Do Healthcare Workers Adhere to Diabetes Clinical Care Guidelines? A Study at a National Hospital, Kenya

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Abstract

Background: The incidence of diabetes mellitus is rapidly increasing worldwide and over 366 million people have diabetes and according to the Kenyan Ministry of Health over 2 million Kenyans are affected by diabetes. In Kenya about 60% and 50% of patients with renal and cardiac complications respectively are as a result of diabetes, and about three quarter of these patients attend the diabetes clinic. It is therefore critical to examine the care provided especially the healthcare practitioner's adherence to diabetes care guidelines. Such guidelines offer a practical way of ensuring standardized care for diabetics and reduce morbidity.

Methods: A retrospective study based on a record review of 377 outpatient files to assess diabetes care practices at Kenyatta National Hospital. The sample consisted of diabetics who have utilised the diabetes clinic for a period of two years. A structured questionnaire and checklist were used to collect data. Randomly selected patient files were reviewed to collect information on the diabetes care practices recommended by the national guidelines. Data was analyzed using SPSS to establish the health care professionals' adherence to National Diabetes Care Guidelines.

Results: Despite almost all patients having an initial evaluation done and management goals were stated in 99.5% in the files, 24.7% and 10.8% of patients were referred for medical nutrition therapy and diabetes self-management education respectively showing that preventive measure were poorly executed. Yearly risk assessment surveillance was poor with only 30.2% and 47.2% patients referred for micro albuminuria, and lipid assessment respectively.

Conclusion: Adherence to diabetes guidelines by healthcare professionals at the hospital was poor and this worsen during patients' subsequent visits. There was also poor adherence to annual risk assessment. Together, these deficiencies represent a lost opportunity for early detection of preventable complications that are major contributors to care costs and poor quality of life.

Introduction

Diabetes mellitus (DM) contributes to 3.4 million deaths in the world annually [1] and it is projected that there will be a two thirds increase in prevalence by 2030 [2]. In addition the leading cause of mortality among those with type 2 diabetes mellitus (T2DM) is cardiovascular disease (CVD) [3] (Joseph and Golden, 2014). Globally CVD is said to be the number one cause of death [4]. Furthermore, 20% to 50 % of people with diabetes develop debilitating complications that greatly increase the economic burden on health care systems [5]. The ten-fold increase in diabetes prevalence in over a decade [6] poses a challenge to care as it requires urgent healthcare response, which may be impossible not possible in many developing economies of Africa.

Kenya and many countries in Sub Saharan Africa cannot cope with the double burden of chronic non communicable diseases (NCDs) and communicable diseases (CDs). Preventive action at the primary and secondary care levels of care is necessary to save the huge costs incurred in tertiary level diabetes care. The appropriate level of care will assist in preventing complications related to diabetes and ensure early diagnoses therefore reducing the cost incurred when treating such complications.

The diabetes clinic at the National Hospital in Kenya caters for over 10,000 people .Hospital records show an increase in diabetes related complications. The renal and cardiac clinics are overburdened by the rising cases of diabetes related renal and cardiac complications. About 60% and 50% of patients with renal and cardiac complications respectively are as a result of diabetes [7] (MOH, 2006); and about three quarter of these patients attend the diabetes clinic. Tertiary care of diabetes related complications poses a great burden to the hospital and the patients, it is thus necessary to ensure good care practices at primary level in order to curb the burden in tertiary institutions.

Care guidelines have been devised to provide guidance to physicians and other health care professionals to work toward achieving care goals. They assist in assessing the quality of care provided and help in the identification of areas requiring more attention [8]. The American Diabetes Association (2008) further asserts that care providers should have defined timely and necessary referral patterns to appropriate specialists to address any noted anomalies once the yearly risk surveillance has been carried out. If well applied, these guidelines will assist in achieving care goals and curb the development of acute and long term complications. They thus have a bearing on quality of care and related costs.

