Prevelance of diabetes in Vellore district, Tamil Nadu, India

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ABSTRACT

Diabetes is roughly translated as excessive sweet urine. There are three types of diabetes they are type1, type2 and gestational diabetes .the causes of diabetes include less amount of secretion of insulin, life style, food style modification and genetic factors. Diabetic ketoacidosis, polydipsia, poluria, polyphagia, poor wound healing are the major symptoms for the diabetes. complication of diabetes like damage to the retina,kidneys,nerves,hyperosmolar hyperglycemic nonketotic syndrome etc.regular diet control, physical exercise, medical treatments like intake of insulin, tablets from the class like sulfonylureas, biguanides, alpha-glycosidase inhibitors, thiazolidinediones etc. are plays a major role in control of diabetes.ayurvedha food habits also helps in control of diabetes. it can be prevent by avoiding the fat contained food items, less consumption of alcohol,etc.regular exercise is crucial to the prevention of type 2 diabetes. Intake of nutrient foods helps to manage the diabetes. Regarding the prevalence of diabetes, the number of cases of diabetes worldwide in the year 2000 among adults was estimated to be 171million and will rise to 366 million by 2030 now we should awake and ready to know about the prevalence in our district. This survey will give an idea about the prevalence of diabetes and their management by the people in Vellore district.

Key Word: Type 1 Diabètes, Type 2 Diabètes, Gestational Diabètes, Prévalence, PHC,
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INTRODUCTION

Diabetes is a life long disorder, which is markedly affected by day to day variations in diet, exercise, infection and stress. These factors have to be addressed on daily basis while managing diabetes and the patient is the person best equipped to deal with the situation. Hence, a thorough knowledge of the disease and how it alters normal body functions and the awareness of its acute and chronic complications is necessary .it enables the diabetic patient to take better care of him

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or herself. Awareness of diabetes, its complications and better health care has proved to improve the long term outlook of this disease. The management of diabetes is intimately linked to food therefore; knowledge about food and nutrition and the scientific base of biochemistry, physiology, and pathogenesis go a long way towards the understanding and dealing with the disorder [1], [7]

Diabetes is major cause of morbidity [2] and mortality world wide [3] The word diabetes is from the Greek *diabanein* which means to pass through, in reference to the excessive urine produced as a symptom of these diseases [8]. And the term *diabetes*, without qualification, usually refers to diabetes mellitus, which roughly translates to excessive sweet urine (known as "glycosuria").

There are three main types of diabetes:
- **Type 1 diabetes**: results from the body's failure to produce insulin, and presently requires the person to inject insulin. (Also referred to as *insulin-dependent* diabetes mellitus, *IDDM* for short, and *juvenile* diabetes.)
- **Type 2 diabetes:** results from insulin resistance, a condition in which cells fail to use insulin properly, sometimes combined with an absolute insulin deficiency. (Formerly referred to as *non-insulin-dependent* diabetes mellitus, *NIDDM* for short, and *adult-onset* diabetes.)
- **Gestational diabetes:** is when pregnant women, who have never had diabetes before, have a high blood glucose level during pregnancy. It may precede development of type 2 DM.

2. Prevalence:
The number of cases of diabetes worldwide in the year 2000 among adults was estimated to be 171 million and will rise to 366 million by 2030 [4].

India stands first in the diabetic population this table will give a clear information about the top ten countries having high diabetic population. India is considered to be the "DIABETIC CAPITAL OF THE WORLD" Global prevalence of diabetes is about 2.8% in 2000 and it estimated to be around 4.4% in 2030 International Diabetes Federation estimates the total number of diabetic subjects to be around 40.9 million in India and this is further set to rise to 69.9 million by the year 2025. [5]

A study in south India at Vellore in 1964 .this hospital based study done on 63,356 individuals showed a prevalence of 2.5%.[6]

We know about the prevalence of diabetes in India and Tamil nadu now we are in the position to know about the prevalence of diabetes in our Vellore district .This survey will gives a clear detail about the prevalence of diabetes in our district.

EXPERIMENTAL SECTION

3.1 Study Centers:
Survey was conducted in total Vellore district. The regions selected on the basis of number of blocks and municipalities present in the district. Totally 27 regions were selected and surveyed.

