Prevalence of diabetes mellitus and the associated behavioral risks factors among the staff of three secondary schools in Owo, Ondo State, Nigeria

Ilesanmi O.S.[1,2], Ojo O.A.[3], Omotoso B.[2], Ojo O.E.[3], Junaid O.A.[3], Amenkhienan I.[2], Alele F.O.[2]

Abstract

Objective: The prevalence of type 2 Diabetes is associated with significant morbidity and mortality, hence the need for early identification of risk factors. This study, therefore, aimed to determine the prevalence of diabetes mellitus and the associated behavioral risks among secondary school staff in Owo, Ondo State, Nigeria.

Methods: A cross-sectional survey of 118 staff at three secondary schools in Owo was conducted using a structured interviewer-administered questionnaire. Demographic and clinical data were obtained as well as fasting or random blood glucose measurements using standard methods. Data were analyzed with SPSS version 21.0.

Results: The mean age of participants was 43 ± 8 years, 59.3% were females. Type 2 Diabetes Mellitus was found in 2.8% of the participants, 18.5% were hypertensive, 22.0% were Obese while 25.4% had abdominal obesity. In all, 13.6% smoke cigarette, 35.6% drank alcohol, 49.2% does not add at least a spoonful of vegetable to their meals, 27.1% does not engage in physical exercise while 78.0% do not eat fruits at least once a day. About 58.4% of the respondents had at least one risky behaviour. More male respondents (22.9%) had a self-perceived risk of Diabetes Mellitus (p=0.001), 40.0% of female respondents had abdominal obesity (p<0.001). Correlation (r=0.347) exist between Waist/Hip ratio and random blood glucose, (p=0.012)

Conclusion: Despite low prevalence of diabetes mellitus, many had at least one risky behaviour. Intensifying efforts on educating the general population on the risk factors for Diabetes Mellitus and lifestyle modification is important.

Keywords: Diabetes Mellitus, behavioural risk factors, lifestyle, blood pressure, obesity

*Corresponding author: Ilesanmi O.S.: E-mail: ileolasteve@yahoo.co.uk

[1]Nigeria Field Epidemiology and Laboratory Training Programme, Abuja, Nigeria
[2]Department of Community Health, Federal Medical Centre, Owo, Nigeria
[3]Department of Internal Medicine, Federal Medical Centre, Owo, Nigeria

Prévalence du diabète sucré et des facteurs de risque comportementaux associés parmi le personnel de trois écoles secondaires à Owo, État d'Ondo, Nigéria

Ilesanmi O.S.[1,2], Ojo O.A.[3], Omotoso B.[2], Ojo O.E.[3], Junaid O.A.[3], Amenkhienan I.[2], Alele F.O.[2]

Abstrait

Objectif: La prévalence du diabète de type 2 est associée à une morbidité et une mortalité significatives, d'où la nécessité d'une identification précoce des facteurs de risque. Cette étude visait donc à déterminer la prévalence du diabète sucré et les risques comportementaux associés chez le personnel des écoles secondaires à Owo, dans l'État d'Ondo au Nigéria.

Méthodes: Une enquête transversale de 118 membres du personnel de trois écoles secondaires à Owo a été menée à l'aide d'un questionnaire structuré administré par un intervieweur. Des données démographiques et cliniques ont été obtenues ainsi que des mesures de glycémie à jeun ou aléatoires à l'aide de méthodes standard. Les données ont été analysées avec SPSS version 21.0.

Résultats: L'âge moyen des participants était de $43 + 8$ ans, 59,3% étaient des femmes. Le diabète sucré de type 2 a été retrouvé chez 2,8% des participants, 18,5% étaient hypertendus, 22,0% étaient obèses et 25,4% avaient une obésité abdominale. En tout, 13,6% fument des cigarettes, 35,6% boivent de l'alcool, 49,2% n'ajoutent pas au moins une cuillerée de légumes à leurs repas, 27,1% ne font pas d'exercice physique et 78% ne mangent pas de fruits au moins une fois par jour. Environ 58,4% des répondants avaient au moins un comportement à risque. Plus de répondants masculins (22,9%) avaient un risque auto-perçu de diabète sucré ($p = 0,001$), 40,0% des femmes interrogées avaient une obésité abdominale ($p <0,001$). Il existe une corrélation ($r = 0,347$) entre le rapport taille / hanche et la glycémie aléatoire ($p = 0,012$)

Conclusion: Malgré la faible prévalence du diabète sucré, beaucoup ont eu au moins un comportement à risque. Il est important d'intensifier les efforts pour éduquer la population générale sur les facteurs de risque du diabète sucré et la modification du mode de vie.