The importance of guidelines in diabetes care serve as useful tools for clinical decision making [9]. Guidelines are used to reduce practice variation, guide appropriateness and measure the quality of care [10,11]. They enable health care providers to improve patient outcomes through a change from conventional to evidence-based physician practices. However, substantial gaps have been documented between the development and dissemination of consensus statements and their implementation in practice [9]. This study therefore sought to assess

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whether healthcare professionals in the centre adhere to guidelines for diabetes care as poor management of diabetes may be one of the contributory factors to the diabetes related complications. Findings of this study will form a basis on which the management and clinicians can act upon to improve the implementation of guidelines at the centre and will also inform the ongoing training of health professionals at National Hospital.

Setting

The health system in Kenya is structured in three levels namely primary, secondary and tertiary. Majority of the patients are seen first at the primary level. Until about 10 years ago 75% of people with diabetes in Kenya were managed at the secondary and tertiary levels of care [12]. The primary care health professionals and centres lacked the capacity to manage diabetes patients. In order to deal with the deficiencies in the care of diabetics at health facilities, the Ministry of Health in Kenya adopted the WHO guidelines for diabetes care in 2005.

The Kenyan guidelines stipulate the following as good diabetes care for the management of diabetes:

- An initial evaluation and physical examination conducted for each patient to enable the practitioner to set short and long term care goals.

- Initial evaluation entails a full medical history, physical examination and baseline risk assessment.

- Anthropometric measures should be done at each visit namely blood pressure, weight and height.

- Patients should have annual risk surveillance namely eye screening, lipid profile, echocardiogram, foot examination, dental examination and renal screen

- Enquiry about alcohol and tobacco use should be done at each visit

- Referral for diabetes self-management education, medical nutrition therapy and exercise education are highly recommended

At the National Hospital Diabetes centre, the doctors are responsible for patient consultation, treatment, referrals for risk surveillance and self-management education. Nursing staff are responsible for measuring blood pressure, blood glucose, weight, heights. In addition, they conduct diabetes education, and feet examination, while medical nutrition therapy is carried out by nutritionists.

Permission to conduct the study was obtained from the Ethics and Research committee at the University of the Western Cape as well as the Ministry of Health in Kenya.

Materials and Methods

This was a retrospective descriptive study. Data was collected through the review of medical records of diabetic patients who were utilizing the diabetes clinic for not less than four years. A total of 377 patient records were randomly selected. Data from the files was extracted utilizing a structured questionnaire looking for actions that were carried out or omitted. The data collected related to the various components of diabetes care as stipulated in the Kenyan National Diabetes Guidelines. The absence or lack of documentation of a particular component of care was taken to mean that that particular component of care did not occur.

Data was analyzed using Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to summarize the data. The level of HCP's adherence was calculated and expressed as a percentage for each category of clinical recommendations i.e. the percentage of cases with care procedures or anthropometric measures done e.g. blood pressure, retinal screening etc. The following categories were devised to illustrate the level of care very good (>80%), Good (71-80 %), Fair (61-70%), Poor (50-60%) and Very poor (<50%).

Results

Patient characteristics

Of the 377 medical files reviewed, 232 (61.5%) were female and 145 (38.5%) were males and the majority of the outpatients were over the age of 45 years.

Majority of the patients in the study had type 2 diabetes 276 (73.2%), while 101 (26.8%) patients had type 1 diabetes. The duration of diabetes amongst patients varied. Of the 377 patients, 185 (49.2%) have had diabetes for not more than 4 years, while 25.8% and 25% have had diabetes for more than 10 years and for 5-10 years respectively. Majority of patients 211 (56%) had have been visiting the hospital for 2 years, 63 patients accounting for 16.7%, had been visiting for 3 to 4 years and 102 (27.1%) for 5 years or more. When examining the frequency of clinic visits, 245 (65%) had 1-2 visits, while 101 visited 3-4 times and only 31 (8.2%) visited the hospital 5 times and more (Table 1).

