

Knowledge, Attitude and Practice Among Diabetic Patients on Home Insulin Therapy Towards the Disease

By

Paras Preet Singh

*Dissertation submitted for the partial fulfillment of the
MBA Pharmaceutical Management*

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that **Paras Preet Singh** student of MBA Pharmaceutical Management from The IIHMR University, Jaipur has undergone internship training at Portea Medical, Bangalore on topic To study the Knowledge, Attitude and Practices among Diabetic Patients on Home insulin therapy towards the disease from 7th Feb 2018 to 7th May 2018.

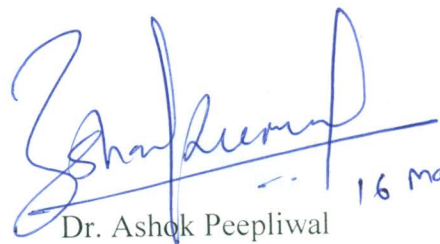
He has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific, and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



Dr. Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Dr. Ashok Peepliwal
Associate Professor
The IIHMR University, Jaipur

16 May 18

The certificate is awarded to

PARAS PREET SINGH

In recognition of having successfully completed her
Dissertation in the department of

PHARMA SOLUTIONS

And has successfully completed his Project on

**KNOWLEDGE, ATTITUDE AND PRACTICE AMONG DIABETIC PATIENTS ON HOME-
INSULIN THERAPY TOWARDS THE DISEASE**

Date: 10th May, 2018

Organization: PORTEA MEDICAL PVT. LTD, BANGALORE

He comes across as a committed, sincere & diligent person who has a
strong drive and zeal for learning

We wish him all the best for future endeavors



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THE IIHMR UNIVERSITY, JAIPUR**CERTIFICATE BY SCHOLAR**

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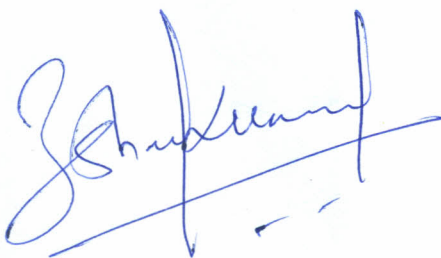
and submitted by Paras Preet Singh

Enrollment No 0074

under the supervision of Dr. Ashok Peepliwal

for award of MBA in Pharmaceutical Management of the University carried out during the period from 2016 to 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.

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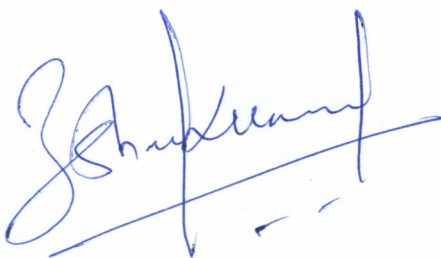


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ABSTRACT

Background: Diabetes is one of the first diseases described with an Egyptian manuscript from c. 1500 BCE mentioning “too great emptying of the urine.” The first described cases are believed to be of type 1 diabetes Indian physicians around the same time identified the disease and classified it as madhumeha or honey urine noting that the urine would attract ants the term "diabetes" or "to pass through" was first used in 250 BC by the Greek Apollonius of Memphis. Type 1 and type 2 diabetes were identified as separate conditions for the first time by the Indian physicians Sushruta and Charaka in 400-500 CE with type 1 associated with youth and type 2 with obesity.

Aim:

To study the Knowledge, Attitude and Practice among diabetic patients on home insulin therapy towards the disease.

Methodology:

Sample size	:	150 Diabetic Patients (83 Males and 67 Females)
Sampling method	:	Probability Sampling.
Technique Used	:	Structured Questionnaire.
Type of data	:	Primary data was referred.
Type of study	:	Quantitative Study was done.
Study location	:	Bangalore (Rural and Urban)
Study Duration	:	7 th Feb 2018 – 7 th May 2018

Results: 1. It was found that 63.3% knows about the diabetes but here the thing is the knowledge where as 36.7% of the patients had very little or no idea.
2. It was found that 37.3% of the people told that they suffered from eye disorders, 33.3% of the people said that they suffered from Peripheral neuropathy.....

Conclusion: Coming onto the conclusions of the report that was prepared after analyzing the responses of 150 Diabetic People several types of conclusion statement was made and it was also found that there is a lot need of awareness that need to be created among the people for the better understanding of the disease and its management if people are not clear on the point what the diabetes is and what are the implications and complications of the disease the critical case will keep on reporting and would agonize the stats of mortality rate of people due to diabetes in India and hence, there is a need to create awareness among the people.

ACKNOWLEDGEMENT

I favor my Alma mater and Almighty, the efforts that were put into this project. But this would not be possible without the generous support and assistance, of my mentor and my organization, PORTEA MEDICAL, BANGALORE. I would urge all my thanks to them for such a great support and Co-operation and would like to Thank Mr. Manoranjan Darla who support and guided me on my crucial decisions and like to thank my HR Mr. Darshith Satheesh for helping me at very point.

With a view to the grace of Dr. Ashok Peepliwal them with constant guidance of him, and for direction, and the support for the project so that the report provides information on the completion of the work. I would also like to express my parents and my gratitude to the members of the University for the cooperation and encouragement helped me to complete the report. I also give thanks to my colleagues for helping me during problems.

INTRODUCTION

A new set of global guidelines on managing diabetes that aim to replace those followed for over three decades has stirred up a row within the medical community. Doctors in India feel the norms, which recommend relaxing blood sugar targets, will not only lead to serious complications in diabetics but also confusion in treatment protocol. They advise that these should be ignored for Indians. The controversial norm relates to relaxing the long-term blood sugar target, hemoglobin A1C (HbA1c) which, via a blood test, gives an estimate of a person's blood sugar level average over the past few months. Generally, an HbA1c of 6.5% indicates diabetes.

There were over 72 million cases of diabetes in India in 2017, according to International Diabetes Federation.

American College of Physicians, an organization of internal medicine physicians, has recommended recently in the medical journal, *Annals of Internal Medicine*, that clinicians should aim to achieve an HbA1c level between 7% and 8% in most patients with type 2 diabetes as against the traditional 6.5 to 7% which has been followed over decades. The recommendation is leading to a conflict in views amongst doctors, with certain associations opposing it. Doctors here say the guideline of lowering the blood sugar target cannot be binding and should be ignored as diabetes in India is more aggressive, and, hence, riddled with complications. They say these recommendations should not be applicable here as India has its own three advisory bodies—the ICMR (Indian Council of Medical Research), RSDDI (Research Society For The Study of Diabetes in India) and API (Association of Physicians of India)—which are more tuned in to Indian cases. Anoop Misra, chairman of Delhi-based Fortis-C-DOC (Centre of Excellence For Diabetes, Metabolic Diseases and Endocrinology), said, “In reality, Indian physicians continue to follow US-based guidelines, hence ACP guidelines may have substantial impact in India. If blood sugar control is loosened (as advised by ACP), more patients in India will suffer from complications, the burden of which

is already high. We should ignore these and stick to previous time-tested glycosylated hemoglobin limit of control of 7%.”

Others concur the guidelines cannot be standardized because of several differences in lifestyle, physiology and food habits. Dr Shashank Joshi, endocrinologist and diabetologist who consults at Mumbai’s Lilavati Hospital, said, “Asian Indians who develop diabetes are insulin-resistant and have different phenotype (observable characteristics, physiological properties, or behavior) compared to those in the western world. None of the North American or European guidance are applicable for Indians, Chinese or Asian geographies.” Also, since Asians consume more carbohydrates, their response to medicines and doses is different.

Says Dr Rajeev Chawla, president-elect of RSSDI 2018 and senior consultant diabetologist, “Pharmacotherapy using oral or injectable agents may be used in addition to lifestyle modification therapies to achieve a target glycosylated hemoglobin target of less than 7% for all diabetics as far as possible to prevent complications.” The RSSDI is the largest organization of doctors in Asia engaged in diabetes care with over 7,000 members.

