 5th February 2018 to 4th May 2018 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Signature

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Acknowledgement

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.Lastly but surely not the least from the bottom of my heart I wish to thank my family and my friends for being who they are. Without their support and encouragement I would have not attained all that I have so far. I hope I have lived up to their expectations.

Stuti Kothari

IIHMR University

Summary

.These days, Diabetes has become a very common and known word to everyone and due to various reasons like changing lifestyle and food habit, inheritance etc. are leading to increase in the no. of Diabetic patients every day. Hence many Pharmaceutical companies are planning to grab this segment by introducing more and more Diabetic solution in the market.

.In this study a depth interview was held to map the perception of respondents to understand the buying behaviour of consumers by using MDS (multi-dimensional scaling) approach. After going through the whole study it has been revealed that: There is enough awareness about Glucometer among diabetic patient, and Approx74% knew about Glucometer. Out of total respondents, 1/3 rd. of community in city like Mumbai is aware about Glucometer. Efficacy, past experiences and peer references are very important factors which help consumer buying a product. Brand plays major role to purchase any Glucometer.

Introduction

Type 1 diabetes was largely considered a disorder in children and adolescents, but this opinion has changed over the past decade, so that age at symptomatic onset is no longer a restricting factor. Polydipsia, polyphagia, and polyuria (the classic trio of symptoms associated with disease onset) along with overt hyperglycaemia remain diagnostic hallmarks in children and adolescents, and to a lesser extent in adults. An immediate need for exogenous insulin replacement is also a hallmark of type 1 diabetes, for which lifetime treatment is needed. Key questions remain regarding the epidemiology of type 1 diabetes, effectiveness of current therapies, understanding how the disorder develops, and preventing or curing the disease.

.TID is a multi factorial disease in which environmental and genetic factors both play a major role. The triggering event is still obscure, and so are many of the immune events that follow. In this brief review, we discuss the possible role of potential environmental factors and which triggers are believed to have a role in the disease. In addition, as the disease evolves, beta cells are lost and this occurs in a very heterogeneous fashion. Our knowledge of how beta cell mass declines and our view of the disease's pathogenesis are also debated. We highlight the major hallmarks of disease, among which are MHC-I (major histocompatibility complex class I) expression and insulitis. The dependence versus independence of antigen for the immune infiltrate is also discussed, as both the influence from bystander T cells and the formation of neo-epitopes through modifications are thought to influence the course of the disease. As human studies are proliferating, our understanding of the disease's pathogenesis will increase exponentially.

Glucometer

.A glucose meter (or glucometer) is a medical device for determining the approximate concentration of glucose in the blood. It is a key element of home blood glucose monitoring (HBGM) by people with diabetes mellitus or hypoglycaemia. A small drop of blood, obtained by pricking the skin with a lancet, is placed on a disposable test strip that the meter reads and uses to calculate the blood glucose level. The

meter then displays the level in mg/dl or mmol/l. The cost of home blood glucose monitoring is substantial due to the cost of the test strips.

Future prospects of Glucometer

.No. of diabetes patients are increasing day by day and lifestyle factors are known to be essential for the development of type 2 diabetes like busy lifestyle, Obesity, less nutritive diet, abnormal routine, late night parties, alcohol, smoking. Environmental toxins may contribute to recent increases in the rate of type 2 diabetes. In one study, those who had high levels of physical activity, a healthy diet, did not smoke, and consumed alcohol in moderation had an82% lower rate of diabetes. When a normal weight was included the rate was 89%lower. In this study a healthy diet was defined as one high in fibre, with a high polyunsaturated to saturated fat ratio, and a lower mean glycaemic index. Obesity has been found to contribute to approximately 55% type 2 diabetes, and decreasing consumption of saturated fats and Trans fatty acids while replacing them with unsaturated fats may decrease the risk.

Review of literature

.In the process of advancements made on the technology front, one which has suffered a lot is nothing but the 'human health'! Today's fast life and corporate culture has taken its toll on lifestyles which now is synonym to more junk foods, lesser work outs and physical and psychological stress.

Blood sugar level is nothing but direct indicative of actual life style of a person. Deviation of the blood sugar level from normal range creates many adverse physiological changes in the body system. Hence, managing and keeping watch over the levels of glucose in the blood is critical in management of diabetes.

.Type 1 diabetes is a chronic illness when body is unable to produce insulin due to destruction of beta cells.

.Signs and symptoms

.Polyuria

.Polydipsia

.Polyphagia

.Unexplained weight loss

.Other symptoms are fatigue, nausea, and blurred vision.

.its onset may be sudden. It is not unusual for patients with type 1 diabetes to present with diabetic ketoacidosis (DKA).

Glucometer Concept

.Many glucose meters employ the oxidation of glucose to gluconolactone catalysed by glucose oxidase (sometimes known as GOD). Others use a similar reaction catalysed instead by another enzyme, glucose dehydrogenase (GDH). This has the advantage of sensitivity over glucose oxidase but is more susceptible to interfering reactions with other substances.

