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KNOWLEDGE AND ATTITUDE TOWARDS DIABETES MELLITUS AND ITS PREVENTIVE STRATEGIES AMONG SECONDARY SCHOOL STUDENTS IN ENUGU EAST LOCAL GOVERNMENT AREA

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Abstract
The study dealt on knowledge and attitude towards diabetes mellitus among secondary school students in Enugu East Local Government Area. The study adopted descriptive research design and was guided by five research questions. The population for the study comprised of thirteen thousand, nine hundred and sixty (13,960) secondary school students in the ten secondary schools in Enugu East LGA of Enugu State. The sample size of 388 students was determined from this population using Taro Yamen formula. Multistage sampling technique comprising of proportionate and simple random sampling technique was also adopted in this study. The instrument for data collection was a structured and validated questionnaire. Data was collected through direct visitation of the sampled schools while frequency, percentage and mean were used for data analysis. The analysis found that; secondary school students are knowledgeable on the causes (71%), signs and symptoms (70%), consequences (54%) and preventive measures (81%) of Diabetes Mellitus. The study found that there is a poor attitude towards Diabetes Mellitus (2.38) among Secondary School Students in Enugu East LGA. The study concluded that secondary school students possess adequate knowledge of diabetes mellitus, including its causes, signs and symptoms, consequences, and preventive measures. The study however recommended the need for educational programmes that will deepen the knowledge of diabetes mellitus and its preventive strategies among secondary school students in Enugu east and the whole of Enugu state, Nigeria.

Keywords: Attitude, Diabetes Mellitus, Knowledge, and Prevention

Introduction
Diabetes mellitus is one of the numerous diseases that is closely related to the blood sugar level of an individual. According to American Diabetes Association (2014), Diabetes Mellitus is a group of metabolic disorders characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. This health problem occurs as a result of the body's inability to regulate blood sugar levels properly. There are two main types of diabetes: type 1 and type 2. In type 1 diabetes, the body's immune system destroys the insulin-producing beta cells in the pancreas, leading to a deficiency of insulin. Type 2 diabetes, on the other hand, occurs when the body becomes resistant to the effects of insulin or when the pancreas is unable to produce enough insulin to maintain normal blood sugar levels. The most worrying concern is that diabetes mellitus has high prevalence globally and locally.

Global reports have established that the global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014 (World Health Organization, WHO, 2016). In addition, the International Diabetes Federation (IDF, 2019), reported that up to 463 million adults (20-79 years) were living with diabetes worldwide, and this number is expected to rise to 700 million by 2045 if current trends continues. In lower income areas like Africa, it was found that there is a significant rise in the prevalence of diabetes. It was further estimated that 19.4 million adults (20-79 years) were living with diabetes in Africa, and this number is expected to increase to 47 million by 2045. The International Diabetes Federation also points out that nearly half of adults with diabetes in Africa are undiagnosed, which further underscores the urgency of addressing diabetes in the region especially in Nigeria. Ogbera and Ekpebegh (2019), revealed that the prevalence of diabetes mellitus has been on the rise, with estimates ranging from 4.8% to 5.7% as of 2019. These statistics highlight the growing burden of diabetes mellitus and emphasize the need for individuals to be knowledgeable on the causes, signs and symptoms, consequences and preventive strategies of diabetes mellitus.

However, Centers for Disease Control and Prevention (2021), stated that Diabetes mellitus can as well be caused by a combination of genetic, environmental, and lifestyle factors. This submission shows that diabetes mellitus is often linked or caused by individual's genetic predisposition, poor nutritional, obesity, and physical inactivity. In Nigeria, Azuogu, Madubueze, Una, Okedo-Ale and Azuogu (2018), found that obesity, sedentary lifestyles, low knowledge of diabetes were among the causes of diabetes mellitus in Nigeria. Moreover, the causes of diabetes mellitus lead to the characteristic signs and symptoms of the condition, including increased thirst, frequent urination, unexplained weight loss, fatigue, blurred vision, slow wound healing, and in some cases, tingling or numbness in the hands or feet.