Mots clés: Diabète sucré, facteurs de risque comportementaux, style de vie, tension artérielle, obésité

*Auteur correspondant: Ilesanmi O.S.: E-mail: ileolasteve@yahoo.co.uk

[1]Nigeria Field Epidemiology and Laboratory Training Programme, Abuja, Nigeria
[2]Department of Community Health, Federal Medical Centre, Owo, Nigeria
[3]Department of Internal Medicine, Federal Medical Centre, Owo, Nigeria

INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder that continues to be a major threat to global health and a great socioeconomic burden to many nations (1,2). It has been projected as one of the world's main disabling diseases in the next 25 to 30 years and is the 6th leading cause of death worldwide (3). There were more than 1.56 million cases of diabetes in Nigeria in 2015 (3).

The increased prevalence of diabetes mellitus in Nigeria has been attributed to the rise in urbanization, advancement in technology, globalisation and lifestyle modification from the conventional African model to western culture. Modifiable risk factors, for example, the increase tobacco and alcohol use, physical inactivity and consumption of an unhealthy diet rich in carbohydrates, sugar, fats and salt contributed to the rise in prevalence of diabetes (4,5). Non-modifiable factors such as family history, age and ethnicity and an understanding of the contribution of these factors and the environment in the development of diabetes remains a challenge in the prevention and control of the disease. The resultant effect of these modifiable and non-modifiable factors is an increase in the level of obesity and overweight in the population which is the main risk factor for diabetes (6,7,8). Other factors implicated include abandoning healthier conventional high fibre diet rich in vegetables and fruits, and regular physical activities.

Appropriate lifestyle can mitigate the effect of diabetes. Simple lifestyle modifications such as a healthy diet rich in vegetables and fruits, increased physical activity and weight reduction are considered to be effective in preventing and delaying the onset of diabetes. Lifestyle modifications can be improved by putting in considerable efforts to increase awareness of the public about diabetes and its risk factors. Such efforts will assist in early detection and reduce the incidence of complications as well as encourage a healthy lifestyle, which is among the various ways of controlling diabetes mellitus (8).

Recognition of significant health risk, knowledge and awareness about diabetes mellitus, complications and management are important for adoption of preventive behaviours (9). Public health interventions cannot be instituted without data on the prevalence and risk factors associated with diabetes mellitus. Secondary school staff have the opportunity and ability to impact knowledge to students. This study aimed at assessing the prevalence of diabetes mellitus and the associated behavioral risks among secondary school staff in Owo, Ondo State.

METHODS AND MATERIALS

We conducted a cross-sectional study in Owo in November 2013. Owo is one of the 18 *Local Government* Areas in Ondo State, Southwest Nigeria. Owo is located about 50 kilometres from Akure, the Ondo State capital. The study population was secondary school teachers and other staff working in the schools. There are 15 secondary schools in Owo at the time of the study. All consenting members of staff from the selected schools were eligible.

Sample size determination
The sample size was calculated using the Leslie Kish formula for sample size determination for single proportion as follows:

$$n = Z\alpha^2 p(1-p)/d^2$$

Where:
n = Minimum desired sample size
Z = the standard normal deviate, usually set as 1.96 which corresponds to 5% level of significance.
p = 4 % the prevalence of type II Diabetes Mellitus in Nigeria, according to de-Graft Aikins et al. (10)
d = Degree of accuracy (precision) set at 5 % (0.05)
$n = 1.96^2 \times 0.04 \times (1-0.04)/0.05^2 = 59$

Compensating for non-response rate of 10% (Ns)
Ns = nx1/1-r,
where
r = proportion of non-response
n = 59x1/1-0.1 = 59x1/0.90 = 66

A total of 118 secondary school staff participated in the study out of the 124 in the three schools.

Sampling method and data collection
Respondents were selected using a two stage sampling technique. The first stage involved simple random sampling method in the selection of three secondary schools from the list of all the 15 secondary schools in Owo metropolis by balloting. A number was assigned to each of the school before three of the numbers were randomly selected. The school corresponding to the selected numbers were chosen for the study. Survey of all consenting members of staff was done. Out of the 124 staff in the three schools 118 participated giving a response rate of 95 %. A

semi-structured, interviewer-administered questionnaire was used for data collection. The study instrument was adapted from the Behavioural Risk Factor Surveillance System questionnaire of the Centres for Disease Control (11).