Future prospects of Glucometer

.No. of diabetes patients are increasing day by day number of lifestyle factors are known to be important to the development of type 2 diabetes like busy lifestyle, Obesity, less nutritive diet, abnormal routine, late night parties, alcohol, smoking. Environmental toxins may contribute to recent increases in the rate of type 2 diabetes. In one study, those who had high levels of physical activity, a

healthy diet, did not smoke, and consumed alcohol in moderation had an82% lower rate of diabetes. When a normal weight was included the rate was 89%lower. In this study a healthy diet was defined as one high in fibre, with a high polyunsaturated to saturated fat ratio, and a lower mean glycaemic index. Obesity has been found to contribute to approximately 55% type 2 diabetes, and decreasing consumption of saturated fats and Trans fatty acids.

Self-monitoring

Real-time monitoring of glucose—using continuous glucose monitors (CGMs)—can help patients improve glycemic control. [6, 7] CGMs contain subcutaneous sensors that measure interstitial glucose levels every 1-5 minutes, providing alarms when glucose levels are very high or low.

SMBG systems have the potential to play an important role in the management of diabetes and in the reduction of risk of serious secondary clinical complications. This review describes the transition from simple urine sugar screening tests to sophisticated meter and reagent strip systems to monitor blood glucose. Significant developments in design and technology over the past four decades are described since the first meter was introduced in 1970. Factors that have influenced this evolution and the challenges to improve analytical performance are discussed. Current issues in the role of SMBG from the clinical, patient and manufacturer.

Objectives

- Perceptual mapping of buying behaviour of Diabetic patients with respect to Blood Glucose Monitoring System (Glucometer)
- To evaluate the convenience of using Glucose monitoring devices among the diabetic patients

Research Methodology

Sample design

• Sampling Frame: The sampling frame for this study will be 150 adults with diabetes type 1 between 18 to 50 years both male and female suffering from diabetes.

• Sample Size: The sample size of 150 Type 1 Diabetes patients.

•Sample Area: Mumbai

•Sampling Procedure: The sampling procedure used was Random Sampling.

Research Design:

Descriptive as well as exploratory research.

Data Collection Method:

. Structured Questionnaire

Data Collection Sources:

• Primary Data

Data Collection tool & technique: In-depth interviewing technique: Data was collected through in-depth interview of patients through questionnaire.

Questionnaire Design: A structured questionnaire was designed covering, close ended questions. The questionnaire included the questions in reference with product requirement and factor affecting choice of the Glucometer.

Study Area

The study was carried out in Mumbai city.

Sample population

.The inclusion criteria will be all the Type-1 diabetic patients in the healthcare facilities who are available for the study and are willing to participate. The exclusion criteria will be Type-2 diabetes patients. Patients below the age of 18 will not be considered.

Study duration Data collection procedure:

.3 months (1st February to 5th May)

Primary data: Eligible patients of type-1 diabetes male and female adults in the healthcare facility.

Data analysis Procedure: Data will be analyzed with the help of MS excel and descriptive analysis will be done.

Data collection instrument: Interview of Type-1 diabetes patients

Structured questionnaire

Observation

Using available information

Data analysis

.The analysis of questionnaire is done in Excel and Likert Scale. Graphical Analysis is done on the questionnaire.

.Graphical Analysis

1- **Do you know Glucometer?**

Row Labels	Count of Do you know About Glucometer
No	39
Yes	111
Grand Total	**150**

