

**ASSESSMENT OF AWARENESS ABOUT MICROVASCULAR AND
MACROVASCULAR COMPLICATIONS OF DIABETES MELLITUS**Arya Lekshmi U. S.¹, Dr. Merlin N. J.^{2*}, Prof. (Dr.) Shaiju S. Dharan³ and Gloris Mariam Chacko⁴^{1,4}Student, 5th Year Pharm D, Department of Pharmacy Practice, Ezhuthachan College of Pharmaceutical Sciences.²HOD, Department of Pharmacology, Ezhuthachan College of Pharmaceutical Sciences.³Principal, Ezhuthachan College of Pharmaceutical Sciences.***Corresponding Author: Dr. Merlin N. J.**

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ABSTRACT

Background: Diabetes Mellitus is a metabolic disease that result in high blood sugar level in body .Prolonged duration of diabetes in a person can lead to many complications which may affect the eyes, nerves, kidneys and other organs. Diabetic Complication are mainly of two types: microvascular and macro vascular complications. The aim of this study is to assess the awareness about diabetic complication among people in South Kerala. **Objective:** To obtain quantitative and qualitative data regarding the awareness of diabetic complication in South Kerala. **Methodology:** It was a cross-sectional observation study done by simple random sampling based on a questionnaire and data were analyzed statistically. This study was conducted in 300 people among rural and urban area of South Kerala. **Result:** 300 subjects were participated in the study in which 34% were aware and 66% were unaware about diabetic complications. Subjects were asked about awareness of common complications resulting from diabetes mellitus, majority ie, 35% responded as kidney disease, 30% as eye disese, 16% as heart disease,7% as stroke, 12% as donot know. While assessing the awareness about organs affected by diabetes, 34% responded as eyes, 21% as feet, 18% as kidney, 11% as nerves, 9% as heart, 7% as donot know. **Conclusion:** Now a days diabetes mellitus is globally increasing. And the people are unaware about the diabetic complication and need of proper treatment. Through this study the awareness of diabetes mellitus as well as its complication has been assessed.

KEYWORDS: Diabetes Mellitus, Macro vascular complications ,Microvascular complications, awareness.**INTRODUCTION**

Diabetes Mellitus is a metabolic disorder characterized by high blood sugar level over a prolonged period of time, with disturbances of carbohydrate, fat, and protein metabolism.^[1] The abnormal production of insulin hormone and impaired utilization is the main cause of diabetes. Symptoms of diabetes mellitus include polyphagia, polydyspia, polyuria, blurry vision, tiredness, weight loss.^[1] Diabetes is mainly classified into type 1 diabetes, type 2 diabetes, prediabetes and gestational diabetes.^[1] Type 1 diabetes is an autoimmune disease. The pancreatic cells which are main production unit of insulin is attacked by immune system and the cells are destroyed.^[2] The exact reason behind the immune attack is unclear. Type 2 diabetes occurs when the body become resistant to insulin, ie, uptake of insulin decrease thereby causing hperglycaemia.^[3] People with type 2 diabetes mellitus are having insulin resistsnace. Due to childhood obesity type 2 diabetes also affects kids and teens also. Prediabetes is a condition in which the blood glucose level is higher than normal but no as large enough to diagnose as diabetes mellitus.^[4] It is known as impaired fasting glucose or impaired glucose tolerance.

Gestational Diabetes is high blood sugar during pregnancy This occurs due to insulin blocking hormones in the placenta.^[5,6]

Prolonged duration of diabetes mellitus can lead to several complication like microvascular and macro vascular complication.^[7,8] Macrovascular disease is a disease which include the macro (large) blood vessels such as coronary arteries, the aorta and the sizable arteries in the brain and in the limbs of the body. Microvascular disease is the disease of small arteries. Macro vascular complication include coronary artery disease, peripheral artery disease and stroke.^[9,10] Microvascular complication include nephropathy, neuropathy and retinopathy.^[9,10] This study focuses on the assessment of awareness and knowledge about microvascular and macrovascular complication of diabetes mellitus through questionnaire and also provide the proper information about diabetic complications. Main objective of the study was to obtain the qualitative and quantitative data regarding the awareness about the diabetic complications among people in rural and urban areas of south kerala.

MATERIALS AND METHOD

The study was a cross-sectional observational study carried out among 300 people in urban and rural areas of south kerala for a period of 1 month. Simple random sampling method was used. Study was conducted in male and female people of the age group 18-65 years in south kerala. People who are willing as well as subjects with and without diabetes are considered in the study. Subjects who are bedridden and chronically ill are excluded from the study. A preformed questionnaire based study is carried out and data is collected and documented. The subjects are asked about the awareness and knowledge about diabetes and its complications. Questionnaire involved demographic details, causes of diabetes, commonly affected age group and sex in diabetes, course of disease, symptoms of disease, knowledge of diabetic complications, awareness about the organs commonly affected by diabetes, quality of life

in diabetes patients, frequency of hospital visit and blood sugar testing, measures to prevent diabetes.^[11,12]

The data obtained were analysed statistically.

