

Diabetic care in Nigeria: report of a self-audit

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In tribute to the memory of Claude Ake, PhD.

Abstract

As part of a wider study aimed at establishing baseline data on standard of diabetic care to compare with subsequent reassessment after measures to improve outcomes have been introduced, the case notes of 118 Nigerians (42 males) with diabetes attending a teaching hospital-based diabetic clinic were reviewed to assess the quality of professional care in a year with reference to an international standard of diabetic care. Patient attendance at the clinic averaged about nine times annually and majority of them had been attending the facility for about 6 years. Fasting blood glucose (FBG) was tested four or more times in 92.4% of the patients. The corresponding figures for footcare were 1.7%; referrals for eye, dental, or cardiac examination were 12.7%, while lipid profile, serum creatinine, and urinary protein estimation were documented in 16.9% of the patients. In contrast, high-risk assessment or part of it was documented in all patients, and in 61.9%, high-risk intervention was recorded. The data suggest that the quality of diabetic care was less than optimal, and foot examination and referrals, etc. are specific areas for improvement. © 2002 Elsevier Science Inc. All rights reserved.

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1. Introduction

Population-based studies conducted in the late eighties in urban and rural areas using WHO diagnostic criteria indicate a prevalence rate of diabetes of between 1.7% and 1.4% in Nigeria (Erasmus, Ebomoyi, & Fakeye, 1988; McLarty, Pollit, & Swai, 1991). More recently, two studies reported prevalence rates of 1% and 2.6% in urban and rural communities, respectively (Akinkugbe, 1992; King & Rewers, 1991). These data and the social changes in the last three decades that have led to increased availability of health facilities, awareness, and coupled with some gain in life expectancy may have contributed to the increased burden of diabetes now being seen in public hospitals across the country.

Unfortunately, despite advances (DCCT Research Group, 1993; Mecklenberg et al., 1982; The Hypertension Detection and Follow-up Program Research Group, 1985) in

antidiabetic therapy, there is widespread evidence (Akanji & Adetuyibi, 1990; Dagogo, 1991; Famiyuwa, Adenaike, Osotimilehin, & Adetuyibi, 1988; Osuafor, 1998; Osuntokun et al., 1971; Oviasu, 1973) that Nigerians with diabetes mellitus (DM) are at substantial risk of premature death and complications related to diabetes even while in care. Part of this unfavourable outcome has been attributed largely to patient characteristics that include ignorance, poverty, and a high default rate (Akanji & Adetuyibi, 1990; Dagogo, 1991; Famiyuwa et al., 1988; Osuafor, 1998; Osuntokun et al., 1971; Oviasu, 1973). Another part of the problem, which is only just coming into view (Matowe, 2000; Nwosu, 2000; Steyn et al., 1999), may be the processes involved in the health care system of many sub-Saharan African countries including Nigeria.

Specifically, studies (Hellman, Baker, Flores, Lehman, & Bacon, 1997; Piette et al., 2000; Public Health focus, 1993) in healthcare services conducted in Europe and America indicate that professional adherence to approved guidelines for diabetic care can reduce variability in patient care and affect outcome. In this regard, as part of a wider study aimed

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at establishing baseline data for subsequent reassessment after measures to improve outcome has been introduced, we recently observed (Okoro, Adewara, & Davies, unpublished observations) a strikingly high quality of diabetic care in our facility using patient satisfaction as an indicator. However, because professional healthcare services are taken on trust and the diabetic population we serve is predominantly vulnerable (Akanji & Adetuyibi, 1990; Dagogo, 1991; Famiyuwa et al., 1988; Okoro et al., unpublished observations; Osuafor, 1998; Osuntokun et al., 1971; Oviasu, 1973), it is not entirely clear whether this observation could apply to other aspects of care.

These considerations prompted the present study in which we evaluated 1-year's diabetic care with reference to an international standard.

2. Method

2.1. Location

Our diabetic clinic is a teaching hospital-based ambulatory service run by a consultant physician and a team of medical residents and nurses. Patients are referred to it from general and other specialised clinics of this hospital, as well as from other levels of the healthcare system including general hospitals and private clinics in our catchment area, which spans six adjoining states. Patients are seen every Wednesday beginning from 2 pm until all patients are seen and this can go on until about 7 pm on some days depending on patient load.

