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REFERENCE ID: STSH160250

EFFICACY OF PHLORIZINUM IN DECREASING BLOOD SUGAR LEVEL

1. INTRODUCTION

1.1. BACKGROUND

In this modern world, where there is enough and more number of diseases, there is a disease that ranks high and has been attacking the human world due to lifestyle derangement since ages- DIABETES MELLITUS.

"Live the life to the fullest." But in the process of living our life to the fullest, we initially invite happiness in our lives but later on without our invitation, many so called diseases visit us. Diabetes is the body's failure to metabolize blood sugar properly. It now strikes Americans at the rate of 1 new case in every 52 sec and also 3.2 million lives annually worldwide, and India ranks 1st in the total number of diabetic patients. It became a great threat in developing nations as they switch on to westernized life styles that emphasize on rich food and sedentary living. [1]

Experience says that homoeopathy stands out for its holistic approach towards diseases it helps to improve the patient's general feeling of well-being as homoeopathy treats the patient and not the disease. Many homoeopathic remedies play a crucial role in the control of diabetes mellitus one amongst them is Phlorizinum which is still untouched by many homoeopaths. Phlorizinum is a well indicated remedy for patients with glycosuria. So with this study I aim at extracting the efficacy of Phlorizinum in diabetic subjects.

Diabetes mellitus is a metabolic -cum- vascular syndrome of multiple etiologies characterized by chronic hyper glycemia with disturbances of carbohydrate, fat, and protein metabolism resulting from defects in insulin secretion, insulin action or both. This disorder is frequently associated with long term damage, which can lead to failure of organs like eyes, kidneys, nerves, heart and blood vessels. [2]

In a workshop sponsored by WHO and ICMR conducted at Chennai Dr. Bela Shah under the guidance of Dr. C. Varghese, NPO, WHO and Dr. J.R. Leowski, RA, WHO, commented that chronic diseases like Diabetes must be consulted by specialized health care personnel.

Glycosuria is defined as sugar in the urine. It occurs when the amount of glucose in the blood exceeds the maximum amount that the kidneys can reabsorb (renal threshold). The renal threshold for glucose ranges from 160 to 190 mg/dL of blood; glycosuria does not occur until the blood glucose rises above this level. The most common cause of glycosuria is diabetes mellitus (DM), according to ICD 10. Glycosuria may also result due after a heavy meal, during times of emotional stress, and during pregnancy, when the renal threshold for glucose may be lower. Glycosuria may also occur in individuals receiving total parenteral nutrition (TPN) when the rate of infusion of glucose exceeds the ability of the pancreas to produce insulin.

1.2. NEED FOR STUDY

The dramatic worldwide increase in the prevalence of diabetes mellitus is posing a massive health problem in both developed & developing countries. Interestingly in developed countries, lower socio economic groups are mostly affected. Diabetes mellitus is a heterogeneous disorder, gradual in onset, frequently mild or silent, chronic, occurs in the middle-aged &elderly, slow to ketosis. It appears to be linked with sedentary lifestyle, over nutrition & obesity.[3]

Phlorizinum is an effective remedy in controlling the elevated blood sugar level. It is an old school remedy for intermittent fever and while being administered for this, it has produced glycosuria. In the patients with Glycosuria, the condition disappeared showing a reversible change from diabetes.

Since Phlorizinum is a partially proved remedy, not much is known about it to the homoeopathic world. Thus through this study the relevance of Phlorizinum would be explored to the homoeopathic world.

2. AIMS

To study the efficacy of Phlorizinum in decreasing blood sugar level.

3. OBJECTIVES

To study the efficacy of Phlorizinum in decreasing blood sugar level.

To compare the pre and post fasting blood sugar level after administering Phlorizinum.

4. REVIEW OF LITERATURE.

4.1. History

The history of diabetes has its antiquity, it has apparently plagued human being for a very long time, since from earliest civilizations of Asia, Egypt, etc. Diabetes has been referred as boils and infections, excessive thirst, loss of weight, and the passing of large quantities of honey sweet urine which often drew ants and flies. The story of diabetes is the story of a relentless advance against a relentless disease. [4]

Diabetes mellitus is rather a disease than constellation of symptoms, but their pathogenesis, has been claimed to be known by physicians, since 3,500 years in ancient Egypt. The term "diabetes" was first coined by Araetus of Cappadocia (81-133AD). Later, the word mellitus (honey sweet) was added by Thomas Willis from Britain in 1675, after rediscovering the sweetness of urine and blood of patients (first noticed by the ancient Indians). It was only in 1776, that Dobson
from Britain confirmed the presence of excess sugar in urine and blood.