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3.2 Sample Size:
By the random sampling method about 1000 people (male-621, female-379) were surveyed in the different regions in Vellore district. Every region consists of several villages, those villages also covered under this survey.

3.3 Classification of Samples:
Samples were classified according to the sex, age, work type, income level, and qualification.

3.4 Sampling Units:
 The survey conducted by home to home method in some regions, outside of the PHC centers, public places etc.

3.5 Data Collection:
3.5.1 Primary Data:
In this primary data, the method followed is field survey. According to this method the questionnaire was prepared and 1000 people were surveyed in various regions in the Vellore district. The survey conducted on the basis of random sampling method.

3.5.2 Secondary Data:
The published articles were collected from the internet which is related to the diabetes survey done in the different parts of India and in world.

3.5.3 Survey Sheet and Questionnaire Preparation:
As a reference to the questionnaire prepared by the de Monsotto University, the questions were prepared .it covers all the criteria's related to the diabetic patients in our country. In the survey sheet, it consists of 32 questions. Some of the questions are in yes or no format. In every sheet patients signature has been taken as a proof.

4. DEFINITIONS:
4.1 Qualification:
Qualification is categorized into three class 1.illetrate-people completed their schooling up to class five.2.school- people completed their school education.3.college-people completed their graduation.

4.2 Work Type:
Based on the physical work, work type classified into three types: easy, medium
And hard.

4.3 Diabetes:
Diabetes is classified as type1, type 2 and others. In others it includes gestational diabetes etc.

4.4 Income Level:
Depending upon the annual income, Below Poverty Line, middle class and Above Poverty Line is classified.

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4.5 Awareness:
People affected by the diabetes know about the precaution and the diabetic food habits.

4.6 Treatment:
Based on the treatment being taken by the people it is categorized as government and private hospitals.

4.7 Control of Diabetes:
Usually people will take insulin and tablets to control the diabetes in addition to that they are maintaining proper diet control and regular exercise.

4.8 Medication:
Three types of medications are following by the people they are ayurvedha, allopathy and other medications etc.

4.9 Management:
According to the income level, how the people managing their food habits. Regarding the physical work, managing of diabetes is a great issue among the people.

4.10 Diet Control:
Even though consuming of medicines will not cure in case of diabetes so people are advised to maintain their diet in the food habits.

4.11 Health Problems:
In diabetic patients, they will face the health problems like cardiac problems, ophthalmic problems (cataract, blurred vision), blood pressure and foot ulcer etc.

RESULTS

5.1. Classification of population:
The diabetic patients were classified into different categories as according to age, sex, income level ,work type, treatment being taken ,type of diabetes, type of medication, drugs consume by the people, others health problems like blood pressure ,cardiac and ophthalmic problems and foot ulcer. Finally management of diabetes.

5.2. Prevalence of Diabetes:
As per the survey results, prevalence of diabetes in Vellore district is **16.7 percent.** Total district population is 3928106.male-1959676, female-1968430.Number of people between 0-6 age is 406705.the formula used to calculate prevalence is

Prevalence =<u>Number of sample</u>   X Total number of sample X 100.
                    District population

5.3. Sex and Diabetes:
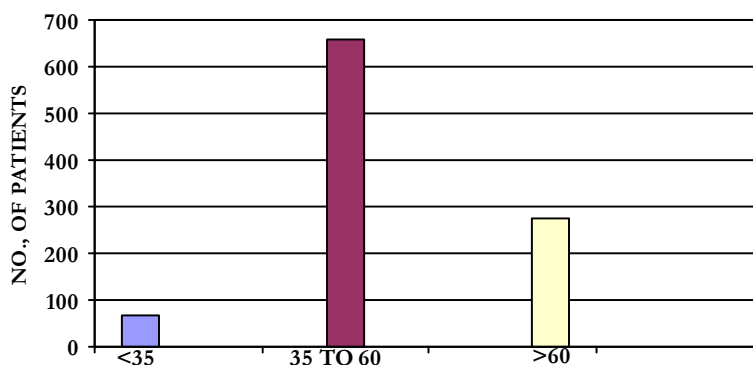Among 1000 people total number of male-621and female-379 people was surveyed. male population comprises of 62.1%and female population is 37.9%

