

# **PACIFIC JOURNAL OF MEDICAL SCIENCES**

**{Formerly: Medical Sciences Bulletin}**

**ISSN: 2072 – 1625**



**Pac. J. Med. Sci. (PJMS)**

[www.pacjmedsci.com](http://www.pacjmedsci.com). Email: [pacjmedsci@gmail.com](mailto:pacjmedsci@gmail.com).

---

## **PERCEIVED VERSUS ACTUAL RISK OF DIABETES MELLITUS AMONG UNDERGRADUATES IN OSOGBO, NIGERIA**

**Wasiu Olalekan Adebimpe**

Department of Community Medicine, University of Medical Sciences Ondo Nigeria

Email: [lekanadebimpe@gmail.com](mailto:lekanadebimpe@gmail.com)

## PERCEIVED VERSUS ACTUAL RISK OF DIABETES MELLITUS AMONG UNDERGRADUATES IN OSOGBO, NIGERIA

Wasiu Olalekan Adebimpe

Department of Community Medicine, University of Medical Sciences Ondo Nigeria

Email: [lekanadebimpe@gmail.com](mailto:lekanadebimpe@gmail.com)

### ABSTRACT:

This study determined actual and perceived risk of Diabetes Mellitus (DM) among undergraduates in Osogbo in Southwestern Nigeria. It was a descriptive cross sectional explorative study conducted among 250 newly admitted undergraduates of Osun state University selected using multi-staged sampling method. Data on perceived and actual risk to DM were collected using pre tested self-administered semi-structured questionnaire. Data was analyzed using the SPSS software. Mean age of respondents was  $21.0 \pm 2.4$  years. Of the 250 students 230(92.0%) have heard about DM, 37(14.8%) were overweight and 9(3.6%) were obese. Only 11(4.4%) felt they were at risk of DM, 237(94.8%) said they were not at risk, 225(90.0%) said they can never have DM. Based on the six selected risk factors, only 64(25.6%) were at no risk, 137(54.8%) had single while 49(19.6%) were at multiple risk of DM. Of the 237 who claimed or perceived they were not at risk, only 64 (27.0%) were actually at no risk. A statistically significant relationship was found between actual DM risk and having heard about DM ( $p < 0.05$ ). Having heard about DM was the major predictor of congruent actual and perceived risk among studied respondents. It was concluded that incongruence between perceived and actual risk to DM exists among University undergraduates studied, an indication to step up awareness programmes about DM.

**Keywords:** Diabetes, Perceived and actual risk, western lifestyles, undergraduates.

### INTRODUCTION:

The reported epidemiological transition from infectious to non-communicable diseases (NCDs), and the growing prevalence of these chronic disabling diseases have portrayed Diabetes Mellitus (DM) as a significant problem of public health importance. As at the end of 2013, about 382m people worldwide and

estimated 20m sub Saharan Africans had DM, and this figure is expected to rise to 592m and 41.4m respectively by 2035 [1]. Majority of those affected are in the low income developing nations [2], where it mainly affects the young and the economically productive age groups [3]. Nigeria has the highest number of people with DM with an estimated 3.9 million

people [4]. The disease is characterized by chronic hyperglycemia and impaired metabolism related to carbohydrates, lipids, and proteins caused primarily by insufficient secretion of insulin.

Adoption of lifestyles such as cigarette smoking, alcoholism and eating junk foods, coupled with sedentary lifestyles may have increased the risk of youths developing DM among other non-communicable diseases through behavioural means. The rise of DM among young adults has substantially increased over the past ten years in Nigeria, especially as the rise of obesity continues to reach new heights, and as youths grow into adulthood and older [5-7].

University students generally exhibit poor risk perception to DM, and this disease is of less concern to them for now [8]. The Health Belief Model hinging health behaviour on several social factors and for at-risk persons to modify their intention to perform the behavior fits into the issue of risk to DM [9].

Since perceived risk is a correlate of knowledge, attitude and the potential efforts a client would take at going for screening and curtailing an ongoing health problems [10], it is important to determine perceived risk among these vulnerable group in order to inform policy and programmatic efforts and decisions.

The objective of this study was to determine and compare actual and perceived risk of DM

among undergraduates in Osogbo in Southwestern Nigeria

#### **METHODOLOGY:**

Osogbo is the capital of Osun state in Southwestern Nigeria. The State University runs a multi campus system with the main campus and 3 of the 7 faculties in Osogbo. The prevalence of DM among youths either in Osogbo or the entire State was not known as a result of poor surveillance data. Newly admitted students are expected to pass through basic health screening at the University health services.

This was a descriptive cross sectional study. The study population consisted of newly admitted undergraduates who came for pre-admission screening exercise at the University Health Center. Only registered students of the University were recruited into the study.