In modern time, the history of diabetes coincided with the emergence of experimental medicine. An important milestone in the history of diabetes is the establishment of the role of the liver in glycogenesis. Claude Bernard from France in 1857 had rediscovered the concept that diabetes is due to excess glucose production. Later, this discovery constituted the basis of insulin isolation and clinical use by Banding and Best (Canada) in 1921. Trials to prepare an orally administrated hypoglycemic agent ended successfully by first marketing of tolbutamide and carbutamide in 1955. The present context will also discuss the history of dietary management and acute and chronic complications of diabetes. [5]

Diabetes mellitus is a metabolic cum vascular syndrome of multiple etiologies characterized by chronic hyperglycemia with the disturbances carbohydrate, fat, and protein metabolism resulting from defects in insulin action or both. This disorder is frequently associated with long term damage, which would lead to failure of organs like eyes, kidneys, nerves, heart and blood vessels. [6]

4.2. Types

There are two type of diabetes. Type 1 and Type 2(most prevalent). Type 1 diabetes, which accounts for only 5–10% of those with diabetes, previously encompassed by the terms insulin-dependent diabetes, type 1 diabetes, or juvenile-onset diabetes, results from a cellular-mediated autoimmune destruction of the β-cells of the pancreas. Markers of the immune destruction of the β-cell include islet cell auto antibodies, auto antibodies to insulin, auto antibodies to glutamic acid decarboxylase (GAD65), and auto antibodies to the tyrosine phosphates IA-2 and IA-2β. One and usually more of auto antibodies are present in 85– 90% of individuals when fasting hyperglycemia is initially detected.

Also, the disease has strong HLA associations, with linkage to the DQA and DQB genes, and it is influenced by the DRB genes. These HLA-DR/DQ alleles can be either predisposing or protective. Type 2 diabetes, which accounts for 90–95% of those with diabetes, previously referred to as non-insulin-dependent diabetes, type 2 diabetes, or adult-onset diabetes, encompasses individuals who have insulin resistance and usually have relative (rather than absolute) insulin deficiency. At least initially, and often throughout their lifetime, these individuals do not need insulin treatment to survive. There are probably many different causes of this form of diabetes.
Although the specific etiologies are not known, autoimmune destruction of β-cells does not occur, and patients do not have any of the other causes of diabetes listed above. [7]

