

Awareness on Symptoms and Complications of Hyperglycemia In Diabetic Patients

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ABSTRACT

Diabetes mellitus (DM), which is associated with high morbidity, is a significant global public health issue. Diabetes increases the risk of various microvascular and macrovascular disorders, such as coronary artery disease, stroke, retinopathy, nephropathy, and foot amputation, which increase patient suffering and morbidity. Type 2 diabetes is a metabolic disease that requires not only the use of medication but also active patient awareness and appropriate lifestyle adjustments that may improve glycemic control. The current study was prospective and used a pre-developed and validated questionnaire to awareness on symptoms and complications of hyperglycemia among diabetic patients during a 6-month period. A total of 150 patients from various parts of the Dakshina Kannada district participated; of these, 64 men and 32 women, each with a family history of diabetes, were among the participants. During the pre-intervention trial, participants were questioned using a questionnaire, and then educational interventions were given using pamphlets and verbal counseling. It was followed by a 3-month post-intervention study including the same subjects. According to the study findings, only one-third of the diabetic patients in the study sample had adequate knowledge prior to the intervention. This increased significantly after implementation of the educational program. The implementation of the current intervention study was effective in improving patient's awareness on symptoms of DM. This success could be attributed to the fact that the program was tailored to their findings, and its content had direct applications to their care practices.

KEYWORDS: Diabetes mellitus, Awareness, Symptoms, Complications, Interventions.

I. INTRODUCTION

Diabetes mellitus (DM) is a major public health concern around the world, with substantial

morbidity. Polygenic condition characterised by poor carbohydrate, protein, and lipid metabolism due to insufficient or inefficient insulin sensitivity to the receptor. Insulin resistance (lower sensitivity of cells to insulin), a relative insulin deficit, or both are symptoms of type II diabetes. For those with diabetes, recognising and treating hypoglycemia depends on the ability to recognise hypoglycemic symptoms. Type II diabetes often develops in maturity, and the majority of individuals are fat.^[1] It is well established that a number of lifestyle factors play a significant role in the emergence of Type 2 DM. The most prevalent behaviours include excessive alcohol use, cigarette smoking, physical inactivity, and a sedentary lifestyle. About 55% of type 2 DM cases are thought to be caused by obesity.^[2] Type 2 diabetes is a metabolic illness that requires not only medical therapy but also active patient awareness and suitable lifestyle modifications to improve glycemic control. The major disadvantage of diabetes is that if it is not well controlled, it can lead to a rise in the number of complications connected with the disease. Diabetes increases the risk of various microvascular and macrovascular diseases such as coronary artery disease, stroke, retinopathy, nephropathy, and foot amputation lead to increased patient suffering and increased morbidity.^[3] However, diabetes and its complications can be controlled and prevented by proper and effective management. Diabetes mellitus is treated for life, therefore the costs of diabetes and its accompanying co-morbidities and complications impose a significant economic burden on individuals, society, and the health-care system. To achieve effective glycemic management, however, it is required to evaluate glycated haemoglobin (HbA1c) as well as assess diabetes awareness among diabetes individuals. Diabetes ignorance has a detrimental impact on self-care management. The lack of qualified professionals in India makes it difficult to deliver information about diabetes and

its consequences, even though patient education plays a very important role in efficient management of diabetes.^[4]

II. MATERIALS AND METHOD

A community based observational study was conducted to awareness on symptoms and complications of hyperglycemia among diabetic patients in community of Mangalore by accessing different regions of Dakshina Kannada district. The study was conducted among Diabetic populations above 18 years of age for the duration of 6 months from January 2021 to June 2021. A total of 150 patients were included in the study. The study protocol was approved by the Institutional Ethics Committee (IEC) of Srinivas Institute of Medical

Science and Research Centre (SIMS & RC), Mukka, Mangalore.