The guidelines were first released in 2015 and revised in January 2018 based on Indian evidence. Diabetes mellitus is classified into type I, type II and gestational diabetes mellitus type I being characterized by insulin deficiency which needs daily administration of Insulin. Type II diabetes mellitus results from the body's ineffective use of insulin while gestational diabetes is hyperglycemia with onset or first recognition during pregnancy. Insulin therapy is an important part of diabetes treatment often and is a cornerstone of treatment in type I diabetes and critical, in many cases, to the management of type II diabetes. Despite this at least one-third of patients fail to take their insulin as prescribed, and 20% of adults intentionally skip their doses. Participation of patients is very crucial in the management of diabetes mellitus as medications alone aren't enough to manage the disease without different non-pharmacological measures taken. Numerous studies have been conducted in various parts of the world regarding the awareness and practice of diabetes patients towards the self-administration of insulin therapy and overall

management of the disease. In Ethiopia, some studies on the prevalence, complications, adherence of patients to their medications, and self-care practices were conducted in different parts of the nation but studies regarding patient's awareness and practices are still scarce. The objective of this study was to assess the knowledge, attitude and practice of diabetic patients who were self-administering insulin towards their management of disease and medication.

BACKGROUND

Diabetes is one of the first diseases described with an Egyptian manuscript from c. 1500 BCE mentioning "too great emptying of the urine." The first described cases are believed to be of type 1 diabetes Indian physicians around the same time identified the disease and classified it as madhumeha or honey urine noting that the urine would attract ants the term "diabetes" or "to pass through" was first used in 250 BC by the Greek Apollonius of Memphis. Type 1 and type 2 diabetes were identified as separate conditions for the first time by the Indian physicians Sushruta and Charaka in 400-500 CE with type 1 associated with youth and type 2 with obesity. The term "mellitus" or "from honey" was added by Thomas Willis in the late 1600s to separate the condition from diabetes insipidus which is also associated with frequent urination. The diabetes capital of the world with as many as 50 million people suffering from type-2 diabetes, India has a challenge to face. However, medical experts feel that timely detection and right management can go a long way in helping patients lead a normal life. Diabetes might be one of the most talked about diseases across the world and especially in India, but awareness about the same can well be estimated by the fact that India today has more people with type-2 diabetes (more than 50 million) than any other nation.

With the country having the highest number of diabetic patients in the world, the sugar disease is posing an enormous health problem to our country today. Often known as the diabetes capital of the world, India has been witnessing an alarming rise in incidence of diabetes according to the International Journal of Diabetes in Developing Countries. According to a World Health Organization (WHO) fact

sheet on diabetes, an estimated 3.4 million deaths are caused due to high blood sugar.

The WHO also estimates that 80 per cent of diabetes deaths occur in low and middle-income countries and projects that such deaths will double between 2016 and 2030. It has been further estimated that the global burden of type-2 diabetes is expected to increase to 438 million by 2030 from 285 million people (recorded in 2010). Similarly, for India this increase is estimated to be 58%, from 51 million people in 2010 to 87 million in 2030. But debates, discussions and deliberations aside, the fundamental thing is to know what exactly diabetes is.

EARLY HISTORY

The first complete clinical description of diabetes was given by the Ancient Greek physician Aretaeus of Cappadocia (fl. 1st century CE), who also noted the excessive amount of urine which passed through the kidneys.”

Diabetes mellitus appears to have been a death sentence in the ancient era. Hippocrates makes no mention of it, which may indicate that he felt the disease was incurable. Aretaeus did attempt to treat it but could not give a good prognosis; he commented that "life (with diabetes) is short, disgusting and painful. The disease must have been rare during the time of the Roman empire with Galen commenting that he had only seen two cases during his career.

In medieval Persia, Avicenna (980–1037) provided a detailed account on diabetes mellitus in The Canon of Medicine, "describing the abnormal appetite and the collapse of sexual functions," and he documented the sweet taste of diabetic urine. Like Aretaeus before him, Avicenna recognized a primary and secondary diabetes. He also described diabetic gangrene, and treated diabetes using a mixture of lupine, trigonella (fenugreek), and zedoary seed, which produces a considerable reduction in the excretion of sugar, a treatment which is still prescribed in modern times. Avicenna also described diabetes insipidus very precisely for the first time, though

it was much later that Thomas Willis differentiated it from diabetes mellitus in a chapter of his book *Pharmaceutice rationalis* (1674).

The sweet urine symptom of diabetes is evident in the Chinese name for diabetes, *táng niǎo bìng* (糖尿病), meaning "sugar urine disease". This name has also been borrowed into Korean and Japanese. In 1776 Matthew Dobson confirmed that the sweet taste comes from an excess of a kind of sugar (called glucose) in the urine and blood.

Although diabetes has been recognized since antiquity, and treatments of various efficacy have been known in various regions since the Middle Ages, and in legend for much longer, pathogenesis of diabetes has only been understood experimentally since about 1900. An effective treatment was only developed after the Canadians Frederick Banting and Charles Best first used insulin in 1921 and 1922.

The discovery of a role for the pancreas in diabetes is generally ascribed to Joseph von Mering and Oskar Minkowski, who in 1889 found that dogs whose pancreas was removed developed all the signs and symptoms of diabetes and died shortly afterwards. In 1910, Sir Edward Albert Sharpey-Schafer suggested that people with diabetes were deficient in a single chemical that was normally produced by the pancreas—he proposed calling this substance 'insulin', from the Latin *insula*, meaning island, in reference to the insulin-producing islets of Langerhans in the pancreas. The endocrine role of the pancreas in metabolism, and indeed the existence of insulin, was further clarified in 1921, when Sir Frederick Grant Banting and Charles Herbert Best repeated the work of Von Mering and Minkowski, and went further to demonstrate they could reverse induced diabetes in dogs by giving them an extract from the pancreatic islets of Langerhans of healthy dogs. The islets of Langerhans was discovered in 1869 by an anatomist named Paul Langerhans. He identified the key cells in the pancreas which produce the main substance that controls glucose levels in the body.

LITERATURE REVIEW

Knowledge, attitude and practice among diabetic patients on insulin therapy towards the disease and their medication at a university hospital in North-western Ethiopia: a cross-sectional study.

Objective:

To assess the knowledge, attitude and practice of diabetic patients who were self-administering insulin towards their management of disease and medication.

Materials and Methods:

A cross-sectional study was done in the hospital from 1st of April to 16th of May 2013 through a structured interview with 150 diabetes mellitus patients who were self-administering insulin as part of their therapy. Data collected was analyzed descriptively using SPSS version 19.0.

Results:

Majority (61.3%) were men and those in the age group of 14-29 years (47.3%). Among those who experienced hypoglycemia, 135 (90%) knew the home management of hypoglycemic effect of insulin. More than three quarters (78%) reported they were comfortable with their insulin therapy. More than half (54.7%) of the participants had their blood sugar level monitored every month. Forty-six (30.7%) of the patients reported they had missed their insulin due to different reasons at different times. Insulin storage appropriateness was significantly associated to educational level.

Conclusions:

This study showed that there was poor practice among the patients regarding diabetes and self-insulin therapy which calls for education on self-care management and insulin self-therapy for diabetes mellitus patients by skilled health care providers.

Survey of knowledge-attitude-practice concerning insulin use in adult diabetic patients in eastern India

Objectives:

The study was conducted to assess knowledge, attitude, and practice regarding insulin use among diabetic patients in tertiary care hospitals.

Materials and Methods:

Type 1 and 2 diabetic patients, aged 18 years and above, attending the Medicine/Endocrinology out-patient department or admitted as in-patients in three hospitals in and around Kolkata were enrolled. A pretested structured questionnaire comprising of 51 items was administered through face-to-face interview. Responses from 385 subjects were analyzed.

Results:

Both higher educational and higher economic standards were associated with better understanding of insulin use. Longer duration of diabetes and its treatment (oral anti-diabetic drugs and insulin) were associated with better knowledge of some parameters. Female subjects were less aware of HbA1c as a monitoring tool. Among current insulin users, 70% had never used a glucometer; only 27.33% carried simple carbohydrates for use in hypoglycemic attacks; and 32% failed to rotate sites for insulin injection.

Conclusion:

Knowledge and attitude were satisfactory overall but deficiencies in practice were pronounced, which can potentially be removed through appropriate counseling.

Knowledge, Attitude and Practices of Diabetic Patients in the United Arab Emirates

Introduction

Diabetes self-management education is a cornerstone of diabetes care. However, many diabetics in the United Arab Emirates (UAE) lack sufficient knowledge about their disease due to illiteracy. Thus, before considering any possible intervention it was imperative to assess present knowledge, attitudes, and practices of patients towards the management of diabetes.

Methods

A random sample of 575 DM patients was selected from diabetes outpatient's clinics of Tawam and Al-Ain hospitals in Al-Ain city (UAE) during 2006–2007, and their knowledge attitude and practice assessed using a questionnaire modified from the Michigan Diabetes Research Training Center instrument.

