

Knowledge and Awareness of Diabetic Retinopathy amongst Diabetic Patients in Kenyatta National Hospital, Kenya

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Abstract

The main objective of this study was to find out the knowledge and awareness of diabetic retinopathy among diabetic patients at Kenyatta National Hospital, Diabetic clinic. Diabetic retinopathy usually occurs due to poor of management of diabetes mellitus and lack of knowledge on the complications of diabetes mellitus. Patients were randomly selected and requested to fill questionnaires and for those who were not in a position to fill due to illiteracy or visual disability, the researcher filled the questionnaire for them. Regarding to knowledge and awareness, 83% of the respondents had heard of diabetic eye disease (DED), 60% of those who had heard of DED, knew the relationship between DED and diabetes. Fifty percent of all the respondents went for eye check ups. The results suggest that there is general awareness of diabetic retinopathy amongst a majority of patients (83%), however there is need to increasing awareness amongst diabetic patient.

Key words: Diabetic retinopathy, knowledge, awareness, Kenya, diabetes mellitus

1.0 Introduction

A successful program to combat any disease in the community relies on the awareness of the community on that disease. The community must be aware of the problem and the efforts being taken to help solve it so that they can actively engage in health seeking behavior, such as coming in for treatment. In addition, general knowledge on the specifics of the disease and on what can be done to combat it will help enormously in the effectiveness of the program. (Kaliyaperumal, 2004)

1.1 Community involvement

The first and most difficult task in community involvement is the identification of a manageable yet meaningful target community (Barbara, et al. 2003). The identification of a community can be based on a variety of things:

- geographic boundaries or spaces
- politics of identity and ethnicity
- demographic or other variables determined relevant by a particular research question
- any number of other fabricated ties that ignore diaspora, globalization, media, and the multiplicity of self-identification.

In this paper the target community was identified on the basis of demography.

1.2 Prevalence of diabetes

Diabetes is one of the most significant public health challenges that we face in the 21st century. It and other similar chronic conditions are already taking a huge toll on human health and resources, yet they continue to be neglected by States, individuals and communities (World Diabetes Foundation, 2007). “Chronic conditions” describes all health problems that persist across time and require some degree of health care management.

Diabetes, heart disease, depression, schizophrenia, HIV/AIDS, and ongoing physical impairments all fall within the category of chronic conditions (WHO, 2002). The number of people with diabetes is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity (Sarah et al. 2004). The increase in diabetes in developing countries is especially concerning. Developing countries contribute 3/4 of the global burden for diabetes. However, the number of persons diagnosed with diabetes will increase from 135 million in 1995 to 300 million in 2025 (King et. at., 1998).

1.3 Types of diabetes

Diabetes mellitus can be divided into four classes; Type 1 diabetes mellitus is a situation where by there is severe insulin deficiency hence administration of insulin is essential. Type 1 is further divided into immune and idiopathic causes. The immune form is the most common form of type 1. Type 2 diabetes mellitus is characterized by tissue resistance to the action of insulin combined with a relative deficiency in insulin secretion. Patients with type 2 diabetes mellitus may not require insulin to survive, but 30% or more will benefit from insulin therapy to control the blood sugar. Type 3 diabetes mellitus refers to multiple other specific causes of an elevated blood sugar, nonpancreatic disease, drug therapy e.t.c. Type 4 diabetes mellitus is gestational diabetes (GDM) and is defined as any abnormality in glucose levels for the first time during pregnancy (Betran, 2007).

1.4 Diabetes in Kenya

Diabetes is increasingly common worldwide, and Kenya is no exception. The Kenyan Ministry of Health estimates the prevalence of diabetes to be around 10% (3.5 million people) (Atieno, 2006). The prevalence of diabetes mellitus in Kenya is estimated at 3% with up to 50% being undiagnosed. The number of diabetes is estimated to rise dramatically in the near future in most developing and intermediate societies, affecting particularly urbanizing societies and the middle-aged population (Kenya Society for the blind, 2008).

T2DM is the more prevalent, and Kenyans are developing it younger than humans in developed countries. The age of onset of T2DM in Kenya is between 45 and 55, compared with 64 years in developed countries. Kenyans are also at higher risk for crippling or life-threatening complications, because they report to health centers when the disease is advanced (The East African, 2007).

