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ORIGINAL RESEARCH

Knowledge Of Diabetes Mellitus And Its Explanatory Predictors Among Civil Servants In Kwara State, Nigeria

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Abstract

Background: Millions of individuals throughout the world, including government employees, suffer from the chronic metabolic illness known as diabetes mellitus (DM). Effective diabetes prevention, care and general well-being have been linked to appropriate knowledge of the disease.

Objectives: To assess the level of knowledge of DM and its explanatory predictors among civil servants in Ilorin, Kwara-State, Nigeria

Methods: A descriptive cross-sectional study was carried out among 300 civil servants in selected nine Ministry/Department/Agency (MDAs) using the multistage sampling technique. Data were collected using a pre-tested, semi-structured, interviewer-administered questionnaire. Chi-Square test and binary logistic regression model were used for inferential statistics at $p < 0.05$.

Results: More than ninety percent (99.7%) of civil servants are aware of DM, less than a quarter of the respondents knew blindness as a complication and healthcare workers were the major source of their information. About two-third (61.3%) had good knowledge of DM. Respondents' knowledge was significantly associated with grade level ($p = 0.027$), MDAs of affiliation ($p < 0.001$) and average monthly income ($p < 0.001$)

Conclusion: Efforts should be put in place in all MDAs to enhance good knowledge. This good knowledge might eventually affect their practice of preventing the disease and that will reduce this menace among civil servants.

Keywords: Civil servants, Diabetes Mellitus, Knowledge, Nigeria, Predictors

Introduction

One of the major non-communicable diseases (NCDs) that has gained the attention of the international medical community is diabetes, which resulted in a United Nations (UN) political statement on NCDs in September 2011 and a follow-up meeting on the UN political declaration on NCDs in May 2013.^[1] Diabetes is defined as an abnormality in carbohydrate metabolism, which leads to an abnormality in the metabolism of fat and protein. The condition is thought to be caused by an abnormality in the production and function of the hormone insulin, which is released by the pancreatic islets of Langerhans.^[2]

Diabetes mellitus is one of the most prevalent diseases worldwide with more than one out of ten adults (20 – 79) years now living with DM. Diabetes constitutes a huge morbidity and mortality burden globally. The estimated prevalence of DM globally in 2021 was 537 million with prevalence of 10.5%. It has been predicted that if significant action is not put in place, people living with DM will increase to 643 million by 2030 with prevalence of 11.3%. If this trend continues, the number will jump to 783 million with prevalence of 12.2% by 2045. Death due to Diabetes mellitus and its complications in year 2021 was 6.7 Million.^[3]

In Africa, in the year 2021 number of people living with Diabetes mellitus was 23.6 million. This translate to 1 in every 22 adults (20 -79) years are living with Diabetes mellitus. It has been projected that people living with Diabetes mellitus will increase to 33 million with prevalence of 4.8% in 2030 and 54.9 million with prevalence of 5.2% in year 2045. This predicted increase of 129% is the highest predicted increase in all the International Diabetes Federation (IDF). Increasing urbanization and increase in awareness of people in Africa region about their diabetes state might be the likely reason for the increase. IDF atlas

identified that almost 1 out of 2 people with DM are unaware of their diabetes status. Death due to Diabetes mellitus and its complications in year 2021 was 416,000.^[3]

According to IDF Atlas, People with DM in Nigeria in the year 2021 was 3,623,500, it was projected to 4,941,600 in the year 2030 and 7,988,300 in 2045 if active steps are not put in place to address the issue. Death attributable to DM in year 2021 was 48,375.4 and total diabetes-related health expenditure in 2021 was 1,810.6 USD million. It was projected to be 2,472.3 USD million in year 2030 and 3,869.1 USD million in year 2045.^[3] The prevalence of Diabetes in Nigeria in year 2021 was 3.6% and projected prevalence for 2030 is 3.7%.^[3] The ascribed reason for the increasing prevalence of diabetes in Nigeria is modernization and the adoption of western lifestyles, notably among senior executives and civil workers.^[4]

Diabetes is recognized as a major global health issue and a risk factor for many conditions, including kidney failure, vascular brain disorders, blindness, and amputation of limbs. After a lengthy period if not properly treated, diabetes can harm the heart, blood vessels, eyes, kidneys, and nerves.^[5] Diabetes has negative effects on work productivity and leads to high economic burden in terms of healthcare expenditure.^[6] Most persons with diabetes in developing countries are persons within the 35 to 64 age range and this age range includes a significant segment of the productive work force.^[4]

