

# Risk of developing diabetes among healthcare workers in a Nigerian tertiary hospital

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## Abstract

This study has assessed the risk of future development of type 2 diabetes among Nigerian healthcare workers. Using a validated risk assessment tool, 106 health workers were assessed including doctors, nurses, physiotherapists, laboratory staff, etc. Ten-year diabetes risk was higher in females, who also had higher levels of risk. Overall, 44% had an elevated risk, though in only one-third was the risk above the 'moderate' level. Nevertheless, these risk profiles in health workers are significant, and demonstrate that all sectors of society (including those with specialist knowledge) are susceptible to the developing epidemic of type 2 diabetes.

## Introduction

The prevalence of diabetes is undergoing unprecedented growth globally. This dramatic increase is largely due to obesity and sedentary lifestyles.<sup>1</sup> It is a chronic disease that requires long-term medical attention both to limit the development of its devastating complications and to manage them when they do occur.<sup>1,2</sup> It is also a disproportionately expensive disease. In the US in 2002, the per-capita cost of healthcare was US\$13 243 for people with diabetes while it was US\$2560 for those without DM.<sup>3</sup> The current diabetes prevalence of about 150 million persons worldwide is projected to increase to 220 million and 300 million by 2010 and 2025 respectively.<sup>1</sup> However, type 2 diabetes is largely a preventable disease. This is where diabetic health education and public awareness becomes critically important. The disease can be prevented with early institution of effective and consistent lifestyle modifications, particularly for people with an elevated risk of developing the disease.<sup>4,5</sup> Thus, there is need for the design of strategies that focus on preventive diabetic health education at all levels of healthcare delivery. Healthcare workers constitute the major channel for the delivery of this important diabetes education to the public.<sup>6</sup> Healthcare workers are custodians of other people's health, and they are health educators in preventive medicine. This is more important in

resource-poor settings where there is low literacy, high poverty, and inadequate health services. The objective of the present study was, therefore, to assess the risk of developing type 2 diabetes among healthcare workers in a Nigerian tertiary hospital.

## Methods

The survey was done at the Federal Medical Centre, Ido-Ekiti, southwest Nigeria, which is a tertiary referral health institution serving more than 2.5 million people. A diabetes risk assessment questionnaire was used for data collection and risk assessment. The questionnaire consisted of eight parameters, some of which were questions and others were age and anthropometric measurements, such as body mass index and waist circumference. The questionnaire was a modification of the diabetes risk assessment form of the Finnish Medical Association, slightly modified and adapted to our local setting (see Figure 1). The parameters were graded and scored. The total risk score for each study participant was the summation of all the scores. The risk of developing type 2 diabetes within 10 years was stratified into: low (<7); slightly elevated (7–11); moderately elevated (12–14); high (15–20); and very high (>20). Participants were randomly drawn from health workers who consented to participate in the study. The pre-tested questionnaire was administered by house physicians and medical officers.

## Results

One hundred and six (106) healthcare workers participated in the study; 62 (58%) were males and 44 (42%) female (male: female ratio of about 1.5:1.0). The majority (71%) were aged below 40 years, while there was no participant over 65 years. Thirty-eight (36%) were medical doctors and 26 (24%) were nurses. The others were healthcare assistants (13%), pharmacists (11%), laboratory scientists (8%), and physiotherapists (7%). Forty-seven (44%) had an elevated risk of developing type 2 diabetes within 10 years. However, only 36% of those with an elevated risk were in the 'moderate' to 'very high' risk groups (see Table 1). The risk of developing type 2 diabetes was higher in females (27/62 or 46%) than in males (20/44 or 43%). In addition, female participants with an elevated risk were more likely to have a more severe risk than their male counterparts.

## Discussion

The majority of the study participants were below 40 years of age. As increasing age is a risk factor for type 2 diabetes,<sup>7</sup> this probably affected the proportion of the

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Figure 1 Type 2 diabetes risk assessment questionnaire

Circle the appropriate scores (on left) for yourself and sum up the total points

**1. Age**

0 <45 years  
2 45–54 years  
3 55–64 years  
4 ≥65 years

**2. Body mass index (kg/m<sup>2</sup>)**

0 <25.0  
1 25.0–29.9  
3 ≥30.0

**3. Waist circumference measured below the ribs**

**Men:** 0 <95 cm      **Women:** 0 <80 cm  
3 95–102 cm      3 80–88 cm  
4 >102 cm      4 >88 cm

**4. Do you usually have daily at least 30 minutes of physical activity at work or during leisure time (including normal daily activity)?**

0 Yes  
2 No

**5. How often do you eat vegetables or fruits?**

0 Every day  
1 Not every day

**6. Have you ever taken antihypertensive drugs on a regular basis?**

0 No  
2 Yes

**7. Have you ever been found to have a high blood glucose (e.g. in a health examination, during an illness or during pregnancy for women)?**

0 No  
2 Yes

**8. Do you have a family history of diabetes?**

0 No  
3 Yes: grandparent, aunt, uncle, or first cousin  
5 Yes: parent, brother, sister, or own child

**Total risk score: .....**

Risk score	Risk of developing type 2 diabetes within 10 years
<7	Low
7–11	Slightly elevated
12–14	Moderate
15–20	High
>20	Very high

study participants with elevated risk of the disease (most were below 40 years of age). The high risk of developing type 2 diabetes in the study participants is of major concern. This corroborates the current unprecedented growth of diabetes globally. While this trend has been attributed to the increasing prevalence of obesity and sedentary lifestyle, other risk factors should also be critically examined, including family history.<sup>8</sup> Although most study participants were not sedentary in the workplace, due to the nature of their professional practice, the culture of engaging in regular active exercise was

Table 1 Risk of developing type 2 diabetes among study participants

Risk	Participants		Total (n=106)
	Male (n=62)	Female (n=44)	
Low	35 (56%)	24 (54%)	59 (56%)
Slightly elevated	20 (32%)	10 (23%)	30 (28%)
Moderate	7 (11%)	2 (4%)	9 (8%)
High	–	6 (14%)	6 (6%)

generally lacking. Increased physical activity reduces the risk of overweight or obesity and improves insulin sensitivity.<sup>5</sup> Hypertension is also an important risk factor, frequently co-existing with diabetes. Both diseases are associated with insulin resistance.<sup>10,11</sup>

In our study, female participants were more likely to have higher risk scores than their male counterparts. This may partly be due to overweight and obesity (one of the major assessment criteria used in the study) being more frequent and more severe in females than in males.<sup>12</sup>

In conclusion, the risk of developing type 2 diabetes within 10 years is unacceptably high among healthcare workers in our hospital and it is likely that the risk would be higher in the general public. This is a resource-poor setting where there is a heavy burden of infectious diseases, and Nigeria, like any other sub-Saharan African country, cannot cope with the impending epidemic of diabetes. There is urgent need to develop diabetes prevention strategies which include health education policies geared towards adoption of lifestyle measures that prevent or at least delay the onset of type 2 diabetes.

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