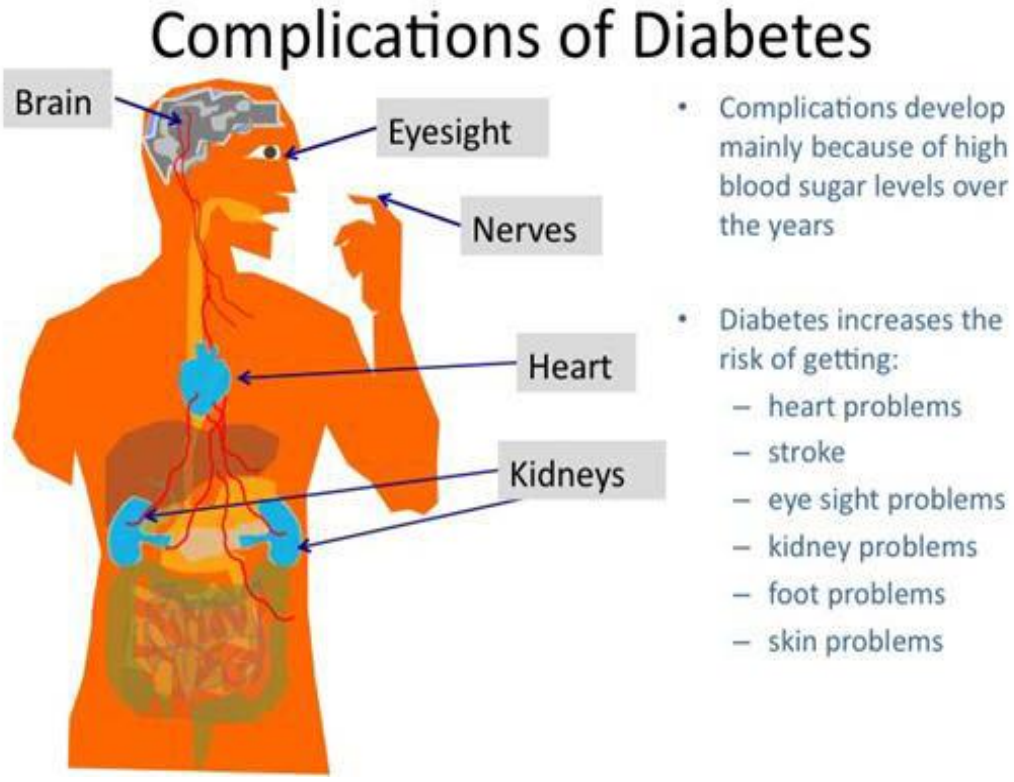
4.3. Genetic considerations

Type 2 DM has a strong genetic component. Major genes that predispose to this disorder have yet to be identified, but it is clear that the disease is polygenic and multifactorial. The concordance of type 2 DM in identical twins is between 70 and 90 %. Individuals with apparent with type 2 DM have an increased risk of diabetes: if both parents have type 2 DM, the risk approaches 40%. [8]

4.4. Harmful Effects of Diabetes on the Body

Diabetes is a lifelong condition that can have negative, serious effects on your entire body. Diabetes can damage kidneys, affecting their ability to filter waste products from the blood. Elevated amounts of protein in the urine (microalbuminuria) can be a sign that kidneys are not functioning properly. Kidney disease related to diabetes is commonly known as diabetic nephropathy. Diabetes

is the leading cause of gastro paresis. Symptoms include vomiting, nausea, heartburn and bloating. Pancreas release and produce insulin to help make energy out of sugars. If your pancreas produces little or no insulin, or if your body can not utilize it, alternate hormones are utilized to turn fat into energy. This can create high levels of toxic chemicals, including ketone bodies and acids that may lead to a condition called diabetic ketoacidosis.



Diabetes causes damage to nerves (peripheral neuropathy), which can affect one's perception of cold, heat, and pain, making you more susceptible to injury. This also makes it more likely that you will ignore an injury specifically if it is in a difficult place to see, such as between toes, on your heels or the bottoms of your feet. Coronary heart disease and diabetes are intimately related. Diabetes contributes to high blood pressure and is linked with high cholesterol that significantly increases the risk of cardiovascular disease and heart attacks. [9]

4.5. Management of diabetes

So where can homeopathy contribute to the management of diabetes? First of all, homeopathic treatment can help improve the general health of a person with diabetes. If a person with diabetes is in good health, his or her insulin requirements will be steady and the blood glucose well controlled. If the general health is poor, it can be very difficult to achieve good control.

This can be helped by administering a "constitutional" remedy, based on the totality of the patient's symptoms and characteristics. The effect will be to improve the general sense of well-being, to improve diabetes control, and maybe to lower the insulin or drug requirements.

The remedy Syzygium (Jambol seeds) has a reputation for a specific effect on diabetes, and can be given in mother tincture, three drops daily in water. I cannot claim much success with this, but a veterinary colleague has reported excellent results in dogs.

Boericke's Materia Medica mentions several other remedies, which cause diabetic symptoms, such as an increased urinary output and the presence of sugar in the urine (glycosuria), in their provings. Uranium nitricum is one of these, and it is associated with great emaciation and fluid retention, thirst, nausea and vomiting. It can be tried in low potency, twice daily.

Phlorizinum (obtained from the root of the apple and other fruit trees) is another remedy indicated.

Janet Gray explains how homeopathy can contribute to the management of this condition, improving quality of life and helping to control complications. [10]

4.6. Recommended composition of diet for people with diabetes

DIETARY CONSTITUENT	PERCENTAGE OF ENERGY INTAKE
Carbohydrate	45-60%
Sucrose	Up to 10%
Fat (total)	<35%
n-6 Polyunsaturated	<10%
n-3 Polyunsaturated	Eat 1 portion (140g) oily fish once or twice weekly
Monounsaturated	10-20%
Saturated	<10%
Protein	10-15% (do not exceed 1 g/kg body weight)
Fruit/Vegetables	5 portions daily

