

Prevalence, Socio-Demographic Factors and Complications of type II Diabetes Mellitus among Patients attending Medical Ward at Hoima Regional Referral Hospital

Kyomugisha Sarah

Faculty of Clinical Medicine and Dentistry Kampala International University Western Campus Uganda

ABSTRACT

Type II Diabetes mellitus (DM) is a group of metabolic disorders characterized by variable degrees of insulin resistance, impaired insulin secretion and increased glucose production. It is estimated that each individual spends 79 USD to foot their bills and approximately 8000 Ugandans die of DM-related causes annually. Unfortunately, some individuals have the disease but have not yet known and by the time it was identified, it will have caused complications. This study was to assess the prevalence of DM Type II among patients who attend the medical ward at Hoima Regional Referral Hospital. Through a cross-sectional descriptive study using a quantitative approach, by records audit, a total of 1100 patients who were admitted to the medical ward between October 2020 and March 2021 were reviewed. Results revealed that a total of 88 patients were suffering from Type II Diabetes mellitus which gave a prevalence of 8.0%. The majority of the patients who had DM (54.6%) had diabetes-related complications. DM Type II incidence risks began to increase from 45 years and reached its peak in over 60 years (28.4%). Also, those living sedentary lives were found at higher risk. Common complications found to be associated with DM Type II included hypertension (24%), Diabetic nephropathies (16%), ocular complications (14%) and diabetic neuropathy (12%). It is recommended that the Ministry of Health intensify lifestyle and diet modification campaigns as well as recruitment of health workers especially those skilled in DM management to improve accessibility so that risks of late reporting with complications can be minimized.

Keywords: Type II Diabetes mellitus, Diabetic complications, Insulin, Glucose, Metabolic disorders.

INTRODUCTION

Diabetes mellitus occurs throughout the world but is more common in the developed world. DM is classified mainly into three viz: Type I, Type II, and gestational [1-4]. Type II accounts for up to 90% of global DM [5-7]. According to the International Diabetes Federation, type II diabetes mellitus is believed to be on the increase, especially in middle and low-income countries including sub-Saharan Africa and Asia due to an increase in sedentary lifestyles. It is reported that DM ranked 7th leading cause of death worldwide in 2018 [8]. It is therefore no surprise when WHO describes Type II diabetes as a global epidemic. The pathogenesis of type II diabetes is complex, involving the interaction of genetic and environmental risk factors that lead to insulin resistance in the muscles and the liver as well as beta cell dysfunction. Initially, insulin resistance leads to elevated insulin secretion to maintain a normal blood glucose level [9,10]. However, in susceptible individuals, the pancreatic β -cells are unable to sustain the increased demand for insulin and a slowly progressive demand for insulin develops [11, 12].

The pattern of development is often preceded by an intermediate state of impaired glucose tolerance (IGT). There is an increased prevalence of type II diabetes mellitus in many African countries as a result of changing lifestyles, feeding patterns and levels of physical activity among others attributed to increased obesity and sedentary lifestyles in both adults and children [13, 14]. As stated earlier, 70-90% of the Diabetes Mellitus cases in Africa are of type II and is more prevalent among the rich and "powerful" and thus is called a "disease of opulence" and is commonly in towns where people can afford diet rich in saturated fats and refined sugars and are also physically inactive [15]. It is estimated that each individual spends 79 USD to foot their bills and approximately 8000 Ugandans die of DM-related causes annually. Unfortunately, some individuals have the disease but have not yet known and by the time it is identified, it will have caused complications. Mortality and morbidity due to type II DM are escalating in Uganda and other developing countries even though DM can be prevented easily and cheaply through lifestyle

modifications, diet and exercise. A fairly large percentage of the budget in Uganda is spent on treating DM yet there are also demanding communicable diseases like Cholera, Typhoid, and HIV/AIDS. Despite the increasing prevalence of type II diabetes in Africa and Uganda in particular, responsiveness by the health system and public is very slow, especially in rural settings services are still lacking. The number of type II diabetes patients admitted to the medical ward of Hoima Regional

Referral Hospital (HRRH) has been steadily increasing and most of those admitted with acute complications like renal failure, and diabetic foot ulcers that result in mortality and morbidity. The information about the prevalence of DM type II in Hoima is not known thus the need for this study to determine the prevalence of type II DM among Patients who attend HRRH medical ward so that strategies are put in place to reverse the trend.

METHODOLOGY

Study Design

The study was of a retrospective descriptive cross-sectional design, quantitative involving the use of patient records who attended the medical ward at HRRH. It was a retrospective descriptive cross-sectional study because it utilised secondary data sources in records of previous months. This method was preferred because of the nature of the research questions that required the use of structured procedures and formal instruments to collect information under conditions of control and analysis of numerical information.

Area of Study

The study was carried out in the medical ward and the records office of HRRH. HRRH is located in Hoima City, Hoima District, southwestern Uganda. The hospital has a bed capacity of 500 and is one of the regional referral hospitals in Uganda. The hospital has many clinics including the dentistry clinic, ophthalmology clinic, ENT clinic, antenatal clinic, dermatology clinic, and tuberculosis clinic. Though the diabetes clinic is lacking, diabetic cases are handled in the accident and emergency ward, medical ward and medical outpatient department.