Weight, height, waist circumference, hip circumference, blood pressure and fasting or random blood sugar measurements were carried out using standardised instruments. A stadiometer was used to measure height with the respondent standing upright without shoes and against the wall, feet together and gazing forward. Height was measured to the nearest 0.5 cm. Weight was measured with a manual Seca 761 scale (Vogel and Halke, Germany), which was calibrated to zero each time weight was measured. Blood pressure for adults was measured twice in sitting position using an Accoson sphygmomanometer. Hypertension was defined according to the seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure (JNC 7) criteria as average blood pressure of $\geq$140/90 mm Hg after two readings (12). Blood glucose (fasting or random) levels was estimated using standardized Accucheck glucometer. World Health Organization (WHO) diagnostic criteria (1999) was used as the cut-off for diabetes i.e. random blood glucose $\geq$ 11.1 mmol/L (200 mg/dL) fasting blood glucose $\geq$7.0mmol/L (126mg/dL) in the presence of classical symptoms of hyperglycemia. Seven(5.9%) who were previously diagnosed to be diabetic were not tested for blood sugar. The cut-off for normal waist/hip ratio for a male was < 0.9 while <0.85 was used for a female. Body mass index (BMI) was calculated as weight (kg)/height (m^2). BMI was categorised thus: underweight as BMI < 18.6, normal weight as BMI 18.6-24.9, overweight as BMI 25-29.9 and obesity as BMI 30.

Definition of Terms

We defined physical inactivity or sedentary living as lack of regular, sustained activity; that is when the total physical activity was below the recommended (i.e., <30 minutes of moderate activity per day for at least 3 days per week). Respondents who reported no physical activity in the form of a formal exercise regimen and whose job was mostly done sitting or standing were classified as having inadequate physical activity, inactive/sedentary.

For female respondents, excessive alcohol intake was the report of an average daily

alcohol consumption of >1 drink. Male respondents who reported an average daily alcohol consumption of >2 drinks were also categorized to have had excessive alcohol intake. One drink was defined as a shot of spirits (e.g., scotch, vodka and gin), one glass of wine or half a bottle of beer. Current smoking implies smoking cigarettes every day or some days in the last 30 days. Overall risk behaviour was defined as having at least one or more risk behaviours for type 2 diabetes.

Data analysis

Questionnaires were checked for omissions and errors after collection and corrections were made where necessary. Data were analysed with SPSS version 21.0 (13). Descriptive statistics (frequency, mean ± standard deviation) were done. Correlation of waist-to-hip ratio and blood glucose was determined using Pearson correlation. The Chi Square test and Binary logistic regression analysis were used to explore associations at a 5% significance level.

Ethical consideration: Informed consent was obtained from the respondents. All information obtained was kept confidential. Approval for the study was obtained from Health Research Ethics Committee, Federal Medical Centre, Owo.

RESULTS

Of the 118 respondents, 48 (40.7%) were male, the mean age was 43 years standard deviation $\pm$ 8 years, 51 (43.2%) were 40-49 years old. In all, 98 (83.1%) were from the Yoruba ethnic group while 20 (16.9%) were from other ethnic groups. Married respondents were 90 (76.3%), 38 (79.2%) male and 60 (74.3%) female were married. Those with a postgraduate level of education were 30 (25.4%) of whom 17 (35.4%) were male, and 13 (18.6%) were female. The non-teaching staff were 38 (32.8%). The non-teaching staff worked in the laboratory, library, school bursar and administrative unit of the school. The sociodemographic characteristics of the respondents categorised by sex are as shown in Table 1.