Specialty training of care providers consultant physicians have basic degree in medicine after completing a 6-year undergraduate programme and thereafter undergo a 6-year structured apprenticeship (residency programme) in an accredited programme in a university teaching hospital under the strict supervision of staff specialists. They are finally certified after passing prescribed examinations set by one of two postgraduate medical colleges of equal status West African College of Physicians and National Postgraduate Medical College of Nigeria. O.E.O. has been the consultant physician in charge since February 1999.

Residents: These doctors have basic degree in medicine and are at various stages of the specialist training outlined above. They also take graded clinical responsibilities as part of their training under a consultant physician who is also a faculty staff in the affiliate medical school.

2.2. Sociodemographic characteristics of patient population

Most Nigerians with diabetes are middle-aged, have type 2 disease (Akanji & Adetuyibi, 1990; Dagogo, 1991; Famiyuwa et al., 1988; Okoro, Jolayemi, & Oyejola, in press; Osuafor, 1998; Osuntokun et al., 1971; Oviasu, 1973), and are predominantly poor, with no formal education. For this reason, patient-provider interaction is con-

ducted mainly in Yoruba, which is the language of interaction and that of the major ethnic group in the catchment area of this facility (Okoro et al., in press; Okoro et al., unpublished observations). English, which is the official language in Nigeria, is sometimes the medium of communication for those who prefer it or are not fluent in Yoruba. The latter are usually Nigerians of other ethnic origins who are resident in or around Ilorin metropolis.

2.3. Healthcare payment system

The federal government offers services at public healthcare facilities at a subsidised rate. Nevertheless, users still pay up to 72% of total personal health expenditures in the form of out-of-pocket payments (The World Health Report, 2000) for prescription drugs, laboratory tests, transportation, consultation, and other incidentals without reimbursement. There is no social security system but the extended family system and network of friends, charity, and exemptions sometimes aid indigent individuals in need to meet the cost of their healthcare expenses.

However, neither exemption from user fees by hospital authorities on a case-to-case basis nor charity play any major role as a source of funding for this population of Nigerian diabetics to finance their care (Okoro et al., unpublished observations) and generally, Nigerians with chronic conditions are willing to pay for healthcare services if such services are perceived as satisfactory and of high quality (Ohaeri, Campbell, & Adenipekun 1995; Okoro et al., unpublished observations). Among those attending this diabetic clinic (Okoro et al., unpublished observations), prescription drugs are the most expensive component of care cost for 61%, followed by cost of transportation, and only 7% of patients indicate cost of laboratory tests as the most expensive.

2.4. Procedure

Case notes were reviewed anonymously by fresh medical interns with no advanced training or clinical experience related to diabetes. Only case notes of patients attending the clinic regularly for 2 consecutive years with a minimum of four clinic visits annually were involved. The minimum level of contact was fixed to fall within the range recommended by the American Diabetic Association (ADA) guidelines as maximum (Wylie-Rosett, Cypres, & Basch, 1992) and offered more opportunities for adherence to the standard under consideration. In addition, this minimum (of at least four clinic visits annually) is in excess of existing practice (Hellman et al., 1997; Piette et al., 2000; UK Prospective Diabetes Study Group, 1998) in diabetic clinics in more advanced countries but is consistent with the tradition in this facility of following diabetic outpatients on a monthly basis (see Table 2). The period of assessment was 1 year, which was either 1997 or 1998. The instrument for data collection was a *diabetes quality assurance checklist* designed to review medical care using a basic assess-

ment and a high-risk assessment and intervention to monitor adherence to the ADA standard of diabetic care provided during a 1-year period (Wylie-Rosett et al., 1992). This protocol defined the elements of care that should be documented in the case note of individuals with diabetes. As part of quality assurance procedure, a pilot study involving 21 case notes was independently reviewed by two of the interns in order to determine interobserver and intraobserver variations over time. It was observed that the degree of concordance was within prescribed limit (Wylie-Rosett et al., 1992). In addition, case notes of qualified patients were randomly allocated to the reviewers.