Knowledge is the weapon in the fight of many diseases and diabetes mellitus is not an exception. With the help of knowledge, people may determine their risk of developing diabetes, find the right care and treatment, and be inspired to manage their condition. Knowledge empowers people about their health concerns and teaches them about healthy behaviors, as is well recognized.^[4,7] Adequate knowledge various aspects of the disease's is the first step in

primary and secondary prevention, which are required at all societal levels. For better management and a higher quality of life, knowledge of diabetes, its risk factors, complications, and management is very important.^[8]

Public knowledge about diabetes helps combat not only the disease itself but also prevent complications with its medical and socioeconomic consequences. A study revealed relative level of knowledge and awareness of diabetes among several healthy populations, although these knowledge level may not be adequate to prevent diagnosis.^[9] A retrospective study among civil servant had previously established DM as one of the major non communicable diseases among civil servants.^[10]

It has been reported that civil servants are prone to adopting unhealthy lifestyles such as reduced physical activity, excessive intake of calories and sedentary lifestyles, which can directly contribute to the problem of obesity and diabetes among them.^[4,11] Also, civil servants were purposefully used for this study, because civil servants comprise people in different works of life, professions and disciplines with different cadres (juniors and seniors staff), different socio-economic class, different levels of education and literacy. Based on these characteristics, they are ideal representation of the general public.

Data from this study can be very useful for policy makers for designing of evidence-based interventions to improve civil servants knowledge of DM and strategies to reduce DM prevalence among them. Also, civil servants constitute a larger percentage of workforces in the formal setting in the State. It is assumed that findings from this study will be applicable to other workers in formal setting in the state and Nigeria at large.

Hence, our study assessed level of knowledge of DM and its explanatory predictors among civil servants in Ilorin, Kwara-State, Nigeria.

Methods

Study area

The study was conducted in Ilorin, which is the capital city of Kwara State. Kwara state has a projected population of 3,259,613 as at 2024. The inhabitants are mainly Yoruba, Nupe, Baruba and Fulani tribes. Its inhabitants mainly practice Christianity, Islam and Traditional religions. The occupations of the residents include civil service, trading, farming, artisans, organized private sector and weaving of traditional attires. Kwara State has 16 LGAs and the State Secretariat is in Ilorin South LGA. The Kwara State Civil Service is grouped into Ministry/ Department/Agency (MDAs) and a huge number of the MDAs are housed in the 2 phases of the State Secretariat Complex. The population of state civil servant in Kwara state is 970.

There are 490 primary health centres (PHCs), 45 secondary health facilities, and 1 tertiary health facility in Kwara State. The state has various recreational centres, mostly in the capital, such as Millennium Park, Diamond Park, and the state-owned Amusement Park.

Study Design: A cross-sectional design was used.

Study Population: The study populations were male and female civil servants in Kwara State secretariat, Ilorin

Inclusion Criteria: Civil servants on permanent appointment and who are resident staff of MDAs at the State Secretariat who gave their consent were recruited into the study

Exclusion criteria: Civil servants who were on contract employment because they are not permanent staff, those who were on posting outside the State Secretariat and those who work with agencies that are not resident within the secretariat premises were also excluded from the study.

Sample Size Determination

The minimum sample size for the study was calculated using Leslie Fischer's formula for estimating sample size in a population that is greater than 10,000. The standard normal deviate at 95% confidence limit was set at 1.96 while the margin of error was set at 5%. The proportion of participants with good knowledge of DM from previous study was 83%.^[12] The sample size gotten was 217, however the population of civil servant is less than 10,000 (970) and formula for population less than 100,000 applied to get a sample size of 177. A 10% non-response rate was envisaged among our study participants and corrected for. Thus, the minimum sample size estimated for this study was 197 but this was multiplied by 1.5 to correct for possible cluster effect. Hence, a sample size of 296 was estimated for better generalization but rounded up to 300 respondents.