Indeed, the signs and symptoms of diabetes mellitus encompass a range of manifestations that show the impact of elevated blood glucose levels on various body systems, including increased thirst and urination, unexplained weight loss, fatigue, blurred vision, slow wound healing, and peripheral neuropathy (Centers for Disease Control and Prevention, 2021). In addition, Mayo Clinic (2021), outlined the signs and symptoms of diabetes mellitus to include increased thirst, frequent urination, unexplained weight loss, and fatigue. Furthermore, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (2017), reported that elevated blood glucose levels that translate to diabetes impact various body systems, including vision, skin, and nerve health. The signs and symptoms of Diabetes Mellitus if not identified and addressed appropriately can lead to serious health consequences, including cardiovascular diseases, kidney failure, nerve damage, among other complications. From the forgoing, it is clear that diabetes mellitus is a dangerous illness which affect other part of the body. Therefore, it is important that effort are made to empower young adults especially secondary school students on ways to prevent this diseases

including the knowledge of the signs and symptoms, causes, consequences and preventive strategies of diabetes mellitus.

Various literatures highlight that effective prevention strategies for Diabetes Mellitus may include maintaining a healthy weight, engaging in regular physical activity, consuming a balanced diet rich in fruits, vegetables, and whole grains, and avoiding tobacco use (American Diabetes Association, 2021; Centers for Disease Control and Prevention, 2021). From this submission, it can be asserted that informed individuals who possess knowledge of Diabetes Mellitus are better equipped to adopt preventive measures, such as making healthy lifestyle choices, seeking early screening, and managing risk factors, associated with the disease. Knowledge of diabetes mellitus will thus lead to understanding of the causes, symptoms, management, and complications of the disease, as well as its impact on overall health and well-being. Therefore, knowledge of Diabetes Mellitus may help individuals to make good decisions about their health, enabling them to take proactive steps to adopt a healthy lifestyle, manage stress, and monitor their blood glucose levels, all of which are crucial in preventing the onset of the disease and its complications (Mayo Clinic, 2021). This is because the first level of prevention of diabetes mellitus starts from the individual especially with regards to lifestyle modification which includes proper dietary exercise and avoidance of sugary or processed food.

However, Akinlua, Meakin, Umar, Freemantle and Beloyartseva (2018), revealed that there is a significant knowledge gaps regarding diabetes mellitus among the Nigerian population, particularly with regards to its risk factors, symptoms, and management. Motala, Mbanya and Ramaiya, (2014), also report a lack of awareness about diabetes and its risk factors in Africa, highlighting the need for improved education and knowledge dissemination. In addition, Uloko, Musa, Ramalan, Gezawa, Puepet and Uloko (2017), emphasize the necessity to address the inadequate knowledge and misconceptions about diabetes through targeted education and public health programs in African countries. These submissions suggest that lack of knowledge of diabetes mellitus may be the reason for the high prevalence of the disease. Hence, it is important to examine the current level of knowledge of diabetes mellitus among individuals including secondary school students. Moreover, the knowledge of diabetes mellitus is linked to attitudes towards diabetes mellitus, as individuals with a better understanding of the condition are more likely to have positive attitudes and engage in proactive diabetes management (Sarkar, Fisher, & Schillinger, 2016). Supporting this Okandeji-Barry, Oghenenioborue, Odjimogho, Efegbere (2020), states that the burden of Diabetes Mellitus could be drastically reduced if patients are empowered with the right knowledge and attitude for management of the disease, including preventing its risk factors. Consequently, knowledge and attitude towards Diabetes Mellitus are important for people to develop the right attitude towards the disease and also increases their likelihood of participating in prevention and control activities. Hence, the study examines the knowledge and attitude towards preventive

measures of Diabetes Mellitus among secondary school students in Enugu East Local Government Area of Enugu State.

Statement of the Problem

Diabetes mellitus has become a subject of concern in Nigeria. Based on this, the disease is reflected in secondary school education curricula. There are also ongoing enlightenment campaigns by health experts on the nature of diabetes mellitus. As such, it is expected that secondary school students in Enugu East Local Government Area ought to be knowledgeable on the causes, signs and symptoms, consequences and preventive strategies of diabetes mellitus as well as possess positive attitude towards the prevention of the disease.