4.7. Etiologic classification of diabetes mellitus:

- Type 1 diabetes (cell destruction, usually leading to absolute insulin deficiency).
- Type 2 diabetes [may range from predominantly insulin resistance with relative insulin deficiency to a predominantly insulin secretary defect with insulin resistance].
- Other specific types of diabetes. [11]

4.8. Life style modification for patients with diabetes

- DIET:

  30 % of diabetics can be controlled on diet therapy assisted by exercise. Diet should be balanced. It should have 10 to 15% calories from proteins, 20 to 25% calories from fats & rest 60-65% from carbohydrates with adequate vitamins and minerals.[12]

- EXERCISE:

  It helps in reducing blood sugar, in burning calories and thus reducing weight; in reducing blood pressure, toning of heart muscles, improving blood circulation and increasing good HDL cholesterol and lowering bad LDL cholesterol. Yoga and pranayama are found to be effective in reducing the blood sugar levels.[13]

4.9. Studies on Diabetes mellitus

A study conducted by Dr. Farokh.J.Master on Dec.2015 about Management of diabetes mellitus with Lycopodium (Constitutional remedy) in which he got tremendous result of keeping blood sugar under control and relief from symptoms too.

Another work by Dr. Nidhi Mahajan, Dr. Vikranth Thripathi during Oct 2015 about comparative study between homoeopathic and placebo treatment in diabetes mellitus revealed 75% success in homoeopathic treatment and 20% in placebo treatment.

A study conducted by N.L. Tiwari Parag during Dec 2013 about 30M potency approach on Diabetes Mellitus showed Constitutional treatment in 30M potency along with proper diet and regimen helped them to keep the diabetes under control.

A study conducted on Cephalandra tincture by Dr. Hafseezullah Baig, Dr. S. R. Sharma, Dr. Anitha, Dr. Praveen, Oberai, Dr. Debadatta, And Dr. Alok Mishara Jan 2008 revealed they got a result of 70 patients who control over their blood sugar level.

4.10. ABOUT PHLORIZINUM BY DIFFERENT AUTHORS

Encyclopedia of Homoeopathic Pharmacopoeia by P.N. Verma / Indu Vaid

Mol. wt.: 436.40

Uses: Diabetes. Herpes preputialis. Intermittent fever.

Synonyms: English: Phlorhizin, Phloridzin; French: Phloridzine.

Description: A glucose from the root bark and bark of apple, pear, plum and cherry trees, and other members of the family Rosaceae. It is also found in the leaves and leaf buds of apple trees. Isolated from the root bark. Hydrolysis by dilute mineral acids yields phloretin and glucose. A sweet, substance, with a bitter after taste. The crystals are dihydrate, long needles (precipitated from water) with a melting point 110°C. Freely soluble in boiling water, alcohol, acetone, and other organic bases; insoluble in ether, chloroform, and benzene.

History and authority: A Dictionary of Practical Materia Medica by Clarke.

Preparation: Solution 1/10 in Strong Alcohol.

(a) Mother Solution 1x:- Drug Strength 1/10 Phloridzinum 100 g Strong Alcohol in sufficient quantity to make one litre of the Mother Solution.

b) Potencies: 2x and higher with Dispensing Alcohol.

c) Trituration 1x Drug Strength 1/10 Phloridzinum 100 g Saccharum Lactis 900 g To make one Kilogramme of the trituration.

d) Potencies: 2x and higher to be triturated. 6x may be converted to liquid 8x. 9x and higher with Dispensing Alcohol Storage: Cool and dry place.[14]

Phlorizinum is an effective remedy in controlling the elevated blood sugar level. It is an old school remedy for intermittent fever and while being administered for this, it has produced glycosuria. In the patients with Glycosuria, the condition disappeared showing a reversible change from diabetes. Glycosuria is defined as sugar in the urine. It occurs when the amount of glucose in the blood exceeds the maximum amount that the kidneys can reabsorb (renal threshold). The renal threshold for glucose ranges from 160 to 190 mg/dL of blood; glycosuria does not occur until the blood

glucose rises above this level. The most common cause of glycosuria is diabetes mellitus and is classified as O26.839, according to ICD 10. Glycosuria may also result due after a heavy meal, during times of emotional stress, and during pregnancy, when the renal threshold for glucose may be lower. Glycosuria may also 2 occur in individuals receiving total parenteral nutrition (TPN) when the rate of infusion of glucose exceeds the ability of the pancreas to produce insulin.