Diabetes practices

Measurements: Weight was the anthropometric that was measured the most by healthcare professionals, while only 26 (6.8%) patients had their height measured. Only 6 of the 377 patients had BMI calculations on their records. Blood pressure was measured for 368 of the 377 patients. However at subsequent visits the number of patients whose blood pressure was measured declined (Table 2).

At subsequent visits there was a decline in the number of patients whose measurements were taken (Figure 1). Body Mass Index (BMI) calculations for the majority of the patients were only calculated at the first visit while weight measurements declined from 34.6% at first visit to 21.4% at the fourth visit. Blood pressure measurements were taken for 29.7% of the patients at the first visit and only on 23.6% by the fourth visit, thus illustrating a decline in care practices during subsequent visits (Figure 1).

History recording: At initial visit only 36.5% and 35.3%of the patients had their history of smoking and alcohol use collected respectively, showing that risk behavior inquiry was not conducted for the majority of the patients in this study.At subsequent visits, only12 (3.2%) patients had an inquiry of alcohol use in subsequent third visit compared to 98.7% patients who did not have an inquiry of alcohol use, while smoking enquiry was not recorded at subsequent visits.

Preventative measures: Only 213 (56.5%) patient files had an initial evaluation form properly filled and present in their files, while 164 (43.5%) did not have an initial evaluation form. However, a thorough examination of the patient files revealed that all patients had an initial evaluation conducted despite the absence of initial evaluation forms in the patient files. Management goals were stated in 375 (99.5%) patients. However, only 93 (24.7%) and 40 (10.8%) of the patients had a record of referral for medical nutrition therapy and diabetes self-management education respectively. Referrals for exercise education were recorded for only 60 patients accounting for 15.9% of the total sample (Fig 3). Almost all the preventative measures were below 100%

Visits	Frequency	Percent
01-Feb	245	65
03-Apr	101	26.8
5 and more	31	8.2
Total	377	100

Table 1: Number of visits to the clinic in the past 2 years

Variables		Frequency	Percentage
Weight	Performed	370	98.1
	Not Performed	7	1.9
Height	Performed	26	6.8
	Not performed	351	93.2
BMI Calculation	Performed	6	1.6
	Not performed	371	98.4
Blood Pressure	Performed	368	99.5
	Not performed	9	0.5

Table 2: Frequency of measurements collected at the initial visit (n=377)

Figure 1: Measurements taken at subsequent visits.
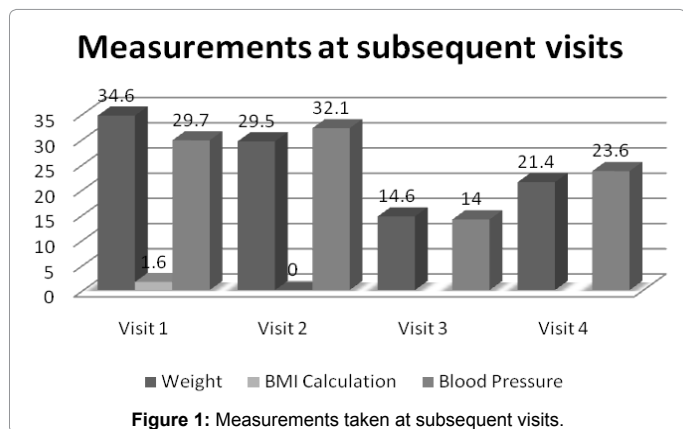
with an exception of management goals and initial evaluation (Figure 2)