ETHICAL CONSIDERATION

Ethical approval was obtained from institutional ethics committee of Ezhuthachan college of pharmaceutical sciences prior to the study.

RESULT

A total of 300 people were participated in the study where 147 were males and 153 were females.

34% (n=102) of people were aware about the microvascular and macro vascular complications of diabetes mellitus and 66%(n=198) were unaware.

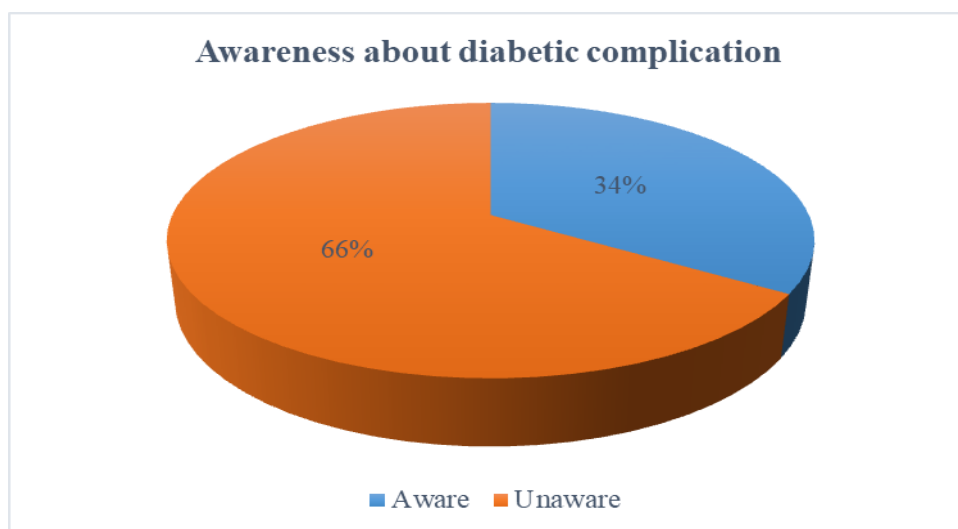


Figure1: Graph representing percentage of awareness about diabetic complication.

When the subjects were asked about the awareness of common complication resulting from diabetes mellitus 35%(n=106) responded as kidney disease, 30%(n=90)

responded eye disease, 16%(n=48) responded as heart disease, 7%(n=20) responded as stroke and 12% (n=36) responded as donot know.

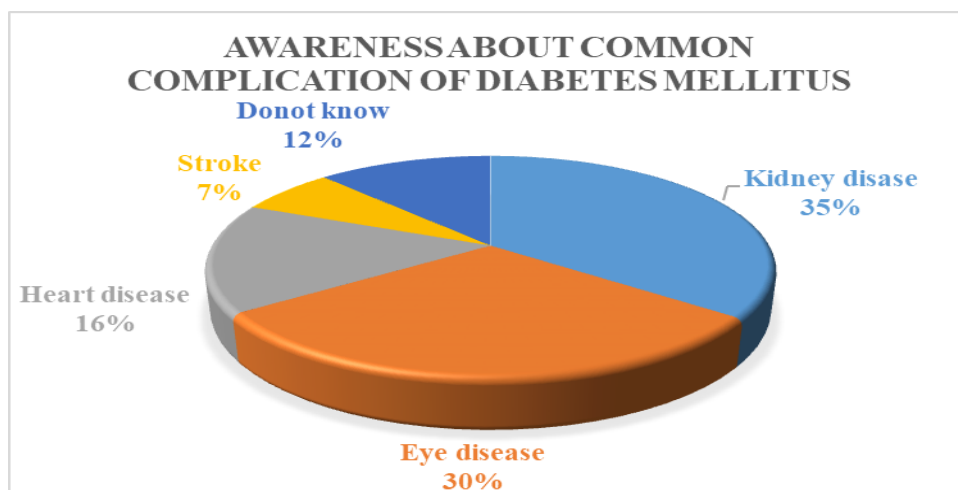


Figure 2: Graph representing assessment of awareness about common complications of diabetes.

451 responses were obtained while assessing the awareness about the organs that affected by diabetes. In which 34%(n=152) responded that diabetes affect eyes, 21%(n=97) responded as feet, 18%(n=79) responded

kidney, 11%(n=51) responded as nerves, 9%(n=41) responded as heart, and 7%(n=31) responded as do not know.