A Dictionary of Practical Materia Medica J.H Clarke

He states that Phlorizinum exists in fine, silky, four-sided, colourless needles, soluble in water. It has a bitter and slightly astringent taste, and has been used in old-school practice as a remedy for intermittent fever, and whilst being administered for this it has produced glycosuria.
This observation has led to its successful use by homoeopaths in cases of diabetes. [15]

In Lotus Materia medica by Robin Murphy.

He states that Phlorizinum. A substance discovered in the fresh bark of the Apple, Pear, Cherry While being administered for this it has produced glycosuria. A patient to whom it was given by Burnett accused him of having given him a preparation of apples. The man discovered it because it produced herpes along the dorsum of the penis, an effect which invariably occurred whenever he ventured to eat apples. V. Mering produced glycosuria in dogs with Phlor., but if Syzyg. was given simultaneously with Phlor., no glycosuria appeared. [16]

Pocket manual of Homoeopathic Materia Medica & Repertory by William Boericke M.D

He explained about Phlorizinum in essentials of Rare and Uncommon Remedies, in this he explaining that a glucosidal principle obtained from the bark of the root of the apple and other fruit trees. Produces diabetes and fatty degeneration of the liver, intermittent fever. Daily dose, 15 grains. Phlorizinum causes glycosuria. No Hypergalycemia results. It compels the secretory epithelium of the kidney to break down serum albumin into sugar. There is no increase in blood sugar. [17]

5. METHODOLOGY

5.1. Sources of data

Random selection of 30 cases of hyperglycemia from the OPD and IPD of SARADA KRISHNA HOMOEOPATHIC MEDICAL COLLEGE. Then detailed case taking is done and recorded in

SARADA KRISHNA HOMOEOPATHIC MEDICAL COLLEGE standardized case record format. Then Phlorizinum is administered to the patients and the blood and urine sugar level is tested and the case is noted systematically.

Patients between the age group of between the age group of 18 to 75 years were screened for the study. Patients of both sexes belonging to different socio-economic groups were included in the study. Cases were studied for a minimum period of 2 months.

5.2. Methods of collection of data

INCLUSION CRITERIA:

- Individuals with age between18 to 75 years
- Both male and female will be taken for this study

EXCLUSION CRITERIA:

- Individuals with other complications of hyperglycemia and with other systemic illness.
- Individuals with age above 75 years.
- Individuals below 18 years

DATA COLLECTION

- By interview technique and observation (Case study, Systemic examination, Investigation).
- Recording will be done in pre structured case format.

5.3. BRIEF OF PROCEDURES

1. Case taking and recording of problems in standardized case record format.
2. Investigations
3. Procedure of Benedict's urine test:
    - Take 5 ml of Benedict's solution in a test tube
    - Then add 5-8 drops of urine in the test tube containing Benedict's solution and heat it.
    - Upon boiling, it will change the color. If it doesn't change color, it means the sugar in the original solution is non reducible.
4. Blood sugar level is test through Accucheck strip test.

5.4. Administration of medicine.

Phlorizinum was administered in 6X potency one gram thrice daily for one week and changes are recorded. It is repeated again in next week and this is continued for 2 months. And the changes are recorded in standardized case record format.

5.5. OUTCOME ASSESSMENT

- Changes will be noted by reduction in the blood and urine sugar levels.
- Evaluation of result with comparison of pre and post blood and urine sugar level.

5.6. IMPLICATIONS

Homoeopathy is one of the most popular holistic systems of medicine. This the only way through which a state of complete health can be regained by removing all the sign and symptoms from which the patient is suffering. The aim of this homoeopathic research is to prove the efficacy of Phlorizinum in decreasing blood sugar level. By this study utility of Phlorizinum can be explored and thus it can give benefit to a large number of patients with diabetes mellitus.