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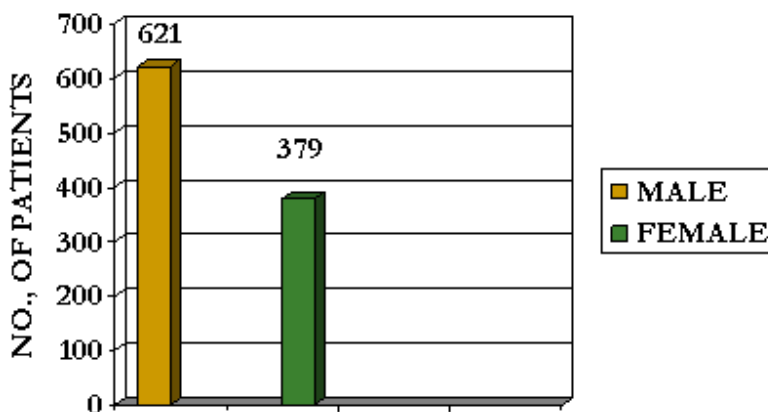
Graph 4: Sex and diabetes.

5.4. Age and Diabetes:
Age is one of the major factor in diabetes on the basis of age, it categorized into three types, 1.below35, 2.between 35-60, and 3.above 60.number of people is 67, 660 and 273 respectively
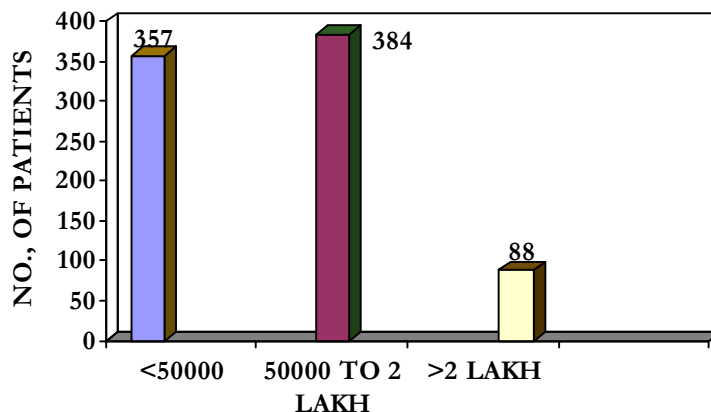

Graph 5: Age and diabetes.

5.5. Work Type and Diabetes:
Based on the work type, easy work type people are 767, medium type of work people is 165 and hard type of work people is 80 in number respectively.

5.6. Annual income and diabetes:
From the annual income, people can be classified into BPL, medium and APL. BPL-357 people, medium-384 and APL -88

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Graph 6: Income level and diabetes.

5.7. Qualification and Diabetes:

Awareness about the diabetes among the illiterate and literate can be known total number of illiterate is 190, people completed their schooling is about 622 and graduation is188.
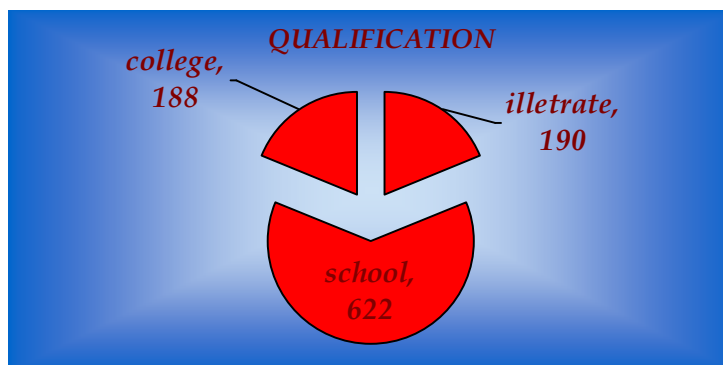
Graph 7: Qualification and diabetes
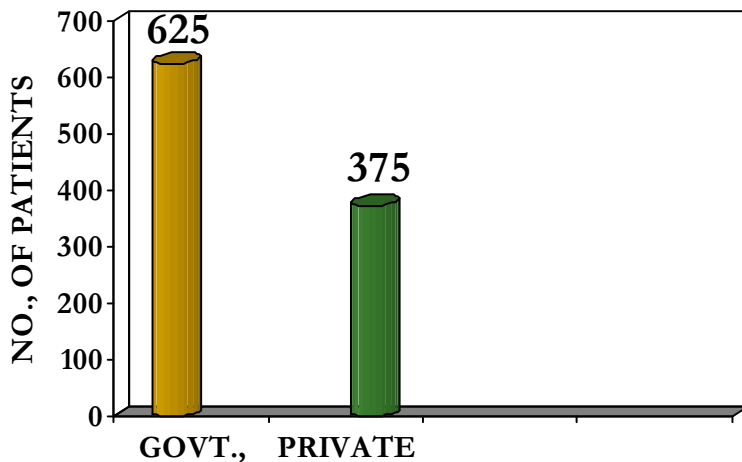
5.8. Type of diabetes:

Two types of diabetes were identified among the people .people affected by the type 1 diabetes is 125.whereas type 2 is 875.
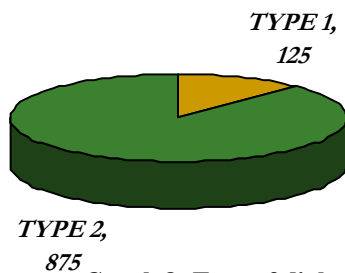
Graph 8: Type of diabetes.

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5.9. Hospitals and diabetes:

Among the 1000 people, 625 people being taking their treatment in the government and in private hospitals are 375.

Graph 9: Hospitals and diabetes

5.10. Drugs and Diabetes:

Majority of the people taking meteoric and glibenclimide combination drug to control their diabetes other drugs are indicated in graph.M-metformin, GLI-glibenclamide, GLC-gliclazide, GLM-glemipride, GLP-glipizide, PIO-pioglitazone
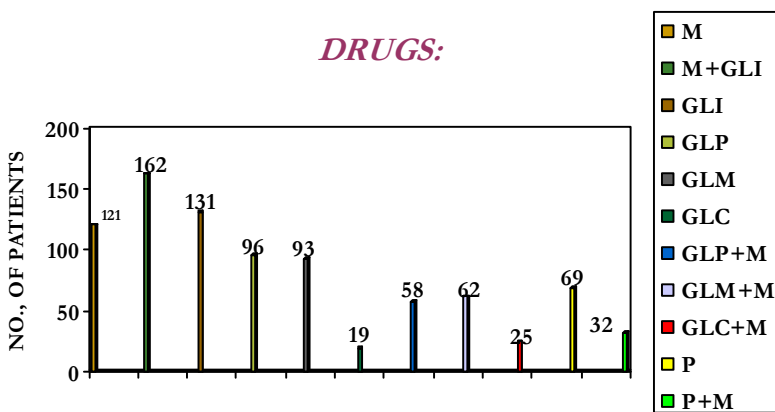
Graph 10: Drugs and diabetes

5.11. Daily Activities and Diabetes:

People facing many difficulties to manage their diabetes in their daily activities.866 people facing great deal to manage the diabetes .132 people suggested the diabetes does not affected their daily activities.2 people are not bother about the diabetes.
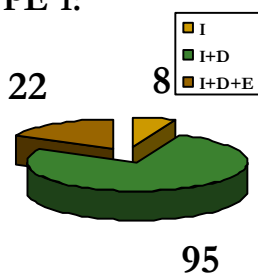
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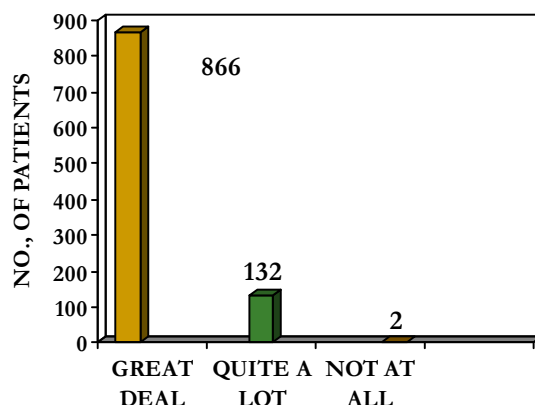
Graph 11: Daily activities and diabetes.
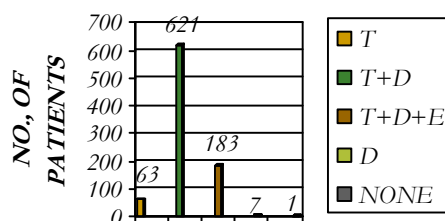
5.12. Control of diabetes:
Type 1 diabetes people controls by taking insulin .some people maintaining proper diet with insulin .others in addition to that doing exercise regularly .In case of type 2 diabetes people controls by taking tablets instead of insulin.