Sampling Technique: Multistage Sampling method was used to recruit the study participants. This was carried out in three stages. ***First stage (Selection of MDAs):*** The list of all MDAs was obtained from the secretariat. The first stage involved selection of nine out of the eighteen MDAs in the State Secretariat using a simple random sampling technique. The chosen MDAs were Ministry of Tertiary Education; Ministry of Education and Human Capital Development; Ministry of Energy; Ministry of Works; Ministry of Water Resources; Ministry of Communication; Ministry of Enterprises; Office of Auditor General and State Primary Health Care Development Agency. ***Second stage (Determination of desired sample size per MDAs):*** This was achieved using stratified random sampling with proportional allocation of respondents from the different MDAs in the selected ministry; stratification was along the lines of selected nine MDAs. ***Third stage (Selection of Respondents):*** The respondents were chosen using a systematic random

sampling technique (with the sampling fraction calculated based on the number of staff present in the MDA and the number of respondents to be selected) with the aid of the staff register. The first respondent from each MDA was selected by simple random sampling, and subsequent respondents were selected using a sampling fraction (systematic random sampling).

Study Instruments: A semi-structured, interviewer-administered questionnaire developed by reviewing similar studies^[4,13] on the topic was used to collect information from respondents. Content validation of the questionnaire by public health physician was done. The questionnaire was used to collect information on Socio-demographic characteristics and Knowledge on DM.

Pretesting of instrument: The study instrument was pre-tested on thirty 30 respondents from Kwara State ministry of Health, which was not part of selected ministry is located outside and away from the State Secretariat where the selected Ministries were situated. This was to facilitate data collection process by ensuring that the questions are clear and understandable to the respondents. Vague words were replaced with simpler words, and sentences that are difficult to understand were rephrased.

Scoring of Variables: Various questions on knowledge of respondents about DM were graded. For the overall respondents' knowledge on DM, a correct answer was scored 1 and a wrong answer was scored 0. The composite scores for individual respondents were calculated and the mean of all the scores were thereafter calculated. The respondents who scored below the mean of 1.39 ± 0.49 were considered as having poor knowledge, while those who scored up to or above the mean of 1.39 ± 0.49 were graded as having good knowledge.

The composite labels for individual respondents' questions were analyzed descriptively (in

frequency and the percentage of the distribution) in relation to their ministries.

Data Management and Analysis

The questionnaires were sorted out and edited daily. Data were entered and analyzed using IBM® SPSS version 25.0 (International Business Machines Corporation, Armonk, NY, United States). Categorical data were summarized using percentages and presented in Tables and Charts. Continuous data were summarized using mean and standard deviation. At the bivariate level, Chi-Square test was used to test association between categorical variables. Factors that were significant at bivariate analysis at p values ≤ 0.05 levels were modeled in multivariate logistic regression analysis to reveal the predictors of knowledge of DM. The level of statistical significance was set at p values ≤ 0.05 for all inferential analysis.

Results

The mean age of respondents was 39.2 ± 7.9 years. Respondents that are between 21 to 40 years of age were close to 61.0%, the male respondents are more than the female respondents, the majority (84.7%) of the respondents are married, respondents that practice Islam were 64.0%, 76.0% of the respondents highest level of education was tertiary.

More than three-quarters of the respondents are senior staff, 56.3% of the respondent's average monthly income was more than fifty thousand naira, respondents within the Ministry of Energy, Works and Water Resources are 39.3% and the mean years in service of the respondents was 9.7 ± 6.2 years, while respondents between 6 to 15 years in service were 59.3%. Table I shows the socio-demographic characteristics of the respondents.

From Table II, 299 of the respondents were aware of Diabetics Mellitus, majority knew the

causes and predisposing factors of Diabetes Mellitus to be; Hereditary (Family history of diabetes), Excessive consumption of alcohol and Excessive consumption of sugary substances or drinks. About 81.0% of the respondents knew slow healing of wounds as one of the symptoms of Diabetes Mellitus, 67.3% of the respondents knew regular physical exercise as one way to prevent or manage Diabetes Mellitus and the majority of the respondents likely complications of poorly managed Diabetes Mellitus are; delayed wound healing, hypertension and kidney failure.

Therefore, 61.3% of the respondents had good knowledge of Diabetics Mellitus and 38.7% had poor knowledge of Diabetics Mellitus.