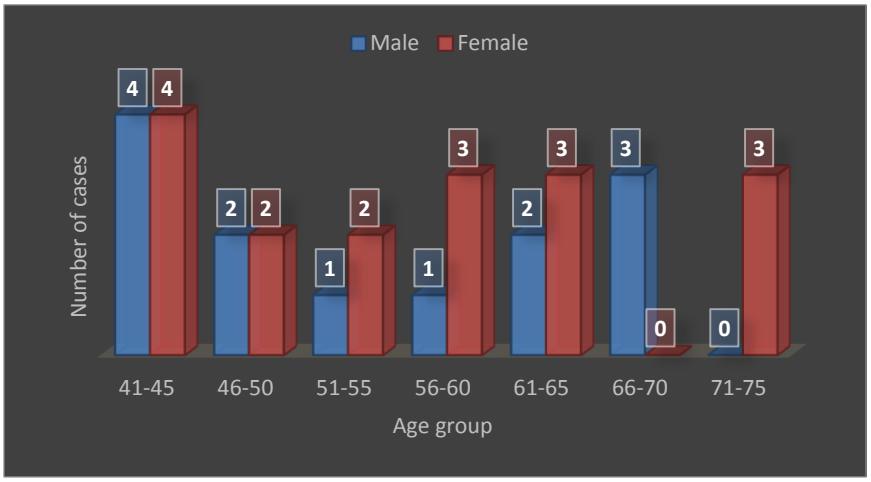
6. OBSERVATION AND RESULT

The observations of study conducted in 30 cases of hyperglycemia have been recorded here.These cases were followed for a minimum of 60 days and are mentioned below.Statistical analysis was done in order to test the significance before and after administration of Phlorizinum.

6.1. Fig: 1 Distribution of patients according to their age and gender.

Age group	Male	Female
41-45	4	4
46-50	2	2
51-55	1	2
56-60	1	3
61-65	2	3
66-70	3	0
71-75	0	3

Distribution of patients according to their age and gender.



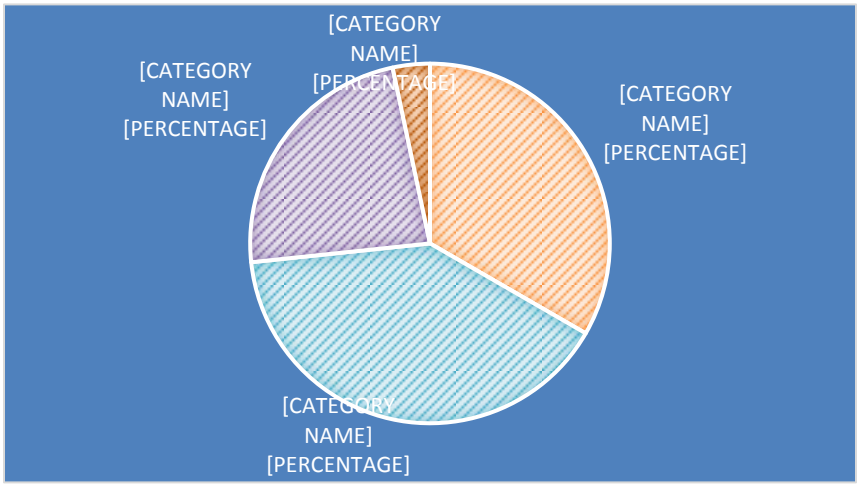
FINDINGS

This study shows most number of cases are belonging to the age group 41-45 years which is 13.33% male and 13.33% female (4 cases each), the age group 71-75 years showed 10% females only (3 cases), the age group 66-70 years showed 10% males only (3 cases), the age group 61-65 years showed 10% females (3 cases) and males 6.66% (2 cases), the age group 56-60 years showed 10% females (3 cases) and 3% males (1 case), the age group 46-50 years showed 6.66% both males and female (2 cases each). The age group 51-55 years showed 3% (1 case) and females 6.66% (2 cases).

6.2. Fig: 2. Distribution of patients according to the duration of illness.

Duration of illness	No of cases
> 1 yr	10
1-5 yrs	12
5-10 yrs	7
> 10 yrs	1

Distribution of patients according to the duration of illness.



