BRIEF COMMUNICATION

FACTORS CONTRIBUTING TO POOR GLYCEMIC CONTROL IN DIABETIC PATIENTS UNDER FOLLOW-UP IN JIMMA SPECIALIZED HOSPITAL DIABETIC CLINIC.

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ABSTRACT

BACKGROUND: Diabetes mellitus is associated with chronic complications like neuropathy, nephropathy, retinopathy and cardiovascular diseases. Hyperglycemia is the most important risk factor for developing such diabetic complications. In this diabetic clinic poor glycemic control was reported prevalent and yet the contributing factors for the problem were not studied. Objective of the study: the aim of this study is to identify factors contributing to poor glycemic control in diabetic patients under follow-up.

MATERIALS AND METHODS: a retrospective cross sectional study was conducted among 217 diabetic patients who were under follow up at Jimma University specialized hospital Diabetic Clinic during September to March 2006. Cards of patients were selected by employing a systematic sampling technique using their card number. Data on demographic and clinical characteristics were abstracted from the cards. Data were cleaned, edited and entered in to a computer and analyzed using SPSS for windows version11.0. Statistical tests for significance were done where deemed necessary at the level of significance of 0.05.

RESULTS: The mean age was 44 ± 16.3 years with minimum and maximum ages 6 and 93 years, respectively. The mean Fasting blood sugar was 209mg/dl ± 81.7 with a minimum and maximum values being 75 and 565mg/dl, respectively. Seventy one percent were males, 38.2% had Type I, and 60.8% had Type II diabetes. There was a poor glycemic control in 99(45.6%) of the cases. Age, address and type of diagnosis showed a statistically significant association with poor gycemic control (P<0.05).

CONCLUSION: Age, distance from health care center and type of diabetes have significant association with the poor control of blood glucose level and hence are the two identified factors among perhaps several others which contribute to poor glycemic control in diabetic patients under follow-up.

RECOMMENDATIONS: Decentralization of diabetic health care service in rural village health centers is recommended as one measure to improve poor glycemic control and prevent or reduce the occurrence of diabetic complications and consequent mortality.

KEYWORDS: Blood glucose control, Diabetic patients under follow-up, Diabetic complications

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INTRODUCTION

The burden of non-communicable diseases is emerging as a major public health challenge for developing countries. This is largely attributed to unhealthy life style such as unhealthy dietary habits, physical inactivity, overweight/obesity and smoking. Non-communicable diseases are projected to account for 73% of global mortality by the year 2020. World Health Organization (WHO) estimates that such diseases accounted for at least 40% of all deaths in developing countries. The most common and problematic non-communicable conditions are heart disease, hypertension and diabetes (1-3).

Diabetes mellitus is the commonest of all metabolic diseases all over the world including developing countries (4,5). At present it is estimated that about 150 million people are affected by diabetes worldwide. It has been reported that in some African countries the prevalence ranges vary from 1-10%. In Ethiopia diabetes is being recognized as one of important health problems. In a community-based study overall prevalence 0.34% has been reported Hospital-based studies from Addis Ababa, Gondar and Dire Dawa reported prevalence rates 1.9-4.3 % which is the same as reports from other African countries (6).

Diabetes mellitus is associated with chronic complications like neuropathy, nephropathy, retinopathy and cardiovascular diseases. The cardiovascular complications are a major cause of morbidity and mortality in patients with diabetes. Hyperglycemia is the most important risk factor for developing such diabetic complications (7,8)

Prolonged and elevated levels of glucose in the blood, which is left unchecked and untreated results in serious diabetic complications over time and sometimes even death. It is therefore highly important that a diabetic patients check their blood levels either daily or every few days to see what levels they are achieving over a given period of time (9).

Previous studies conducted at Jimma Hospital Diabetic Clinic demonstrated the prevalence of poor glycemic control 54.9% poor glycemic control (fasting blood glucose level control of $\geq$ 200mg/dl) that was of longer duration as shown by high levels of glycated hemoglobin (8.5%)(10, 11).

Shortage of drug, poor storage of the drug, improper injection technique, lack of education and lack of adherence to treatment are some of the factors that contribute to poor control of blood glucose level. Adherence to treatment could be affected by distance of the diabetic health care center. Access to care for rural patients who need to travel great distances to hospital to obtain insulin and treatment is a major problem. Care for chronic diseases such as diabetes must be delivered at places closer to the residences. (12).