Table I: Socio-demographic characteristics of the respondents

Variables	Frequency (n=300)	Percentage (%)
Age group (in years)		
≤ 20	2	0.7
21 – 40	183	61.0
41 – 60	115	38.3
<i>Mean ± SD = 39.2 ± 7.9</i>		
Gender		
Male	172	57.3
Female	128	42.7
Marital Status		
Married	254	84.7
Single	30	10.0
Separated/Divorced	10	3.3
Widowed	6	2.0
Religion		
Christianity	107	35.7
Islam	192	64.0
Traditional	1	0.3
Highest Level of Education		
Primary	10	3.3
Secondary	22	7.3
Tertiary	237	79.0
Post graduate	31	10.4
Ethnic Group		
Yoruba	228	76.0
Nupe	42	14.0
Baruba	24	8.0
Fulani	5	1.7
Bokobaru	1	0.3
Administrative Grade Level		
1 – 7	40	13.3
8 – 13	228	76.0
14 – 17	32	10.7
Average monthly income		
≤ ₦50,000	131	43.7
> ₦50,000	169	56.3
MDAs of Affiliation		
Ministry of Tertiary Education; ‘Ministry of Education and Human Capital Development’	62	20.7
Ministry of Energy; ‘Ministry of Works’ and ‘Ministry of Water Resources’	118	39.3
Ministry of Communications; ‘Ministry of Enterprise’ and ‘Office of Auditor General’	84	28.0
‘State Primary Healthcare Development Agency’	36	12.0
Number of years in service		
≤ 5	79	26.3
6 – 15	178	59.3
16 – 25	35	11.7
26 – 35	8	2.7
<i>Mean ± SD = 9.7 ± 6.2</i>		

* - Statistically significant

Table II: The knowledge of diabetes Mellitus among the respondents

Variables	Frequency (n=300)	Percentage (%)
Awareness of the disease known as Diabetes Mellitus		
Yes	299	99.7
No	1	0.3
Cause(s) / Predisposing factors to Diabetes Mellitus **		
Hereditary (Family history of diabetes)	249	83.0
Excessive consumption of alcohol	192	64.0
Excessive consumption of sugary substances or drinks	219	73.0
Excessive sleeping	16	5.3
Excessive consumption of water	39	13.0
Lack of physical exercise or activity	62	20.7
Smoking of cigarettes and other tobacco products	30	10.0
Obesity	88	29.3
Witchcraft	3	1.0
I don't know	1	0.3
Symptom(s) of Diabetes Mellitus **		
Frequent thirst	169	56.3
Slow healing of wounds	242	80.7
Frequent hunger	64	21.3
Weight loss	167	55.7
Weight gain	15	5.0
Frequent and excessive urination	190	63.3
Others ²	2	0.7
I don't know	3	1.0
Way(s) to prevent / manage Diabetes Mellitus **		
Regular physical exercise	202	67.3
Intake of fruits	145	48.3
Usage of herbal concoction	34	11.3
Usage of anti-diabetic drugs	198	66.0
Reduction of starchy food intake	187	62.3
Reduction in protein diet	23	7.7
Others ³	2	0.7
I don't know	3	1.0
Likely complication(s) of poorly managed Diabetes Mellitus **		
Hypertension	208	69.3
Headache	59	19.7
Blindness	74	24.7
Delayed wound healing	244	81.3
Kidney failure	155	51.7
Skin rashes	16	5.3
Arthritis	21	7.0
Others ⁴	8	2.7
I don't know	2	0.7
Overall Score of Knowledge		
Good	184	61.3
Poor	116	38.7

Others²- Blur vision.Others³- Herbal medication. Others⁴- Death, Hearing loss.