Study population

This included all diabetic patients of all age groups and social backgrounds who attended the medical ward at HRRH from October 2020 to April 2021.

Sample size determination

No definitive method was used to obtain the sample size. The sample included all diabetic patients of all age groups and social backgrounds who attended the

medical ward at HRRH from October 2020 to April 2021. These were obtained via their medical documents in the medical ward and the records office.

Inclusion Criteria

All diabetic patients who attended the medical ward at HRRH from October 2020 and April 2021.

Exclusion Criteria

Patients whose histories were not recorded.

Data collection method

Data was collected from the medical ward and the records department at HRRH. Using a data sheet.

Data quality control

Patients who were admitted more than once within the study period were only considered once. The outliers were strictly avoided through observation of upper and lower limits.

Data analysis plan and presentation

Data was analysed using Microsoft Excel, calculators, pens and paper. The data was presented in the form of graphs, pie charts, figures and tables.

Ethical Consideration

An introduction letter was obtained from the faculty of clinical medicine and dentistry and was presented to the Head of Department records department of HRRH to seek permission to use the hospital records. All the information obtained from the patient files was not used for any other purpose other than for this research. Patient names were not included anywhere on the datasheet. The patients were instead referred to using serial numbers.

RESULTS

Table 1: Prevalence Of Type II DM According To All Age Groups

Age Range	Frequency	Percentage
<20	2	2.2
21-25	2	2.2
26-30	4	4.6
31-35	5	5.7
36-40	7	8.0
41-45	6	6.9
46-50	15	17.0
50-54	12	13.7
55-60	10	11.4
60 and above	25	28.4
TOTAL	88	100

According to the table above, the prevalence of type II diabetes mellitus is higher among patients who are 60 years and above (28.4) and low among patients <20 and between 21-25, each having 2.2%. From this information, type II diabetes prevalence increases with increase in age.

1100 patients were received between October 2020 and March 2021 and the occurrence of Type II Diabetes mellitus among them was 88 patients, giving a prevalence of 8.0%.

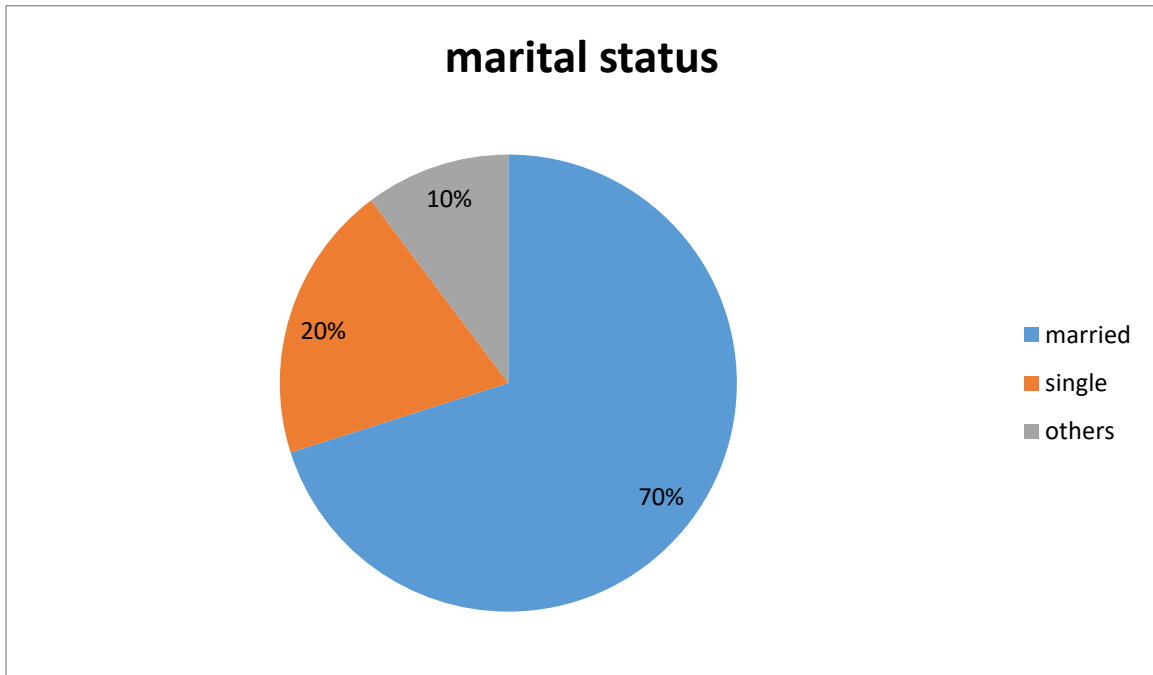


Figure 1: Prevalence Of DM Type II According to Marital Status

According to the pie chart above, the prevalence of DM Type II is highest among the married with 70%. Those who had diabetes and were single contributed

20% of the diabetes type II cases while others (Divorced, widowed, widows) contributed 10% of the cases.