The sample size was estimated using the Leslie Fischer's formular for calculation of sample size for population less than 10,000 [11]. The perceived risk prevalence of 0.5 was used. Although a sample size of 234 was obtained, it was increased to 250 to account for attrition.

Multi stage sampling method was used to select the students. In stage I, two out of 3 faculties at the main campus were selected using simple random sampling employing

simple balloting. In stage 2, three departments per faculty were randomly selected. In stage 3 in a department, a class was selected using simple random sampling employing simple balloting. In Stage 4, eligible students were selected in a class using systematic sampling of one in 3 students after obtaining a sample frame (list of students) who were present on that day as the students sat in class preparing for a lecture; and this continued until allocated questionnaires were exhausted.

A pretested semi-structured self-administered questionnaire was used in data collection. This was coordinated by two trained research assistants. Two nurses also administered a checklist used in collecting anthropometric measurements from the respondents.

With the initial zero calibration of the weighing scale, the weight was taken in kilograms when the respondent was standing upright and the 2 arms by the side and with the shoes off and no loads on him or her. Height was taken using the standard laboratory stadiometer and a properly calibrated tape rule. The weight and height were used to calculate the Body Mass Index (BMI) for each of the respondents.

The research ethics committee of Ladoke Akintola University of Technology (LAUTECH) Teaching Hospital Osogbo gave consent for this study. Each student filled a written consent form prior to data collection and after the

essence of the procedure and research had been communicated to them and consent obtained.

Data was analyzed using the SPSS software version 17.0 after data cleaning. Validity of data entered was ensured through random checks, and double entry. Frequency tables and a chart were generated. Perceived risk was assessed verbally by asking respondents whether or not they are at risk of having DM. Actual risk was assessed by considering six risk factors to DM namely: obesity or overweight (from BMI calculation), smoking, alcohol, no regular exercises (i.e daily brisk walk of about 30 minutes per day), eating junk foods and having a first level relative having DM. While each of these risks scored +1 mark if present, the cumulative (total) score was used to categorize risk into None (Zero risk), single (+1 risk), double (+2 risks) and more than 2(multiple risks). The chi squared test was used in demonstrating relationship between categorical variables of interest while binary logistic regression was used in doing further analysis related to the actual risk of respondents. P values were considered significant at values equal or less than 0.05 for all inferential statistics.

## **RESULTS:**

The mean age of the 250 respondents was  $21.0 \pm 2.4$  years with 154(61.6%) of them existing in the 20-24 year age group,

163(65.2%) were females, only 14(5.6%) were ever married, 144 (57.6%) grew up in the urban city and 82 (32.8%) in the semi urban locations (Table 1).

Among the respondents 92.0% (230/250) have heard about DM, 11.2% (28/250) of them could give correct description or definition of DM. Only 4.4% (11/250) of total respondents (which is equivalent to 4.8% (11/230) of those who have heard about DM), said they were at risk of having DM (perceived risk); while 94.8% (237/250) of total respondents said they were not at risk (Table 2). Furthermore, 90.0% (225/250) of the respondents said they can never have DM while 15.2% (38/250) felt that their friends were at higher risk than them; 38.8% (97/250) believed that changing lifestyle was responsible for high DM occurrence.

The common risk factors identified in the current study were sedentary lifestyle, eating fat and junk foods, a positive family history of DM and to a lesser extent, smoking and alcohol. The BMI results show that 14.8% (37/250) of respondents were overweight while 3.6% (9/250) were obese (Table 2).

Going by the pooled or cumulative total score of risk factors, our results showed that 25.6% (64/250) of respondents had no DM risk

factors, 54.8% (137/250) had single risk factor, 19.6% (49/250) had multiple risk factors, 18.0% had double while 1.6% had more than double risk factors of DM. Thus, only 27.0% (64/237) of those who claimed or perceived they were not at risk were actually not at risk (actual risk) of DM.

Table 3 showed association between risk categories and some variables of interest. A statistically significant relationship was found between actual DM risk and having heard about DM ( $p < 0.05$ ), but no relationship was found with age, gender, perceived risk to DM and BMI status of the respondents ( $p > 0.05$ ). While there was no significant difference in actual risk perceived relative to age and gender differences on binary logistic regression, respondents who have heard about DM were four times more likely to have perceived their actual risk of DM compared to those who have not heard about DM (OR 0.25, 95%CI 0.096-0.622 and  $p = 0.002$ ). Likewise, respondents who perceived themselves to be at risk of DM were 1.7 times more likely to have a congruent actual risk score compared to those who did not perceived themselves to be at risk, though this observation was not statistically significant (OR 1.70, 95%CI 0.482-6.026 and  $p = 0.210$ ).