Annual risk surveillance: Documentation of recommended yearly risk surveillance was variable . Only 29.2% patient files had a record for eye screening. Renal screening (53.6%) and lipid profile less than 5 % of the patient files had a record for dental check-up (1.3%) and microfilament testing (3.7%). This is an illustration that annual risk surveillance was very poorly conducted (Figure 3).
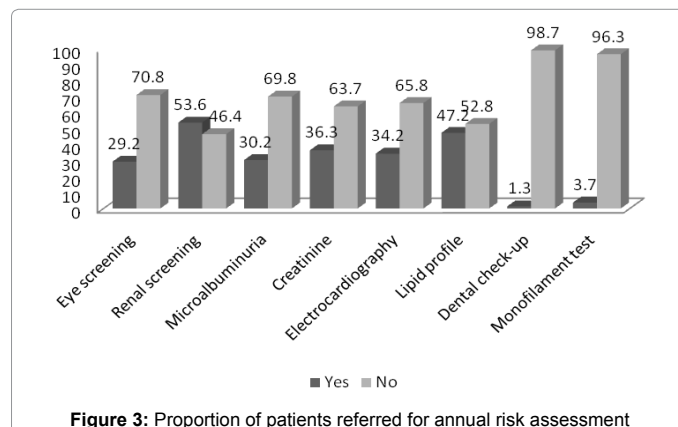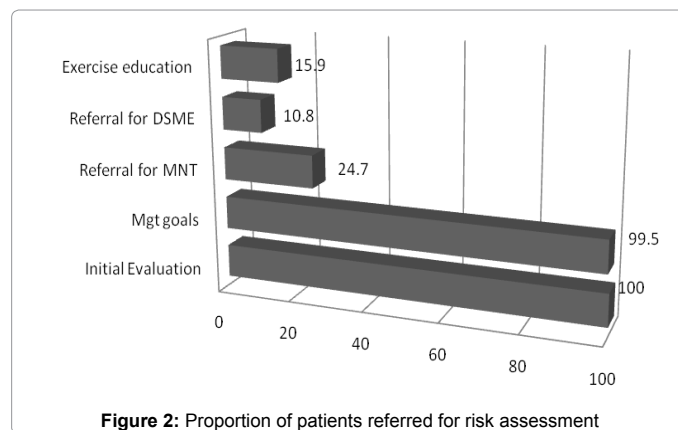
Discussion

The ultimate goal of managing diabetes mellitus is to control blood glucose and to prevent long-term complications. Care guidelines and recommendations are a guide to assist health care providers in achieving these goals by informing care practices. This study indicates an overall poor adherence by healthcare professionals to national diabetes care guidelines. In this study compliance to care guidelines deteriorated during subsequent visits. Such results are discouraging considering that this study was conducted at a diabetic clinic situated in a regional hospital.

Although all the patients had an initial evaluation conducted, only 213 patient files had an initial evaluation form present in their records. Evaluation forms are standardized forms that ensure that critical information for patient profiling and care is collected and therefore has an impact on care decisions made by the health care provider. In the patients who had no initial evaluation, the data collectors had to read through the clinical notes to ensure that all information required on the evaluation form was captured. Diabetes is a complex condition and

the information required to inform care is vast and therefore can easily be forgotten or overlooked if the healthcare provider has no reference such as a template to assist in clinical consultation especially in a health centre with high patient load such as in Kenyatta National Hospital. Such findings suggest poor record keeping. This is a clear illustration that even at first contact protocols are not followed and this may have an impact on continuity of care.

The number of visits was low, 65% of patients made 1 to 2 visits to the clinic in the past 2 years, while only 31 (8.2%) had made 4 or more visits. Although the current Kenyan guidelines do not stipulate the required or expected number of visits to a facility per annum, the number of visits in this study was below the American Diabetes Association recommendations of an average of 6 visits per year [11]. However the general consensus is usually 3-4 visits per year. The low proportion of patients re-visiting the health facility can be attributed to several factors namely distance to facility, costs related to transportation; as well as the large patient load, which makes subsequent visits far spaced [12]. There could also be patient related barriers such as their understanding of the importance of follow-up visits and socioeconomic factors which were not explored in this study.