Data analysis was by comparison of individual scores for each item of care (Piette et al., 2000) against the minimum ADA standard (100%), then 75% and 50% of the minimum ADA standard using one-sample *t* test. Two-sample *t* tests were used to assess quality of diabetic care by gender in order to examine whether this factor influenced the quality of treatment diabetics were exposed to. Analysis of variance was used to examine possible influence of specific patient characteristics on individual items of care. Differences were considered significant if *P*-value is $< .05$, except as otherwise stated. Some results are presented as mean $\pm$ S.E.

3. Results

3.1. Sample size

A total of 147 case notes were reviewed of which 118 met the enrolment criteria. Therefore, this survey involved a total of 118 subjects (42 males) with a mean age of 56.3 ± 0.24 years (16–82 years). The mean duration of clinic attendance was 6.4 ± 0.5 years, with an average of 9.05 ± 0.29 clinic visits per year. The mean score was significantly lower in all items of care assessed when compared to ADA minimum (Table 1). When these scores were compared against 75% and again against 50% of the prescribed minimum, they were still significantly lower (data not shown for clarity). However, fasting blood glucose (FBG) testing (isolated from

Table 2

Distribution of selected variables and mean score by gender

Mean		Male (<i>n</i> = 42)	Female (<i>n</i> = 76)	<i>t</i> value	<i>P</i> -value
Variable					
1	Assessment of cardiovascular risk factors	4.1	4.2	0.7	.52
2	Duration of attending diabetic clinic (years)	6.1	6.6	0.5	.64
3	Age (years)	56.6	56.1	0.2	.87
4	Footcare	0.12	0.07	0.4	.67
5	General care	2.8	3.6	1.3	.19
6	High-risk intervention	9.6	14.04	2.1	.04*
7	High-risk assessment	– 33.3	– 28.7	1.5	.14
8	Laboratory tests	0.06	0.0.55	0.0.2	.82
9	Monitoring blood glucose	9.5	9.5	0.1	.92
10	Number of clinic visits per year	8.7	9.3	0.92	.36
11	Referrals	1.3	0.9	0.72	.47

* Indicates significant difference.

item 7) of 9.5 times per year was not significantly different from the frequency of 4+ assigned by ADA standard.

Also, the frequency distribution revealed that footcare was documented in only two patients, and laboratory test for lipid profile, serum creatinine, and urinary protein estimation were documented in 16.9% of the patients. Similarly, 15 (or 12.7% of the patients) had referrals for eye, dental, or cardiology. In contrast, all patients had some form of assessment for high risk but only in 61.9% of the patients was record of high-risk intervention available. About 66.1% of the patients had general care involving nutritional intervention, education, and counseling for exercise/physical activity. About 95.7% of the patients had some form of cardiovascular risk factors assessment and 92.4% (109) of the subjects had FBG tested at least four times or more in the year reviewed.

There was no significant variation documented in the level of diabetic care by gender except in item 6 (i.e. *high-risk intervention*) where the females had significantly higher

Table 1

Comparative score of diabetic care against described minimum

Mean		ADA minimum ^a	Mean scores	<i>df</i>	<i>t</i> value	<i>P</i> -value
Variable						
1	Assessment of cardiovascular risk factors	9	4.1 (2–9)	116	66.0	$< .001^*$
2	Footcare	15	0.09 (0–5)	117	247.9	$< .001^*$
3	General care	20	3.3 (0–14)	117	57.3	$< .001^*$
4	High-risk intervention	+ 70	12.6 (0–39)	117	55.6	$< .001^*$
5	High-risk assessment	– 70	– 30.2 (– 60 – + 29)	116	26.1	$< .001^*$
6	Laboratory tests	10	0.6 (0–8)	117	68.5	$< .001^*$
7	Monitoring blood glucose	30	9.5	116	89.1	$< .001^*$
8	Referrals (for eyes, teeth, and ECG/ cardiology)	16	1.0 (0–13)	116	55.4	$< .001^*$

^a Least score that is considered consistent with minimum standard of care according to ADA criteria.* Indicates significant difference at *P* value shown. Figures in parentheses indicate range.

mean score compared to their male counterparts (Table 2). Of note, there was no interrater variation in any item of care assessed except for the same item, i.e. *higher risk intervention* ($df=5$, $P=.001$). The mean score for this item of care by observers and number (n) assessed were 14.55 ($n=31$), 21.25 ($n=20$), 6.40 ($n=30$), 7.00 ($n=15$), 14.14 ($n=21$), and 0.0 ($n=1$) for raters 1, 2, 3, 4, 5, and 6, respectively.