Against this assumption, it is observable that many secondary school students in Enugu East Local Government Area are exhibiting behaviours that expose their health to diabetes mellitus. Such behaviours includes over consumption of processed food like noodles, bread, egg rolls among others. These students are also observed to be consuming soft drinks that has high sugar content. These behaviours are liable to increase the risk of diabetes mellitus among these students, subsequently lead to cardiovascular diseases, neuropathy, retinopathy, kidney failure, and impaired wound healing. It is on these notes that this study determines the level of knowledge and attitude towards preventive measures of diabetes mellitus among secondary school students in Enugu East LGA. The study is more so because the knowledge and attitude of students towards diabetes can help identify potential barriers to seeking healthcare, access resources for healthcare, and adhere to self-management practices and develop targeted interventions that address healthcare barriers and improve health outcomes of secondary school students in Enugu East LGA.

Purpose of the Study

The general purpose of the study is to determine the knowledge and attitude towards preventive measures of Diabetes Mellitus among secondary school students in Enugu East Local Government Area of Enugu State. Specifically, the study sought to:

1. determine the knowledge of the causes of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State
2. determine the knowledge of the signs and symptoms of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State
3. determine the knowledge of the consequences of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State
4. determine the knowledge of the preventive strategies of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State
5. ascertain the attitude towards preventive measures of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State.

Research Questions

The following research questions guided this study

1. What is the knowledge of the causes of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?
2. What is the knowledge of the signs and symptoms of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?
3. What is the knowledge of the consequences of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?
4. What is the knowledge of the preventive strategies of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?
5. What is the attitude towards preventive measures of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?

Method

The study employed descriptive survey research design. The population for the study consisted of thirteen thousand, nine hundred and sixty (13,960) secondary school students in ten secondary schools in Enugu East LGA of Enugu State. The sample size of 388 students was determined using Taro Yamen formula. Purposive sampling technique was used to sample 4 secondary schools out of the 10 secondary schools in Enugu East LGA. This is because the researcher aimed to sample schools with mixed gender demographic group in order to ensure appropriate representation. Proportionate sampling technique was used to sample the secondary school students from each of the 4 sampled secondary schools because the number of students in each school was not equal. Then simple random sampling technique of balloting without replacement was used to determine the respondents for this study.

The instrument for data collection was a structured questionnaire titled "Knowledge and Attitude towards Diabetes Mellitus Questionnaire (KADMQ)". The questionnaire was divided into two sections. Section A consists of the demographic data of respondents while section B consists of statement to elicit information on the knowledge and attitude towards Diabetes Mellitus among secondary school students in Enugu East LGA. Section B was divided into five clusters. Cluster one has eight items on the knowledge of the causes of Diabetes Mellitus. Cluster two has eight items on the knowledge of the signs and symptoms of Diabetes Mellitus. Cluster three has eight items on the knowledge of the consequences of Diabetes Mellitus, cluster four has eight items on the knowledge of the preventive strategies of Diabetes Mellitus and cluster five has eight items on attitude towards preventive measures of Diabetes Mellitus among secondary school students in Enugu East LGA of Enugu state. The responses options was Agree or Disagree for cluster one to four while a 4 scale of Strongly Agree (SA: 4), Agree (A: 3), Disagree (D: 2) and Strongly Disagree (SD: 1) was used for cluster five.

The instrument was validated by three experts, two in Health Education and one specialist in measurement and evaluation all in the Faculty of Education, ESUT. The experts critically examined the instrument and made useful suggestions which were effected on the instrument before final production. The researcher administered the

questionnaire with the help of three research assistants on days agreed on between the researchers, the research assistants and the respondents. The data collected was analysed with frequency and percentages for cluster one to four while cluster five was analysed using mean and standard deviation. The decision rule was that any item in cluster one to five with percentage score 50% and above on the correct answer was regarded Knowledgeable (K), while percentage score below 50% the correct answer was regarded as Not Knowledgeable (NK). On the other hand in cluster five any item with mean response of 2.5 and above was considered as Agree (A) and any mean score below 2.5 is considered as Disagree (D).

Results

Research Question One

What is the knowledge of the causes of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?