Results

Thirty-one percent of patients had poor knowledge of diabetes. Seventy-two had negative attitudes towards having the disease and 57% had HbA1c levels reflecting poor glycemic control. Only seventeen percent reported having adequate blood sugar control, while 10% admitted non-compliance with their medications. Knowledge, practice and attitude scores were all statistically significantly positively, but rather weakly, associated, but none of these scores was significantly correlated with HbA1c.

Conclusions

The study showed low levels of diabetes awareness but positive attitudes towards the importance of DM care and satisfactory diabetes practices in the UAE. Programs to increase patients' awareness about DM are essential for all diabetics in

the UAE in order to improve their understanding, compliance and management and, thereby, their ability to cope with the disease.

Knowledge, attitude and practice of insulin use and its adverse effects in adult diabetic population

Background:

Diabetes is a disease when left untreated, leads to many complications. India is emerging as a diabetic capital of the world. Insulin is widely used as a therapeutic option, and hence this study was conducted to assess the awareness of Insulin use and its adverse effects in diabetic population.

Methods:

The study was a questionnaire survey conducted in adult patients with diabetes who are on Insulin therapy. The participants' knowledge, attitude and practice were assessed by using a questionnaire consisting of 32 questions. Scores were allotted to each question and evaluated after applying appropriate statistical tests.

Results:

The mean age of the participants was 57.26 ± 11.24 years. About 54% were males. 46% belonged to rural areas. The mean knowledge score was 17.53 ± 4.40 , mean attitude score 7.42 ± 4.85 and the mean practice score was 6.56 ± 1.91 . 40% responded that they will return the expired insulin vials to the pharmacy. The most common reason for non-adherence was economic constraints (60%). The females had better knowledge (17.60 ± 4.43 vs. 17.45 ± 4.40 , $p > 0.88$), attitude (8.21 ± 3.84 vs. 6.58 ± 5.56 , $p > 0.09$) and practice (6.97 ± 1.84 vs. 6.13 ± 1.92 , $p < 0.02$) of insulin use than males. Also, the urban population had better knowledge (17.58 ± 3.64 vs. 17.32 ± 4.97 , $p > 0.297$), attitude (8.70 ± 3.95 vs. 6.06 ± 5.37 , $p < 0.002$) and practice scores (6.92 ± 1.89 vs. 6.38 ± 1.92 , $p > 1.395$) than the rural counterparts.

Conclusions:

There exists a gap between knowledge attitude and practice of insulin use. This can be overcome by conducting awareness programs by health care providers, to

sensitize people about the proper use, side effects and the methods of disposal of insulin vials.

AIM OF THE DISSERTATION.

To study the Knowledge, Attitude and Practice among diabetic patients on home insulin therapy towards the disease.

RESEARCH QUESTION.

What is the knowledge of the Diabetic people about the Home insulin therapy and their Attitude towards the same.

OBJECTIVE

To Assess the Knowledge and attitude of the Diabetic people towards the Home Health Insulin therapy.

ORGANIZATIONAL PROFILE

PORTEA, established on July 2013 as a start up by Mrs. Meena Ganesh and Mr. Ganesh Krishnan with the realization of providing the healthcare services at doorsteps of people that would probably lessen their pains and efforts to go to hospital and savor the services of Portea being on their favorite bed.

Basically, it helps the individuals with high quality and affordable services

Doctors, medical practices and hospitals offer high quality post-operative services, allowing renewed procedures on in-patient procedure and secondary and tertiary care.

Portea is a leading Home-healthcare service provider with services in Bangalore, Chandigarh, Chennai, Hyderabad, Indore, Jaipur, Kolkata, Lucknow, Mumbai, Nagpur, NCR, Pune and Visakhapatnam. We are going to be operational in more cities very soon.

We offer various in-home health care services like Physiotherapy, Nursing, Attendant/Home Health Aide, Doctor Visit, Lab Tests, New Born Baby & Mother Care. We will keep on adding more in-home health care services with a vision to bring world class medical care into our patients' homes.

PORTEA HELPS

Individuals receive high-quality, affordable, in-home healthcare

Doctors, medical practices and hospitals offer high-quality post-operative and primary care, allowing a renewed focus on in-patient procedures and secondary and tertiary care.

Employers and businesses provide their employees with affordable access to high quality healthcare

Services we offer:

1. Physiotherapy
2. Nursing
3. Medical Equipments
4. Baby and Mother Care
5. Nutrition and Diet Consultation
6. Gestational and Diabetes Management
7. Lab Tests
8. Doctor Consultation
9. Trained Attendants.
10. Vaccination and Elder Care.
11. Care Packages.

VISION

To bring the world class health services to customer doorsteps.

VALUES IN PORTEA

Care and Compassion.

Customer Centric.

Honest & Ethical.

Ownership.

METHODOLOGY

Sample size	:	150 Diabetic Patients (83 Males and 67 Females)
Sampling method	:	Probability Sampling.
Technique Used	:	Structured Questionnaire.
Type of data	:	Primary data was referred.
Type of study	:	Quantitative Study was done.
Study location	:	Bangalore (Rural and Urban)
Study Duration	:	7 th Feb 2018 – 7 th May 2018

ANALYSIS:

Nature of the sample:

This section deals with the opinions of the 150 respondents who are diabetic patients and are dependent upon the insulin therapy to maintain the blood sugar level in the normal conditions.

Total Sample Size : 150 Diabetic Patients (83 Males and 67 Females).

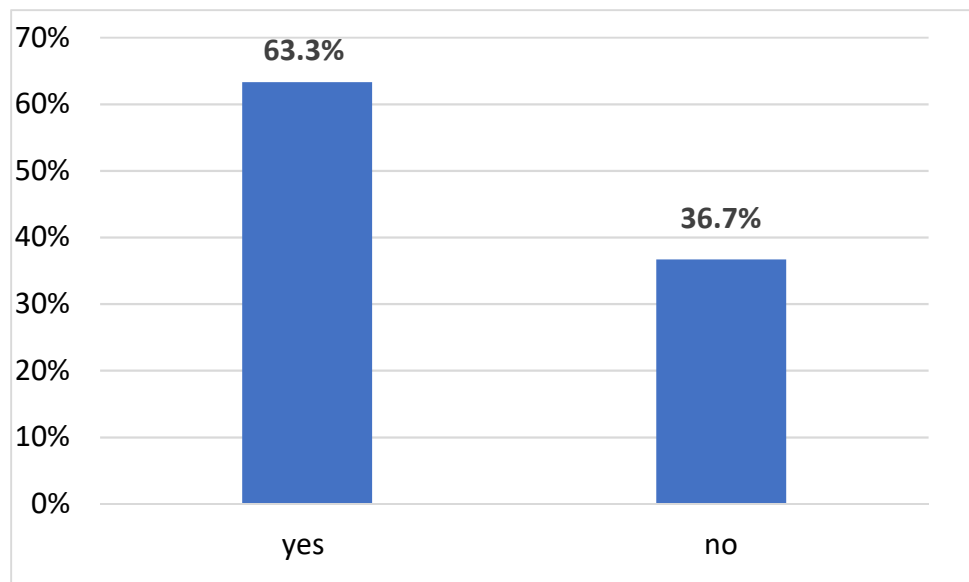
Total Respondents : 150 Diabetic Patients.

The sample size for the analysis had been taken from the newer as well as the old patients who are attached with Portea medical and managing their diabetes well. The Analysis of the opinions of the 150 Diabetic patients specifically aims in knowing the knowledge attitude and the practice among the insulin therapy that they take for normalizing the elevated levels of blood sugar levels and for this a structured questionnaire was made in the order to record their responses in the questionnaire and further analysis can be proceeded.

ANALYSIS OF THE QUESTIONS ASKED

For analyzing the opinions of the people, the starting was done from the fact that how many male patients were there and how many female patients were there from 150 respondents, so there were 83 Male respondents and there were about 67 females respondents, although it has nothing to do with the gender related disease spread.

So, coming on to the very first question that was asked from the patients was that the patient has knowledge about the Insulin treatment or not and after the collection of the data it was found that only 63.3% (95) of the patients understand the act of taking the insulin mostly the people who belong to the rural area 36.7% (55) doesn't understand the effects of the insulin, that what happens when they take an insulin injection but only knows that they have to take that to prevent the complications.