TYPE 1:

TYPE 2:
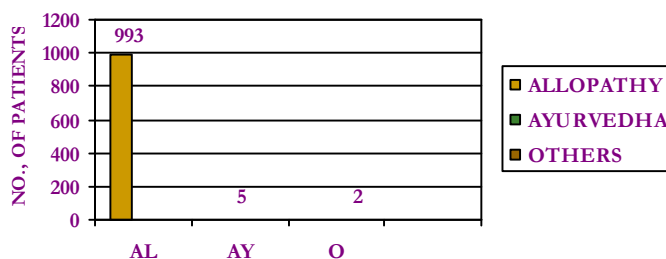

Graph 12: Control of type 1 diabetes.   **Graph 13: Control of type 2 diabetes.**

5.13. Medication and diabetes:
Mostly people preferred allopathic type of medication whereas rest of the people prefers ayurvedha and not taking any treatment.
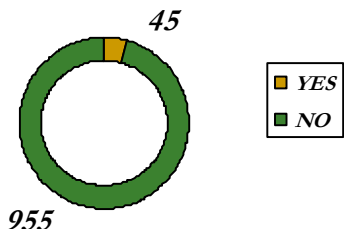
TYPE OF MEDICATION:
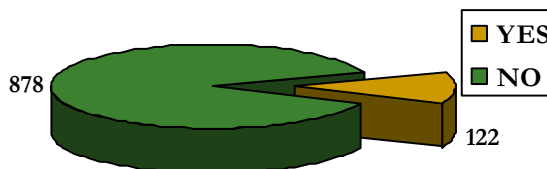

Graph 14: Medication and diabetes.

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5.14. Awareness and diabetes:

A person having diabetes knows how to manage in life. Regarding HBA1C test only45 people know about the test whereas awareness about carbohydrate count, 122 people know about that.

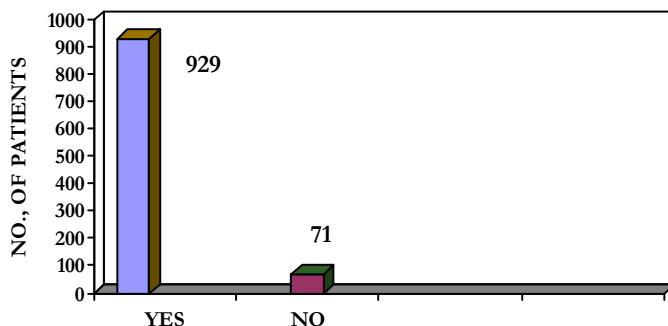*AWARENESS ABOUT HBA1C:*

Graph 15: HBA1C and diabetes   **Graph 16: Carbohydrate count and diabetes.**
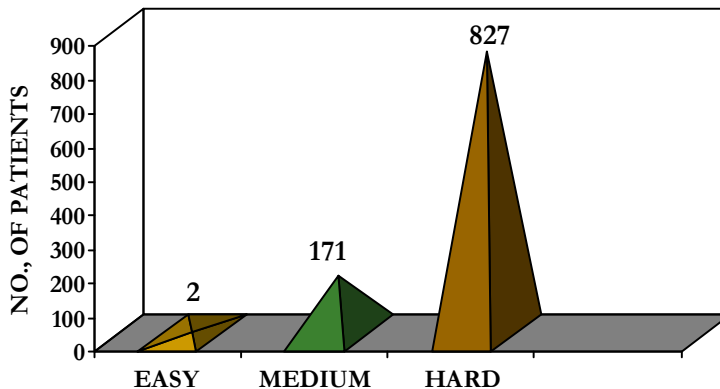
5.15. Food habits and diabetes:

Managing of food habits is hard to827 people, medium to171people, easy to 2 people. In case of diet control, 927 people maintaining proper diet control rest of them not maintaining their diet.