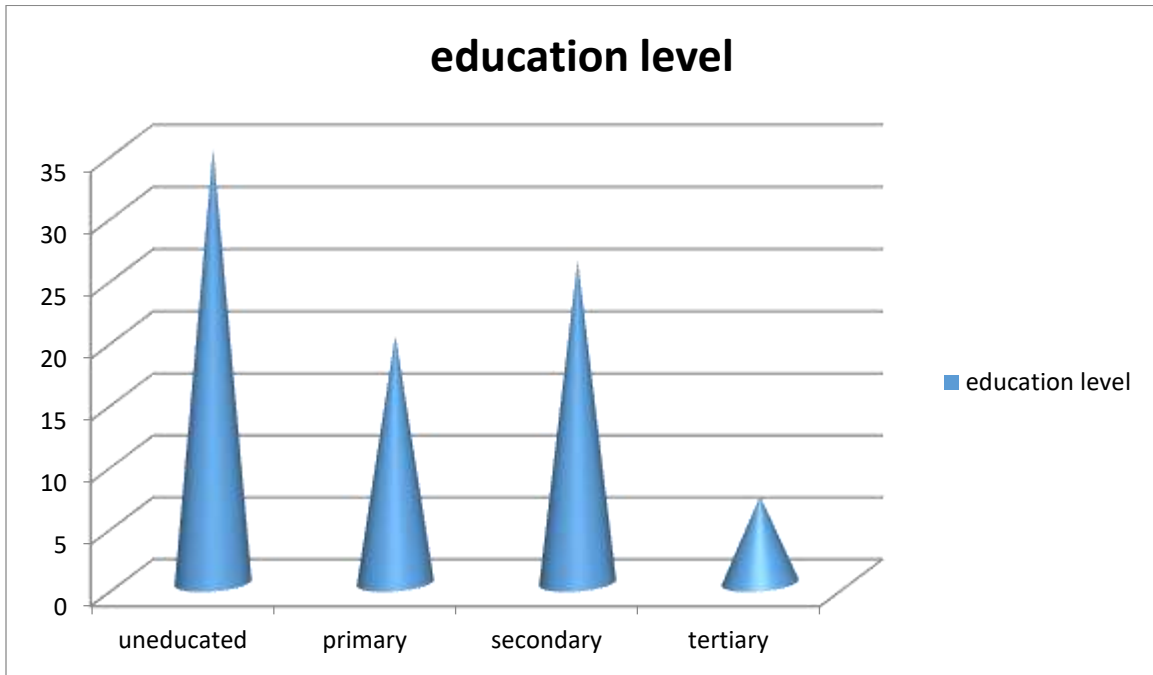


Figure 2: Prevalence of DM Type II According to Level Of Education.

According to the figure above, DM Type II is more prevalent among the uneducated(35/88) and least prevalent among people who attended tertiary

education (7/88). Those who had diabetes mellitus and stopped at the secondary level were 20/88 and those who finished only the primary level were 26/88.

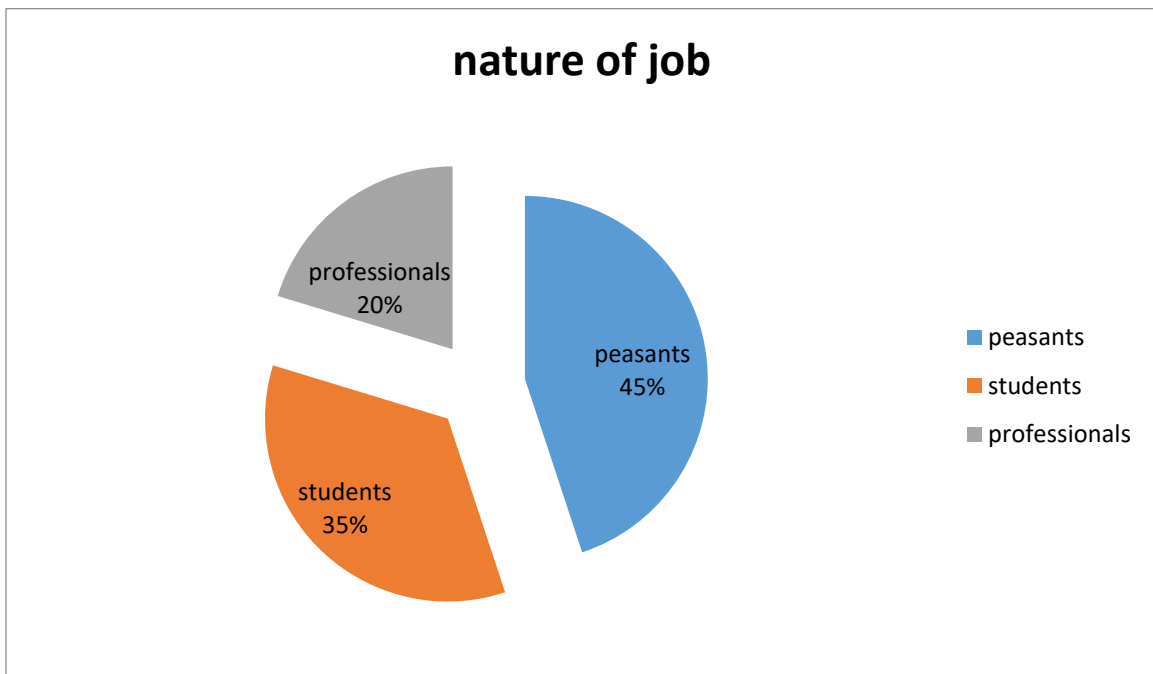


Figure 3: Prevalence of Type II Diabetes Mellitus According to the Nature of Job.