4. Discussion

This study assessed the quality of care of individuals with diabetes in Nigeria with reference to an international standard. The results indicate that care was not adequate. In particular, it is important to draw attention to the fact that it is likely that this study presents an optimistic portrayal of the degree to which ADA guidelines for the treatment of diabetes are met for several reasons: (1) Our study cohort only includes patients with at least four clinic visits per year for 2 consecutive years; with an average of nine visit per year for the entire population. This frequency of clinic visit is far higher than is currently advocated (Hellman et al., 1997; Piette et al. 2000; UK Prospective Diabetes Study Group, 1998). (2) At a minimum, this level of contact gives providers more opportunities to adhere to ADA guidelines. Of note, most of the items of care assessed are effective, simple, and low-cost strategies to identify and treat individuals at risk of diabetic complications, e.g. foot ulcer and lower extremity amputation. This may suggest that not all care providers involved were familiar with clinical guidelines that can maintain and improve the quality of life of people with diabetes at reduced cost (Hellman et al., 1997; Peters, Legorreta, Ossorio, & Davidson, 1996; Piette et al., 2000; UK Prospective Diabetes Study Group, 1998; Wylie-Rosett et al., 1992).

In coming to this conclusion, a number of issues must be considered. First, despite reports (Romm & Putna, 1981) of discrepancies between recorded performance of care and actual practices, it is now widely agreed that these discrepancies have been overstated and case notes remain largely adequate for retaining and transmitting certain key information vital to patient care (Berlowitz et al., 1998; Hellman et al., 1997; Kristensen, Bro, & Lauritzen, 1999; McAuliffe, 1978; Peters et al., 1996; Romm & Putna, 1981; UK Prospective Diabetes Study Group, 1998; Wylie-Rosett et al., 1992). Further, explicit documentation is integral to good clinical practice and adherence to clinical guidelines (Berlowitz et al., 1998; McAuliffe, 1978; Public Health focus, 1993). Second, the case notes reviewed were those of patients on scheduled clinic visits at the time of data collection who also met the enrolment criteria set out in Method. For these reasons, the present findings probably reflect trends rather than of general application to the universe of diabetic population.

Nevertheless, the data (Tables 1 and 2) show that diabetes is predominantly a disease of middle age as also

observed in previous Nigerian studies (Akanji & Adetuyibi, 1990; Dagogo, 1991; Famiyuwa et al., 1988; Osuafor, 1998; Osuntokun et al., 1971; Oviasu, 1973). It is of some importance that this group of individuals has been attending the diabetic clinic for about 6 years with an average of nine clinic visits in the year of assessment. Strikingly, in no item of care (Table 1) evaluated did mean performance reach 50% of prescribed minimum except in item 7, i.e. monitoring of glycaemic control using FBG. This observation reflects the practice of regular testing of FBG with each scheduled clinic visits in this facility. It is important to note that the ADA score of 30 for this item was reduced to 15, as estimation of glycosylated haemoglobin is not available here and home monitoring of glucose is not widely practiced due to cost. It is reassuring, however, that the quality of diabetic care was not gender selective (Table 2), except for *high-risk intervention* where the females did better. The reason for this is not clear but could be related to patient characteristic rather than caregiver preference or bias. This view is reinforced by the similarity of observers' rating in all items of care, except *high-risk intervention* (see Results).

In addition, there are a number of observations that are germane to this discussion: (1) Weight was nearly always recorded with each clinic visit but in less than 10% of the patients was height documented; thus, it was difficult to verify how body "thinness" or "fatness" was determined and by extension how the selection of the appropriate oral hypoglycaemic drug was made (Osuafor, 1998). (2) Performance with regards to referrals (item 2) to other specialised services, e.g. eye, dental, and cardiology, was only about 6% of expected target. These facilities were all located in the same hospital complex as the diabetic clinic and could suggest that clinical care providers were not all familiar with the multidisciplinary nature of diabetic care (Kristensen et al., 1999; Nwosu, 2000; Peters et al., 1996; UK Prospective Diabetes Study Group, 1998; Wylie-Rosett et al., 1992).