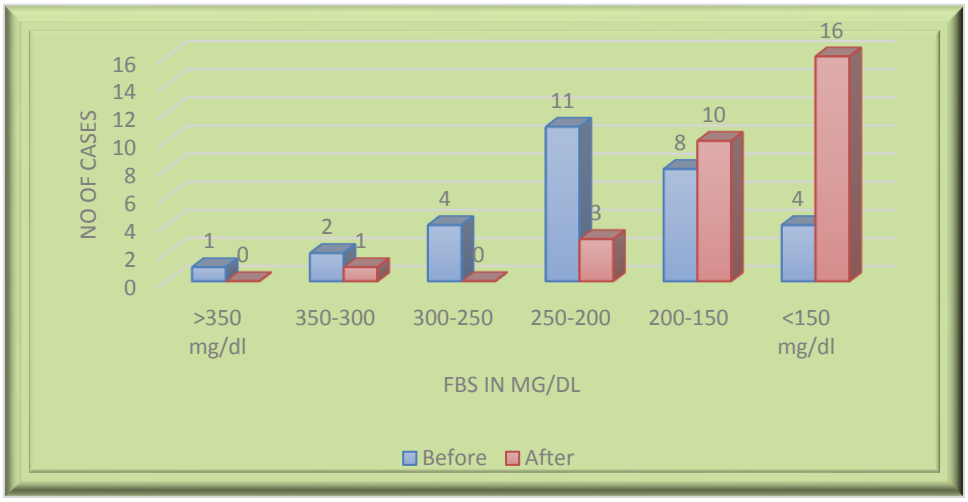
FINDINGS

Out of 30 cases, 12 cases (40%) between 1-5 years duration, 10 cases (33.33%) was less than 1 year duration, 7 cases between 5-10 years duration, only 1 case (3.33%) was more than 10 years duration.

6.3. Fig: 3. Distribution of patients according to their range of FBS

Range of FBS	No of cases	
	Before	After
>350 mg/dl	1	0
350-300	2	1
300-250	4	0
250-200	11	3
200-150	8	10
<150 mg/dl	4	16

Distribution of patients according to their range of FBS



FINDINGS

FBS Before administering medicine

According to this study 11 cases (36.66%) was having, 8 cases having blood sugar level 200 to 150 mg% (26.6%). 4 cases(13.33%) each was FBS level 300 – 250 mg% and < 150mg%, 2 cases (6.66%) was having 350 to 300 mg%.

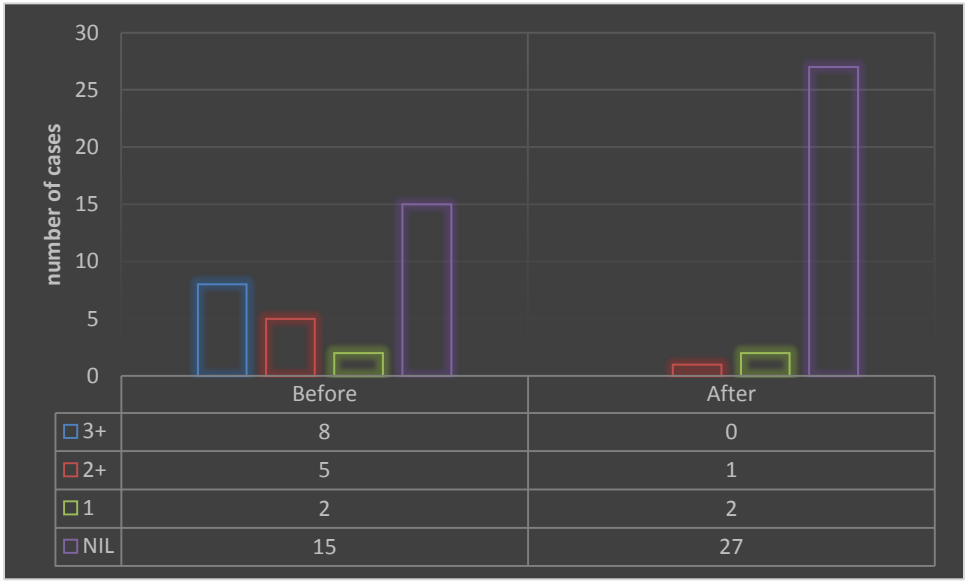
FBS After administering medicine

According to the study 16 (53.33%) cases showed blood sugar level reduced to <150 mg%. In this study blood sugar level between 250 to 200 mg% in 11 cases which after the study reduced to (10%) 3 cases showing improvement after the administration of medicine.

6.4. Fig: 4. Distribution of patients according to their range of Urine sugar.

Urine sugar	No of cases	
	Before	After
3+	8	0
2+	5	1
1	2	2
NIL	15	27

Distribution of patients according to their range of Urine sugar.



FINDINGS

According to the study 8 (26.66%) cases was having 3+ urine sugar, 15 cases (50%) was having no urine sugar.

After the study urine sugar level 3+ was reduced to 0 cases, 27 cases (90%) urine sugar was reduced to nil.