Table 1.1 No of Responses recorded for Fig 1

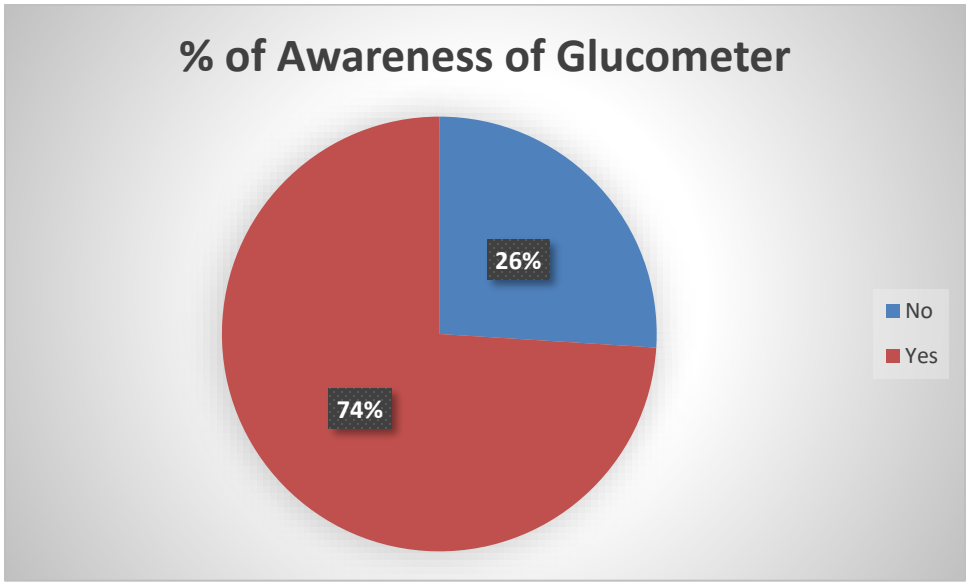

Fig 1: Amongst the 150 respondents 74% of people responded that they are aware about glucometer and 26% responded that they are not aware about glucometer.

2- Do you use Glucometer?

Row Labels	Count of Do you use Glucometer?
No	48
Yes	102
Grand Total	150

Table 1.2- responses recorded for figure 2

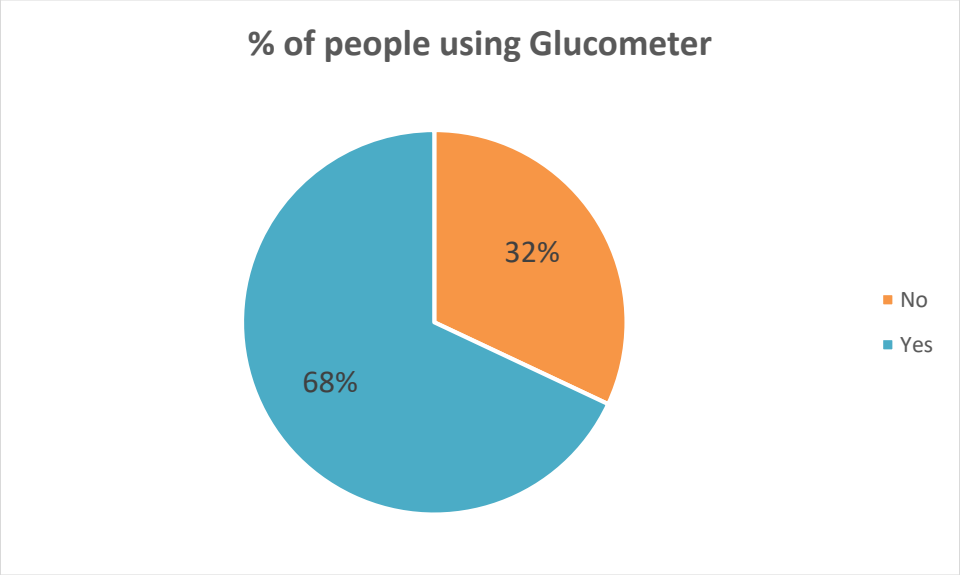

Fig 2 .Among the 150 respondents 68% of type 1 diabetes respondents responded that they use glucometer while 32% of people responded that they do not use Glucometer.

3- Prefer glucometer based on past experiences?

Row Labels	Count of Do you prefer glucometer based on your past experiences?
Maybe	24
No	44
Yes	82
Grand Total	**150**

Table 1.3- responses recorded for figure 3

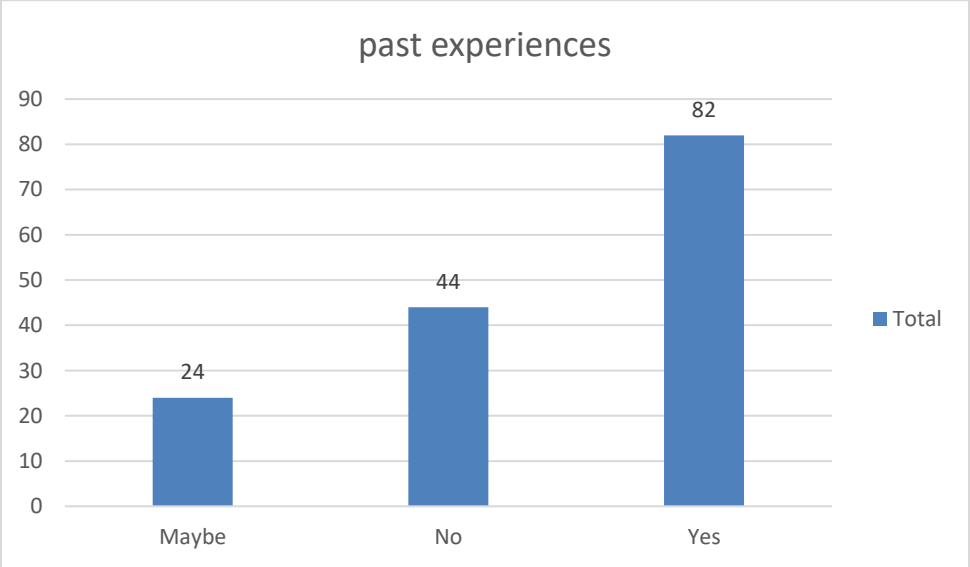

Fig3- Among the 150 respondents 82 people responded that they prefer Glucometer based on their past experiences, 44 people responded that they do not prefer Glucometer based on their past experiences and 24 people responded that they might use Glucometer based on their past experiences.