**Table 1: socio-demographic data of respondents**

<b>Variables</b>	<b>Number (%)</b>
<b>Age (years):</b>	
15-19	78 (31.2)
20-24	154 (61.6)
25-29	18 (7.2)
<b>Gender:</b>	
Male	87 (34.8)
Female	163 (65.2)
<b>Marital status:</b>	
Single	236 (94.4)
Married	14 (5.6)
<b>Ethnicity:</b>	
Yoruba	206 (82.4)
Ibo	21 (8.4)
Hausa	2 (0.8)
Others	21 (8.4)
<b>Religion:</b>	
Christian	145 (58.0)
Islamic	102 (40.8)
Traditional	1 (0.4)
Others	2 (0.8)
<b>Location where respondents grew up</b>	
Local	24 (9.6)
Semi-urban	82 (32.8)
Urban	144 (57.6)

**Table 2: awareness and risk of DM (n=250)**

<b>Variables</b>	<b>Number (%)</b>
Have heard about DM	
Yes	230(92.0)
No	20(8.0)
Could give correct definition of DM	
Yes	28(11.2)
No	222(88.8)
I am at risk of having DM	
Yes	11(4.4)
No	237(94.8)
Don't know	2(0.8)
I can never have DM	
Yes	225(90.0)
No	25(10.0)
My friends are at higher risk than me	
Yes	38(15.2)
No	198(79.2)
Don't know	14(5.6)
Changing lifestyle is responsible for high DM occurrence	
Yes	97(38.8)
No	153(61.2)
Common DM risk (multiple responses)	
Alcohol	12(4.8)
Smoking	11(5.6)
No regular exercise	147(57.6)
Junk foods	97(38.8)
First level relative having DM	30(12.0)
BMI categories	
Normal	204(81.6)
Overweight	37(14.8)
Obese	9(3.6)

Table 3: association between risk categories and some variables of interest

## Bi-variate analysis

Variables	Actual risk		X <sup>2</sup> /F test	P value
	No risk (f / %)	>1 risk (f / %)		
<b>Age (years)</b>				
15-19	22 (28.2)	56(71.8)	2.52	0.866
20-24	40 (26.0)	114(74.0)		
25-29	2 (12.5)	16(87.5)		
<b>Gender:</b>				
Male	23(26.4)	64(73.6)	0.532	0.912
Female	41(25.2)	122(74.8)		
<b>Heard about DM</b>				
Yes	53(23.0)	177(77.0)	12.507	0.006
No	11 (55.0)	9(45.0)		
<b>I am at risk of DM (perceived risk)</b>				
Yes	4 (36.4)	7(63.6)	2.825	0.419
No	60(25.3)	179(74.7)		

## Binary logistic regression (with 'actual risk')

	Odds Ratio	95% CI		P value
		Lower	Upper	
Age in years ((reference category= <20 years))	1.21	0.665	2.223	0.263
Sex (reference category =female)	1.07	0.590	1.935	0.410
Heard about DM (reference category=no risk)	0.25	0.096	0.622	0.002
I am at risk of DM (reference category=no)	1.70	0.482	6.026	0.210

**DISCUSSIONS:**

Majority of the respondents have heard about DM, this awareness may not directly translate into good knowledge for the studied population moreover only about one-tenth of them could

give a correct description or definition of DM. These awareness figures are higher when compared to other studies done amongst University students [12, 13]. This could be due to the fact that youths or students give full

concentration to their education, and regard DM as future life events that should not be given priority now. To further support this thinking of youths, another study [8] found that University students believed that the issue of DM is presently of less concerns to them and should be reserved for the future.

In our study, only very few (4.4%) perceived themselves to be at risk of DM while majority said they can never have DM, about less than one-fifth however perceived their friends to be at risk. In a study among similar age group, forty-eight percent of participants perceived themselves at minimal risk for developing type II diabetes [14]. In yet another study conducted in 2008, 32% of University students perceived themselves at risk for developing diabetes [8].

The comparable very low figure of risk perception found in our study is an indication to the fact that little would be done among study population to prevent DM, and this portray danger to the development of voluntary DM screening habit desired among youths and the general population. In Nigeria for example, most NGOs had focused on HIV and other infectious diseases. The author is not aware of any non-governmental organization (NGO) doing significant work or enlightenment campaign or screening exercises that could improve knowledge of DM or other Non-communicable diseases among youths.

Common risk factors identified were smoking, alcohol, sedentary lifestyle, positive family history. Few (about 14.8%) were overweight while 3.6% were obese. This pattern supports some other studies [15]. About two-fifth of studied respondents attributing DM to adoption of lifestyles, supports another study sharing same belief; and in which three quarter believed lifestyle was associated with diabetes onset [15].