According to the figure above, DM Type II is more prevalent among the peasants, who contribute 45% of the cases. The professionals (like teachers, nurses,

doctors, bankers and others) contribute 35% of the cases while 20% of the cases are students.

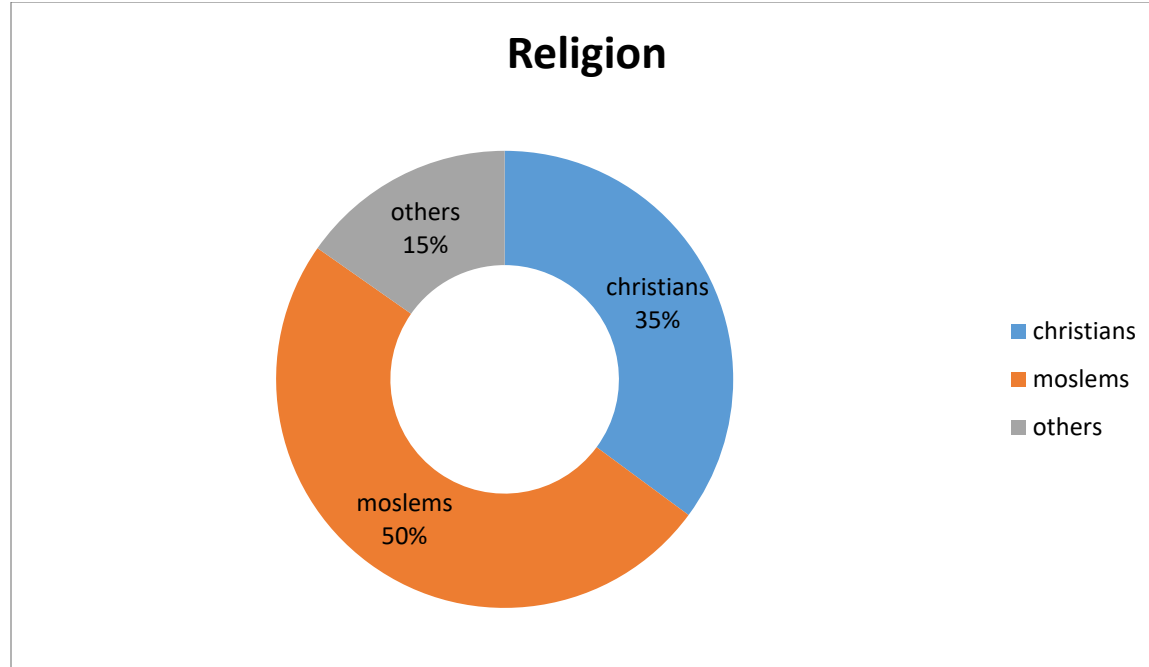


Figure 4: Prevalence of DM Type II According to Religion

According to the figure above, DM Type II is more prevalent among moslems (50%) while Christians contribute 35% of the cases. Other religions (pagans,

atheists and traditionalists contribute 15% of the cases.

Table 2: Number of DM Type II Patients with Complications

Complication	Percentage of Individuals (%)
Heart Disease	9
Stroke	10
Hypertension	24
Ocular complications	14
Diabetic foot	10
Diabetic neuropathy	12
Diabetic nephropathy	16
Others	5
Total	100

According to the table above, most of the DM Type II individuals who get complications develop hypertension as a complication (24%). This was followed by diabetic nephropathy at 16%, ocular complications followed with 14% and then stroke and

diabetic foot at 10% each. Heart disease contributed 9%. Other complications like gestational diabetes, glucagonomas and pheochromocytomas contributed 5%.

DISCUSSION

Prevalence of type II diabetes mellitus

A total number of 1100 patients were found to have been admitted to the medical ward of HRRH. Out of this, 88 patients were found to have had diabetes mellitus type II from October 2020 to April 2021. The prevalence of type II Diabetes mellitus was therefore 8.0%. The majority of the diabetes mellitus type II cases had diabetic-related complications (54.6%). Only 45% of the diabetes type II cases did not have

any complications. This finding was close to what was reported by researchers from the international diabetic federation who found out that the global prevalence of diabetes mellitus type II among adults over 18 years of age rose from 4.7% in 1980 to 8.5% in 2018 [16]. The prevalence of complicated Diabetes mellitus was 54.6% which is a high figure to call for sensitization since most patients seek help late when complications have developed.