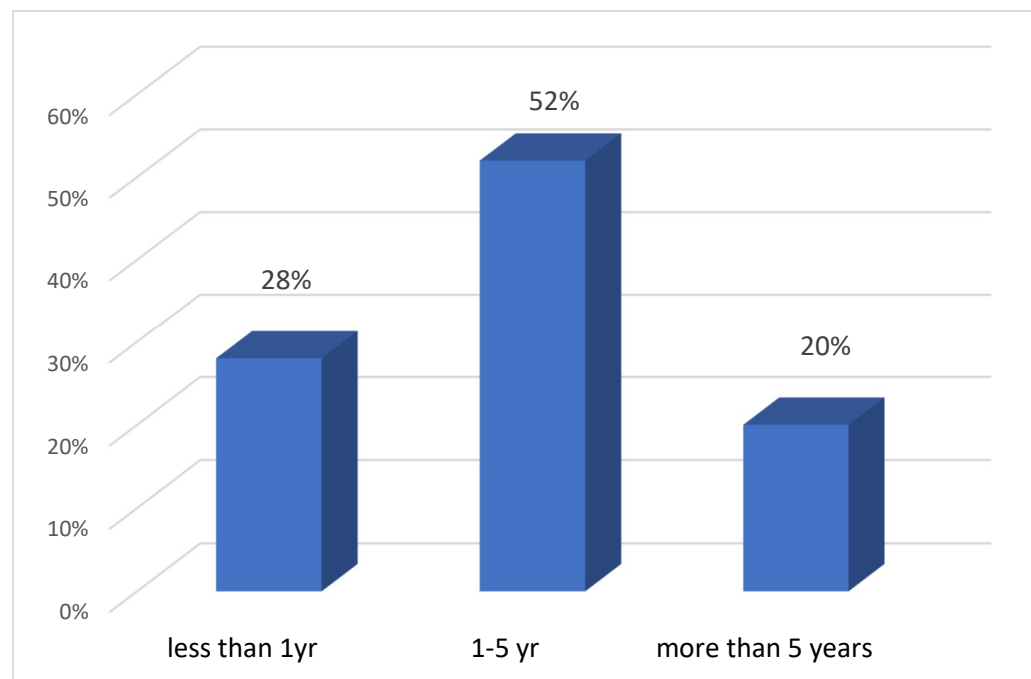
GRAPH 1: Patients having Knowledge about the insulin treatment

So, this graph has been plotted after getting the data from the analysis and found that majority of the patients have the knowledge about the treatment they are taking.

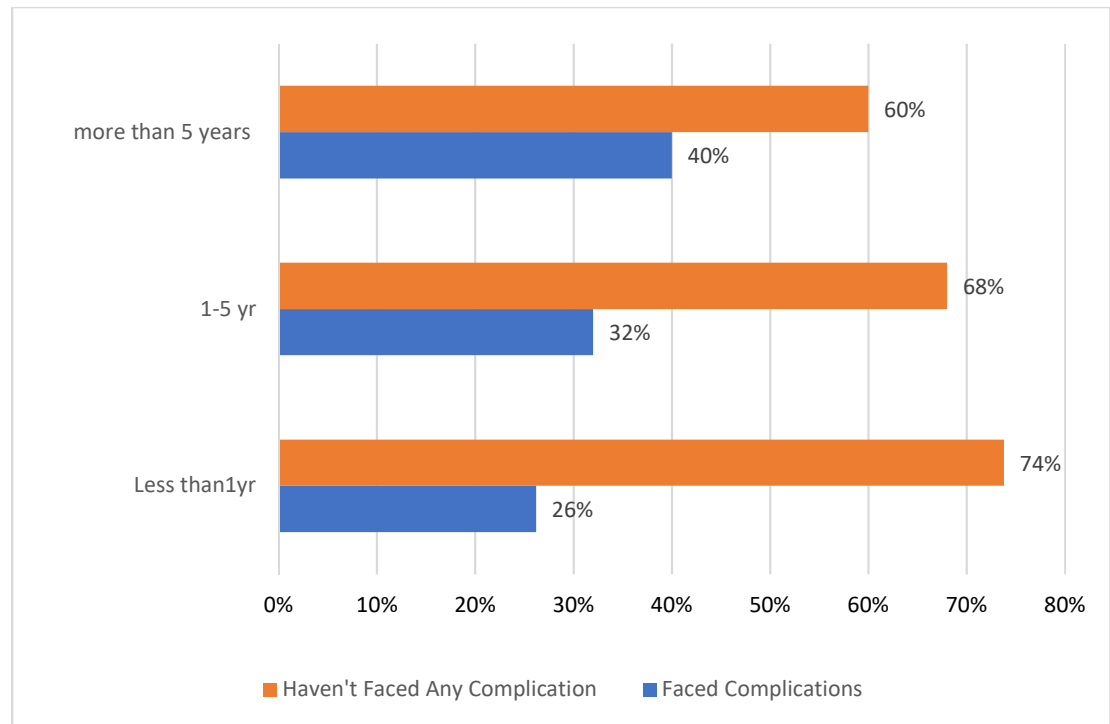
Further continuing the analysis and coming onto the next question, the patients who were suffering from diabetes were asked about the duration they were under the insulin treatment the main aim in asking this question was to see that what about the satisfaction level and the level of complications that were faced by the patients who are under the insulin therapy. After analyzing the responses of 150 patients, it was found that 28% (42) of the patients who were under insulin therapy from less than 1 year now and 52% (78) of the patients were those who were under insulin therapy from last 1 to 5 years and only 20% (30) of the patients were those who were now under insulin therapy for more than 5 years now.

Duration of Insulin Therapy	Complications		Total %
	Yes%	No%	
Less than a year	11(26.2%)	31(73.8%)	42(100%)
One to five years	25(32%)	53(68%)	78(100%)
More than 5 years	12(40%)	18(60%)	30(100%)
Total	48(32%)	102(68%)	150(100%)

Table 1: Depicting the complications of the Diabetes



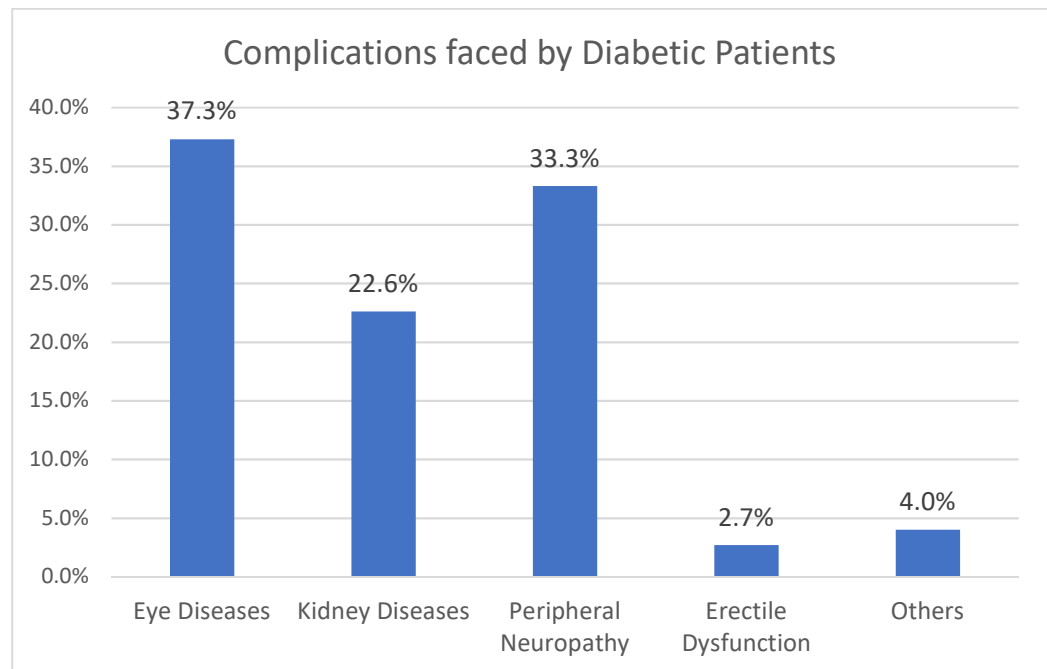
GRAPH 2: Duration of the patients under insulin therapy



Graph 3: Depicting the percentage of patients who faced complications

For the patients who were under the insulin treatment for less than 1 year, only 26% of the patients who faced some of the complications regarding their insulin therapy whereas 74% of the patients either faced some of the minimal or no complications at all. However, on the same context for the patients who are in between the range of one to five years of their insulin treatment the scenario was different in that 32% of the patients faced complications and 68% of the patients were there who didn't face any of the complications and similarly for those patients 40% of the patients were there who faced complications during their insulin therapy and 60% of the patients didn't face any complications. The complications were almost the same i.e. Hypoglycemia, kidney problems, swelling, Pain in feet, edema.