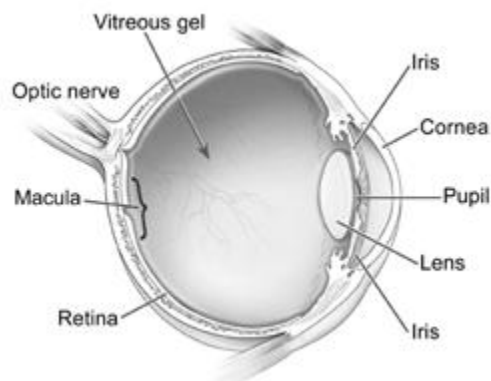
1.5 Implications of lack of knowledge and awareness

Lack of awareness by Africans and facilities for detection and monitoring of Diabetes Mellitus may contribute to the high prevalence of diabetic complications (Longo, et al, 2008). Diabetes complications include: Cardiovascular disease (CVD), Diabetic retinopathy, Diabetic neuropathy and foot ulcers (Sanchez, 1998).

Diabetic eye disease refers to a group of eye problems that people with diabetes may face as a complication of diabetes. All can cause severe vision loss or even blindness (Steven, 2010).

Diabetic eye disease may include:

- Diabetic retinopathy—damage to the blood vessels in the retina.
- Cataract - clouding of the eye's lens. Cataracts develop at an earlier age in people with diabetes.
- Glaucoma- increase in fluid pressure inside the eye that leads to optic nerve damage and loss of vision. A person with diabetes is nearly twice as likely to get glaucoma as other adults.



In people with diabetes, high blood sugar damages the walls of the small blood vessels in the eye, altering their structure and function. As part of this condition, called diabetic retinopathy, these vessels may thicken, leak, develop clots, close off, or grow balloon-like defects called micro aneurysms. Frequently, fluid accumulates in the part of the retina used in tasks such as reading; this condition is called macular edema. In advanced cases, the retina is robbed of its blood supply and grows new, but defective, vessels - a process called neovascularization. These fragile vessels can bleed, creating vision-impairing hemorrhages, scar tissue, and separation of the retina from the back of the eye (retinal detachment). The new vessels can also block fluid flow within the eye, producing glaucoma (John, 2010). There is a high potential for vision loss in persons with diabetes, with approximately two-thirds of persons having had vision loss after 35 years of diabetes.

Current treatment modalities are effective in preventing as much as 98% of vision loss and blindness due to severe retinopathy, if treatment is provided at the appropriate time. However, issues related to utilization of services remain a major challenge (Namperumalsamy, et al 2004). Blindness prevalence rate in Africa varies widely but the evidence suggests that approximately 1% of Africans are blind. The major cause of is cataract, trachoma and glaucoma are also important causes of blindness. All these can be prevented by primary health care measures (Catherine et al, 1998). All people with diabetes, both type 1 and type 2, are at risk of diabetic retinopathy. That's why everyone with diabetes should get a comprehensive dilated eye exam at least once a year. The longer someone has diabetes, the more likely he or she will get diabetic retinopathy. Retinopathy occurs in approximately 20 per cent of diabetics, which accounts to nearly a quarter million Kenyans (Standard News Paper, 2009).

2.0 Related literature

The World Health Organisation estimates that 45 million people are blind worldwide, yet an estimated 80 per cent of the blind suffer needlessly. Millions could be cured because their blindness is caused by conditions that are easily treatable or preventable (Kenneth, 2009). With worldwide estimated 2.5 million blind people diabetic retinopathy emerges as the 4th leading cause of avoidable blindness accounting for approximately 5% of blindness. While it is the No.1 cause of avoidable blindness for the working population in the industrialized world it is said to account for 5-10% of blindness in intermediate economies. For developing countries no sufficient data are available. However, anecdotal observation and preliminary studies indicate that it is an increasing problem (University of Nairobi, 2004). Currently, diabetic retinopathy is estimated to contribute about 3% of blindness in Kenya. Reportedly, in Kenya, almost 50% of diagnosed diabetics in Nairobi and almost 20% in rural Central Province had diabetic retinopathy with the majority never having undergone any eye examinations (Kenya society for the blind, 2008).

Its good to note that the International Diabetes Federation (IDF) is working on standardized education in eight African countries – Tanzania, Cameroon, Mozambique, Kenya, Uganda, Senegal, Zimbabwe, and Zambia. Diabetes education in Kenya, to name one country where awareness is growing, was started as a joint four-year partnership of the World Diabetes Foundation (WDF), the Ministry of Health, and the Kenya Diabetes Management and Information Center (Atieno, 2006). When a survey consisting of 10 questions on diabetes was administered to 1,700 people in the streets of Nairobi recently, only 20% of the respondents had 70% of the questions correctly answered (WHO, 2007). The results underscored the great need for diabetes education programs, which the government is attempting to implement.