Weight management in diabetes is crucial, as weight gain is associated with morbidity and increased complications. Majority (98.1%) of the patients had their weight measured while 6.8% of patients had their height measured at the initial visit. It is therefore not surprising that only 6 patients' files out of 377 files had a recorded body mass index (BMI). It is therefore not surprising that a very high number 98.4% did not have BMI calculated. This may be attributed to the clinicians not using these measures in assessing patients or planning

Figure 2: Proportion of patients referred for risk assessment

Figure 3: Proportion of patients referred for annual risk assessment

care, otherwise they would demand them from the nurses, who in turn would perform these tasks as they will be deemed necessary. This highlights disparities between care guidelines and day to day practice. Guidelines without protocols and tools to ensure uniformity in care approach results in the high rates of non- adherence noted in the health professionals' practice, this may possibly be the case at Kenyatta National Hospital. Larme & Pugh, attributed this to lack of clarity of care guidelines/protocols, inherent care provider attitudes and the general complexity of diabetes as a disease [13]. Furthermore, the number of patients whose weight and height was measured declined during subsequent visits. This phenomenon of healthcare professional's adherence to care guidelines waning with time is not limited to this centre it has been documented in various centres worldwide [11]. The diabetes care guideline stipulates that blood pressure measurements be conducted at each diabetic visit. Hypertension is a comorbidities of diabetes, and also a major risk factor for cardiovascular diseases and micro-vascular complications [9,14]. Almost all the patients, 99.5% had their blood pressure measured at initial visit; however, there was a decline in blood pressure measurements during subsequent visits. The decline in measurements at subsequent visit may pose a danger to the care of diabetics as problems may not be detected early enough for physicians to take appropriate actions; this may therefore lead to complications which further complicate the management of diabetics.

Inquiry about alcohol use and smoking was poor, and this was at times not even conducted at subsequent visits. This may be attributed to lack of follow-up templates that remind health workers to inquire about smoking and alcohol use. It may also be due to the fairly large female population in the diabetic clinic who are rarely associated with smoking in Kenya, therefore health professionals do not find it necessary to enquire. Tobacco use in Kenya is estimated at 22.2 % in males and 0.9 % in females [15]. It is advisable for diabetics to avoid tobacco use, as it is correlated with higher incidence of vascular complications especially retinopathy, nephropathy, and cardiac disease [16].

There were few patients referred for medical nutrition therapy (MNT), diabetes self-management education (DSME) and exercise education. MNT and DSME are integral in diabetes management as these components are crucial for glyceamic control. Exercise on the other hand has been associated with improved blood glucose levels, reduced cardiovascular risk and reduction in weight [17].

Apart from referrals, annual risk surveillance was poor with only 53.6% of the patients having a renal screening while the other types of screening were recorded in less than 50% of the patients. The poor risk surveillance in this study shows that physicians are not performing the annual tests required to prevent complications. Diabetic patients with foot ulcers are said to present frequently at numerous tertiary clinics in Kenya and these are associated with poor glycaemic control, infection, hypertension and dyslipidaemia [18]. The causes of such complications can be prevented through annual risk assessments such as microfilament test. Despite these challenges it is important to also note factors that may contribute to non-compliance to guidelines. For example, in the absence of equipment to perform certain tests, the physicians may be reluctant to request for such tests as they know that there is a scarcity of equipment to perform them. Thus an audit of resources necessary for the management of diabetes is crucial in order to determine health system related barriers which may influence compliance to diabetes guidelines.

Conclusion

The study shows that there are gaps between ideal and actual care practices; this is not surprising given the complex nature of diabetes management often needing coordinated services. Generally, adherence to diabetes guidelines by healthcare professionals at the hospital was poor and this worsen during the patients' subsequent visits. Together, these deficiencies in practice represent a lost opportunity for early detection of preventable complications that are major contributors to care costs and also result in poor quality of life. Future studies are needed to explore reasons for lack of adherence to care guidelines so that measures could be taken to improve the situation in order to reduce complications related to diabetes.

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