Proportion of DM Type II by age

According to Table 1, the prevalence of type II Diabetes mellitus is higher among patients who are 60 years and above, (28.4) and low among patients below 20 and between 21 and 25 years, (2.2%). From this data, it can be noted that Type II Diabetes mellitus prevalence increases with an increase in age. This is attributed to the fact that as one age, the glucose uptake by the cells reduces, hence an increase in glucose levels in the blood. Also, as one gets older, one is subjected to more risk factors for DM Type II such as stress hence an increased prevalence of DM Type II among the elderly. This study agreed with the study about the world prevalence of diabetes among adults aged 20-79 years which was found to be 6.4%, affecting 285 million adults in 2010 and was predicted to increase to 7.7% and 439 million adults by 2030 [17].

Distribution of DM Type II by marital status

According to the pie chart in Figure 1, the prevalence of DM Type II is highest among the married with 70%. Those who had diabetes and were single contributed 20% of the cases while others (Divorced, widowed) contributed 10% of the cases. These figures indicate that couples are not sharing knowledge about their lifestyle and therefore, as a result, they both get affected by lifestyle diseases such as DM Type II. Also, married adults have a lot of responsibilities that make them anxious and stressed and this puts them at more risk of developing DM Type II. Single-status adults have a lot of time for themselves and hence can exercise, eat healthy meals and socialize, which makes them less at risk of developing DM Type II. Also, since DM Type II is associated with age, the singles are usually young and hence less at risk. Divorced, widows and widowers contributed a lower percentage simply because they are few in society and there is no correlation between their status and DM Type II. This study confirmed the prediction of Sommanavar and Genesan [17] who stated that between 2010 and 2030, there was an expected increase in the prevalence of DM Type II among adults who at most times are married.

Distribution of DM Type II according to occupation/ nature of the job

According to the information obtained as portrayed in Figure 3, DM Type II is more prevalent among the peasants who contribute 45% of the cases. The professionals (like teachers, nurses, doctors, bankers, and others) contribute 35% of the cases while 20% of the cases are students. Professionals spend most of their time doing office work that requires sitting in one place for so long which affects glucose uptake by the muscles and other issues hence DM Type II was noted among the peasants simply because the majority of them are not educated and lack knowledge concerning nutrition and other lifestyle changes that could prevent DM Type II. Students do a lot of

exercises and a lot of work that involves movement from one place to another hence a low prevalence and the majority of them are young. Most of the professionals stay in town and peasants stay in rural areas. This differs from the study by Sreekumaran and Nair which found that the prevalence of diabetes mellitus was 2.6% among urban and 1.9% among rural residents [18].

Distribution of DM Type II according to the level of education

The study revealed that DM Type II is more prevalent among the uneducated (35/88) and least prevalent among people who attended tertiary education (7/88). Those who had diabetes mellitus and had stopped at the secondary level were 20/88 and those who finished only the primary level were 26/88. These figures indicate that as much as the basics of good nutrition and the general basics on how to remain physically fit are taught in schools, the campaign should continue even into communities. The higher one goes to school, the better he becomes aware of the functioning of his body and hence the ability to prevent non-communicable diseases like DM Type II. Most uneducated people stay in the villages and few of them in town. This agreed with Sreekumaran and Nair who said that the prevalence of diabetes mellitus was 2.6% among urban and 1.9% among rural residents [18].

Distribution of Type II according to religion

According to Figure 4, the study found that DM type II is more prevalent among Moslems (50%) while Christians contribute 35% of the cases. Other religions (pagans, atheists and traditionalists) contribute 15% of the cases. Hoima district is predominantly occupied by Moslems and this in turn attracts a high number of Moslems admissions at HRRH. But also, the high prevalence of DM Type II in the Moslem community can be attributed to the fact that most of them are polygamous which accords them more responsibilities and hence more stress and anxiety, the leading risk factors to DM Type II. It was also noted that Moslems are business and as one gets richer, he/she becomes predisposed to a sedentary lifestyle. The prevalence among Christians was also considerably high which calls for attention. Churches are reluctant to teach about healthy living and it is high time they come up to encourage believers to carry out exercise, and diet modification, to promote physical wellness.

Number of DM Type II patients with complications

According to Table 2, most of the DM Type II individuals who get complications develop hypertension as a complication (24%). This was followed by diabetic nephropathy with 16%, ocular complications followed with 14% and then, stroke and diabetic foot with 10% each. Heart disease contributed 9%. Other complications like gestational diabetes,

glucagonomas, and pheochromocytomas contributed 5%. There is a direct relationship between hypertension and diabetes mellitus. Usually, Hypertension is due to renal and liver inefficiency that occurs as a result of persistent diabetes mellitus [19-25]. For ocular, nephropathy, stroke and diabetic foot, the number of occurrences was almost the same. Therefore, the underlying factor, which is possibly the insufficiency in blood to the respective organs as a result of DM Type II, affects each of the organs with

the same intensity [26-30]. Other rare complications such as glucagonomas and pheochromocytomas can only develop in an individual if the DM is not managed well few were found at the research hospital because most patients here are in their early stages of the disease [30-34]. Cardiovascular disease is the foremost cause of mortality worldwide. Cardiovascular disease can be heart disease, hypertension or stroke [26-34].