Out of 124 staff in the three schools at the time of the study 118 participated, 34 (28.8%) were staff of Owo high school, 41 (34.7%) were from Rufus Giwa Polytechnic Secondary School, and 43 (36.4%) were staff of Imade college Owo. Self-perceived risk was reported by 13 (11%) respondents who considered themselves to be at risk of developing diabetes. Table 2 shows the

association between sociodemographic characteristics and self-perceived risk of diabetes. In all, 11 (22.9%) of male respondents had a self-perceived risk of diabetes mellitus compared to 2 (2.9%) of female respondents. The odds of having a self-perceived risk of diabetes was ten times in males compared to female ([odds ratio OR=10.11(95% CI: 2.15-47.47)] p=0.001). Figure 1 shows the awareness of risk behaviour associated with diabetes mellitus and the occurrence of the risk behaviours among the respondents. Concerning smoking 64 (54.2%) of the respondents knew smoking was a risk factor for diabetes of those 64, 16 (25%) smoked cigarettes. Also, 83 (72.9%) were aware that alcohol intake could cause diabetes mellitus, of those 72.9%, 42 (50.1%) took alcohol. Physical inactivity was known as a risk factor for diabetes mellitus by 86 (72.9%). Out of the 86 (72.9%) who knew physical inactivity as a risk factor for diabetes 70 (81.4%) engaged in a sedentary lifestyle. Of 118 respondents 70 (59.3%) had at least one risky behaviour, nil risky behaviour in 48(40.7%), 1 risky behaviour in 1(0.8%), 2 risky behaviour in 41(34.7%), 3 risky behaviour in 17(14.4%) and 4 risky behaviour in 11(9.3%) (cigarette smoking, sedentary lifestyle, excessive alcohol consumption or poor vegetable intake were the risky behaviour).

Table 3 shows the association between health parameters and sex. Above normal waist-to-hip ratio was found in 30 (25.4%) of the participants. Only 2(4.2%) male had abnormal waist-to-hip ratio compared to 28 (40%) female. The odds of having abnormal waist-to-hip ratio was 15 times in females compared to males [OR=15.33(95% CI: 3.52-66.72)] p=<0.001). Diabetes mellitus was found in 3(2.8%) of the 111(94.1%) participants who have never been diagnosed to be diabetic and not on Antidiabetic drug, only 2(4.4%) male and 1(1.6%) female. The respondents with hypertension were 30 (18.5%). Hypertension was found in 16 (33.3%) male and 14 (20%) female though the difference was not statistically significant. The prevalence of overweight and obesity combined was 60.2%. Of female respondents 50 (71.4%) had a body mass index (BMI) 25 compared to 21(43.8%) male.

The odds of having BMI 25 was three times in females compared to males [OR=3.2(95% CI: 1.5-6.9)] p=0.004). There was a weak positive correlation (r=0.347) between waist-to-hip ratio and random blood sugar p=0.012. Fasting blood sugar had no significant correlation with waist-to-hip ratio (r=0.025, p=0.860).

DISCUSSION

The prevalence of diabetes was low in the study population. Higher education rate may be responsible for the low prevalence. The International Diabetes Federation estimated that by the year 2040, one in 10 adults will have diabetes (3). Increase in the prevalence of diabetes will increase its effects such as enormous economic and social burden; reduced productivity, huge financial impact on individuals and national budgets and high levels of morbidity and mortality (14). The greatest weapon in the fight against diabetes is knowledge which can motivate people to assess their risk of the disease and prevent it through healthy lifestyle choices and complication surveillance (15).

We also found that despite awareness, many of the respondents engaged in at least one risky behavior: the majority did not regularly take a healthy diet like vegetables and fruits, one-third of the participants drank alcohol, one- fourth did not engage in physical activity while one- eighth of the participants smoked cigarettes. The occurrence of risk behaviour has long-term implication in the prevention of diabetes mellitus. Similar studies have been conducted that showed poor preventive practices and lifestyle (16,17).

The risk perception of having diabetes mellitus was low among the study participants. A positive family history of a disease may affect one's level of perceived risk and is the factor most significantly associated with the perceived risk of developing diabetes (18,19). A study conducted in Nigeria among university staff showed a risk perception of 67% for non-communicable diseases while good knowledge of diabetes was shown to be 30% among diabetic patients in another study (17,20). However, family members of individuals with type 2 diabetes underestimate their risk of developing the disease (21,22).

A large proportion of the male respondents had normal hip-to-waist ratio compared to female respondents while more than one-third of the participants had BMI > 25<30 which falls within the standard definition of overweight. Having normal hip-to-waist ratio in male compared to female was also seen in a similar study in India (23). As observed in this study, more females had high waist-to-hip ratio and more were in the overweight to obese range. Sex variations in deposition of body fat are evident from the foetal stage and continues throughout life. Women have a greater fat mass than men. This difference in body composition is attributable to the action of sex steroid hormones

(24).