7. DISCUSSION

The subjects of the study were selected from 30 cases of hyperglycemia from the OPD and IPD of Sarada Krishna Homoeopathic Medical College as per the inclusion criteria. Patients between the age group of between the age group of 18 to 75 years were screened for the study. They were studied for a minimum period of 2 months. Phlorizinum is administered to the patient, and the fasting blood and urine sugar level before and after the study is noted systematically. This study was conducted to show the importance of Phlorizinum in reducing blood sugar level. The cases were reviewed at regular interval and follow ups were assessed. The statistical analysis such as distribution of cases according to age, sex, duration of disease, and fasting blood sugar level and urine sugar level is interpreted.

Among the 30 cases studied 13.33% cases both males and females were between 41-45 years. It shows that middle age group is more affected with equal distribution among male and females.

According to the study 40% cases was between 1-5 years duration of disease. Which indicates more number of diabetes mellitus cases reporting in last 5 years. Indicating increases in number of life style diseases.

This study shows fasting blood sugar level before administering the medicine was between 200 to 150 mg% in maximum number of cases which is about 11 cases (36.66%) and after treatment it was reduced to > 150mg% in 16 cases (53.33%) which shows the efficacy of Phlorozinum controlling blood sugar level.

Form this study it was found that the urine sugar level 8 cases 26.66% was having 3+ urine sugar and which after the study reduced to 0 cases. After the study in 27 cases (90%) urine sugar reduced to nil.

8. CONCLUSION

This study reveals predominant age group affected by diabetes mellitus is 41-45 years with both male and female equal distribution.

In this study the duration of disease in most cases were 1- 5 years indicating newly detected cases of diabetes are more.

There is remarkable reduction in urine sugar and blood sugar level after administering Phlorozinum.

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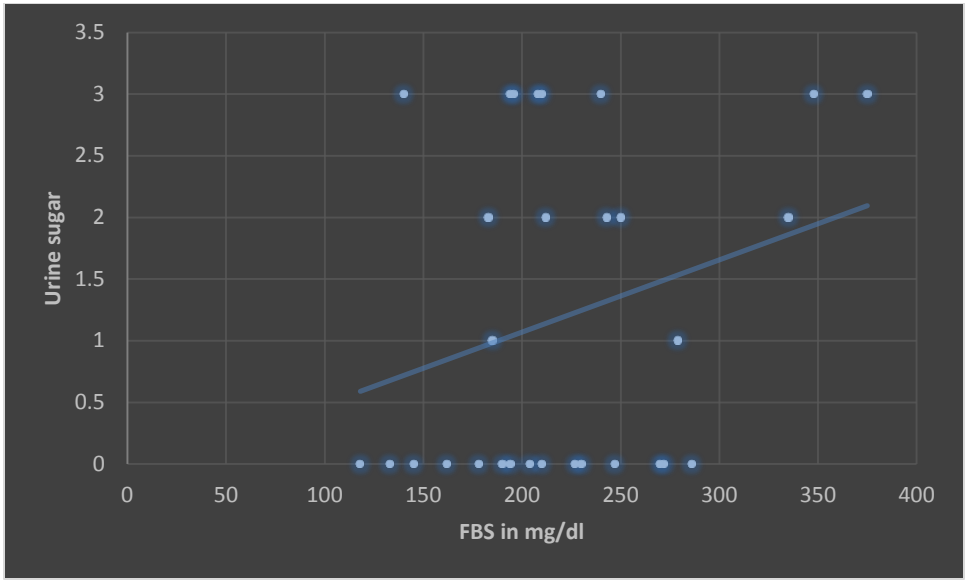
Fbs-Before	Urine-Before	Fbs-after	Urine-After
375	3	307	3
348	3	241	3
240	3	240	0
210	3	229	0
208	3	220	0
196	3	190	0
194	3	189	0
140	3	184	2
335	2	182	0
250	2	177	0
243	2	172	3
212	2	170	0
183	2	159	0
279	1	158	1

185	1		152	2
286	0		149	0
272	0		146	2
270	0		145	0
247	0		144	3
230	0		140	1
227	0		137	0
210	0		129	0
204	0		126	1
194	0		123	1
190	0		118	0
178	0		112	Nil
162	0		110	Nil
145	0		110	2
133	0		107	
118	0		92	Nil


3.5
3
2.5
2
1.5
1
0.5
0
Urine sugar
0
50
100
150
200
250
300
350
400
FBS in mg/dl