** Multiple responses allowed

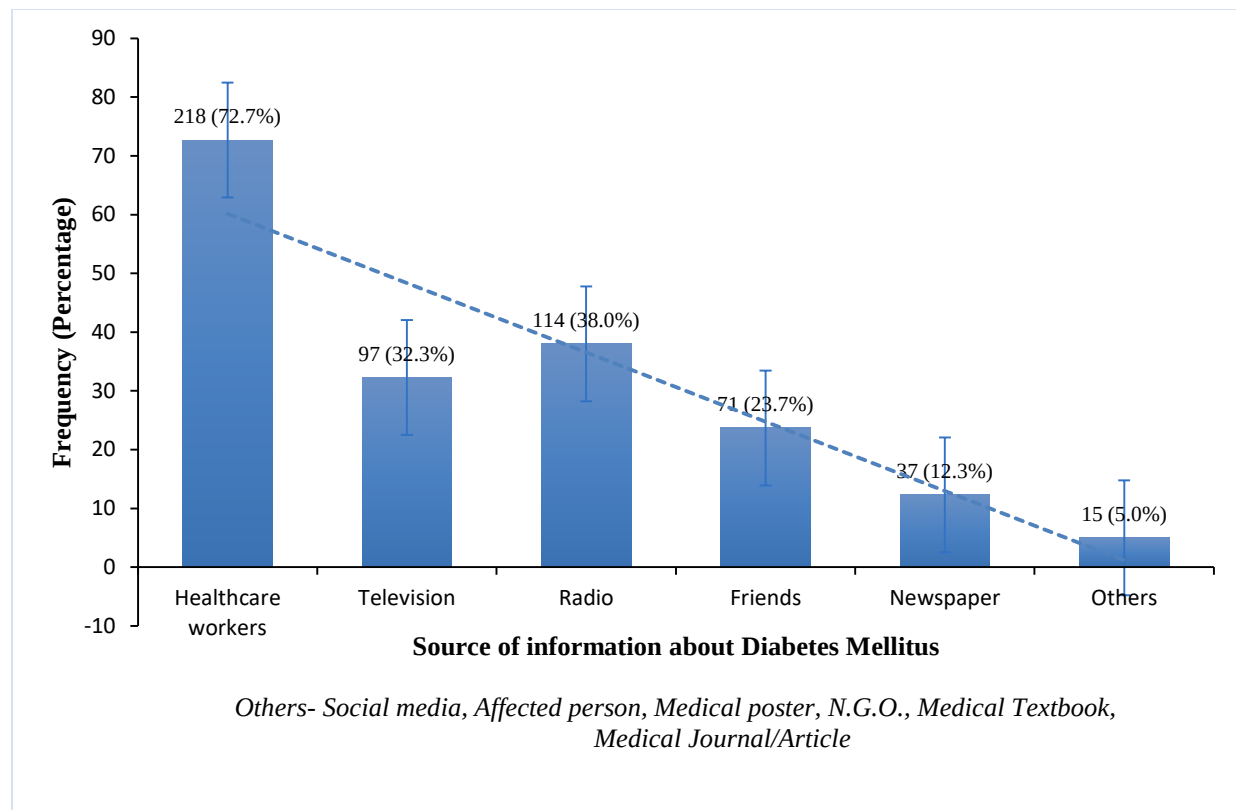


Figure 1: The respondents' source of information on Diabetes Mellitus

Figure 1 shows the source of information about Diabetics Mellitus by the respondents. Out of the 299 respondents, majority, 72.7%, of the respondents knew about Diabetes Mellitus through health workers and 38.0% of the respondents also knew Diabetics Mellitus through radio programs. From the error bars, health workers, as a source of information, showed a significant difference from the others.

Table III shows respondents socio-demographic factors associated with the knowledge of Diabetics Mellitus. The respondent's Administrative Grade Level, Average Monthly Income and MDAs of Affiliation were associated with the respondents' knowledge of Diabetes Mellitus; a statistically significant effect at $p = 0.027$, $p < 0.001$ and $p < 0.001$ respectively. Table IV shows the predictors of the knowledge of Diabetes Mellitus among the

respondents. The respondents with an average monthly income of more than fifty thousand naira were two times more likely to have good knowledge compared to the respondents with less than equal to fifty thousand naira average monthly income. The respondents from 'Ministry of Communications, Enterprise and Office of Auditor General' were 3 times more likely to good knowledge of Diabetics Mellitus compared to the respondents from the 'Ministry of Tertiary Education, Education and Human Capital Development. Likewise respondents in 'State Primary Healthcare and Development Agency' were 10 times more likely to have good knowledge of Diabetics Mellitus compared to the respondents from the 'Ministry of Tertiary Education, Education and Human Capital Development.