The awareness of modifiable risk factors for diabetes mellitus did not translate into a significant reduction in risky behaviour. Many of the subjects who were aware that poor intake of vegetable, physical inactivity, and poor fruit intake could lead to the development of diabetes mellitus were still involved with these risky behaviours. Engaging in risky behaviour despite its awareness is common. General awareness may not be sufficient to create the desired lifestyle modification because of several factors that must be recognized including, the perception of the severity of disease condition, the perception of benefits of lifestyle changes, personality, values and socioeconomic status (16,25,26).

This study is not without some limitations, awareness of diabetes and other non-communicable diseases as reported by study participants may be subject to bias since many non-communicable diseases may be unapparent though they are present, this can make under reporting possible. However, prevalence rates were based on the screening done. This paper has key strengths: a timely and important topic of diabetes risk behaviors; objectively measured blood pressure, glucose, and anthropometry; use of existing scales from US CDC BRFSS. Another strength of this study is the occurrence of multiple risk factors this emphasises the need for more efforts on prevention strategies.

CONCLUSION

Despite low prevalence of diabetes mellitus, many had at least one risky behaviour. Despite the high level of risk behaviour for diabetes mellitus, the self-perceived risk was low. Routine health education should be strengthened and intensified to reduce risk behaviour. Urgent intervention among those at risk for diabetes mellitus and lifestyle modification is important.

REFERENCES

1. Harries AD, Kumar AMV, Satyanarayana S, Lin Y, Zachariah R, Lönnroth K, et al. Addressing diabetes mellitus as part of the strategy for ending TB. Transactions of the Royal Society of Tropical Medicine and Hygiene. 2016;110(3):173-179.

2. Smetana GW, Abrahamson MJ, Rind DM. Should we screen for type 2 diabetes?: Grand rounds discussion from beth israel deaconess medical center. Annals of Internal Medicine. 2016;165(7):509-516.

3. International Diabetes Federation. IDF Diabetes Atlas 2015. 7 ed:[Available from: http://www.diabetesatlas.org(accessed 12-May-2016).

4. Arigbede O, Adeoye I, Jarrett O, Yusuf O. Prediabetes among Nigerian adolescents: A School-based study of the prevalence, risk factors and pattern of fasting blood glucose in Ibadan, Nigeria. International Journal of Diabetes in Developing Countries. 2016 2016/06/03.

5. Isa SE, Oche AO, Kang'ombe AR, Okopi JA, Idoko JA, Cuevas LE, et al. Human Immunodeficiency Virus and Risk of Type 2 Diabetes in a Large Adult Cohort in Jos, Nigeria. Clinical Infectious Diseases. 2016;63(6):830-835.

6. Akter S, Rahman MM, Abe SK, Sultana P. Prevalence of diabetes and prediabetes and their risk factors among Bangladeshi adults: a nationwide survey. Bulletin of the World Health Organization. 2014;92:204-213A.

7. Satman I, Omer B, Tutuncu Y, Kalaca S, Gedik S, Dinccag N, et al. Twelve-year trends in the prevalence and risk factors of diabetes and prediabetes in Turkish adults. European Journal of Epidemiology. 2013 February 01;28(2):169-180.

8. Choby B. Diabetes Update: Risk Factors, Screening, Diagnosis, and Prevention of Type 2 Diabetes. FP essentials. 2017 May;456:20-26. PubMed PMID: 28530381. Epub 2017/05/23. eng.

9. Angeles-Llerenas A, Carbajal-Sanchez N, Allen B, Zamora-Munoz S, Lazcano-Ponce E. Gender, body mass index and socio-demographic variables associated with knowledge about type 2 diabetes mellitus among 13,293 Mexican students. Acta diabetologica. 2005 Mar;42(1):36-45. PubMed PMID: 15868112. Epub 2005/05/04. eng.

10. de-Graft Aikins A, Unwin N, Agyemang C, Allotey P, Campbell C, Arhinful D. Tackling Africa's chronic disease burden: from the local to the global. Globalization and health. 2010;6:5. PubMed PMID: 20403167. Pubmed Central PMCID: PMC2873934. Epub 2010/04/21. eng.

11. CDC. Behavioural risk factor surveillance system questionnaire [Online] 2009. Available from:

12. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL, Jr., et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7

report. JAMA. 2003 May 21;289(19):2560-2572. PubMed PMID: 12748199. Epub 2003/05/16. eng.