Table 1: Percentage Response on the Causes of Diabetes Mellitus n= 372

S/n	**Item:** The following are causes of diabetes mellitus	**Correct (F)**	**%**	**Incorrect (F)**	**%**	**Deci**
1	Family history of diabetes	203	55	169	45	K
2	Eating too much sugar	362	97	10	3	K
3	Obesity or being overweight	299	80	73	20	K
4	Sleeping too much	314	84	58	16	K
5	Certain medications or medical condition	290	78	82	22	K
6	Stressing your body excessively	108	29	264	71	NK
7	Lack of exercise	344	92	28	8	K
8	Insulin resistance	200	54	172	46	K
	Average Percentage		**71%**		**29%**	**K**

Key: F= Frequency, K = Knowledgeable and NK = Not Knowledgeable.

The table indicates that the overall average correct knowledge of causes of Diabetes mellitus among secondary-school students in Enugu East Local Government Area is around **71%**, with incorrect responses averaging 29%. On specific items: a strong majority (97%) correctly identify "eating too much sugar" as a cause, while 92% recognise "lack of exercise," and 84% identify "sleeping too much." Around 80% recognise "obesity/being overweight," and 78% identify "certain medications or medical conditions." Slightly over half (55%) correctly note "family history of diabetes," and 54% indicate "insulin resistance." However, only 29% correctly recognise "stressing your body excessively" as a cause (meaning 71% responded incorrectly) and this item is marked as "NK" (not known) in the decision column. These results suggest that students are moderately well informed about the more commonly promoted or visible risk factors such as sugar intake, overweight/obesity, lack of exercise and medication-related risks. In contrast, awareness of less intuitive

or less commonly emphasised causes (e.g., bodily stress) is weak. The categorisation of most items as "K" (known) and one as "NK" indicates the need to enhance education around the lesser-known causative factors. Overall, while the knowledge level is relatively good, there remains scope to expand students' understanding beyond the most obvious risk factors.

Research Question Two

What is the knowledge of the signs and symptoms of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?

Table 2: Percentage Response on the Symptoms of Diabetes Mellitus

n= 372

S/n	Item: The following are symptoms of diabetes mellitus	Correct (F)	%	Incorrect (F)	%	Deci
9	Increased thirst and frequent urination	263	71	109	29	K
10	Excessive sleeping	162	44	210	56	NK
11	Unexplained weight loss	209	56	163	44	K
12	Lack of appetite	304	82	68	18	K
13	Slow-healing wounds or frequent infections	280	75	92	25	K
14	Reddening of the eyes	208	56	164	44	K
15	Blurred vision	340	91	32	9	K
16	Fatigue and weakness	300	81	72	19	K
	Average Percentage		**70%**		**30%**	**K**

The data from Table 2 indicate that the overall average correct knowledge of signs and symptoms of Diabetes Mellitus among secondary school students in Enugu East Local Government Area is approximately **70%** (with incorrect responses averaging 30%). In detail: 71% correctly identified "increased thirst and frequent urination" as a symptom, while only 56% correctly recognised "excessive sleeping" (44% correct vs. 56% incorrect) which is marked "NK" (not known). For other items: 56% identified "unexplained weight loss", 82% "lack of appetite", 75% "slow-healing wounds or frequent infections", 56% "reddening of the eyes", 91% "blurred vision", and 81% "fatigue and weakness". These results show that students are relatively well aware of more classic and widely publicised symptoms particularly "blurred vision" (91%) and "fatigue/weakness" (81%). However, awareness of less often emphasised symptoms such as "excessive sleeping" and "reddening of the eyes" is lower (44% for each). The "lack of appetite" symptom stands out as being well understood (82%). Given the recognised symptoms of diabetes include increased thirst, frequent urination, fatigue, unexplained weight loss, blurred vision and slow wound healing. The relatively high knowledge rate (~70%) is encouraging, but the gap in awareness of certain symptoms suggests a need to broaden educational efforts to ensure students recognise the full spectrum of warning signs, including those less obvious.

Research Question Three

What is the knowledge of the consequences of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?