CONCLUSION

The prevalence of DM type II in the medical ward in HRRH was 8.0% in the range of global predictions of 8.5%. The incidence of DM Type II was more common among patients aged 60 years and above. Therefore, age is a risk factor for type II Diabetes Mellitus. Most of the cases seen on the ward were married (70%). The majority of the patients were peasants which was highly attributed to illiteracy levels (45%). This was directly related to the prevalence among uneducated people (35/88) since uneducated people end up becoming peasants. On the other hand, professionals accounted for 35% of the patients. A sedentary life was found to have risks to DM and its associated complications. DM Type II was found more prevalent among Moslems (50%) while Christians contributed 35% of the cases. Other religions (pagans, atheists and traditionalists) contributed 5% of the cases. Type II individuals who get complications develop hypertension as a complication 24%. It was also found that people do not seek medical attention when it is still early since only 30 patients who had diabetes were admitted before developing complications.

Recommendations

The government should implement the policies introduced by the WHO for DM prevention and

control with an emphasis on lifestyle change so that people can remain physiologically and physically fit. There is a need to come up with a way of incorporating information about lifestyle diseases and disorders into the education curriculum even at lower levels of learning. The Ministry of Health should work hand in hand with the Ministry of Education. The Ministry of Health needs a national strategy on information, education and behaviour change communication with appropriate messages and strategies on Diabetes Mellitus. The strategy would involve integrating diabetes clinics so that people can easily access such services before complications arise. The government should endeavour to employ enough health workers to health educate the people in the community on the importance of preventive measures for diabetes mellitus and also to health educate them on the symptoms of DM, the management, complications and the preventive measures of DM Type II to reduce its burden and complications in the community. There is a need for health educators and counsellors to study the problems of their clients and use such knowledge to impact appropriate health education for the people that the district leadership is serving.

REFERENCES

1. Agbafor, K. N., Onuoha, S. C., Ominyi, M. C., Orinya, O. F., Ezeani, N., & Alum, E. U. Antidiabetic, Hypolipidemic and Antiathrogenic Properties of Leaf Extracts of *Ageratum conyzoides* in Streptozotocin-Induced diabetic rats. *International Journal of Current Microbiology and Applied Sciences*. 2015; 4 (11): 816-824. <https://www.ijcmas.com/vol-4-11/Agbafor,%20K.%20N,%20et%20al.pdf>
2. Aja, P. M., Ani, O. G., Offor, C. E., Orji, U. O., & Alum, E. U. Evaluation of Anti-Diabetic Effect and Liver Enzymes Activity of Ethanol Extract of *Pterocarpus santalinoides* in Alloxan Induced Diabetic Albino Rats. *Global Journal of Biotechnology & Biochemistry*. 2015; 10 (2): 77-83. DOI: 10.5829/idosi.gjbb.2015.10.02.93128.
3. Aja, P. M., Igwenyi, I. O., Ugwu, O. P. C., Orji, O. U., & Alum, E. U. Evaluation of Anti-diabetic Effect and Liver Function Indices of Ethanol Extracts of *Moringa oleifera* and *Cajanus cajan* Leaves in Alloxan Induced Diabetic Albino Rats. *Global Veterinaria*, 2015; 14(3): 439-447. DOI: 10.5829/idosi.gv.2015.14.03.93129.
4. Uti, D. E., Igile, G. O., Omang, W. A., Umoru, G. U., Udeozor, P. A., Obeten, U. N., Ogbonna, O. N., Ibiam, U. A., Alum, E. U., Ohunene, O. R., Chukwufumnanya, M. J., Oplekwu, R. I., & Obio, W. A. Anti-Diabetic Potentials of Vernemoside E Saponin; A Biochemical Study. *Natural Volatiles and Essential Oils*, 2021; 8(4): 14234-14254.
5. Offor, C. E., Ugwu, O. P. C., & Alum, E. U. The Anti-Diabetic Effect of Ethanol Leaf-Extract of *Allium sativum* on Albino Rats. *International Journal of Pharmacy and Medical Sciences*, 2014; 4 (1): 01-03. DOI: 10.5829/idosi.ijpms.2014.4.1.1103.
6. Alum, E. U., Umoru, G. U., Uti, D. E., Aja, P. M., Ugwu, O. P., Orji, O. U., Nwali, B. U., Ezeani, N., Edwin, N., & Orinya, F. O. Hepato-