5.15.1 Diet Control:

Graph 17: Diet control and diabetes.

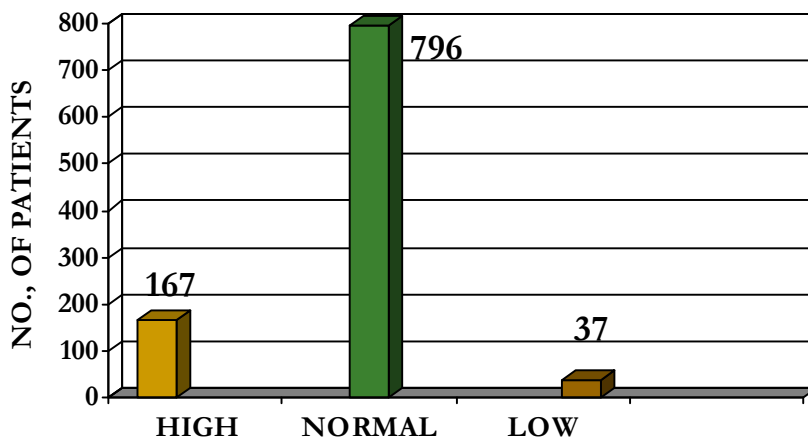### 5.15.2 Manage Of Food Habits:

Graph 18: Food habits and diabetes

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5.16. Health problems and diabetes:
Mainly diabetes results in blood pressure, cardiac and ophthalmic problems.

5.16.1 Blood Pressure:
Among 1000 people, 167 people having high blood pressure and 37 having low blood pressure rest of them having normal blood pressure.

Graph 19: Blood pressure and diabetes.

5.16.2 Cardiac Problems:
Out of 1000 people 68 people had heart attack and 19 people underwent to by pass surgery rest of them did not have any problems .H-Represent Heart attack, BYP-Represent by pass surgery.
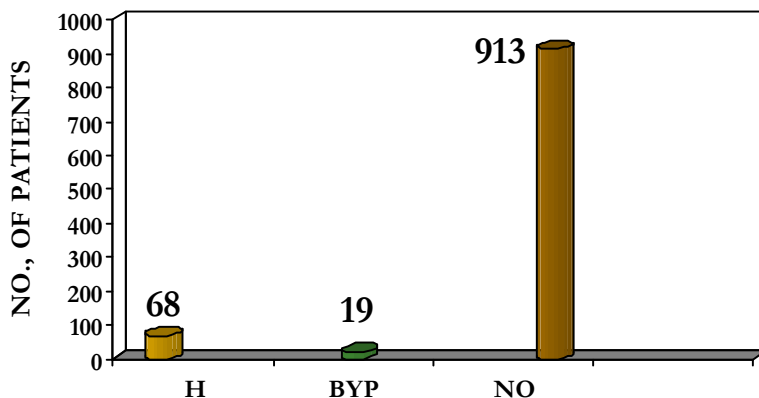
**Graph 20: Cardiac problems and diabetes.**

5.16.3 Ophthalmic Problems:
From the 1000 people, 87 people affected by cataract,283 people having blurred vision,86 people having both cataract and blurred vision.C-Represent Cataract,BL-Represent Blurred vision.

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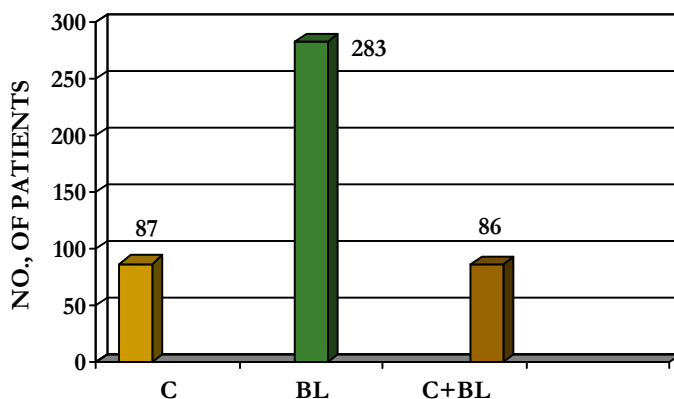
Graph 21: Ophthalmic problems and diabetes