During the 19th World Diabetes Congress, the “Diabetes Declaration and Strategy for Africa” was launched by the International Diabetes Federation Africa Region. Through this declaration, IDF, WHO Africa Region, and the African Union agreed to combine their efforts and called on governments, stakeholders, and partners to work towards prevention, improve the quality of life, and reduce morbidity and premature mortality caused by the disease (Kaushik, 2004).

In consecutive studies the situation for a major referral hospital in Nairobi and for diabetic programmes in rural Kenya where examined with the following major results (extracts):

1. Urban national referral hospital (N = 601, patients attending medical clinic for diabetics): 49.8% had diabetic retinopathy; 82% had no previous eye examination and 48.6% of DR patients needed some sort of treatment. 19.7% had blinding conditions (13.4% csME, 6.3% PDR)
2. Rural clinics / hospitals (N = 410, patients attending medical clinics for diabetics): 18.3% had diabetic retinopathy; 4.9% had blinding conditions (4.5% csME, 0.4% PDR)
3. Urban national referral hospital (N = 71, newly diagnosed diabetics attending medical clinic): 30.4% had diabetic retinopathy, 12.5% had blinding conditions (8.2 csME, 4.3 PDR)
4. Peri-urban referral hospital (N = 50, patients attending medical clinic for diabetics): Prevalence of Primary Open Angle Glaucoma (32%) and Ocular Hypertension (14%) where found to be significantly higher in black Kenyan diabetics than reported from similar studies in Caucasians. Most of the patients with POAG or OH did not show any DR.

These data provide evidence of diabetic retinopathy as an emerging problem for East Africa (University of Nairobi, 2004).

Diabetic retinopathy can be minimized with a combination of strict blood sugar control and routine screening with eye exams - though even with optimal medical care, it is not always possible to prevent or slow retinal damage. Studies have shown that maintaining near-normal blood sugar can decrease your chance of developing retinopathy and can help keep existing retinopathy from getting worse (John, 2010). The most important risk factor for diabetic retinopathy is the duration of diabetes. More than 80% of the diabetic patients develop retinopathy in 15 years. After 15 years, about 2% of persons with diabetes become blind, and about 10% develop severe visual loss. After 20 years, more than 75% of patients will have some form of diabetic retinopathy. Well conducted clinical trials have shown that good control of diabetes and hypertension significantly reduces the risk for diabetic retinopathy, and there is evidence from studies spanning more than 30 years that treatment of established retinopathy can reduce the risk for visual loss by about 90% (Kenya society for the blind, 2008). Routine screening offers the best hope for early detection of diabetic retinopathy. People with type 1 diabetes should have a complete eye exam within five years of diagnosis; those with type 2 should have an eye exam at the time their diabetes is diagnosed. After these initial exams, all people with diabetes should have an eye exam at least once a year. (WebMD, 2010).

Blindness from diabetic retinopathy is a preventable complication of diabetes if the retinopathy is detected early. Among other approaches, strong awareness of retinopathy by diabetic patients could help in the early detection, management and prevention of this complication (Mohammed, 2009). Studies previously completed have revealed that Diabetic Retinopathy, despite its status as one of the greatest causes of blindness in both developed and developing countries, is virtually unknown to a large majority of the population. Without awareness of the disease it is impossible for any individual to aid the cause of preventing blindness from Diabetic Retinopathy, either in him or herself or in the community as a whole (Kaliyaperumal, 2004).

According to a research done in India, the results showed that 49.9% had knowledge of diabetes mellitus and 37.1% had knowledge of diabetic retinopathy. Knowledge about diabetes mellitus was more in women. Regarding practice patterns only 36.5% of individual with knowledge about diabetic retinopathy, believed that if they controlled their blood sugar, they could avoid a visit to an ophthalmologist, compared with 55.5% with no knowledge (Rani et al, 2008).

For eye care programmes to be effective, they require that persons with diabetes are aware of the sight-threatening potential of diabetes and the need for regular eye examinations. Appropriate eye health education may encourage people at risk to seek timely and appropriate care. This will require developing educational materials that are regionally and culturally appropriate, and an understanding of current knowledge, attitudes and practices in the community (Dandona et al., 2001).

A study done in Pakistan to compare knowledge of diabetes mellitus amongst rural and urban patients showed that the urban diabetic patients are much more educated about diabetes when compared to rural diabetic patients. One factor which was observed to play a role in improving awareness was the level of education attained. A well educated person had a much higher than a person with none (Ahmed, et al 2007).

Objectives

To determine the knowledge and awareness of diabetic patients on diabetic eye disease.

3.0 Methodology

The study was carried out in Kenyatta National Hospital. This is because it's Kenya's national referral hospital and would give results which would be more or less a representation of the whole country.