Table 3: Percentage Response on the Consequences of Diabetes Mellitus

n= 372

S/n	Item: The following are consequences of diabetes mellitus	Correct (F)	%	Incorrect (F)	%	Deci
17	Heart disease and stroke	243	65	129	35	K
18	Dislocation of joints	250	67	122	33	K
19	Nerve damage (neuropathy)	179	48	193	52	NK
20	Eye damage and blindness	134	36	238	64	NK
21	Amputations due to poor blood circulation	167	45	205	55	NK
22	Hearing loss	144	39	228	61	NK
23	Social stigmatization	274	74	98	26	K
24	Kidney disease	205	55	167	45	K
	Average Percentage		**54%**		**46%**	**K**

The data from Table 3 show that among secondary school students in Enugu East Local Government Area (Enugu State) the average correct knowledge of the consequences of Diabetes Mellitus is **54%,** meaning 46% responded incorrectly. More specifically: 65% recognised "heart disease and stroke" as a consequence, 67% recognised "dislocation of joints", 48% recognised "nerve damage (neuropathy)", 36% recognised "eye damage and blindness", 45% identified "amputations due to poor blood circulation", 39% recognised "hearing loss", 74% identified "social stigmatization", and 55% identified "kidney disease". Put differently, students are relatively aware of some consequences especially "social stigmatization" (74%) and common cardiovascular outcomes like heart disease/stroke (65%) and joint dislocation (67%) but their awareness is far weaker for serious and clinically important outcomes like nerve damage (48%), eye damage/blindness (36%), amputations (45%), hearing loss (39%). These latter items are marked "NK" (not known) in the decision column, reflecting insufficient knowledge. From a health-education perspective, the moderate overall knowledge (just over half correct) suggests that while many students do have an awareness of diabetes complications, critical gaps remain particularly for microvascular complications (eyes, kidneys, nerves) which are often less visible but highly significant. Given that reputable sources indicate that uncontrolled diabetes *can* cause nerve damage (neuropathy) eye damage and blindness, and kidney disease/failure the fact that student recognition of these is under 50% highlights the need for targeted educational interventions to broaden understanding of the full spectrum of diabetes' consequences.

Research Question Four

What is the knowledge of the preventive measures of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?

Table 4: Percentage Response on the Preventive Measures of Diabetes Mellitus

n= 372

S/n	**Item:** Preventive measures of diabetes mellitus	**Correct (F)**	**%**	**Incorrect (F)**	**%**	**Deci**
25	Maintaining a healthy weight	313	84	59	16	K
26	Eating balanced diet with plenty of fruits or vegetables	332	89	40	11	K
27	Taking more salt daily	299	80	73	20	K
28	Getting regular check-ups or screenings for diabetes	304	82	68	18	K
29	Managing stress and get enough sleep	290	78	82	22	K
30	Taking diabetes medication everyday	208	56	164	44	NK
31	Engaging in physical activities	354	95	18	5	K
32	Limiting sugary and processed foods	300	81	72	19	K
	Average Percentage		**81%**		**19%**	**K**

The data from Table 4 show that among secondary school students in the Enugu East Local Government Area of Enugu State, Nigeria, the average correct knowledge of preventive measures for Diabetes Mellitus is approximately **81%**, with incorrect responses averaging 19%. Specifically: 84% correctly identified "maintaining a healthy weight," 89% "eating a balanced diet with plenty of fruits or vegetables," 80% "taking more salt daily" (though this seems counter-intuitive as a preventive measure and likely indicates confusion), 82% "getting regular check-ups or screenings for diabetes," 78% "managing stress and getting enough sleep," 56% correctly identified "taking diabetes medication everyday" (thus 44% incorrect) and this item was marked "NK" (not known), 95% recognised "engaging in physical activities," and 81% identified "limiting sugary and processed foods." These figures suggest that the students have a generally strong awareness of common lifestyle-based preventive measures particularly diet (89 %), exercise (95 %) and weight management (84 %). The relatively lower recognition for medication use (56 %) may reflect less familiarity with pharmaceutical prevention or confusion about what preventive versus management measures are. The discrepancy for "taking more salt daily" being listed as a preventive measure may reflect misunderstanding or mis-reading of the item. In summary, the high average indicates that students in this area enjoy a relatively good level of knowledge about how to prevent diabetes through lifestyle interventions. That said, nuance is needed: educational programmes should help clarify distinctions between prevention and treatment (e.g., medication) and correct misconception

about some items (such as salt intake). This foundation of awareness is a strong platform for more in-depth health education in schools.