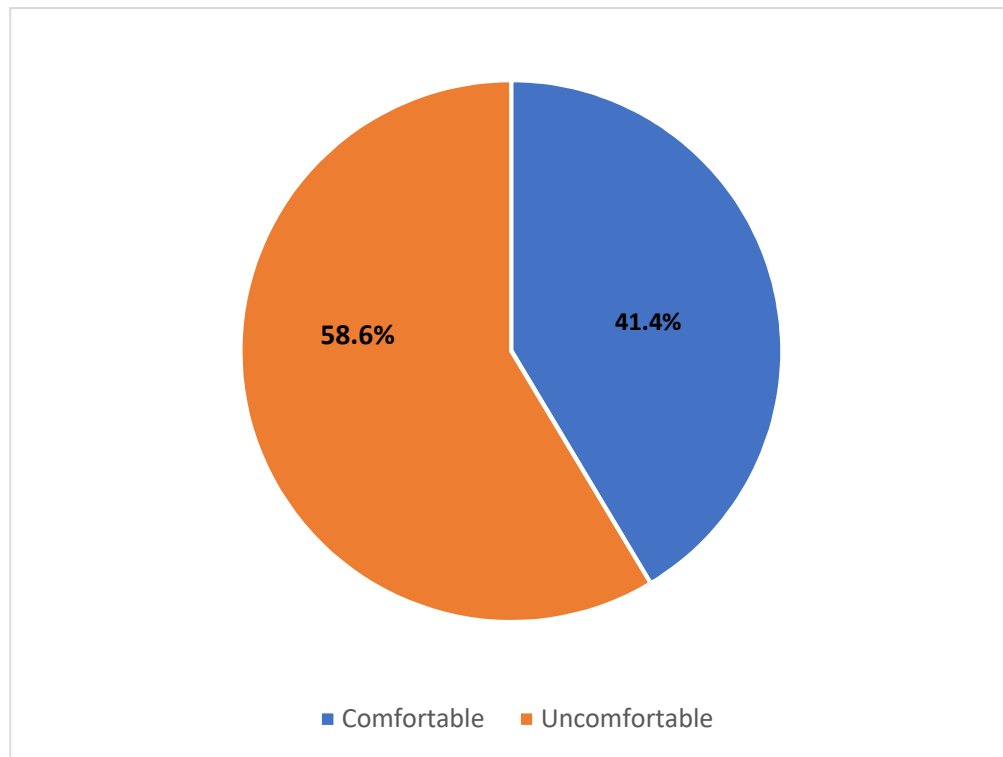
Rushing towards the subpart of the same question to analyze the opinions of the 150 respondents the patients were asked more specifically about the complications that were faced by them and hence told by the and the answers were analyzed.



Graph 4: Depicting the complications that were faced by patients

The responses were recorded on the graph for the pictorial representation and it was found that more specifically more no. of patients are affected by the eye disorders that accounts for about 37.3% (56) close by another group of people were there who faced peripheral neuropathy and accounted for about 33.3% (50) whereas on the slightly minor side those patients were also there who faced kidney related problems this group of the people were there which accounted for about 22.6% (34) and also there were still two other groups which are on the minority side 6% and 3% which were “others group” and the group which faced erectile dysfunction respectively.

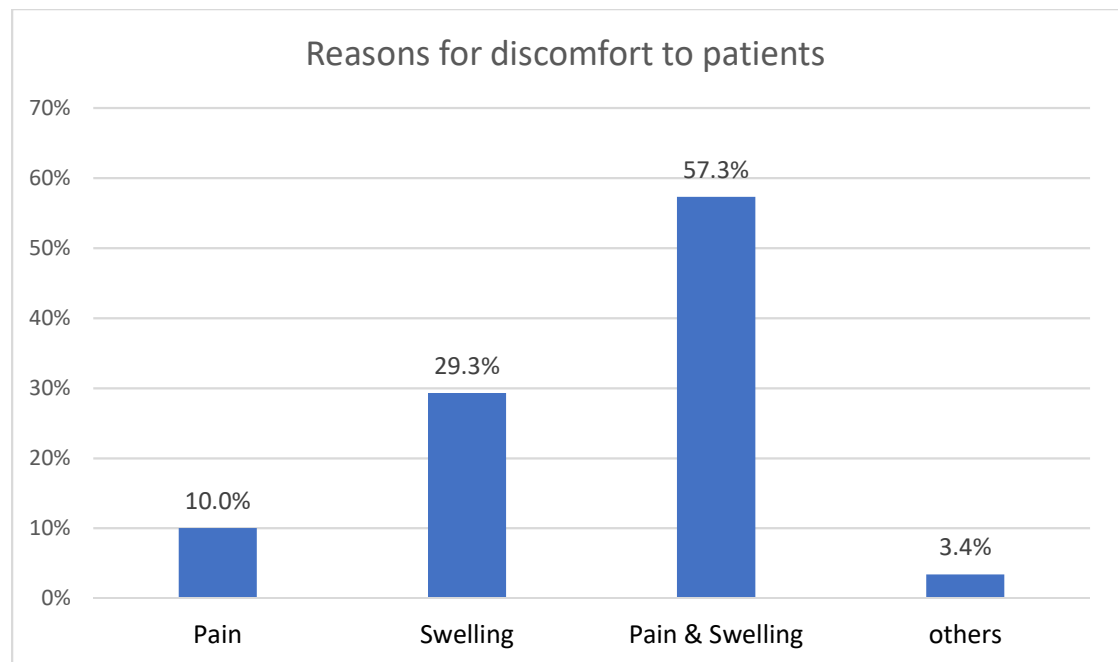
Continuing with the further analysis to know that whether the patients were comfortable with the insulin treatment they were undergoing or not, so the patients were asked about the insulin therapy that whether they are comfortable or not or how easy do they feel during their insulin therapy.



Graph 5: Percentage of patients comfortable with Insulin Therapy

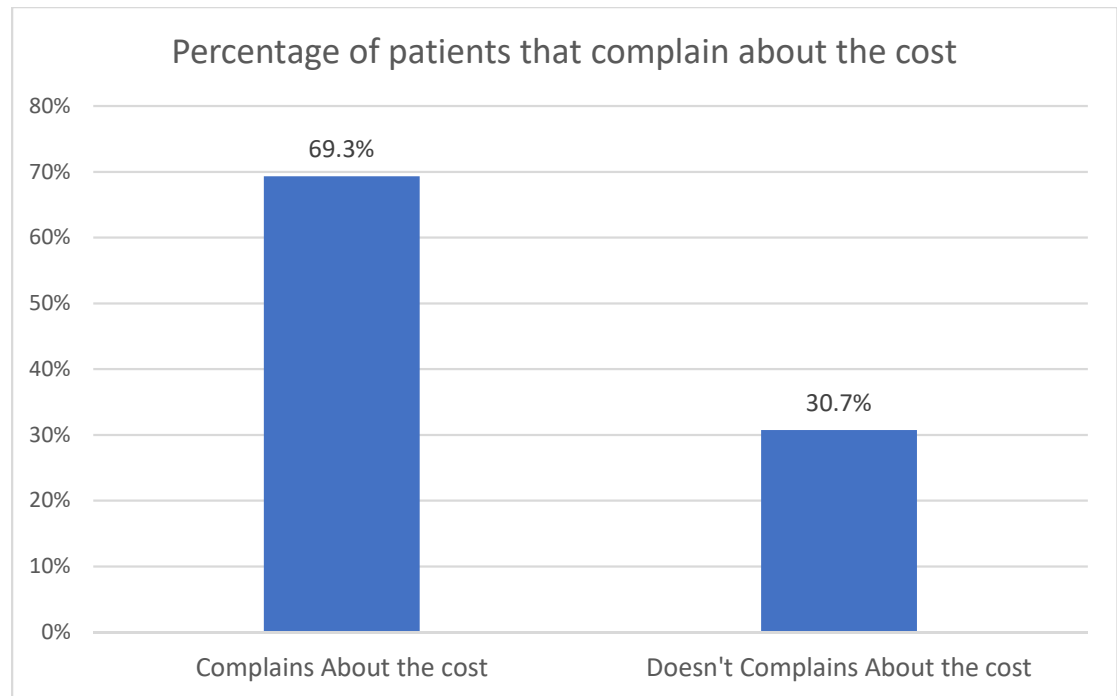
and from the responses of the patients it was found that about 58.6% (88) of the patients were uncomfortable with the insulin treatment they were taking and however 41.4% (62) of the patients said that they are comfortable.