The objective of this study was to describe factors contributing to poor control of blood glucose level in diabetic patients attending Jimma Specialized Hospital diabetic clinic.

MATERIALS AND METHODS

A cross sectional study was conducted from March to April 2006 by reviewing clinical records of diabetic patients attending diabetic clinic at Jimma Specialized Hospital. Jimma specialized hospital is located 346 Kilometers Southwest of Addis Ababa.

The sample size was determined by using finite population sample size correction formula. Among about 600 cards of diabetic patients regularly attending a follow up care, a total of 217 patient cards selected using a systematic sampling

technique after arranging the card numbers in an ascending order. Demographic data and clinical data for two consecutive records of blood glucose determinations abstracted from the cards using a special format prepared for the purpose. An average blood glucose level of two consecutive records was taken for each patient as an indicator of the glycemic control level.

Data were cleaned and entered in to a computer and analyzed using SPSS for windows version11.0. Statistical tests for significance were done where appropriate at the level of significance of 0.05.

RESULTS

Out of the 217 cases reviewed, 154(80%) were males and 63(20%) were female giving a male to female ratio of 2.4:1. The majority (67.1%) was above 35 years and the mean age was 44 ± 16.3 with minimum and maximum ages 6 and 93 years, respectively.

The mean fasting blood Sugar (FBS) was 209mg/dl $\pm$ 81.7 with a minimum and maximum values being75 and 565mg/dl, respectively.

Poor glycemic control was statistically significant associated with age, address and type of Diabetes (P<0.05). Subjects coming out side Jimma Town, those in the young age agroug and those with the diagnosis of type I diabetes tended to have poor gycemic control on the two consecutive follow up measurements during the study period (Table 1). There was a poor glycemic control in 99(45.6%) of the cases.

Table 1. Association of poor blood glucose control versus demographic and clinical characteristics of diabetic patients under follow-up in Jimma Specialized Hospital diabetic clinic, April 2006.

Variable (n=217)	Fasting Blood Glucose level		Total	P. Value
	< 200 mg/dl	>=200 mg/dl		
Sex				
Male	87(56.5)	67(43.5)	154(100)	0.328
Female	31(49.2)	32(50.8)	63(100)	
Age				
5-15	2(25.0)	6(75.0)	8(100)	
16-25	8(25.8)	23(74.2)	31(100)	
26-35	13(46.4)	15(53.6)	28(100)	0.002
36-45	30(60.0)	20(40.0)	50(100)	
>=46	62(62.0)	38(38.0)	100(100)	
Total	115(53.0)	102(47.0)	217(100)	
Diagnosis				
Type I	37(43.5)	48(56.5)	85(100)	0.010
Type II	81(61.4)	51(38.6)	132(100)	
Address				
Jimma town	62(62)	38(38)	100(100)	0.032
Out side Jimma	55(47.4)	61(52.6)	116(100)	

DISCUSSION

Poor control of diabetes leads to renalfailure (requiring dialysis or transplant), blindness, heart disease and limb amputation. Studies in Ethiopia have indicated that complications are common manifesting with retinopathy and nephropathy(12,13).
The most important factors in avoiding these complications is glycemic control with either oral hypoglycemics and/or insulin therapy. Nowadays, the goal for diabetics is to avoid or minimize chronic diabetic complications, as well as acute problems of hyperglycemia or hypoglycemia(4,7, 14).

Patients with type I diabetes mellitus require direct injection of insulin as their bodies cannot produce enough (or even any) insulin. For type 2 diabetics, management consists of a combination of diet, exercise, and weight loss, in any achievable combination depending on the patient. Insulin therapy requires close monitoring and a great deal of patient education, as improper administration is quite dangerous (14).

This study demostrated that there was a poor glycemic control in 45.6% of the cases which is closer to the report of a study conducted in the same clinic using glycated hemoglobin and mean fasting blood glucose level(10,11) .

In conclusion: age, distance from health care center and type of diabetes have significant association with the poor control of blood glucose level and hence are the two identified factors among perhaps several others which contribute to poor glycemic control in diabetic patients under follow-up.

Decentralization of diabetic health care service to the community based health care services is recommended as one measure to improve poor glycemic control and prevent the occurrence of diabetic complications and consequent mortality.

ACKNOWLEDGMENTS

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