Inclusion criteria included Patients above 18 years of age, Patients diagnosed with and undergoing diabetes mellitus treatment, Patients who are not pregnant or lactating, and lastly willing to participate in the study. Exclusion criteria of the study excluded patients below 18 years of age, Patients of pregnant, lactating & pediatric category and Patients diagnosed with Type 1 Diabetes Mellitus.

The data of the study were collected from patients with the help of Questionnaire. Data collected included patients demographic details, personal history, medical and medication history and knowledge about the disease. The data analysis was done using Microsoft Excel.

III. RESULTS

Table 1: Demographic details of patients (N=150)

Characteristics	Number	Percentage
Gender		
Male	64	42.7
Female	86	57.3
Age (in years)		
18-50	40	26.7
51-70	90	60.0
71-90	20	13.3
Educational level		
Elementary school	15	10.0
High school	65	43.3
College/ university	20	13.3
Illiterate	20	13.3
Occupation		
Government employee	18	12.0
Private employee	36	24.0
Self	69	46.0
Retired	12	8.0
Non-working	15	10.0
Family History		

Present	80	53.3
Absent	60	46.7
Social History		
Alcohol consumption	35	23.3
Smoking	18	8.0

Figure 1: Percentage distribution of family history in male and female participants. The mean age of the patients was 52 ± 6.84 years; 64 (42.6%) patients were males and 86 (57.4%) were females. Twenty patients (13.3%) were illiterate and the remaining 130 (86.7%) were educated but majority

(61.5%) of them did not study beyond secondary level. Of the males, 6 persons (9.4%) were unemployed and more than half of the females (63.9%) were housewives. More than a half of our subjects (53.3%) reported a history of diabetes mellitus in their first-degree relatives.

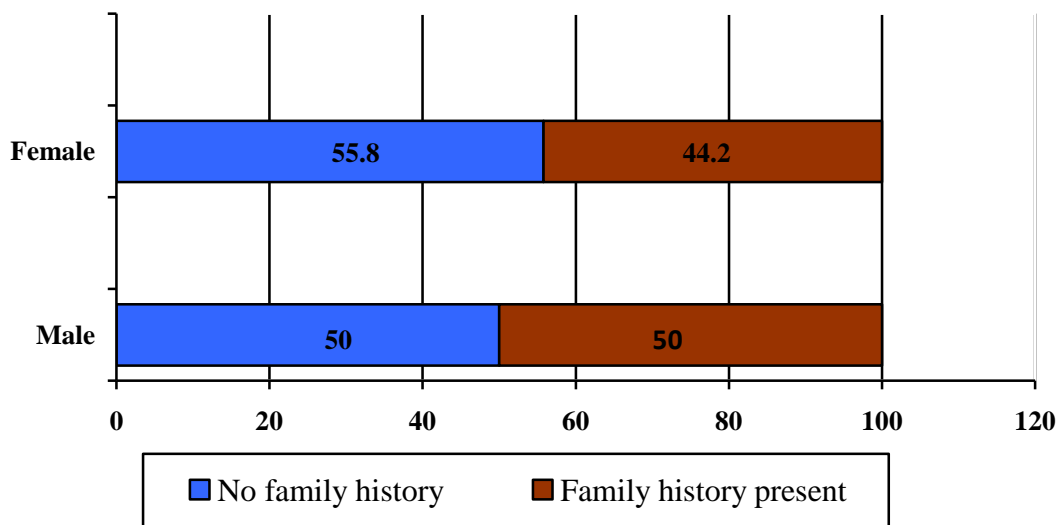


Figure 1: Distribution of diabetes among male and female participants.

AREA- WISE DISTRIBUTION

Area-wise distribution of subjects from different parts of Dakshina Kannada district participated in the study is as follows:

Table 2: Area-wise distribution of subjects (N=150)

Area (D. K. District)	No. of patient
Kankanady	39
Valachil	26
Valencia	31
Jeppu	23
Padil	31

PRE-INTERVENTION TESTING

Only 82 patients (54.7%) knew that diabetes is a condition characterized by raised blood sugar, 30 patients (20.0%) knew that it resulted from a defect in insulin, 72 patients (48%) responded that the disease affects people in the economically productive age group, 66 (44%) knew that both sexes could be affected and only 56 persons (37.3%) regarded it as a lifelong disease.

