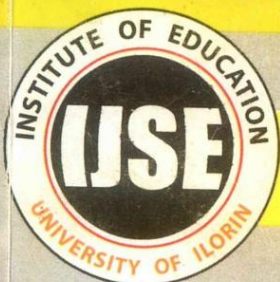
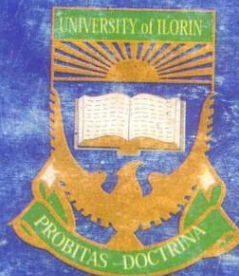


Institute **JOURNAL** of Studies in **EDUCATION**



Vol. 9, No. 1, 2019

Published by
INSTITUTE OF EDUCATION
University of Ilorin, Ilorin, Nigeria.

INSTITUTE JOURNAL OF STUDIES IN EDUCATION

Published by:
INSTITUTE OF EDUCATION
University of Ilorin,
Ilorin, Nigeria.

ISSN: 0795 - 2199

VOLUME 9, NO. 1, (2019)

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**RISK FACTORS FOR DIABETES DISEASE AS PERCEIVED BY
UNDERGRADUATES IN UNIVERSITY OF ILORIN, ILORIN, NIGERIA**

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Abstract

The study examined risk factors for diabetes disease as perceived by undergraduates in University of Ilorin. The purpose of the study investigated whether: (i) genetics; (ii) obesity; and (iii) physical inactivity were risk factor of diabetes disease. Descriptive research design of survey type was employed for the study. The population of the study comprised all undergraduates in University of Ilorin. A Multi-stage sampling technique comprising simple random sampling, proportionate sampling and accidental sampling technique were used to select 394 respondents that participated in the study. Researcher developed questionnaire validated by 3 experts from relevant field was used as an instrument for the study. The reliability of the instrument ascertained through test re-test method while its reliability was obtained using Pearson Product Moment Correlation (PPMC), correlation coefficient of 0.77r was obtained. Inferential statistics of Chi-square used to test the hypotheses at 0.05 level of significance. The findings of the study revealed that genetics and physical inactivity were risk factors of diabetes disease ($316.07 > 16.92$, $48.18 > 16.92$), obesity was not a significant risk factor of diabetes disease as perceived by undergraduates in University of Ilorin ($14.15 < 16.92$). The researcher concluded that genetics and physical inactivity were risk factors of diabetes while obesity was not a risk factor of diabetes as perceived by undergraduates in university of Ilorin. The researchers recommended among others that health educators should enlighten students on the advantages of regular medical check-up in the hospital as one of the important measure to assist family with a member that experiences diabetes disease. Students should also be educated on risk factors for diabetes as empirically confirmed.

Keywords: Risk Factors, Diabetes, Disease, Perceived, Undergraduates

Introduction

Diabetes is a chronic condition that arises when the pancreas do not produce enough insulin, or when the body cannot effectively use the insulin produced. Insulin is a hormone made by the pancreas that helps 'sugar' (glucose) to leave the blood and enter the cells of the body to be used as 'fuel'. When a person has diabetes, either the pancreas does not produce the insulin it needs, or the body cannot make effective use of the insulin produced. According to the International Diabetes Federation, diabetes is the fourth leading cause of death in most developed countries. Each year, three million deaths worldwide are attributable to diabetes-related causes (Alebiosu, 2013). However, according to Nigeria Community & Rural Health Care (2015) opined that diabetes is a lifelong condition that causes a person's blood sugar level to become too high. Persons with diabetes have too much sugar in their blood. There is no cure for diabetes. People with diabetes need to manage their disease to stay healthy.