Research Question Five

What is the attitude towards preventive measures of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State?

Table 5: Mean Response on the Attitude towards Prevention of Diabetes Mellitus n= 372

S/N	ITEM	SA 4	A 3	D 2	SD 1	X	Deci
33	Feeling concerned about the potential complications of diabetes.	20	55	110	187	1.75	D
34	Open to learning more about how to support someone with diabetes?	86	84	120	82	2.47	D
35	Considers diabetes as a serious health condition that requires attention and care	156	130	54	32	3.10	A
36	Empathy for others with diabetes	100	80	85	107	2.47	D
37	Acceptance of diabetes related issues	100	65	35	172	2.25	D
38	Feeling afraid of diabetes related consequences	96	94	172	10	2.74	A
39	Willingness to make lifestyle changes to prevent diabetes	35	25	90	222	1.66	D
40	Learning more about diabetes mellitus	106	100	62	104	2.56	A
	Grand Mean					**2.38**	**D**

Key= A= Agree and D = Disagree

The mean responses in Table 5 suggest that overall, the attitude of secondary-school students in the Enugu East Local Government Area toward preventive measures for Diabetes Mellitus can be characterized as **below the "agree" threshold** (grand mean = 2.38 on a 1-4 scale) and thus interpreted as a generally **disengaged or negative attitude** (marked "D"). Delving into specifics: on the item "considers diabetes as a serious health condition that requires attention and care" (item 35), students showed a positive attitude (mean = 3.10, marked "A"). On "feeling afraid of diabetes related consequences" (item 38), they also showed modest agreement (mean = 2.74, "A"). But on other items the attitude was weaker: "feeling concerned about the potential

complications" (mean = 1.75, "D"); "willingness to make lifestyle changes to prevent diabetes" (mean = 1.66, "D"); "open to learning more about how to support someone with diabetes" (mean = 2.47, "D"); "empathy for others with diabetes" (2.47, "D"); "acceptance of diabetes-related issues" (2.25, "D"); "learning more about diabetes mellitus" (2.56, "A"). In summary: while students recognize diabetes as serious and express some concern about its consequences, they generally show weak commitment to proactive attitudes especially regarding supporting others, making lifestyle changes, and further learning. This suggests a gap between recognizing severity and engaging in prevention-oriented attitude. Health-education efforts should therefore emphasize building a stronger preventive attitude (especially around lifestyle change and support) rather than just knowledge of severity. Research in other settings supports the link between positive attitude and preventive behaviour.

Discussion

Finding one reveal that students in Enugu East are knowledgeable on the causes of diabetes mellitus. This is in line with findings by Azuogu, Madubueze, Una, Okedo-Ale and Azuogu (2018) which reveal that obesity, sedentary lifestyles, and low knowledge of diabetes were among the causes of diabetes mellitus in Nigeria. However, Akinlua, Meakin, Umar, Freemantle and Beloyartseva (2018), did not support this finding by revealing that there is a significant knowledge gaps regarding diabetes mellitus among the Nigerian population, particularly with regards to its risk factors, symptoms, and management. Motala, Mbanya and Ramaiya, (2014), however reported a lack of awareness about diabetes and its risk factors in Africa, highlighting the need for improved education and knowledge dissemination. The researcher believes that the significant gap in the year of both studies may have influenced the results. In other words there may have been a significant rise in the level of education and knowledge of diabetes mellitus among secondary school students over the years.

Finding two reveals that students are knowledgeable on the signs and symptoms of diabetes mellitus. Specifically, the students agreed that early warning signs such as fatigue, blurred vision, slow wound healing, peripheral neuropathy and unexplained weight loss can serve as crucial indicators for identifying individuals at risk of diabetes and prompt them to seek medical attention for timely diagnosis and management. These findings are in line with findings of Mayo Clinic (2021), which outlined that increased thirst, frequent urination, unexplained weight loss, fatigue, vision, skin, and nerve health, among others are the signs and symptoms of diabetes mellitus. However, Motala, Mbanya and Ramaiya, (2014), did not agree with this finding by stating that there is high lack of awareness about diabetes and its risk factors in Africa, and highlighted the need for improved education and knowledge dissemination.