Only 6.0% knew that the disease could be asymptomatic. Weight gain was reported as the most common symptom of diabetes by 68 patients (45.3%) followed by 43 reporting frequent urination as most common symptom (28.7%). Regarding complications resulting from diabetes, awareness on foot problems was found to be the highest in 97 patients (64.6%) followed by heart diseases (37.3%) and kidney diseases in 24.0%.

Table 3: Distribution of respondents according to their awareness on symptoms and complications (n=150)

Issues on awareness	Correct Responses	
	Number	Percentages
Symptoms of disease		
Weight gain/loss	68	45.3
Frequent urination	48	32.0
Frequent hunger	32	21.3
Frequent thirst	22	14.7
Asymptomatic	9	6.0
Complications		
Heart diseases	56	37.3
Kidney diseases	36	24.0
Eye diseases	29	19.3
Stroke	12	8.0
Foot problems	97	64.6
Death	20	13.3
Others	25	16.6

Figure 2: Frequency distribution of diabetics according to their awareness on symptoms

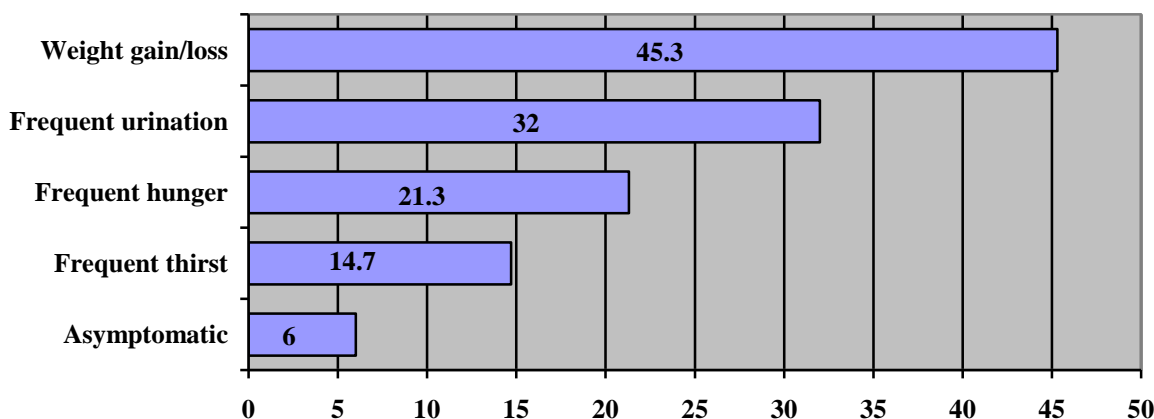
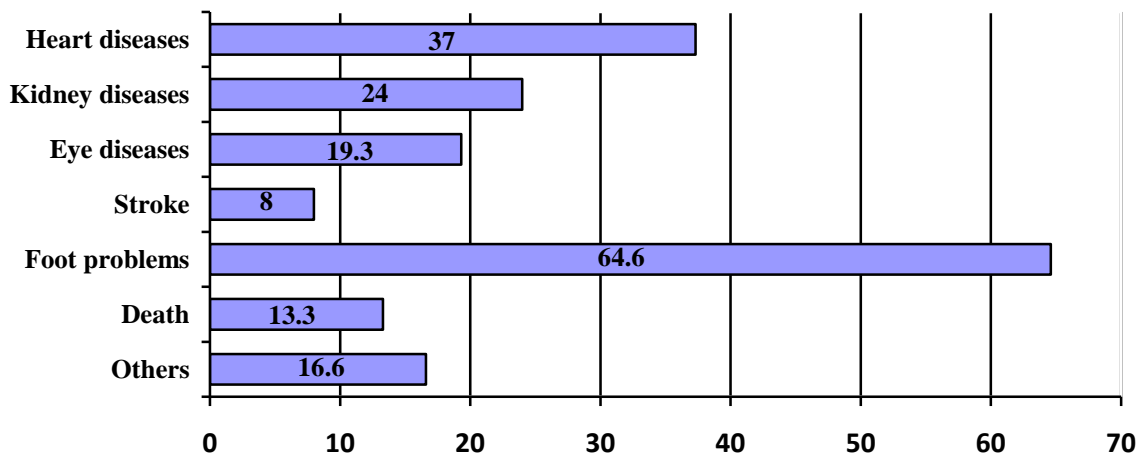