Diabetes is grouped into three categories: Type I, Type II and gestational diabetes. Type 1 diabetes: is a chronic condition in which the pancreas produces little or no insulin, type II diabetes is also a chronic condition that affects the way the body processes blood sugar The pancreas loses the ability to secrete adequate insulin in response to meals or to control glucose levels (American Diabetes Association, (2012b); National Diabetes Information Clearinghouse, 2012). Gestational diabetes appears for the first-time during pregnancy (American Diabetes Association, 2016). Hormones released from the placenta during pregnancy block the action of the mother's insulin in her body, causing insulin resistance. Without insulin, glucose builds up to abnormally high levels in the blood and causes hyperglycaemia, which leads to diabetes. Genetics or Family history is a major non-modifiable risk factor that is closely linked to the expression of diabetes mellitus. Not only does it represent an inherited genetic susceptibility, but also represents shared environmental factors that include cultural values and practices, such as food choices and exercise habits. (Baptiste-Roberts, Gary, Beckles, Gregg, Owens,&Porterfield., 2007). Centers for Disease Control and Prevention, (2015) ascertain that gestational diabetes can cause health problems during pregnancy for both the child and mother. Children whose mothers had gestational diabetes have an increased risk of developing obesity and type II diabetes.

Diabetes among other Non-Communicable Diseases (NCD) is fast assuming epidemic dimension in many parts of the world including Nigeria (Engelgau, Geiss, Saaddine, Boyle, Benjamin & Gregg, 2004). The disease traditionally believed to only affect the older age group is now increasingly diagnosed among adolescents and younger adults. (International Diabetes Foundation, 2015). Hence, it is crucial that young people be well informed about the risk factors for the development of diabetes and creating and sustaining the

Risk Factors for Diabetes Disease as Perceived by Undergraduates

culture of preventive measures. Recent figures released by the International Diabetes Foundation (IDF) indicate that the number of people living with Diabetes is expected to rise from 366 million in 2011 to 552 million by 2030, if no urgent action is taken (International Diabetes Foundation, 2015).

Youths in Nigeria increasingly adopts western lifestyle including the consumption of junk fatty food and food additives. The eroding culture of partaking in farm work and working long distances, poor culture of daily exercises among community members all contributes to the new era of sedentary lifestyle. There is growing evidence that preventing and/or delaying the onset of diabetes is a viable option. (Chiasson, 2007). Since knowledge forms a basis for the adoption of good health-related practices, education institutions are probably some of the best places to implement programmes which will increase knowledge and awareness about lifestyle-related diseases, healthy nutrition, and the importance of physical activity towards prevention and control of diabetes mellitus and other non-communicable diseases.

Physical inactivity is another common risk factor for diabetes among the adult population, leisure time physical activity is a critical factor in the prevention and control of Diabetes mellitus (DM), and has been associated with lower rates of Type 2 Diabetes (Speer, Reddy, Lommel, Fischer, Heather & Park,. 2008). Frederick, Olukunmi and Akintayo,, (2014) reported an increased use of motor vehicles to travel to destinations instead of walking, jogging, or bicycling, and a high prevalence of unhealthy eating practices and patterns among students. The high availability of fast food contributes to eating in larger quantities, and the physiological sensation of having an insatiable appetite. Regular physical exercises are important in the prevention and management of type 2 diabetes, aerobic exercises improve the body's insulin use and reduce the risk diabetes. The study investigated risk factors for diabetes disease as perceived by undergraduates in University of Ilorin, Ilorin, Nigeria.

Statement of the Problem

People with diabetes have an increased risk of developing a number of serious health problems. Consistently high blood glucose levels can lead to serious diseases affecting the heart and blood vessels, eyes, kidneys, nerves and teeth. Nigeria Community & Rural Health Care (2015) opined that diabetes is a lifelong condition that causes a person's blood sugar level to become too high. Persons with diabetes have too much sugar in their blood. There is no cure for diabetes. People with diabetes need to manage their disease to stay healthy.

For the past few decades, type II diabetes was mainly found in overweight or obese adults of 40 years of age and older. There has been an increase in the number of children and young adults in Nigeria who are overweight or inactive, leading to an increase risk for diabetes disease among young people. The risk of

developing type II diabetes increases with age. As people age, they are likely to decrease physical activity which causes loss of muscle mass and increases potential for weight gain (Hurtado-Ortiz, Santos & Reynosa, 2011).