Finding three reveal that the students are knowledgeable on the consequences of diabetes mellitus. Specifically, the finding reveal that the consequences of diabetes mellitus includes; cardiovascular diseases, neuropathy, retinopathy, kidney failure,

and impaired wound healing, all of which significantly impact a person's quality of life and long-term health outcomes. This revelation is supported by Mayo Clinic (2021); and National Institute of Diabetes and Digestive and Kidney Diseases (2017), which states that diabetes mellitus lead to cardiovascular disease, kidney damage, nerve damage, and vision problems. The researcher was not surprised by this finding because Okandeji-Barry, Oghenenioborue, Odjimogho and Efegbere (2020), showed that majority of students in southeastern Nigeria of which Enugu East LGA is included have high knowledge of diseases because of the level of educational improvement in the Area.

Finding four reveals that students are knowledgeable on the preventive measures of diabetes mellitus. Specifically, the students revealed that maintaining a healthy weight, engaging in regular physical activity, consuming a balanced diet rich in fruits, vegetables, and whole grains, and avoiding tobacco use are among the preventive measures of diabetes mellitus. This is also in line with findings by Azuogu, Madubueze, Una, Okedo-Ale and Azuogu (2018), which agreed that individuals who possess knowledge of Diabetes Mellitus prevention are better equipped to adopt preventive measures, such as making healthy lifestyle choices, seeking early screening, and managing risk factors, thereby reducing the likelihood of developing the disease.

Nevertheless, finding five reveal that students had poor attitude towards diabetes mellitus. This finding is in consonance with Strain and Hirst (2015), who showed that there are numerous barriers to individual's attitudes towards preventive measures of diabetes mellitus and highlighted a potential gap in the translation of knowledge about preventive measures into clinical practice. This means that despite adequate knowledge, there may be some problems which affect the implementation of preventive measures and these problems may influence the attitudes of students towards diabetes mellitus prevention. However, Ezeala-Adikaibe, Orjioke and Ekenze (2018), did not agree with the finding by highlighting the potential for positive attitude due to the high level of awareness and receptiveness among the community members towards engaging in preventive measures such as regular physical activity, dietary modifications, and adherence to medication regimens. In order words, the author believed that high knowledge ought to begat positive attitude. However, it is clear that challenges exist with regards to translating knowledge to attitude especially among secondary school students. On the general note, the causes, signs, and symptoms of diabetes mellitus have multifaceted implications for individuals, healthcare systems, and public health initiatives. Understanding the interplay between these factors and their impact on knowledge and attitudes towards diabetes is crucial for developing comprehensive and culturally sensitive interventions aimed at prevention, early detection, and effective management of the condition.

Conclusion

The study explored the increasing behaviours that lead to diabetes mellitus among secondary school students in Enugu East LGA of Enugu. Consequently, the study

determined the knowledge of the causes of diabetes mellitus, signs and symptoms of diabetes mellitus, consequences of diabetes mellitus, knowledge of the preventive strategies of diabetes mellitus and attitude towards preventive measures of diabetes mellitus among secondary school students in Enugu East Local Government Area of Enugu State. From the findings the study concluded that secondary school students possess adequate knowledge of diabetes mellitus, including its causes, signs and symptoms, consequences, and preventive measures. Despite these, the findings also indicate a significant lack of positive attitudes towards diabetes mellitus among these students. This suggests the need for interventions to bridge the gap between knowledge and attitude and cultivate a more compassionate and supportive approach to diabetes mellitus condition among secondary school students in Enugu East LGA of Enugu state

Recommendation

The study recommends the following;

1. There is need to implement educational programs which emphasize empathy and understanding towards individuals with diabetes mellitus to improve students' attitudes.
2. It would be helpful to the students if interactive workshops or extracurricular activities that focus on promoting a positive attitude and support for those living with diabetes are introduced in schools.
3. It is necessary to promote collaborations with healthcare professionals in order to provide firsthand experiences and insights into diabetes mellitus for students.
4. There is need to fully integrate diabetes-related topics into the school curriculum to ensure sustained education and awareness.

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