Figure 3: Frequency distribution of diabetics according to their awareness on complications



POST INTERVENTION TESTING:

After providing intervention, same subjects were interviewed with same questionnaire to assess the improvement in understanding and

benefits of the interventions given. The findings of post intervention are compared with pre intervention values. (Table 3)

Table 4: Comparison of pre and post intervention distribution of respondents according to their awareness on symptoms and complications (n=150)

Issues on awareness	Correct Responses			
	Pre-intervention		Post intervention	
	Number	Percentage	Number	Percentage
Symptoms of disease				
Weight gain/loss	68	45.3	108	72.0
Frequent urination	48	32.0	118	78.7
Frequent hunger	32	21.3	97	64.7
Frequent thirst	22	14.7	87	58.0
Asymptomatic	9	6.0	50	33.3
Complications				
Heart diseases	56	37.3	99	66.0
Kidney diseases	36	24.0	87	58.0
Eye diseases	29	19.3	116	77.3
Stroke	12	8.0	68	45.3
Foot problems	97	64.6	130	86.7
Death	20	13.3	30	20.0
Others	25	16.6	38	25.3

Figure 4: Comparison of pre and post intervention frequency distribution of diabetics according to their awareness on symptoms

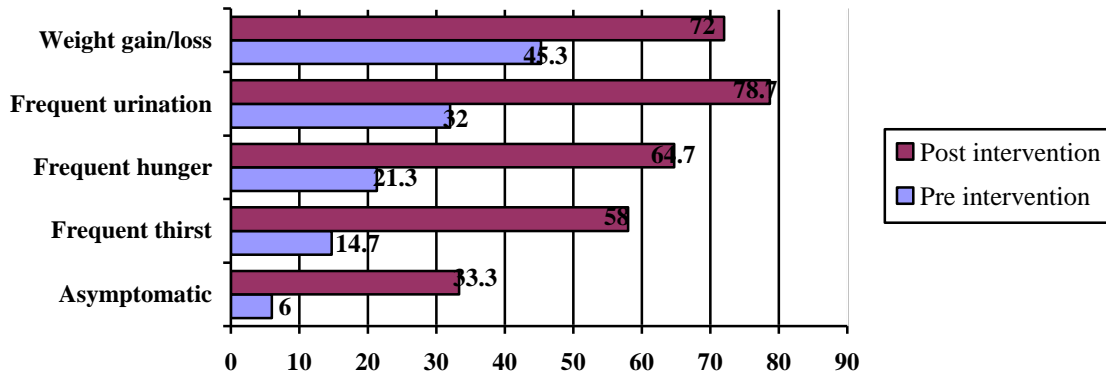
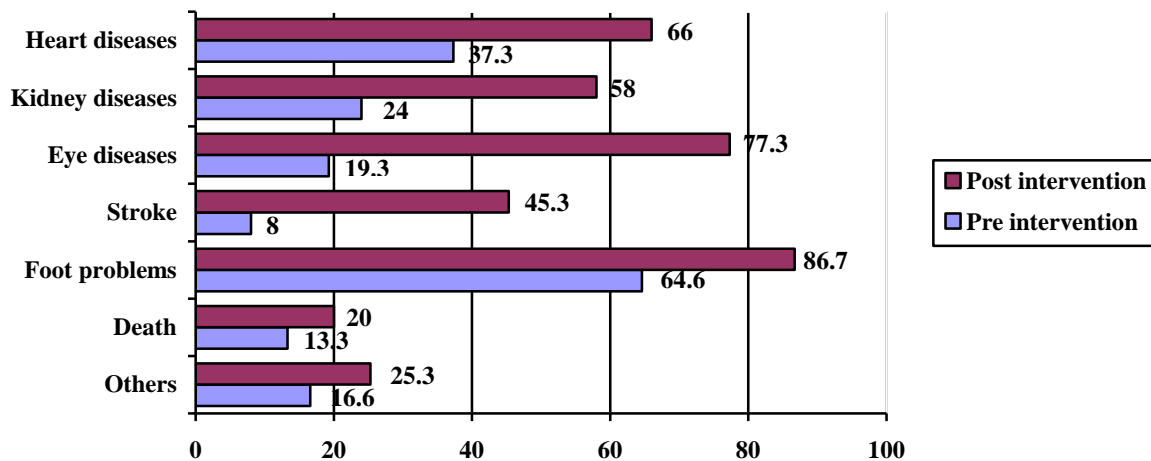