Diabetes is now increasingly diagnosed among adolescents and younger adults, but it is crucial that young people be well informed about the risk factors for the diabetes mellitus as well as preventive measures. Some of the undergraduate students in the study area believe that diabetes disease affect only elderly people especially those that have little or low economic status and they also see people with obese or overweight as a sign of good living which indicated that those people were rich and they take good diets. It is on this premises that researchers intended to investigate the risk factors for diabetes disease as perceived by undergraduates in university of Ilorin, Ilorin, Nigeria.

Research Questions

The following research questions were raised to guide the study:

1. Will genetics be a risk factor for diabetes disease as perceived by undergraduates' in university of Ilorin, Ilorin, Nigeria?
2. Will obesity be a risk factor for diabetes disease as perceived by undergraduates' in university of Ilorin, Ilorin, Nigeria?
3. Will physical inactivity be a risk factor for diabetes disease as perceived by undergraduates' in university of Ilorin, Ilorin, Nigeria?

Research Hypotheses

Based on the research questions, the following research hypotheses were formulated to guide the study:

1. Genetics will not significantly be a risk factor for diabetes disease as perceived by undergraduates' in university of Ilorin, Ilorin, Nigeria.
2. Obesity will not significantly be a risk factor for diabetes disease as perceived by undergraduates' in university of Ilorin, Ilorin, Nigeria.
3. Physical inactivity will not significantly be a risk factor for diabetes disease as perceived by undergraduates' in university of Ilorin, Ilorin, Nigeria.

Methodology

Descriptive research survey method was used for the study. The population of the study comprised of all undergraduates in university of Ilorin, Ilorin, Nigeria. The target population comprised of all the fifteen thousand seven hundred and fifty-eight (15,758) students which include both male and female undergraduates from five (5) selected faculties in the University of Ilorin, Ilorin, Nigeria. A multi-stage sampling technique that made up of simple, proportionate and accidental sampling techniques were used for the study. A simple random

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sampling technique was used to select five (5) faculties from the fifteen (15) faculties in University of Ilorin by using simple balloting technique; those selected faculties were as follows: Faculty of Physical science, Faculty of Communication and Information Science, Faculty of Social Science, Faculty of Engineering and Faculty of Management Science. A proportionate sampling technique was used to select two-point five percent (2.5%) of the population from each of the five (5) selected faculties based on their populations; proportionate sampling technique was a method of sampling technique that ensured that each stratum has equal sampling representation. Accidental sampling technique was used to select 400 level students during their faculties' lessons and numbers selected were based on 2.5% population of the selected faculties. Number of students participated from each of the selected faculties were as follows; faculty of Physical Science 83, Communication and Information Science 53, Social Science 77, Engineering 88 and Management Science 93. Total number of respondents participated in the study were three hundred and ninety four (394). 400 level students from the five faculties were selected for the study because they consist of higher number of matured minds and graduating students who would soon gain more freedom in almost all aspect of their life, which includes unhealthy choices or lifestyle, which is among the leading cause of diabetes.

Table 1: Calculation of the sample selected

S/N	FACULTY	NO OF STUDENTS IN FACULTY	SAMPLE PER 2.5%	NUMBER SELECTED
1.	Physical science	3324	83.1	83
2.	Communication and information science	2102	52.6	53
3.	Social science	3067	76.7	77
4.	Engineering	3537	88.4	88
5.	Management science	3728	93.2	93
	Total	15,758	394	394

Source: Researchers' developed

The Instrument used for the study was a researchers' developed questionnaire that was validated by four experts in related fields. The reliability of the instrument was established using a test re-test method, 20 copies of questionnaire administered on twenty (20) respondents from faculties of Social Science and Physical Science at the Kwara State University, Malete, outside the study area. Two weeks after, the instrument re-administered. The results were compared using Pearson Product Moment Correlation. A reliability coefficient of 0.77r was obtained which was considered high enough and this made the research instrument reliable for the study. The researcher administered the instrument with

the help of three instructed research assistants. Non-parametric statistics of Chi-square at 0.05 level of significance was used to test the hypotheses for the study.