4- .If you know the purpose and use of glucometer, however you are not using the drug, and so you prefer to buy that in future?

Row Labels	Count of If you know the purpose and use of Glucometer, however you are not using the drug, and do you prefer to buy that in future?
can't say	33
No	12
Yes	100
Grand Total	145

Table 1.4- responses recorded for figure 4

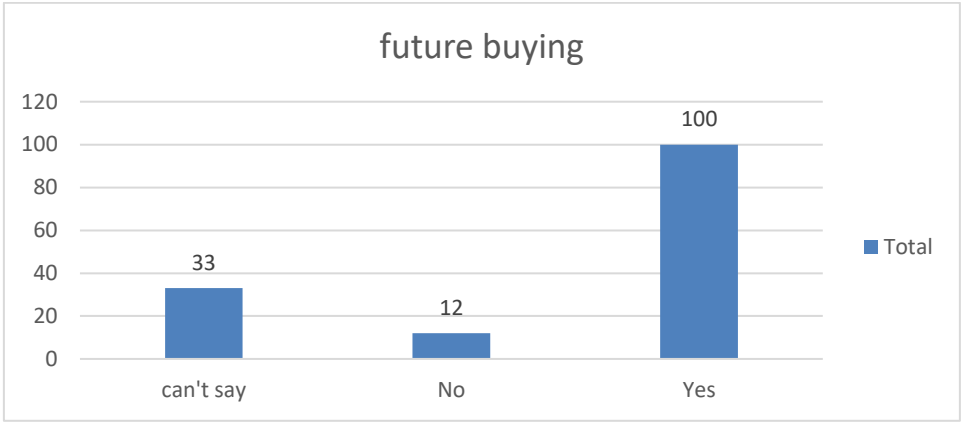

Fig4. 100 out of 150 respondents responded that they would prefer to buy Glucometer in future if they know the purpose of it. 12 responded that they would not buy Glucometer in future even if they know the purpose of it. And 33 of the respondents can't say if they will use Glucometer in future if they know the purpose of it.

5- Glucometer gives you information to manage your diabetes?

Row Labels	Count of Glucometer gives you information to manage your diabetes.
can't say	26
No	15
Yes	106
Grand Total	**147**

Table1.5- Responses recorded for figure 5

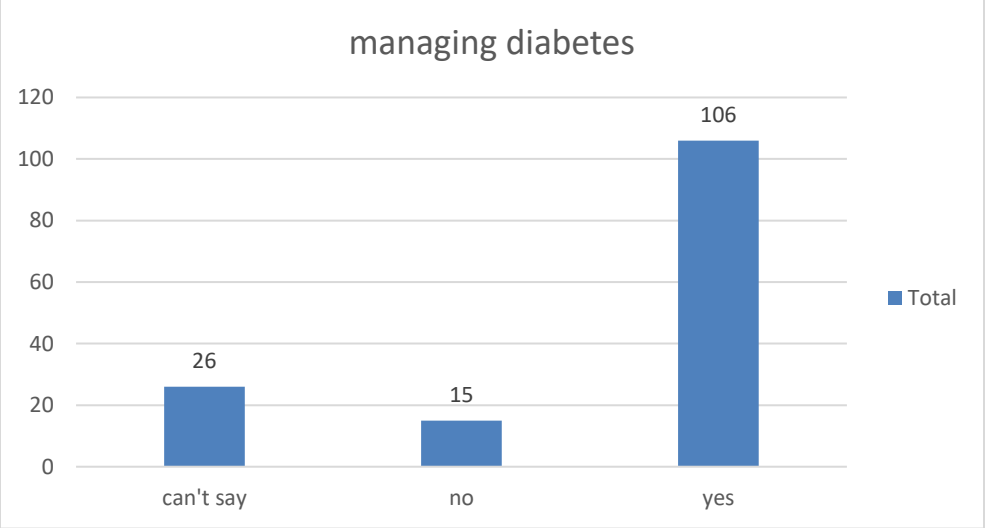

Fig5-Out of 150 respondents 100 people agree that Glucometer gives you the information to manage diabetes among type 1 patients. 15 people responded that Glucometer does not gives the information you need to manage diabetes. 26 respondents can't say whether glucometer gives the information to manage diabetes or not.

6- Glucometer makes you more confident about managing your diabetes?