Onto the next question which in actual was the subpart of the previous question and was only for those patients who told that they weren't comfortable with the insulin treatment or the therapy, those patients were asked that why they were feeling discomfort with therapy after getting the responses from those patients who were



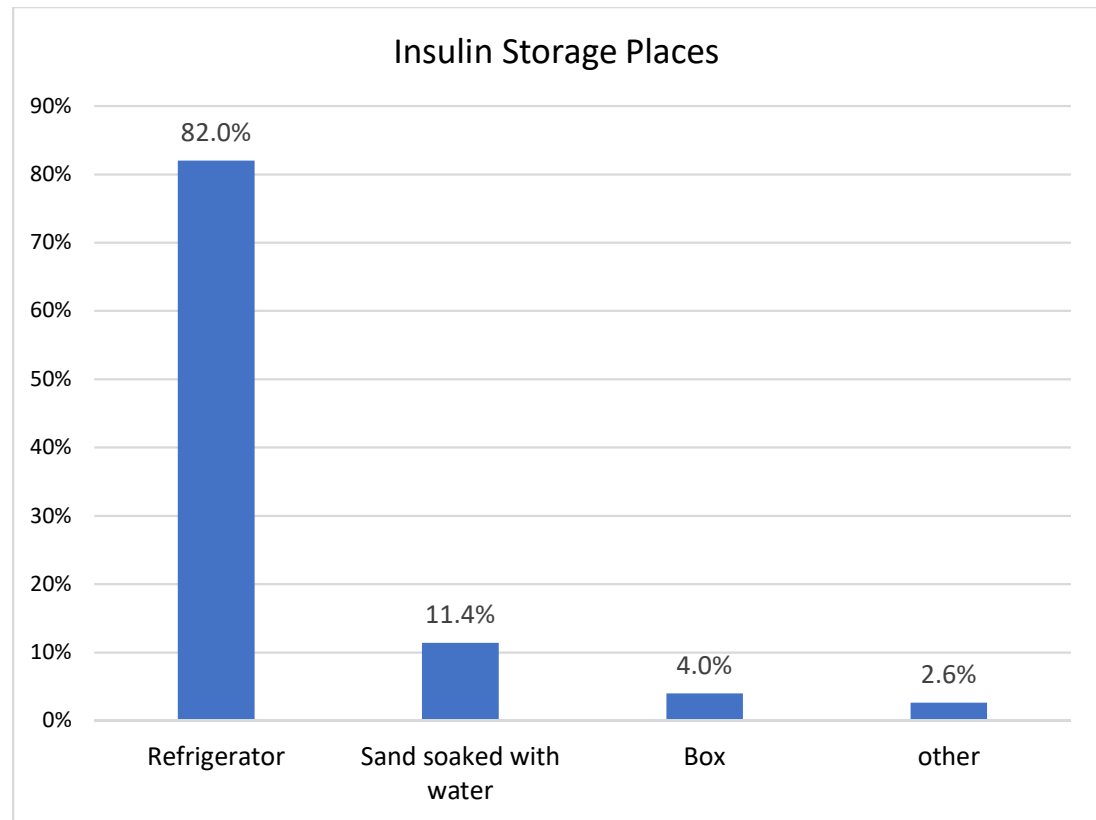
Graph 6: Reason of discomfort for patients who were not feeling comfortable with the therapy.

uncomfortable it was found that 57.3% (86) of the patients felt both pain and swelling as the discomforting factor to them whereas 10% (15) of the patients only complained about the pain they feel during the administration of insulin as a result to which they don't feel like taking insulin as every time they have to take insulin is a painful experience for the and 29.3% (44) of the patients said that they experienced swelling in the area where the insulin was administered in the regular intervals and 3.4% (5) of the patients have other reasons as they don't feel like taking insulin it's a hectic procedure, they have to take insulin everywhere along with them wherever they go because after their meal they have to take insulin injection to normalize their blood sugar levels.



Graph 7: Showing the percentage of the patients that complain about the cost

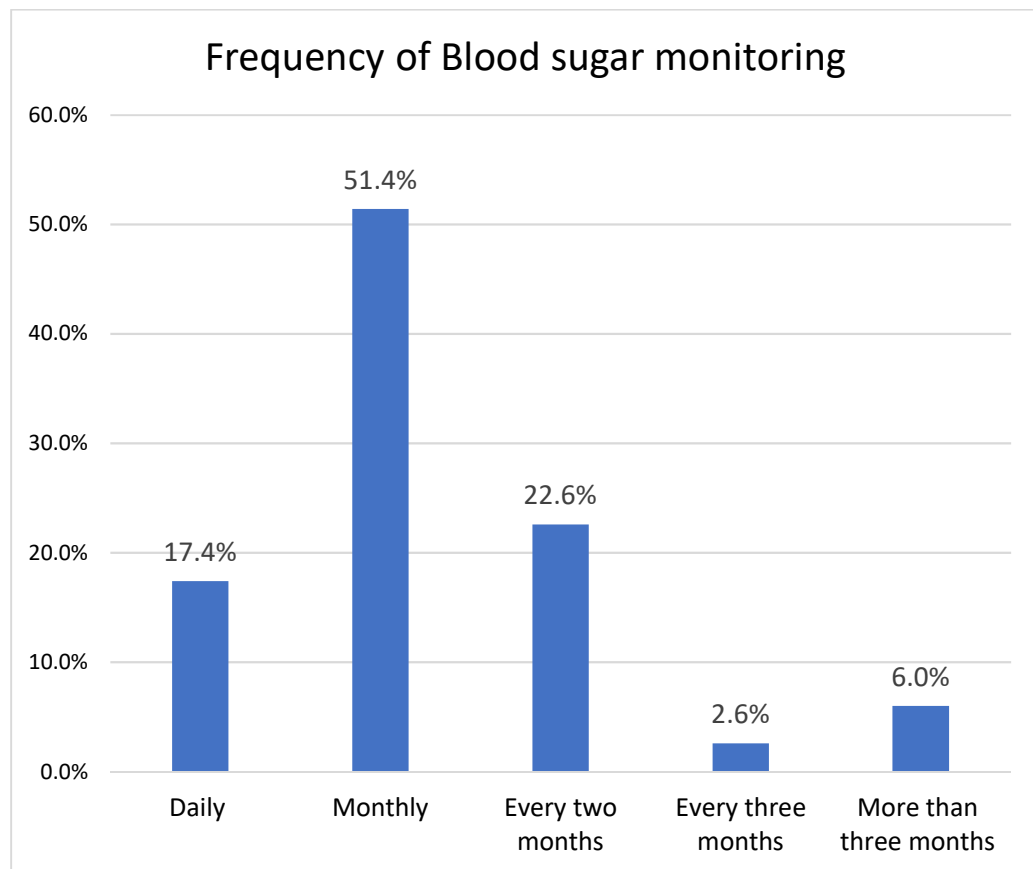
For checking the reasonability of the treatment of the home insulin, patients were asked that do they feel that the treatment they were taking is costly and do they complain about the cost of the treatment and it was found that 69.3% (104) of the patients complained about the cost as they say they have to keep on buying the syringes as one syringe can't be used for more than one time hence the cost of the syringes and as well as the cost of the insulin vials made the treatment costly for them however in the Urban areas of Bangalore 30.7% (46) of the patients who come from upper level of income and others didn't complained about the cost and said that the treatment is affordable for them.



Graph 8: Graph depicting knowledge among patients regarding the storage of insulin vials

The next question that was asked to the patients was that where do the patients keep their insulin vials and every patient was asked this question just to check the level of awareness among the diabetic patients regarding the storage of the insulin vials that where do they keep their insulin vials, as the awareness has already been created by the doctors hence most of the diabetic patients knows about the storage conditions of the insulin vials and hence from the responses that we got from the patients was that 82% of the population of the diabetic patients were keeping their insulin vials in refrigerator however those patients i.e. 11.4% who don't have refrigerator at home they keep the insulin vials in sand soaked with water while 4% of the patients said that they keep the vials in a box and keep the box in shade but they were suggested to keep the vials either in refrigerator or in sand soaked with water and 2.6% of the patients keep it some of the other containers.