Results

The results obtained from the three hypotheses used for the study were shown on the tables:

Ho1: Genetics will not significantly be a risk factor for diabetes disease as perceived by undergraduates' in university of Ilorin, Ilorin, Nigeria.

Table 2: Chi-square analysis on genetics as a risk factor of diabetes disease as perceived by undergraduates in University of Ilorin

S/ N	ITEMS	SA	A	D	SD	ROW Total	DF	C- Valu e	T- Value	Remark
1.	Children of parents who have diabetes are more likely to develop diabetes in future	103 26.1%	178 45.2 %	92 23.4%	21 5.3%	394				
2.	Diabetes can be traceable to heredity factor.	98 24.9%	183 46.5 %	88 22.3%	25 6.3%	394				
3.	A mother having diabetes when she was pregnant puts the child at risk of getting diabetes in future.	65 16.5%	162 41.1 %	130 33.0%	37 9.4%	394	9	316.07	16.92	Ho1 Rejected
4.	Diabetes runs in the family put the family members at risk of having the disease then nothing I can do to prevent	34 8.6%	72 18.3 %	134 34.0%	154 39.1%	394				
	TOTAL	300 19.0%	595 37.8 %	444 28.2%	237 15.0%	1576 100.0%				

@ 0.05 level of significance

Table 2 shows that the calculated chi-square value of 316.07 was greater than critical chi-square value of 16.92 with degree of freedom of 9 at 0.05 alpha level. Since the calculated chi-square value greater than the critical value, therefore the null hypothesis was rejected. This implies that genetics was a risk factor of diabetes as perceived by undergraduates in University of Ilorin, Ilorin, Nigeria.

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Ho2: Obesity will not significantly be a risk factor of diabetes disease as perceived by undergraduates' students in University of Ilorin, Ilorin, Nigeria.

Table 3: Chi-square analysis on Obesity as a risk factor of diabetes disease as perceived by undergraduates in University of Ilorin

S/ N	ITEMS	SA	A	D	SD	ROW TOTAL	DF	CAL VALUE	TABLE VALUE	RE MARK
1.	Excess body fat can lead to diabetes.	90 22.8%	183 46.4%	107 27.2%	14 3.6%	394				
2.	Obesity due to processed meals increases one's risk of diabetes.	70 17.8%	199 50.5%	105 26.6%	20 5.1%	394				
3.	Obesity due to increase in several large meals daily increases one's risk of diabetes.	75 19.0%	182 46.2%	114 28.9%	23 5.9%	394	9	14.15	16.92	Ho2 Accepted
4.	Eating too much with less activities may cause obesity which increases my chances of diabetes.	102 25.9%	177 44.9%	92 23.4%	23 5.8%	394				
TOTAL		337 21.4%	741 47.0%	418 26.5%	80 5.1%	1576 100.0%				

@ 0.05 level of significance

Table three shows that the calculated chi-square value of 14.15 was less than critical chi-square value of 16.92 with degree of freedom of 9 at 0.05 alpha level. Since the calculated chi-square value is less than the critical value, the null hypothesis was accepted. This implies that obesity was not a risk factor of diabetes as perceived by undergraduates in University of Ilorin, Ilorin, Nigeria.

Ho3: Physical inactivity will not significantly be a risk factor of diabetes disease as perceived by undergraduates' students in University of Ilorin, Ilorin, Nigeria.

Table 4: Chi-square analysis on Physical inactivity as a risk factor of diabetes disease as perceived by undergraduates in University of Ilorin.

S/ N	ITEMS	SA	A	D	SD	ROW TOTAL	DF	CAL VALUE	TABLE VALUE	RE MARK
1.	Students who do not do some physical activity such as brisk walking for at least 30 minutes each day increases the risk of having diabetes.	64 16.2 %	170 43.1%	131 33.3%	29 7.4%	394				
2.	Student who replaces walking and biking to use of cabs and KeKe NAPEP (tricycle) increases the risk of diabetes.	41 10.4 %	130 33.0%	173 43.9%	50 12.7%	394	9	48.18	16.92	Ho3 Rejected
3.	Physical inactivity is a major risk factor of diabetes	57 14.5 %%	171 43.4%	122 30.9%	44 11.2%	394				
4.	Aerobic exercises (such as swimming, cycling etc) exercise reduces my risk of	68 17.3 %	193 48.9%	102 25.9%	31 7.9%	394				
	TOTAL	230 14.6 %	664 42.1%	528 33.5%	154 9.8%	1576 100.0%				