The patients were randomly selected and were requested to fill the questionnaires and for those who were unable to fill due to illiteracy or being visually impaired, the researcher filled the questionnaire on their behalf.. Inclusion criterion was used where only patients who had diabetes mellitus involved.

The following formula was used to work out the sample size.

$$n = z^2 p (1-p) / d^2$$

Where;

n=Desired sample size.

Z= Standard error of the mean which corresponds to 95% confidence level. (1.96)

P= Prevalence of condition being studied. In this case is 28.8%

d =Precision with which p is determined (0.05) (Fischer, et al. 1993).

Hence the value of $n=314$

The desired sample size was 314 patients, however due to time factor, 100 patients were recruited. Out of the 100 patients, 37 (37%) were male while 63 (63%) were female.

The study design, survey instruments, and informed consent were reviewed and approved by the Kenyatta National Hospital Ethics and Research committee.

3.1 Data analysis

Descriptive statistics were performed using Statistical Package for social sciences (SPSS) version 12.0.

4.0 Results

A total of 100 patients (37 men, 36 women) participated in the study (Table 1). In terms of occupation, 17% were farmers, 20% were business men and women, 20% had different professions e.g. teachers, 30% were stay at home parents while 13% did not respond to that question. Most of the respondents (40%) were diagnosed with diabetes between ages 41 and 50 years, 20 % between ages 51 and 60 years and 17% between ages 31 and 40 years old.

Table 1: Characteristics of participants

Variable	Number		%
Gender	Male	37	37
	Female	63	63
Age	30-39	13	13
	40-49	17	17
	>50	70	70
Occupation	Farmer	17	17
	Business persons	20	20
	Professional (eg teacher)	20	20
	Stay at home parents	30	30
	Missing	13	13
Age diagnosed with diabetes	1-10	3	3
	11-20	3	3
	21-30	10	10
	31-40	17	17
	41-50	40	40
	51-60	20	20
	61-70	3	3
	Missing	3	3

In regards to knowledge and awareness, 83% of the respondents had heard of diabetic eye disease (DED), while 17% had never heard of it. Sixty percent (60%) of those who had heard of DED, knew the relationship between DED and diabetes. Only 50% of all the respondents went for eye check ups while 47% did not go for eye check ups. Of the 50% who go for eye check ups, 27% of them went once a year, 10% went twice a year while 17% of them went for monthly check ups. Out of the 30 participants, 53% of them had had their vision affected in one way or another.

Table 2

Q. No.	Knowledge and awareness	Percentages
5	Have you ever heard about diabetic eye disease?	Yes 83%
		No 17%
6	If yes, do you know the relationship between diabetic eye disease and diabetes?	Yes 60%
		No 37%
		Missing 3%
8	Do you go for eye check ups?	Yes 50%
		No 47%
		Missing 3%
9	If yes, how often?	Once a year 27%
		Twice a year 10%
		Monthly 17%
		Missing 46%
7	Has your vision been affected?	Yes 53%
		No 47%

N= 30

In terms of gender and knowledge/awareness, out of the 83% of those who had heard about DED, 60% were female while 23% were male. 53% of the respondents had had their eye sight affected in one way or the other.

5.0 Discussion

A number of health awareness studies have been performed in developing countries (James et al, 2008), however Very limited literature exists on the knowledge and awareness of diabetic retinopathy amongst people with diabetes in Kenya. The results of our study suggest that not only knowledge but also best disease practice were less than satisfactory.

Awareness creation is a vitally important step in the creation of a successful program to battle against any disease in the community. This is especially true of the growing problem of Diabetic Retinopathy. Studies previously completed have revealed that Diabetic Retinopathy, despite its status as one of the greatest causes of blindness in both developed and developing countries, is virtually unknown to a large majority of the population. Without awareness of the disease it is impossible for any individual to aid the cause of preventing blindness from Diabetic Retinopathy, either in him or herself or in the community as a whole. Awareness creation is therefore necessary as one of the first steps in any program aimed at reducing Diabetic Retinopathy (Vision2020 e-resource, 2004)

People with diabetes have the right to understand their disease, make informed choices and receive care based on best practice. They must be part of the team that manages their condition. This can only be achieved if interdisciplinary teams and people with diabetes have the information and tools to make changes based on best practice and recognized improvement strategies are used to support meaningful system change (IDF, 2010).

6.0 Conclusions

There is general awareness of diabetic retinopathy amongst a majority of patients (83%), there is however little or no knowledge of its risk factors and prevention. There is therefore a need for increasing awareness and also the provision of access to retinopathy screening services to the patient (Mohamed, 2009). Aggressive and comprehensive awareness is needed to educate diabetic patients on diabetic retinopathy (Rani et al, 2008).

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