Table III: Socio-demographic factors associated with the respondents' knowledge of Diabetes Mellitus

Socio-Demographic Variables	Categorized Knowledge Score		Total n=300 (%)	Statistics
	Good n= 184 (%)	Poor n= 116 (%)		
Age group (in years)				
≤ 20	1 (0.5)	1 (0.9)	2 (0.7)	$\chi^2 = 1.847$ df = 2 p = 0.397
21 – 40	107 (58.2)	76 (65.5)	183 (61.0)	
41 – 60	76 (41.3)	39 (33.6)	115 (38.3)	
Gender				
Male	105 (57.1)	67 (57.8)	172 (57.3)	$\chi^2 = 0.014$ p = 0.906
Female	79 (42.9)	49 (42.2)	128 (42.7)	
Marital Status				
Married	153 (83.2)	101 (87.1)	254 (84.7)	$\chi^2 = 6.345$ df = 3 p = 0.096
Single	18 (9.8)	12 (10.3)	30 (10.0)	
Separated/Divorced	7 (3.8)	3 (2.6)	10 (3.3)	
Widowed	6 (3.3)	0 (0.0)	6 (2.0)	
Religion				
Christianity	70 (38.0)	37 (31.9)	107 (35.7)	$\chi^2 = 2.236$ df = 2 p = 0.327
Islam	113 (61.4)	79 (68.1)	192 (64.0)	
Traditional	1 (0.5)	0 (0.0)	1 (0.3)	
Highest Level of Education				
Primary	4 (2.2)	6 (5.2)	10 (3.3)	$\chi^2 = 2.931$ df = 3 p = 0.402
Secondary	12 (6.5)	10 (8.6)	22 (7.3)	
Tertiary	147 (79.9)	90 (77.6)	237 (79.0)	
Post graduate	21 (11.4)	10 (8.6)	31 (10.3)	
Ethnic Group				
Yoruba	145 (78.8)	83 (71.6)	228 (76.0)	$\chi^2 = 3.973$ df = 4 p = 0.410
Nupe	24 (13.0)	18 (15.5)	42 (14.0)	
Baruba	12 (6.5)	12 (10.3)	24 (8.0)	
Fulani	2 (1.1)	3 (2.6)	5 (1.7)	
Others ¹	1 (0.5)	0 (0.0)	1 (0.3)	
Administrative Grade Level				
1 – 7	17 (9.2)	23 (19.8)	40 (13.3)	$\chi^2 = 7.217$ df = 2 p = 0.027*
8 – 13	145 (78.8)	83 (71.6)	228 (76.0)	
14 – 17	22 (12.0)	10 (8.6)	32 (10.7)	
Average monthly income				
≤ ₦50,000	64 (34.8)	67 (57.8)	131 (43.7)	$\chi^2 = 15.268$ p < 0.001*
> ₦50,000	120 (65.2)	49 (42.2)	169 (56.3)	
MDAs of Affiliation				
Ministry of Tertiary Education, 'Ministry of Education and Human Capital Development'	27 (14.7)	35 (30.2)	62 (20.7)	$\chi^2 = 24.043$ df = 3 p < 0.001*
Ministry of Energy, Ministry of Works and Ministry of Water Resources	65 (35.3)	53 (45.7)	118 (39.3)	
Ministry of Communications, Ministry of Enterprise and Office of Auditor General	61 (33.2)	23 (19.8)	84 (28.0)	
State Primary Healthcare Development Agency	31 (16.8)	5 (4.3)	36 (12.0)	
Number of years in service				
≤ 5	42 (22.8)	37 (31.9)	79 (26.3)	$\chi^2 = 3.683$ df = 3 p = 0.298
6 – 15	115 (62.5)	63 (54.3)	178 (59.3)	
16 – 25	21 (11.4)	14 (12.1)	35 (11.7)	
26 – 35	6 (3.3)	2 (1.7)	8 (2.7)	

* – Statistically significant

+ – Likelihood Ratio

Table IV: The explanatory predictors of the knowledge of Diabetes Mellitus among respondents

Predictor factors	Adjusted Odd Ratio	95% Confidence interval	p-value
Professional Grade Level			
1 – 7 (Junior staff) (<i>Reference value</i>)			
8 – 13 (Senior staff)	1.33	0.608 – 2.898	0.477
14 – 17 (Officer's cadre)	1.62	0.522 – 5.032	0.404
Average monthly income			
≤ ₦50,000 (<i>Reference value</i>)			
> ₦50,000	2.44	1.394 – 4.259	0.002*
MDAs of Affiliation			
Ministry of Tertiary Education, Education and Human Capital Development (<i>Reference value</i>)			
Ministry of Energy, Works and Water Resources	1.81	0.947 – 3.454	0.073
Ministry of Communications, Enterprise and Office of Auditor General	3.42	1.655 – 7.074	0.001*
State Primary Healthcare and Development Agency	9.69	3.214 – 29.213	< 0.001*