- protective effect of Ethanol Leaf Extract of *Datura stramonium* in Alloxan-induced Diabetic Albino Rats. *Journal of Chemical Society of Nigeria*. 2022; 47 (3): 1165 – 1176. <https://doi.org/10.46602/jcsn.v47i5.819>.
7. Ugwu, O. P. C., Alum, E. U., Okon, M. B., Aja, P. M., Obeagu, E. I., & Onyeneke, E. C. Ethanol root extract and fractions of *Sphenocentrum jollyanum* abrogate hyperglycemia and low body weight in Streptozotocin-induced diabetic Wistar albino Rats, *RPS Pharmacy and Pharmacology Reports*, 2023; 2,1-6. <https://doi.org/10.1093/rpsppr/rqad010>.
 8. American Diabetes Association. Diabetes Care. 2019 Jan;42 Supplement 1: S46–S60.
 9. Obeagu, E. I., Scott, G. Y., Amekpor, F., Ugwu, O. P. C., & Alum, E. U. COVID-19 infection and Diabetes: A Current Issue. *International Journal of Innovative and Applied Research*. 2023; 11(01): 25-30. DOI: 10.58538/IJIAR/2007. DOI URL: <http://dx.doi.org/10.58538/IJIAR/2007>.
 10. Obeagu, E. I., Ugwu, O. P. C., & Alum, E. U. Poor glycaemic control among diabetic patients; A review on associated factors. *Newport International Journal of Research in Medical Sciences (NIJRMS)*. 2023; 3(1):30-33. <https://nijournals.org/newport-international-journal-of-research-in-medical-sciences-nijrms-volume-3-issue-1-2023/>.
 11. Aja, P. M., Igwenyi, I. O., Ugwu, O. P. C., Orji, O. U., & Alum, E. U. Evaluation of Anti-diabetic Effect and Liver Function Indices of Ethanol Extracts of *Moringa oleifera* and *Cajanus cajan* Leaves in Alloxan Induced Diabetic Albino Rats. *Global Veterinaria*. 2015; 14(3): 439-447. DOI: 10.5829/idosi.gv.2015.14.03.93129.
 12. Ugwu, O. P. C., Obeagu, E. I., Alum, E. U., Okon, B. M., Aja, P. M., Amusa, M. O., Adepoju, A. O., & Samson, A. O. Effect of Ethanol Leaf extract of *Chromolaena odorata* on hepatic markers in streptozotocin-induced diabetic wistar albino rats. *IAA Journal of Applied Sciences*, 2023; 9(1):46-56. <https://doi.org/10.5281/zenodo.7811625>.
 13. Ugwu, O. P. C., Alum, E. U., Obeagu, E. I., Okon, M. B., Aja, P. M., Samson, A. O., Amusa, M. O., & Adepoju, A. O. Effect of Ethanol leaf extract of *Chromolaena odorata* on lipid profile of streptozotocin induced diabetic wistar albino rats. *IAA Journal of Biological Sciences*. 2023; 10(1):109-117. <https://www.iaajournals.org/wp-content/uploads/2023/03/IAAJB-101109-117-2023-Effect-of-Ethanol-leaf-extract-of-Chromolaena-odorata-on-lipid-profile-of-streptozotocin-induced-diabetic-wistar-albino-rats..docx.pdf>.
 14. Egwu, C. O., Offor, C. E., & Alum, E. U. Anti-diabetic effects of *Buchholzia coriacea* ethanol seed Extract and Vildagliptin on Alloxan-induced diabetic albino Rats. *International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)*. 2017; 6 (6): 1304-1314. <https://ijbpas.com/pdf/2017/June/149750612OMS%20IJBPAS%202017%204202.pdf>
 15. Ugwu, O. P. C., Kungu, E., Inyangat, R., Obeagu, E. I., Alum, E. U., Okon, M. B., Subbarayan, S., & Sankarapandiyam, V. Exploring Indigenous Medicinal Plants for Managing Diabetes Mellitus in Uganda: Ethnobotanical Insights, Pharmacotherapeutic Strategies, and National Development Alignment. *INOSR Experimental Sciences*. 2023; 12(2):214-224. <https://doi.org/10.59298/INOSRES/2023/2.17.1000>.
 16. International Diabetic Federation (IDF), 2018.
 17. Somannavar, S., Ganesan, A., Deepa, M., Datta, M., & Mohan, V. Random capillary blood glucose cut points for diabetes and prediabetes derived from community-based opportunistic screening in India. *Diabetes Care*. 2009; 32, 641-643. doi:10.2337/dc08-0403
 18. Ruegsegger, G. N., Creo, A. L., Cortes, T. M., Dasari, S., & Nair, K. S. Altered mitochondrial function in insulin-deficient and insulin-resistant states. *The Journal of clinical investigation*, 2018; 128 9, 3671-3681.
 19. Shiri, T., Birungi, J., Garrib, A. V., Kivuyo, S. L., Namakoola, I., Mghamba, J., et al. Patient and health provider costs of integrated HIV, diabetes and hypertension ambulatory health services in low-income settings—an empirical socio-economic cohort study in Tanzania and Uganda. *BMC medicine*. 2021; 19(1), 1-15.
 20. Nasiri, B., Eghbal, M. A., Taban Sadeghi, M., Parizad, R., Darzi, A. A., Nazeri, P., et al. The study of the prevalence of vitamin D3 deficiency and its relationship with blood glucose level after coronary artery bypass graft operation among patients with diabetes. *Cardiovascular Biomedicine*. 2021; 1(1), 13-19.
 21. Alum, E. U., Obeagu, E. I., Ugwu, O. P. C., Aja, P. M., & Okon, M. B. HIV Infection and Cardiovascular diseases: The obnoxious Duos. *Newport International Journal of Research in Medical Sciences (NIJRMS)*, 2023; 3(2): 95-99. <https://nijournals.org/wp-content/uploads/2023/07/NIJRMS-3-295-99-2023.pdf>.
 22. Aja, P. M., Chiadikaobi, C. D., Agu, P. C., Ale, B. A., Ani, O. G., Ekpono, E. U., et al. *Cucumeropsis mannii* seed oil ameliorates Bisphenol-A-induced adipokines dysfunctions and dyslipidemia. *Food*