@ 0.05 level of significance

The result obtained from table three shows the calculated chi-square value of 48.18 greater than critical chi-square value of 16.92 with degree of freedom of 9 at 0.05 alpha level. Since the calculated chi-square value is greater than the critical value, therefore the null hypothesis was rejected. This implies that physical inactivity was a risk factor of diabetes among undergraduates of University of Ilorin, Ilorin, Nigeria.

Discussions of Findings

The result of the first hypothesis tested showed that genetic is risk factors of diabetes disease as perceived by undergraduate in university of Ilorin. The result of the findings agreed with the view of Ajibike, (2014) who ascertain that, genetics is profoundly influential on the development of many health conditions

and diseases. Common health problems, including diabetes arise through multigenerational familial patterns. Diabetes is hereditary; if an immediate member of a family has the disease; it increases the likelihood for other members of the family to develop the disease. Most people with diabetes have a direct family member affected by the disease; that means, mother, father, brother, or sister. The findings could be attributed to the fact that most undergraduate students who had parents and siblings with diabetes perceived themselves of being at risk of having the disease and such saw it as being inheritable.

The result of the second hypothesis tested revealed that obesity was not a risk factor of diabetes disease as perceived by undergraduate in university of Ilorin. The result of the finding negates the submission of Academy of Nutrition and Dietetics (2019) that, processed food has a bad reputation as a diet saboteur. It is blamed for obesity rates, high blood pressure and the rise of Type 2 diabetes. But processed food is more than boxed macaroni and cheese, potato chips and drive-thru hamburgers. It may be a surprise to learn that whole-wheat bread, homemade soup or a chopped apple also are processed foods. The result of this finding carved around the fact that most undergraduate students that participated in the study see students with obese or overweight as a sign of enjoyment which indicated that such students take correct diets. They believe that students with obese or overweight have money to take appropriate diets required by their body system and as such they cannot experience diabetics' disease.

The result of the third hypothesis showed that physical in activity was a risk factor of diabetes disease as perceived by undergraduate in university of Ilorin. This finding agreed with the submission of Frederick, Olukunmi & Akintayo, (2014) who reported that the increased use of motor vehicles to travel to destinations instead of walking, jogging, or bicycling, and also a high prevalence of unhealthy eating practices and patterns among students. The high availability of fast food contributes to eating in larger quantities, and the physiological sensation of having an insatiable appetite. Regular physical exercises are important in the prevention and management of type 2 diabetes, aerobic exercises improve the body's insulin use and reduce the risk diabetes. The finding could be attributed to the fact that some of the students understand the benefits associated with physical activity to educational programme and also to their health through the lecture they received from the school and awareness created on media houses.

Conclusion

Based on the findings of this study, it was concluded that:

1. genetics is a significant risk factor of diabetes as perceived by undergraduates in university of Ilorin, Ilorin, Nigeria.

2. obesity is not a significant risk factor of diabetes as perceived by undergraduates in university of Ilorin, Ilorin, Nigeria.
3. physical inactivity is a significant risk factor of diabetes as perceived by undergraduates in university of Ilorin, Ilorin, Nigeria.

Recommendations

The following recommendations were made based on the findings and conclusions of the study:

1. health educators should help enlighten students on advantage of regular medical check-up in the hospital as one of the important measure to assist family with a member that experiences diabetes disease .
2. the school authority should organize enlightenment campaign that will educate students on danger involved in taking wrong diets which may expose them to problem of obese or over weight that serve as risk factors for various health problems where diabetes disease is among.
3. students should engage in physical activity like brisk walking for at least 30 minutes a day, practice the act of walking rather than use of vehicles all the time and the school authority should put in place equipment and facilities for sports involvement.

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