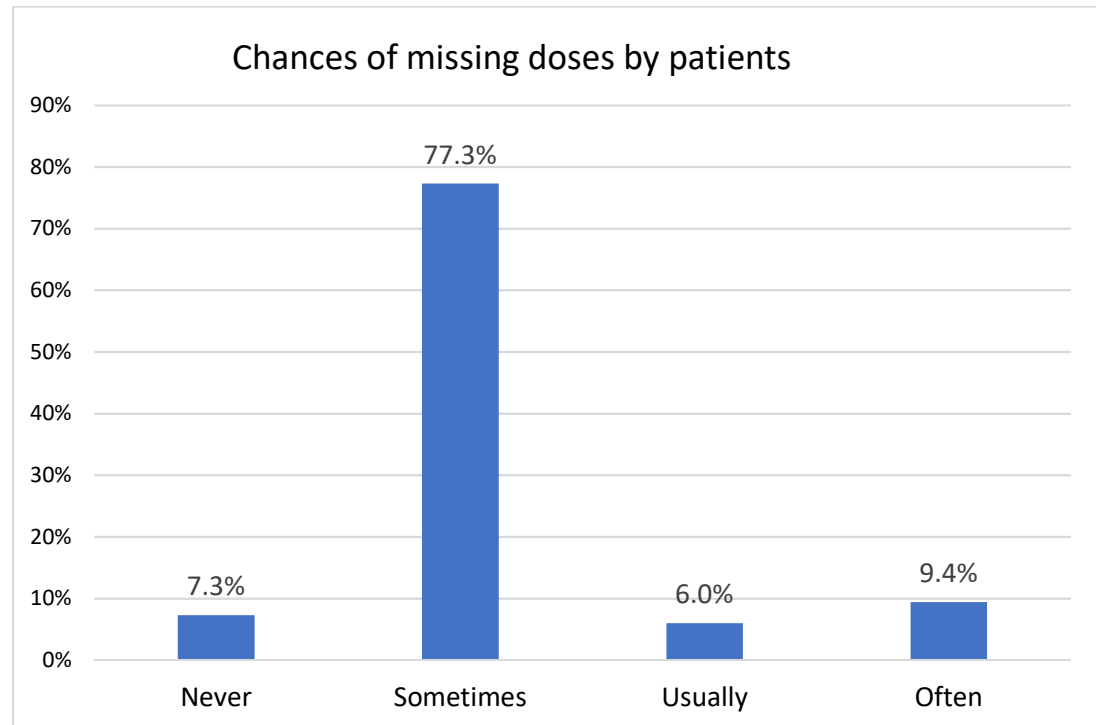
Moving further with the analysis the patients suffering from the diabetes, it was realized that regular checkups of blood sugar level is also very important but most of the patents do not realize this thing so during the collection of the valuable analysis of the patients it was also aimed that to educate them regarding the same so, after collecting their responses when it was analyzed the conclusion was majority of the diabetic people take their blood sugar level checkup on monthly basis the percentage that accounts to this sector was 51.4% (77) and 22.6% (34) of the patients take that once in



Graph 9: Graph Depicting the frequency of blood sugar level monitoring by patients

2 months people who were on the urge of diabetic and those who were on the border line of the diabetes took the diabetes checks generally in the interval of every three months and more than that the percentage accounted for 2.6% (4) and 6% (9) however the diabetic people who came in the upper segment of society with greater

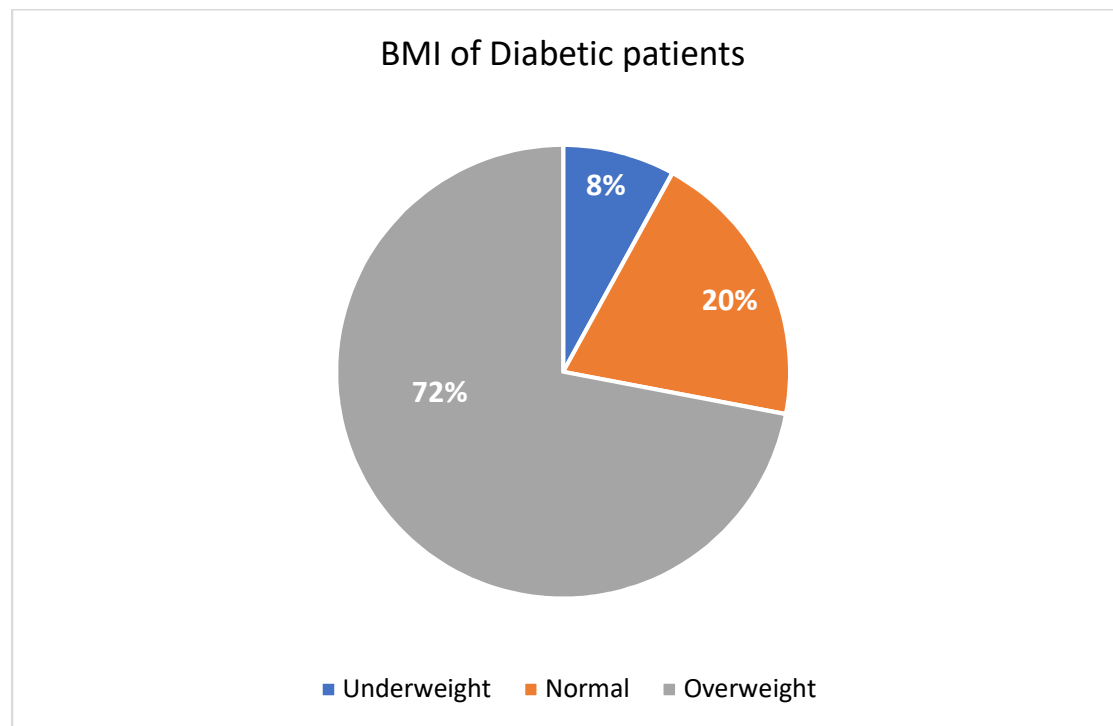
income levels and are in habit of using blood sugar level monitors check their blood sugar level even more frequently almost daily and the percentage of the sector accounts for about 17.4% (26)



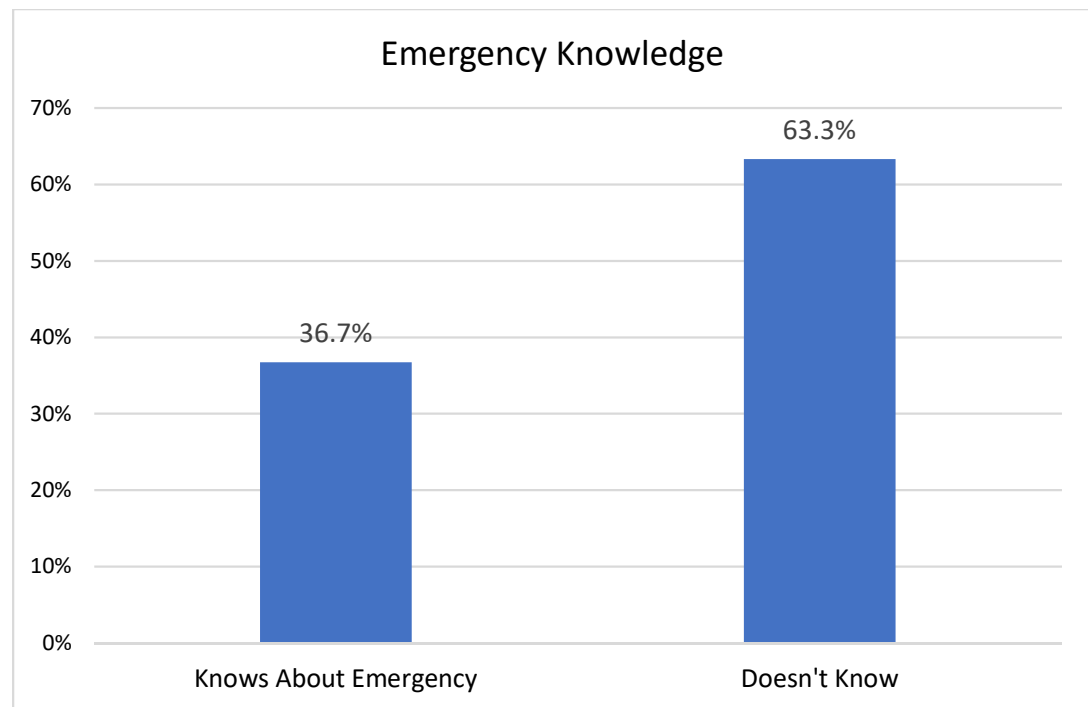
Graph 9: Depicting the chances of missing doses by patients

Missing crucial doses of Insulin is also seen as a factor of complications in Diabetic patients hence which was the base of the next question and the patients were asked that how often they miss their dose of insulin and from the responses of the people it was found that about almost majority of the sample size is missing their insulin doses due to one reason or the other and they educated how they can prevent from missing their doses as missing doses of insulin will create imbalance of the blood sugar level which may further lead to complications, from the analysis it was found that about 77.3% (116) of patients said that they miss their dose of insulin “sometimes” if they were out and forgot to carry the insulin vials along with them however 9.4% said that they ‘often’ miss their dose due to their age factor because most of the people here in this sector were old and hence they forget to take the

dose whereas 7.3% (11) and 6% (9) said that they never or usually miss the dose respectively.