Figure 5: Comparison of pre and post intervention frequency distribution of diabetics according to their awareness on complications



IV. DISCUSSION

The preliminary study's objectives were to evaluate the sociodemographic characteristics of patients as well as their awareness on symptoms and complications of the disease. Only one-third of the study sample's diabetic patients had sufficient knowledge prior to the intervention, according to the study's findings. Following the implementation of the educational programme, this grew dramatically, which prompted acceptance of the predetermined research hypothesis.

According to earlier research, knowledge about diabetes mellitus (DM) and haemoglobin A1c level are related, and that knowledge is directly related to treating and caring for persons with diabetes. [5,6,7] In terms of DM knowledge, the results of the current study were poor, with just 25.2% of respondents aware every symptoms and complications of hyperglycemia, which increased

to 57.11% after interventions. Knowing the signs and symptoms of diabetes revealed that 23.86% of the individuals were well informed and identified weight loss, increased appetite and urine, and delayed wound healing as signs of the disease. The incorrect answers were given by the remaining 76.14% of the participants. Most diabetics showed more frequent urinating.

In our study, 19.3% of respondents agreed that diabetes can cause eye disease, which was significantly lower than the previous study before interventions and higher (77.3%) and consistent with the study by Memon et al. that reported 56.9% of the general population knew that DM affected eyes. [8] Half of our study population (51.6%) stated that genetic factors may increase DM risk, which was lower than a Sri Lankan study in which 73% of respondents reported a family history of DM as a risk factor. Knowledge related to complications of

diabetes indicated that the subjects were aware that poorly managed diabetes caused damage to the eyes, kidneys, and heart. 70.99% of the subjects did not have complete awareness and believed their eyes, kidneys, or hearts could be affected. A study conducted by Zia Ur Rahaman et al. (2014) showed that the knowledge about complications of diabetes was not satisfactory in female diabetics; only 32.4% of female diabetics and 63% of male diabetics were aware of the complications.^[9] Ulvi et al., (2019) conducted the study in rural Islamabad and Ali et al., (1998) in Quetta observed that knowledge about diabetes, including awareness of complications, was poor.^[10,11] This indicates that the majority of the diabetic subjects have not been educated about diabetes by their physicians and other health care professionals, although some studies have shown that even some health care professionals don't have enough knowledge regarding diabetes.^[12,13]

V. CONCLUSION

According to the study's findings, people with diabetes were adequately informed about the symptoms and complications of the illness to prevent the disease's further progression. The study also showed that having a family history of the condition was one of the major variables influencing the occurrence of diabetes in many people. Therefore, it was suggested that in order to prevent the disease from spreading, greater knowledge about diabetes and insufficient glycemic management should be disseminated.

Furthermore, research has shown that diabetes education programmes are effective in boosting diabetic patients' knowledge and behaviours that impact their treatment. To educate diabetes patients, especially those who are at risk of complications, the programme has to be implemented widely.

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