In this regard, specialists know more about such conditions as diabetes and can be expected to use optimal treatment in their areas of expertise (Greenfield, Rogers, Mangotich, Carney, & Taylor, 1995; Mazzuca, Brandt, Katz, Li, & Stewart, 1993). This expectation is supported by evidence (Greenfield et al., 1995; Mazzuca et al., 1993) from countries with advanced healthcare system, which indicate that individuals with chronic conditions such as type 2 diabetes attending specialist clinic as opposed to general medicine clinic have better clinical outcome. In contrast, observations in different populations of individuals with diabetes of 5 years or more duration and attending specialist clinics in Nigeria indicate that diabetic-related complications are not being detected at their earliest stage (Adetuyibi, 1976; Akanji & Adetuyibi, 1990; Dagogo, 1991; Famiyuwa et al., 1988; Osuafor, 1998; Osuntokun et al., 1971; Oviasu, 1973; Smith & Adetuyibi, 1976). For example, while a prevalence rate of 0.6–8.3% of foot ulcers and gangrene has been documented (Adetuyibi, 1976; Law-

son, Oyemade, & Adetuyibi, 1978; Osuntokun et al., 1971; Oviasu, 1973; Smith & Adetuyibi, 1976) in various population of Nigerian diabetics, in one report (Dagogo, 1991), as much as 60% of diabetic related deaths in one teaching hospital was associated with prior leg ulcer that became gangrenous. Similarly, retinopathy rates of 3.6–8% observed in those with diabetes of 5 years or less duration attending diabetic clinics increased dramatically to 20–50% within 15–20 years (Bella, Famuyiwa, Akintewe, & Adetuyibi, 1985; Osuntokun et al., 1971). One survey recently published (Nwosu, 2000) also showed that only 19% of care providers examine the eyes of all diabetics and barely 3% of the doctors referred all such patients for eye care, while the majority (73%) of healthcare professionals only referred diabetic patients after the onset of visual complaints. According to this report (Nwosu, 2000), the pattern of care and referrals described above was seen across all categories of healthcare professionals irrespective of specialisation. The wide variations in the treatment quality across various domains evident in Tables 1 and 2 is consistent with previous observations (Akanji & Adetuyibi, 1990; Bella et al., 1985; Dagogo, 1991; Famiyuwa et al., 1988; Lawson et al., 1978; Nwosu, 2000; Osuafor, 1998; Osuntokun et al., 1971; Oviasu, 1973; Smith & Adetuyibi, 1976) and suggest that the lack of a uniform standard of diabetic care in this facility probably contributed in a major way to these variations. Specifically, the present findings (Tables 1 and 2) reinforce the dichotomy between knowledge and practice; hence, the need for a structured format of diabetic care.

In summary, this study indicates that there is a continuous need for quality monitoring and improvement of diabetic care but also draws attention to the educational needs of the healthcare professionals. Therefore, it is suggested that (a) practicing diabetic care professionals should be encouraged to faithfully evaluate their own work on an annual basis and should be empowered to direct resources to meet areas of service improvement. (b) Availability of simple clinical format can improve documentation and compliance with approved clinical guidance for diabetic care. It can be expected that this may also enhance uniformity of diabetic care and accelerates patient–physician encounter, especially in busy clinics. (c) Because of possible conflict of interest, care quality assurance committee should be external to the institution with members drawn from interest groups in the community served. The committee should ensure that quality healthcare is provided at reduced cost and this parameter should be used to determine the need for the continued existence of such public health facilities and their funding level.

In conclusion, this study represents baseline effort towards identification of the educational needs of diabetic care professionals but also highlights the strengths and weaknesses of healthcare quality assurance programmes of one tertiary healthcare system in Nigeria. The data also suggest that until the emergence of a national treatment guideline for diabetes and the monitoring of their adherence

by care providers many diabetics will probably continue to receive care that fall short of an accepted standard associated with a favourable outcome.

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