Row Labels	Count of Glucometer makes you more confident about managing diabetes
Strongly Disagree	18
Disagree	6
Neither Agree nor Disagree	45
Agree	54
Strongly Agree	27
Grand Total	**150**

Table 1.6- response recorded for figure 6

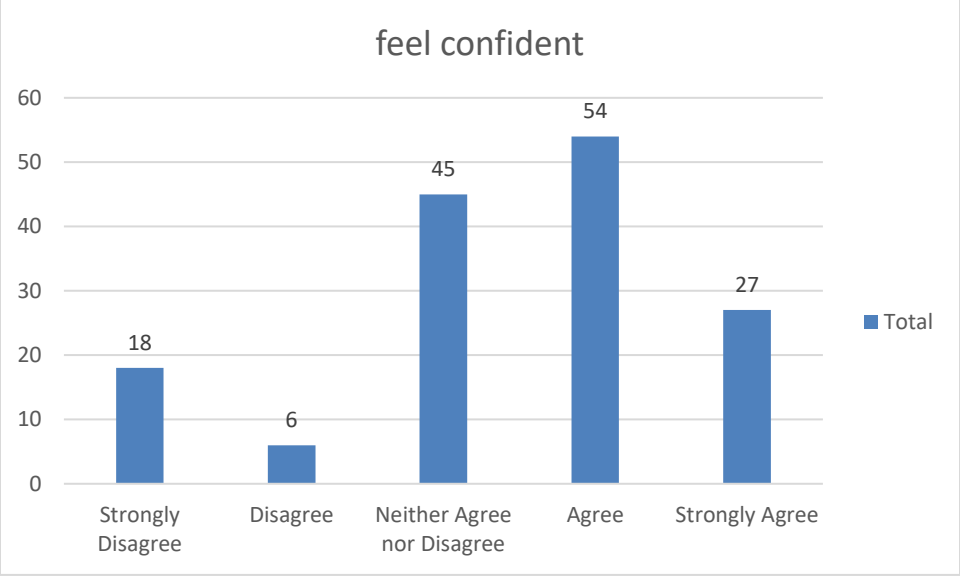

Fig6- 54 respondents agree that Glucometer makes them feel more confident about managing their diabetes, and 45 people neither agree nor disagree that glucometer makes them feel more confident about managing their diabetes.

7- Glucometer makes you more confident about adjusting meal time insulin?

Row Labels	Count of Glucometer makes you feel more confident about adjusting meal time insulin
Strongly Disagree	15
Disagree	4
Neither Agree nor Disagree	51
Agree	49
Strongly Agree	31
Grand Total	**150**

Table1.7- response recorded for figure 7

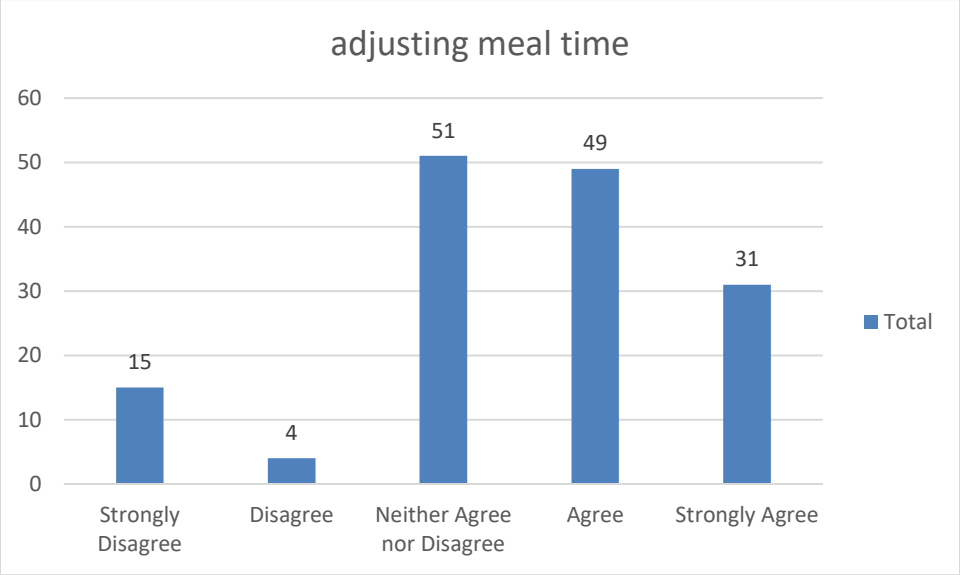

Fig 7.49 respondents out of 150 agree that Glucometer makes them feel more confident about managing their meal time insulin and 51 people neither agree nor disagree that glucometer makes them feel confident about managing their meal time insulin.

8- Glucometer makes your life simpler?