5.16.4 Foot Ulcer:
Among the 1000 people, 102 people affected by foot ulcer rest of them are not affected.
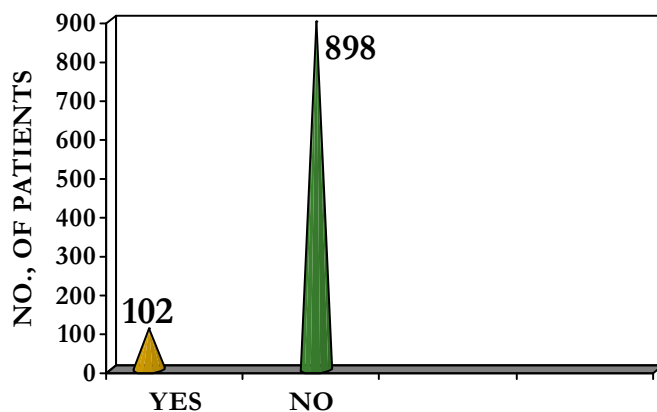
Graph 22: Foot ulcer and diabetes.

CONCLUSION

Totally 1000 people were surveyed   nearly **62.1** percent of male and **37.9** percent of female. About **66.0** percent people having diabetes at the age of 35 to 60.whereas **27.3** percent people are above age 60.only **6.7** percent people reported diabetes below 35 ages.

Majority of the diabetes people are doing easy type of work. They are more prone to diabetes. Around **76.7** percent people are doing easy type of work,.**16.5** percent and **8.0** percent people are doing medium and hard type of work respectively.

From this survey, we came to know that **38.4** percent of the people are from the middle class background.**35.7** percent are in BPL and **8.8** percent people in APL.**62.2** percent of the people completed their schooling. Whereas **19.0** percent are illiterates, **18.8** percent people are graduates. Around **74.7** percent people affected by the diabetes at the age of 35 to 60. Among the

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surveyed people **87.5** percent are having **Type 2 diabetes** and **12.5** percent are having **Type 1 diabetes.**

Treatment being taken by people in government hospitals is **62.5** percent mostly BPL and some middle income level people are prefers their treatment. Nearly **68.1** percent going for frequent check up . People having diabetes are very careful in maintaining their date of check up and management of diabetes. Mostly in all the hospitals, they prefer the BP test.**81.7** percent people are taking BP test Nearly **86.6** percent of the people feel great deal to overcome the diabetes from the daily activities .for the control of type 1 diabetes, **9.5** percent people taking insulin and maintaining proper diet. In case of type 2 diabetes **62.1** percent people consuming tablets and maintaining proper diet Due to fast recovery, around **99.3** percent people prefer allopathic type of medication. Other types are very less in number. Drugs used by the patients are also taken account   in this   survey. Among the other diabetic drugs.**16.2** percent people are taking Metformin and Glibenclamide combination drug. Because compare to other drugs side effects are quite less and low cost.

In case of awareness about the HBA1C test, only **4.5** percent people know about the test. Even though people having awareness about the diabetes people failed to know about the HBA1C test regarding the carbohydrate count **12.2** percent people only having awareness. The government should issue propaganda for doctors to emphasis about the HBA1c and carbohydrate count to the people. Based upon the income level and others factors like time, food habits etc. **82.7** percent people are facing hard to managing of food habits in their daily life.eventhough people having awareness about diabetes, **7.1** percent people failed to maintain their proper diet.

Usually diabetic patients have other health problems like cardiac, ophthalmic, BP and foot ulcer etc. in this survey; the above mentioned problems are concentrated. Blood pressure is normal for **79.6** percent people whereas cardiac problems like heart attack and by pass surgery are reported as **6.8** percent and **1.9** percent respectively .on case of ophthalmic problems mainly facing by the diabetic patients are cataract and blurred vision.**8.7** percent people reported for cataract whereas **28.3** percent for blurred vision. In addition to this **10.2** percent people are having foot ulcer.

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