- Sci Nutr. 2023; 11(6):2642-2653. doi: 10.1002/fsn3.3271.
23. Uti, D. E., Ibiam, U. A., Omang, W. A., Udeozor, P. A., Umoru, G. U., Nwadam, S. K., et al. *Buchholzia coriacea* Leaves Attenuated Dyslipidemia and Oxidative Stress in Hyperlipidemic Rats and Its Potential Targets in Silico. *Pharmaceutical Fronts*. 2023; 05(03): e141-e152. DOI: 10.1055/s-0043-1772607.
 24. Ugwu OPC and Amasiorah, V. I. The In Vivo Antioxidant Potentials of the Crude Ethanol Root Extract and Fractions of *Sphenocentrum jollyanum* on Oxidative Stress Indices in Streptozotocin-Induced Diabetic albino rats. *IDOSR Journal Of Biology, Chemistry and Pharmacy*, (2020) 5(1), 26-35.
 25. Enechi, O. C., Oluka, I. H., Ugwu, O. P., & Omeh, Y. S. Effect of ethanol leaf extract of *Alstonia boonei* on the lipid profile of alloxan induced diabetic rats. *World Journal Of Pharmacy and Pharmaceutical Sciences*, (2013) 2(3), 782-795.
 26. Udeh Sylvester M.C., O.F.C. Nwodo, O.E. Yakubu, E.J. Parker, S. Egba, E. Anaduaka, V.S. Tatab, O.P. Ugwu, E.M. Ale, Ude C.M. and T.J. Iornenge (2022). Effects of Methanol Extract of *Gongronema latifolium* Leaves on Glycaemic Responses to Carbohydrate Diets in Streptozotocin-induced Diabetic Rats. *Journal of Biological Sciences*, 22. 70-79. <https://ascidatabase.com/>.
 27. Ugwu Okechukwu, P. C., Nwodo Okwesili, F. C., Joshua Parker, E., Odo Christian, E., & Ossai Emmanuel, C. Effect of ethanol leaf extract of *Moringa oleifera* on lipid profile of mice. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, (2013). 4(1), 1324-1332.
 28. Enechi, O. C., Manyawo, L., & Ugwu, P. O. Effect of ethanol seed extract of *Buchholzia coriacea* (wonderful kola) on the lipid profile of albino rats. *African Journal of Biotechnology*, (2013) 12(32).
 29. Ugwu Okechukwu, P. C., Onwe, S. C., & Okon, M. B. The effect of Methanol Extract of *Rauwolfia vomitoria* on Lipid Profile of Chloroform intoxicated Wistar Albino Rats. *IAA Journal of Scientific Research*, (2022). 8(1),73-82.
 30. Aja, P. M., Ibekwe, V. I., Ekpono, E. U., Ugwu, P. C., & Okechukwu, P. C. Effect of ethanol extract of *Cajanus cajan* leaf on plasma lipid level in albino rats. *Inter J Cur Res Acad Rev*, (2015) 3(1), 161-167.
 31. Ugwu O.P.C., and Amasiorah, V. I. The effects of crude ethanol root extract and fractions of *sphenocentrum jollyanum* on the lipid profile of streptozotocin-induced diabetic wistar albino rats. *IDOSR Journal of Biology, Chemistry And Pharmacy*, (2020) 5(1), 36-46.
 32. Anaduaka, E. G., Egba, S. I., Ugwu, J. U., APEH, V. O., and Ugwu, O. P. C. Effects of dietary tyrosine on serum cholesterol fractions in rats. *Afr J Biochem Res*, (2014). 8(5), 95e100.
 33. Eze-Steven, P. E., Udeozo, I. P., Chidiebere, E. U., Emmanuel, O., Okechukwu, P. U., & Egba, J. J. Anti-Lipidemic Effects of *Desmodium velutinum* Water Leaf Extract on Albino Wistar Rats Fed with High Fat Diet. *American-Eurasian Journal of Scientific Research*, (2014) 9(2), 26-30.
 34. Ezekwe, C. I., Okorie, A., Ugwu. O.P.C, Nwodo OFC, and Eze SC, (2014). Blood Pressure Lowering Effect of Extract of *Gongronema latifolium*. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 5(2), 952-959.

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