Row Labels	Count of Glucometer Makes Your Life Simpler?
Strongly Disagree	17
Disagree	15
Neither Agree nor Disagree	51
Agree	43
Strongly Agree	24
Grand Total	**150**

Table1.8- response recorded for figure 8

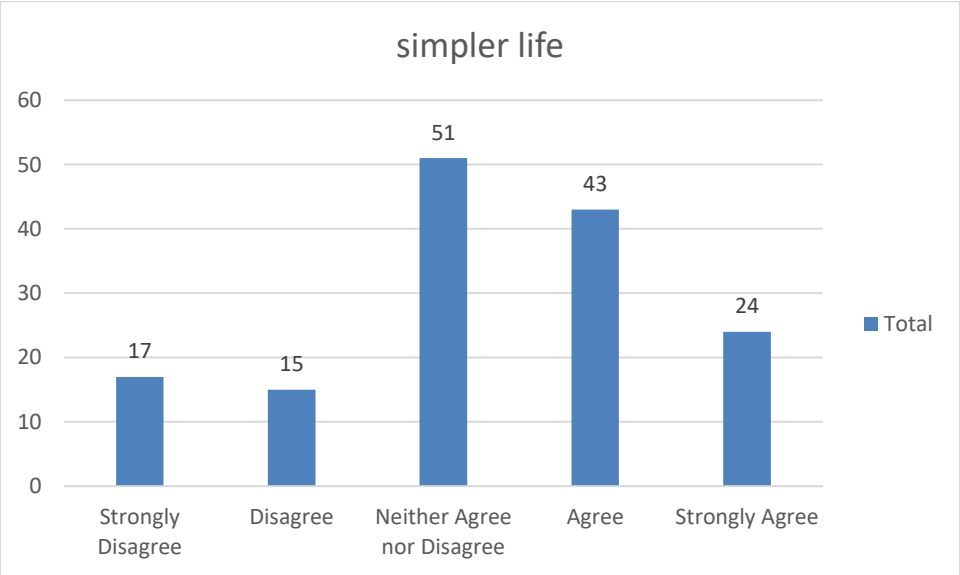

Fig8- 43 respondents out of 150 agree that Glucometer makes their life simpler while 51 respondents neither agree nor disagree about Glucometer making their life simpler.

9- Brand influence me to purchase Glucometer?

Row Labels	Count of Brand Influence me to purchase the Glucometer?
Strongly Disagree	17
Disagree	14
Neither Agree nor Disagree	43
Agree	43
Strongly Agree	33
Grand Total	**150**

Table1.9- response recorded for figure 9

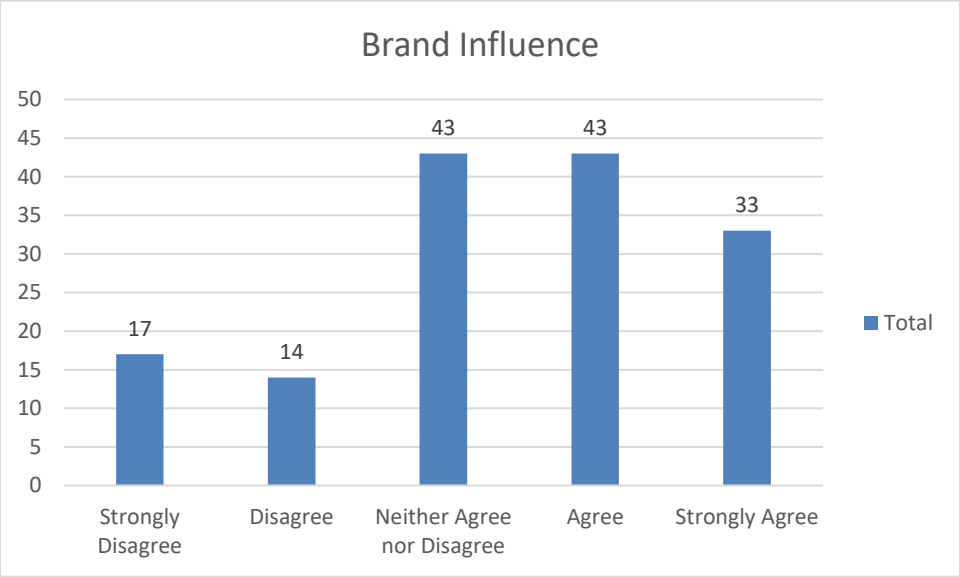

Fig9- 43 people out of 150 agree that brand influences them to buy Glucometer and 43 people neither agree nor disagree that brand influences them to buy Glucometer.

10- Packaging influence me to buy Glucometer?