13. IBM SPSS Statistics for Windows. Version 21.0. IBM Corp. Released 2012. Armonk, NY: IBM Corp.

14. Ashok J, Manasi S, Gladius J, Shekhar B. A study to assess awareness regarding Diabetes Mellitus and factors affecting it, in a tertiary care hospital in Kancheepurum District. Healthline. 2013;4(2):44-49.

15. Patil P, Dixit U, Hiralal B. Study of diabetes in Dharwad- an urban area in India. Indian J.Sci.Technol. 2011;4(11):1481-1483.

16. Alele FO, Ilesanmi OS. Knowledge and Attitude of a Semi Urban Community in the South-South Region of Nigeria towards Diabetes Mellitus. American Journal of Public Health Research. 2014;2(3):81-85. PubMed PMID: doi:10.12691/ajphr-2-3-3.

17. Ige OK, Owoaje ET, Adebiyi OA. Non communicable disease and risky behaviour in an urban university community Nigeria. African Health Sciences. 2013;13(1):62-67. PubMed PMID: PMC3645087.

18. Moon JH, Roh E, Oh TJ, Kim KM, Moon JH, Lim S, et al. Increased risk of metabolic disorders in healthy young adults with family history of diabetes: from the Korea National Health and Nutrition Survey. Diabetology & Metabolic Syndrome. 2017 March 01;9(1):16.

19. Tsenkova VK, Karlamangla AS, Ryff CD. Parental History of Diabetes, Positive Affect, and Diabetes Risk in Adults: Findings from MIDUS. Annals of Behavioral Medicine. 2016 December 01;50(6):836-843.

20. Desalu OO, Salawu FK, Jimoh AKA, A O, Busari OA, Olokoba AB. Diabetic foot care: Self reported knowledge and practice among patients attending three tertiary hospital in Nigeria. Ghana Medical Journal. 2011;45(2):60-65.

21. Pierce M, Harding D, Ridout D, Keen H, Bradley C. Risk and prevention of type II diabetes: offspring's views. The British Journal of General Practice. 2001;51(464):194-199. PubMed PMID: PMC1313950.

22. Kowall B, Rathmann W, Stang A, Bongaerts B, Kuss O, Herder C, et al. Perceived risk of diabetes seriously underestimates actual diabetes risk: The KORA FF4 study. PLoS ONE. 2017;12(1):e0171152.

23. Sukanta K, Rashmi R, Harshad T. A study of knowledge and practices in prevention of type 2 diabetes mellitus among Bhilai steel plant employees. Indian Journal of Medical Specialties. 2012;3(2):143-148.

24. WHO Bulletin. Waist Circumference and Waist-Hip Ratio. Report of a WHO Expert Consultation Geneva2008 [06/06/2014]. Available from: http://www.who.int/nutrition/publications/reports/en/.

25. Bazata DD, Robinson JG, Fox KM, Grandy S. Affecting behavior change in individuals with diabetes: findings from the Study to Help Improve Early Evaluation and Management of Risk Factors Leading to Diabetes (SHIELD). The Diabetes educator. 2008 Nov-Dec;34(6):1025-1036. PubMed PMID: 19075084. Epub 2008/12/17. eng.

26. Alzaman N, Wartak SA, Friderici J, Rothberg MB. Effect of patients' awareness of CVD risk factors on health-related behaviors. Southern medical journal. 2013 Nov;106(11):606-609. PubMed PMID: 24192590. Epub 2013/11/07. eng.

Table 1: Sociodemographic characteristics of secondary school staff in Owo, Ondo State, Nigeria, 2013

Sociodemographic Characteristics	Male	Female	Total
	n (%)	n (%)	n (%)
Age			
<40 years	17(35.4)	25(35.7)	42(35.6)
40-49 years	18(37.5)	33(47.1)	51(43.2)
50 years and above	13(27.1)	12(17.1)	25(21.2)
Ethnic Group			
Yoruba	38(79.2)	60(85.7)	98(83.1)
Others*	10(20.8)	10(14.3)	20(16.9)
Marital Status			
Married	38(79.2)	52(74.3)	90(76.3)
Others	10(20.8)	18(25.7)	28(23.7)
Level of Education			
Secondary	6(12.5)	8(11.4)	14(11.9)
Tertiary	25(52.1)	49(70.0)	74(62.7)
Post graduate	17(35.4)	13(18.6)	30(25.4)
Religion			
Christianity	40(83.3)	63(90.0)	103(87.3)
Islam	8(16.7)	7(10.0)	15(12.7)
Job Description			
Teaching	35(76.1)	43(61.4)	78(67.2)
Non-teaching	11(23.9)	27(38.6)	38(32.8)