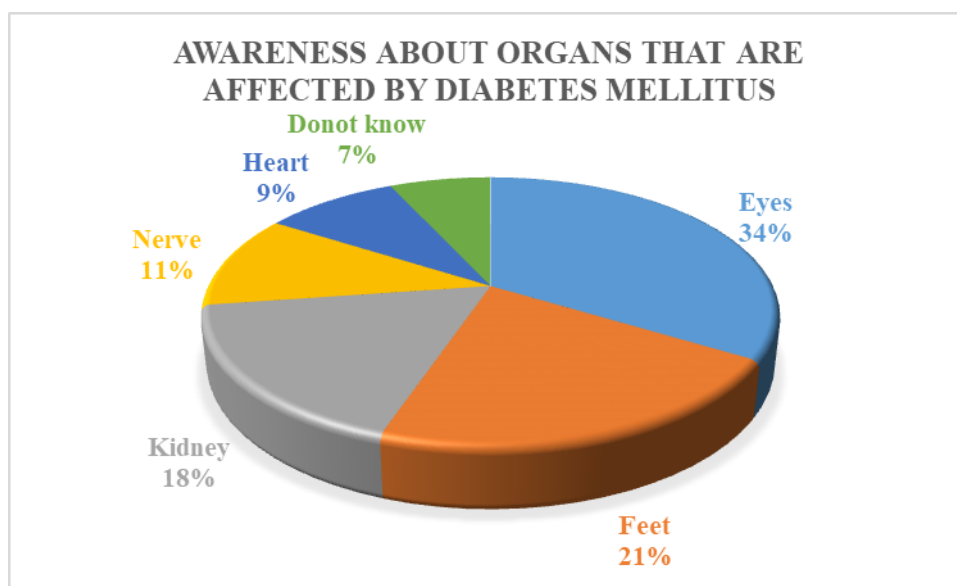


Figure 3: Graph representing awareness about organs that are affected by diabetes Mellitus.

DISCUSSION

According to the study conducted, it is clear that majority of the population were unaware about the microvascular complications such as retinopathy, nephropathy, neuropathy and diabetic foot disorder and macro vascular complications such as coronary artery disease, peripheral arterial disease and stroke of diabetes mellitus. Patient with both type 1 and type 2 have chance to develop complication. High blood glucose level over a prolonged period of time affects the blood vessels and the nerves that control the heart and hence leads to heart disease. Peripheral artery disease is a condition in which the blood flow is reduced due to narrowed blood vessels.^[13] Characteristics symptoms include leg pain particularly when walking. Diabetic stroke is a major risk factor of diabetes mellitus. Diabetes can cause pathologic changes in blood vessels and various location and leads to stroke.^[13] Symptoms include numbness or weakness in one leg, arm or side of the face, difficulty walking or keeping balance or extreme dizziness, confusion or difficulty talking, double vision, Diabetic neuropathy is a type of nerve damage that occurs due to high blood glucose level.^[13,14] Hyperglycaemia can lead to injury to the nerves in the hands and feet. Signs and symptoms commonly worse at night and include numbness or reduced ability to feel pain or temperature changes, tingling or burning sensation, increased sensitivity to touch even with light weight objects like bedsheet in some people, muscle weakness, loss of balance or coordination.^[13,14] Diabetic nephropathy is also known as diabetic kidney disease. High blood glucose level can cause injury to kidney and thereby affect the normal functioning of the kidney and can even lead to chronic kidney disease or kidney failure. Symptoms include

weight loss, reduced appetite or feeling sick, Swelling on the feet and ankles, puffiness around the eyes, muscle cramps, frequent urge for urination, tiredness.^[13] Diabetic retinopathy is the complication that affects the eyes. It is caused by the damage to the blood vessels in the tissue at the back of retina.^[14] Retinopathy is divided mainly into two main categories ie, nonproliferative retinopathy and proliferative nephropathy. In non proliferative diabetic retinopathy the blood vessels in retina are weakened. Tiny bulges in the blood vessels called macroaneurysms may leak fluid into the retina. This leakage may lead to swelling of the macula. Proliferative retinopathy is a condition in which the blood supply to retina is blocked due to the abnormal growth of new blood vessels on the surface of retina. Symptoms include floaters, blurriness, dark areas of vision and difficulty perceiving colours and even blindness.

While assessing the awareness about the common complications of diabetes mellitus majority responded as kidney disease (n=106) followed by eye disease (n=90), heart disease (n=48), stroke (n=20) and then some responded as donot know(n=36). Subjects were asked about the organs which are affected by diabetes, 451 responses were obtained due to the response of subject to more than one option provided. 152 responses were obtained for the option eye followed by 97 response for feet, 79 response for kidney, 51 response for nerve, 41 response for heart, 31 response for donot know. From the study it is clear that if the subject knows about diabetic complication they donot have a proper knowledge about it. Also they are not aware about consequences of these complications.

CONCLUSION

Now a days diabetes mellitus is globally increasing lifestyle disorder. And the people are unaware about the diabetic complication and need of proper treatment. Awareness about diabetes, its complications, proper treatment are essential. Through this study the awareness of diabetes mellitus as well as its complication were assessed. Also proper information were provided about the diabetes, diabetic complications, need of proper blood sugar testing as well as treatment to the subjects.

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