Row Labels	Count of Packaging Influence me to buy Glucometer?
Strongly Disagree	17
Disagree	28
Neither Agree nor Disagree	46
Agree	45
Strongly Agree	14
Grand Total	**150**

Table1.10- response recorded for figure 10

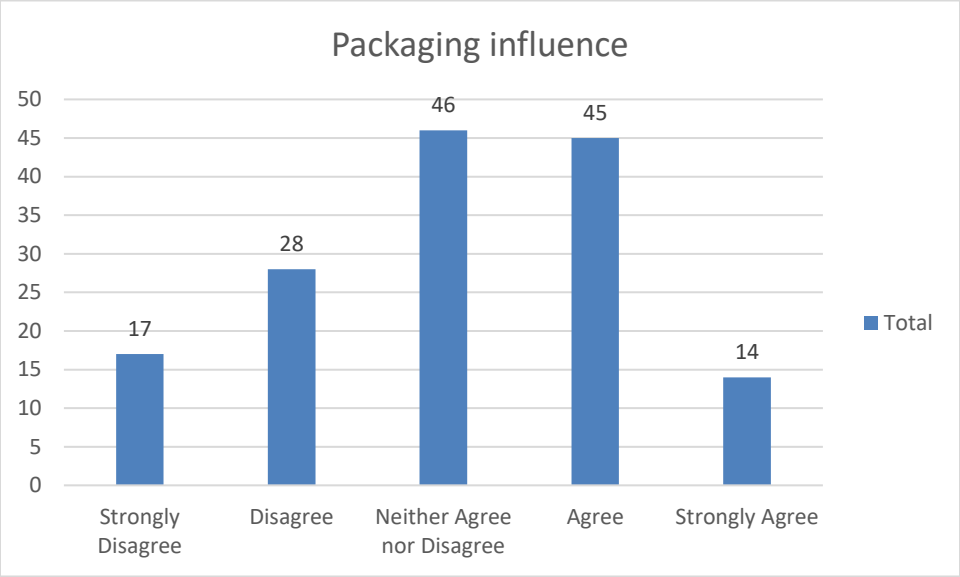

Fig10- 45 people out of 150 agree that packaging influences them to buy Glucometer and 46 people neither agree nor disagree that packaging influences them to buy glucometer.

11- Pricing influence me to buy Glucometer?

Row Labels	Count of Pricing Influence me to buy Glucometer?
Strongly Disagree	20
Neither Agree nor Disagree	63
Agree	42
Strongly Agree	25
Grand Total	**150**

Table1.11- response recorded for figure 12

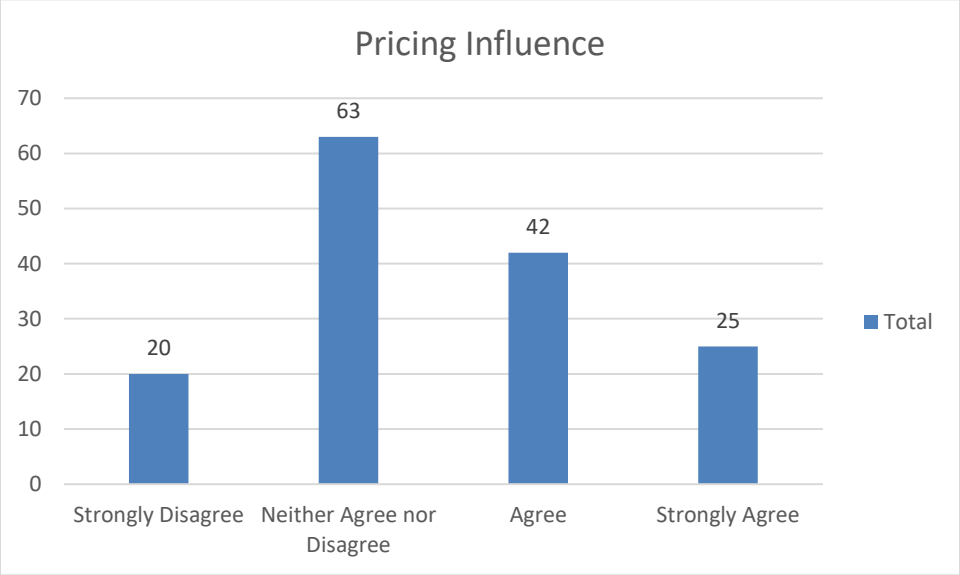

Fig11- 42 out of 150 respondents agree that pricing influence them to buy Glucometer and 63 people neither agree nor disagree that pricing influence them to buy Glucometer.

12- Prefer glucometer only when Doctor Advice

Row Labels	Count of I prefer glucometer only when Doctor Advice
Strongly Disagree	9
Disagree	22
Neither Agree nor Disagree	32
Agree	37
Strongly Agree	50
Grand Total	**150**