*Igbo, Hausa, Nupe

Table 2: Association between sociodemographic characteristics and self-perceived risk of Diabetes among secondary school staff in Owo, Ondo State, Nigeria, 2013

Sociodemographic Characteristics	Self-perceived risk of Diabetes Mellitus		95%OR(CI)	p-value
	Yes n (%)	No n (%)		
Age group				
<40 years	4(9.5)	38(90.5)	1	0.262
40-49 years	4(7.8)	47(92.2)	0. 81(0.19 -3.39)	
50 years and above	5(20.0)	20(80.0)	2.38(0.59 -9.62)	
Sex				
Male	11(22.9)	37(77.1)	10.11(2.15-47.47)	**0.001**
Female	2(2.9)	68(97.1)	1	
Ethnic Group				
Yoruba	12(12.2)	86(87.8)	2.65(0.34-20.59)	0.346
Others	1(5.0)	19(95.0)	1	
Marital Status				
Married	12(13.3)	78(86.7)	4.15(0.53-32.3)	0.150
Others	1(3.6)	27(96.4)	1	
Level of Education				
Secondary	2(14.3)	12(85.7)	1	0.413
Tertiary	6(8.1)	68(91.9)	0.53(0.10-2.79)	
Post graduate	5(16.7)	25(83.3)	1.20(0.21-6.73)	
Religion				
Christian	12(11.7)	91(88.3)	1.85(0.24-14.33)	0.565
Islam	1(6.7)	14(93.3)	1	

Table 3: Association between health parameters and sex of secondary school staff in Owo, Ondo State, Nigeria, 2013

| Health parameters	Sex		Total n (%)	95% OR(CI)	p-value
	Male n (%)	Female n (%)			
Waist-to- Hip Ratio					
Normal	46(95.8)	42(60.0)	88(74.6)	15.33(3.52-66.72)	**<0.001**
Above normal	2(4.2)	28(40.0)	30(25.4)	1	
Type II DM status*					
Normal	43(95.6)	61(98.4)	104(97.2)	0.35(0.05-2.60)	0.381
DM	2(4.4)	1(1.6)	3 (2.8)	1	
Hypertension status					
Normotensive	32(66.7)	56(80.0)	88 (81.5)	0.50(0.22-1.14)	0.102
Hypertensive	16(33.3)	14(20.0)	30 (18.5)	1	
BMI					
<25	27(56.2)	20(28.6)	47(39.8)	3.21(1.50-6.90)	**0.004**
≥25	21(43.8)	50(71.4)	71(60.2)	1	

*DM- diabetes mellitus
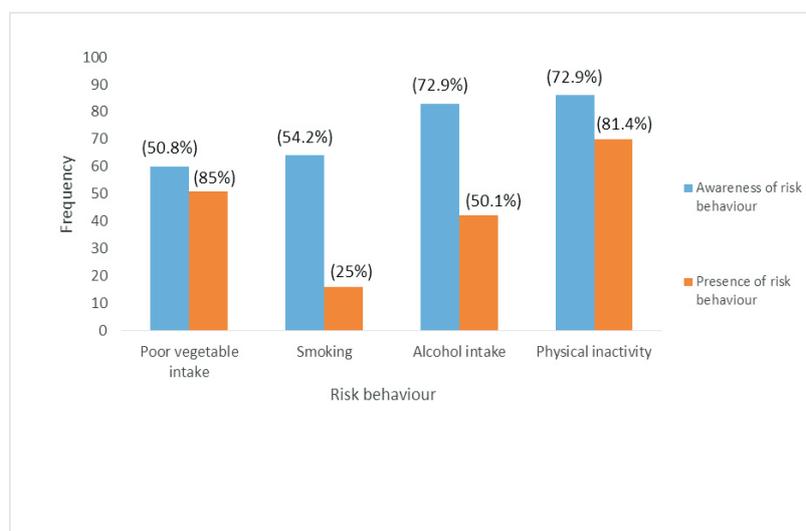
Figure 1 : Awareness of risk behaviour and the presence of risk behaviour among secondary school staff in Owo, Ondo State, Nigeria, 2013