* – Statistically significant

Discussion

In this studied population, about two-third of respondents had good knowledge of Diabetes Mellitus with several gaps in respondents' knowledge as regards diabetes mellitus. Far less than half of the respondents believed that smoking, lack of physical exercise and obesity are causes of diabetes mellitus. This is consistent with findings by Ndibuagu et.al^[14] where less than half also believed these factors are responsible for DM. Although, some respondents in our study believed that witchcraft can be a cause of DM. This is a serious gap in knowledge that needs to be addressed among workers in formal settings. Many of the respondents knew symptoms of diabetes; however there are wider knowledge gaps as regards ways to manage DM and complications of DM among the study participants. This is similar to findings by Ola et.al^[4] in a study also

conducted among civil servants in Oyo State, Nigeria.

The categorized knowledge revealed that about two-third of the respondents had good knowledge about DM, this is in tandem with findings of other similar studies^[4,15,16] but contrary to findings among diabetes patients in Nepal who reported 27.2% with good knowledge about DM.^[17] This might be because respondents in this study are quite enlightened or educated in comparison to the study conducted in Nepal where majority were about one – third of their respondents were illiterates. A study in Southeast Nigeria Enugu^[14] also reported a poor knowledge of DM, although the study was in a rural community. This explains the likely role of education in comparison to this present study that was conducted among civil servants as it has been demonstrated in many studies that level of education is directly related to good knowledge of DM.^[14,18]

This study also revealed that the major source of information about DM is healthcare worker; this is not consistent with the findings from a study in South-South Nigeria where friends and radio were the major sources of information about DM.^[19] Another contrary finding to our study was seen in a South-west study among civil servants in which radio and television were major source of information.^[4] Findings from this present study show that health promotion and education intervention involving various strategies can help in promoting behaviors relating to the early detection and management of diabetes mellitus. Public enlightenment for instance is a useful health education strategy which has the potential for reaching many people, it can be used to create awareness relating to diabetes and influence knowledge as well as foster political will for action. Access to correct information among the general population will allay their fears and help in managing myths about DM.

Finding from this study revealed that respondents with higher monthly income were more likely to have good knowledge of DM. This finding is not a surprise because similar studies had reported same finding.^[13,20,21] The likely reason for this finding might be because staff with higher income are senior staff with better insight into health issues. Other significant factor of MDAs of affiliation was not reported in other studies conducted among civil servants. It was not of surprise that respondents in the State Primary Healthcare and Development Agency had the highest level of knowledge of DM because they are in health-related ministry and often have contact with healthcare workers who were the major source of information in this study. Likewise, respondents in Ministry of Communications, Enterprise and Office of Auditor General also had good knowledge of DM. This also goes in line with mass media being one of the major sources of information in this study.

Conclusion

The findings showed that majority of the respondents had good knowledge of DM. However; there are still significant information gaps among respondents regarding the complications of untreated diabetes. To raise public knowledge of diabetes mellitus, health promotion and education are crucial. Therefore, health education programs that can improve public understanding of diabetes should be planned by policymakers, healthcare managers and healthcare staff.

It is therefore recommended that efforts should be put in place in ministries where knowledge of DM is inadequate to ensure that all staff have adequate knowledge of DM. This adequate knowledge might eventually affect their practice which will reduce this menace among civil servants.

Ethical Consideration: Ethical approval (REC/MOH/2023/04/112) was obtained from the Ethical and Research Committee of the Kwara State Ministry of Health, Ilorin prior to commencement of the study. Permission to carry out the project was also obtained from involved MDAs. Informed consent was obtained from each participant.

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Authors Contributions: BCY and AIM conceived and designed the study. BCY and AIM analysed and interpreted the data. BCY, AIM, BAG and DKA drafted the manuscript. BCY, AIM, FIO, AAO, BAG and DKA revised the manuscript to provide sound intellectual content. All the authors approved the final draft of the manuscript.

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