Going by pooled or cumulative total risk factors, up to about three-quarters were actually at risk of DM with about half having at least a single risk factor. This supports another Nigerian study on Diabetic risk factors [14].

Comparing the various category of risk exhibited by our respondents with their 4.4% perceived risk, there is obviously a disparity between extent of perceived risk and actual risk of DM. This supports similar other studies [15, 16] suggesting that the sample population could have underestimated their level of risk. This calls for concerted and sustained efforts of all stakeholders towards improving awareness and in-depth knowledge about DM among University students and youths generally.

These efforts capable of encouraging positive behavioural change, attitude and perception of risk of DM and screening could be organized by the University health services, community health services and Governments among other stakeholders.

**CONCLUSION:**

Incongruence between perceived and actual risk of DM exists among University undergraduate students. There is a need for improved and sustained public health education targeted at these future leaders and economically productive age group in order to bring about better lifestyles devoid of risk, improved attitude and perception of risk of DM screening, prevention and control.

**Acknowledgement:** The author acknowledge all the students who volunteered to participate in this study as well as the University authority who gave consent towards smooth data collection exercise

**Conflict of interest:** None

**Funding:** no external funding was received for the conduct of this study

**REFERENCES:**

1. International Diabetes Federation. Diabetes Atlas. 6th ed. Brussels: International Diabetes Federation; 2013. Last accessed on 2019 Jan 21. [https://www.idf.org/sites/default/files/EN\\_6\\_E\\_Atlas\\_Full\\_0.pdf](https://www.idf.org/sites/default/files/EN_6_E_Atlas_Full_0.pdf).
2. Shaw JE, Sicree RA, Zimmet PZ, Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res Clin Pract* 2009;87:4-14
3. Joses MK, Hama BS, Luis GS and Saidou PB. Economic burden of Diabetes in the WHO African region. *BMC International health and Human rights*, 2009;9:6
4. World Health Assembly. Follow-up to the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. Geneva: World Health Organization; 2013.
5. Sabir A, Ohwovoriole A, Isezuo S, Fasanmade O, Abubakar S, Iwuala S. Type 2 diabetes mellitus and its risk factors among the rural Fulanis of Northern Nigeria. *Ann Afr Med*. 2013 Oct-Dec;12(4):217-22
6. Hurtado-Ortiz, MT, Santos S and Reynosa A Health behaviors and health status of at-risk Latino students for diabetes. *American Journal of Health Studies*, 2011; 26(4), 196-207.
7. Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS and Koplan JP. The continuing epidemics of obesity and diabetes in the United States. *Journal of American Medical Association*, 2001; 286, 1195-2000.
8. Dong-Chul S, Torabi MR, Kaigang L, John PM, Woodcox SG and Perera B. Perceived susceptibility to diabetes and attitudes towards preventing diabetes among college students at a large mid-western university. *American Journal of Health Studies*, 2008; 23, 143-150.
9. Glanz K, Rimer BK and Viswanath K. Health behavior and health education: Theory, research, and practice (4th ed.). San Francisco: Jossey-Bass. 2008
10. Hochbaum G. M. (1958). Public participation in medical screening programs: A socio-psychological study (Public Health Service Publication No. 572). Washington, DC: Government Printing Office.
11. Araoye MO. *Research Methodology with Statistics for Health and Social Sciences*.

- Ilorin, Nigeria: Nathadex Publishers; 2004:117-120
12. Al-Sarayra Land Khalidi R. Awareness and knowledge about diabetes mellitus among students at Al-Balqa' Applied University. *Pak. J.Nutr.*, 2012; 11: 1023-1028.
  13. Tawalbeh L and Gharaibeh B. Diabetes Knowledge among University Nursing Students in the North of Jordan, Pakistan *J of Nutrition*, 2014; 13 (12): 728-734
  14. Shodunke, RA. "Sampled University Students' Perceived Risk of Diabetes & Self-reported Diabetes Risk Factors". Theses, Dissertations, and Other Capstone Projects. Paper 316. Minnesota State University, 2014
  15. Smith ML, Dickerson JB, Sosa ET, J McKyer EL, Ory MG. College students' perceived disease risk versus actual prevalence rates. *Am J Health Behav.*2012; 36(1):96-106.
  16. Bray M, Shapnick H, Mackie R and Silvers WM. "Difference between perceived and actual cardiovascular disease risk factors in a college aged student population, "International Journal of Exercise Science: Conference Proceedings, 2015; 8 (3):. <http://digitalcommons.wku.edu/ijesab/vol8/iss3/28>. Accessed 11th January 2016.