Rest the BMI of the patients were call calculated and found that majority of them were overweight and this sector accounts for about 72% and only 20% patients of the patients found to have normal BMI beside having diabetes however 8% of the patients were found to be under weight. It was analyzed that lifestyle of the people is also one of the major factor that may contribute to diabetes.



Lastly, patients were asked that whether they know what need to be done during the emergency condition if a patient had some emergency condition do they know what need to be done and from the analysis it was found that only 36.7% of the patients knew that what need to be done if there is an emergency condition but about 63.3% of the patients didn't knew that if there is an emergency what they can do to avoid that hence there is strict need of awareness.

Results

After Analyzing the responses of 150 diabetic patients and asking them questions from the questionnaire various result statements have been concluded. These result statements are as follows:

1. The very first question of the questionnaire was that Do the patients had knowledge about the insulin treatment or not the options were kept as “yes” or ‘No” and after the analysis, it was found that 63.3% knows about the diabetes but here the thing is the knowledge of the people is variable they don’t know each and everything about diabetes but had some idea about the same where as 36.7% of the patients had very little or no idea what they were undergoing and were totally depended on their doctor and even had a doubt that was their doctor is right or not but due to lack of knowledge they can’t able to question him.
2. In the second question patients were asked about the duration they are now under diabetic treatment, it was found that 28% (42) of the patients who were under insulin therapy from less than 1 year now and 52% (78) of the patients were those who were under insulin therapy from last 1 to 5 years and only 20% (30) of the patients were those who were now under insulin therapy for more than 5 years now.

To find the level of complications they had been facing another question was asked to them regarding the complications it was found that the people who were under treatment from less than one year 26.2% of the patients faced complications and 73.8% of the patients did not. For those patients who are under the Diabetic treatment between 1 to 5 years in them the percentage of patients who had complications was a little greater than those who were having diabetes for less than one year in that the percentage was found to be 32% and 68% was those who didn’t faced any complications.

3. After the realization of the fact that beside having other problems by the diabetic patients what are the other side effects that have also been faced by the diabetic patients, so again there were asked one question even more specific regarding their complications and it was found that 37.3% of the people told that they suffered from eye disorders, 33.3% of the people said that they suffered from Peripheral neuropathy that is one of the most common side effects among the diabetic individuals and the another major side effect that was felt was kidney disorder and the two minor segments were 2.7% and 4% which accounted for erectile dysfunction and other. The Section of other majorly include edema, Hypertension etc but was not considered as serious as compared to the others

4. After the part from the complications got over, another thing that was thought of was that it was relevant to ask the patients of Diabetes that Is they comfortable about the therapy they are undergoing or not? And from the responses of the patients it was found that 58.6% of the patients told that no there weren't comfortable and hence only 41.4% of the people said that yes they were not suffering from as such any big problem related to their comfort and they were asked that whether they are okay with what all is going along with the during the treatment phase, so the answer to this was that they have to take the treatment there is no way out hence it is okay for them and have to bear the treatment.

5. The major discomforting reasons that we gazed from the patients was the Pain and Swelling factor which is also known as edema factor and when asked most of the patients complained about both the factors and the percentage ranged up to 57.3% who felt both pain and swelling as discomforting factor. 10% of the patients said that to them swelling is not

that concerned but yes pain cause more discomfort to them where as older people said that not pain swelling causes more discomfort to them whereas 3.4% have their other factors of concerns like cost and other factors.

6. Coming onto the next question that was asked from the patients of Diabetes was about the cost they incur for their treatment and do they complain about the cost or not. So, it was found that 69.3% of the population complained about the cost which includes parts of Urban Bangalore and mostly rural Bangalore, however 30.7% of the population didn't find it too costly as they come in high end profile customers which greater level of incomes. Hence to them treatment is fine.

7. Storing the insulin vials in a proper place is also very important and crucial factor, if they aren't placed at proper position of proper place they may lose their efficacy and may lead to increase the cost of the treatment, hence to detect that where the patients are storing their insulin vials patients were asked this question that where did they store their insulin and their responses were recorded and analyzed and it was found that majority of the people 82% keep their Insulin vials in refrigerator as refrigerator is very common not a days however some of the patients who come from a lower background keep their vials in Sand soaked with water the percentage for them accounts up to 11.4% and 4.0% of the patients keep their insulin vials in a Box mostly wooden and in a shady place and 2.0% others.

8. Blood Sugar level monitoring is also one of the important things that need to be cared of for the proper maintenance of the Diabetic people, therefore people were asked that when do the check their blood sugar level as in how often they do it. It was found that those people who come from a good

income background they check their blood sugar level almost in daily routine and the percentage of these people accounted somewhere around 17.4% and majority of the people about 51.4% , they are checking their blood sugar level once in one month however this is not all about 22.6% of the patients who are suffering from diabetes are checking their blood sugar level in every two months that is still fine and 2.6% of the people are their who are checking their blood sugar level every 3 months and they were suggested that it would be better if they could reduce the duration to 2 or 1.5 months and 6% of the people are those who check their blood sugar level in even more than 3 months these are generally those patients who don't feel like checking their blood sugar level and they have to go to labs to check it and hence generally avoid it.

9. Missing Doses in the people who are at job and in old age is generally very common hence this this question is also designed to analyze the general attitude of the people towards their treatment, their answers were recorded and were also analyzed later and it was found that 7.3% of the patients said that they forget once and twice and they are tech savvy hence they have kept reminders on their phone but they were kept in the “never forgetting” category and majority in this case was those people who Sometimes forgets taking their doses and had some of the implications and 9.4% of the patients usually forgets their doses mainly these are those patients who are old and are already suffering from low memory and dementia and Alzheimer and lastly is the category 6% which are generally office workers and forget their vials in home and not able to take their dose.

10. Last but not the least BMI of the patients were also calculated and was found that 72% of the people were overweight due to their lifestyle and was unable to maintain a proper diet for it and only 20% of the individuals were

normal and beside this 8% of the patients were also found to be underweight.

11. The patients were also accessed on their knowledge that what need to be done during the emergency and was founded that 63.3% of the patients didn't knew that what need to be done only 36.7% of the patients that were working professionals and students mainly teenagers knew that what need to be done.

Conclusions:

Coming onto the conclusions of the report that was prepared after analyzing the responses of 150 Diabetic People several types of conclusion statement was made and it was also found that there is a lot need of awareness that need to be created among the people for the better understanding of the disease and its management if people are not clear on the point what the diabetes is and what are the implications and complications of the disease the critical case will keep on reporting and would agonize the stats of mortality rate of people due to diabetes in India and hence, there is a need to create awareness among the people. Various questions were asked to access the knowledge of the diabetic individuals along with their attitude towards the line of treatment they were undergoing and from the questions such as the Storage place for insulin, Checking their blood sugar level, what need to be done in Emergency condition were all for accessing the knowledge of the patients and it is found that the knowledge of the patients is low to moderate and there is a need to create awareness among these patients by the means of proper literature, apps for the tech savvy people and also counselling sessions for the old people who can just go and listen to what the counsellor is just saying and can help themselves in implementing those changes in their lifestyle to lead a healthy and happier life ahead. Patients were also assessed on their attitude towards their treatment and it was seen that the attitude of the patients in the urban was still towards knowing and eradicating the black holes however people in village area don't care much about the complications they have to face in future due to lack of knowledge hence need of Awareness.

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