Table1.12- response recorded for figure 12

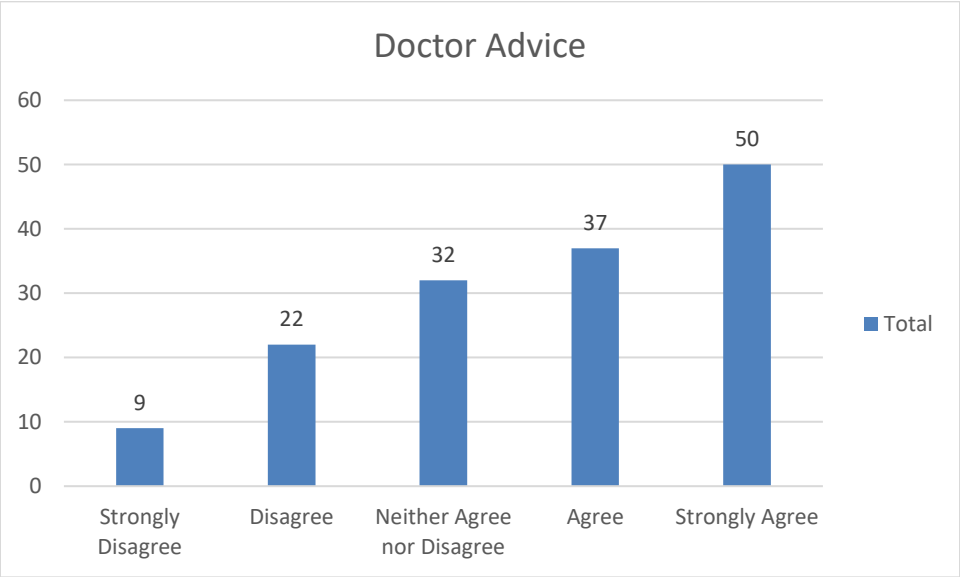

Fig12-50 out of 150 respondents strongly agree that they would buy Glucometer on doctors' advice, and 37 respondents agree that they would buy Glucometer on their Doctors advice.

FINDINGS

- Study shows that there is enough awareness about Glucometer among diabetic patient, 74% of people responded that they are aware about glucometer
- 1/3rd of community in city like Mumbai is not even aware about Glucometer.
- Brand plays major role to purchase any Glucometer.
- Glucometer makes people more confident about managing their diabetes.
- People prefer Doctor's advice to buy Glucometer.
- People are more likely to buy glucometer based on past experiences.

RECOMMENDATIONS

.Since we have seen that 1/3rd of respondents were not aware of Glucometer, hence to promote its products, company should like to use various advertisements and promotional strategy like:

•.This Glucometer can be promoted on 14Th Nov. which we also known as “Diabetes day”. So in this day it can start promotional campaigns like “Diabetes Mela”, or Diabetes march etc.

• .It should be promoted more and more through the doctors and chemist, since they are the important channel intermediaries in this.

• .Role of Nurses cannot be ignored also; they can be a very good assistant in making the Glucometer known among the chemist. They can be designated as “The Diabetes Advisors.

• .On every Friday, which is called sweet Friday, free health check-up camps should be operated, so that more and more people can be aware about the Glucometer.

• .Doctors awareness programme should be run to time to time to make doctors aware about the new product and features about the Glucometer.

LIMITATIONS

.In the particular research the study duration was only for a few 13 weeks, so having a limited time period is the big limitation the project.

.Since the data collection was only done in Mumbai hence it is a bit time taking process, because respondents give responses as per their ease of time, which ultimately make it a bit longer process.

.Sample size taken was only 150. Hence it has its own limitations.

.Human error is unavoidable.

CONCLUSION

.Now a day Diabetes has become a known word to everybody and this disease is spreading worldwide. To cope-up with the problem every company is introducing new technology solutions every day.

In this study we can conclude that brand plays a major role in influencing patients.

74% of people are aware about Glucometer but still 26% of diabetic population is still unknown about Glucometer which is a concern.

Although majority of diabetic people agree that Glucometer makes their life simpler but also majority of population depends on Doctor's advice for buying Glucometer.

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Annexure

QUESTIONNAIRE

1. Do you know about glucometer?

a.). Yes b.). No

2. If yes do you use glucometer?

a.). Yes b.). No

3. Do you prefer glucometer based on your past experiences?

a.). Yes b.). No

4. If you know the purpose and use of glucometer however you are not using the Drug, would you prefer to buy that in future?

a.).Yes b.). No c.). Can't say

5. Glucometer Give you the information to manage your diabetes?

a). Yes b). No

6. Makes you more confident about managing your diabetes?

a). Yes b). No

7. Makes you feel confident adjusting your mealtime insulin?

a). Yes b). No

8. Makes your life simpler?

a). Yes b). No

Factors influencing the preference for Glucometer?

(KEYS:: 1= strongly disagree, 2= Disagree, 3= neither agree nor disagree, 4= Agree, 5= strongly agree.)

Factors	a	b	c	d	e
9.) Brand influences me to purchase the glucometer.					
10.)Packaging of the glucometer influence me to buy.					
11.)Pricing of the glucometer influence me to buy.					
12.)Past Experience influence me to buy.					
13.)I prefer glucometer only when doctor's advice.					

Thank you for your valuable response…