

# Knowledge and Attitude of Diabetes Mellitus Care and Management in Three Hospitals in Bayelsa State, Nigeria

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## Abstract

Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels which leads, over time, to serious damage to the end organs. This research aimed to assess the knowledge, attitude, practice, and confounding factors regarding diabetes mellitus among Bayelsans. A convenient sampling method was used to select four hundred (400) participants who assessed the three randomly selected hospitals in Yenagoa and Ogbia LGAs of Bayelsa state. A questionnaire on knowledge attitude and practice (KAP) and confounding factors of diabetes mellitus was completed and data was analyzed using SPSS Version 23 software. In this study, the majority respondents were male 221(55.3%); the majority (35.8%) were in the age group of 50 years and above; 20.5% were in the age group of 21-30 years, 17.8% were in the age group 41-50 years; 22.5% were single, 51.2% were married, and 25.8% were divorced or widowed; approximately 60% had formal education, while 12.5% and 15.5% had primary and secondary education respectively; 55.5% were Christians, 32% were Muslims; An average number of the Participants demonstrated a high level of knowledge regarding various aspects of diabetes specifically 97.5% understood diabetes as elevated blood glucose levels, 60.5% pictured diabetes mellitus as a chronic (long-lasting) health condition that affects how the body turns food into energy, 73.8%, and 77% affirmed that hereditary/ family history and age respectively play a vital role in type 1 and type 2 DM. The overall Attitude towards diabetic care of the respondents was sub-optimal as only a few of them were found to demonstrate a positive attitude towards diabetic care. 58.1% envision DM as a global concern, 77.1% checked their blood glucose regularly, 27.7% agreed that a healthy lifestyle is effective in controlling diabetes 51.5% and 26.3% viewed diabetes and its complications as evil spirits and can be cured using herbs only respectively. The overall mean (standard deviation) of the knowledge, attitude, practice, and confounding factors was  $2.20 \pm 0.9$ ,  $3.75 \pm 0.97$ ,  $2.26 \pm 0.99$ , and  $2.6 \pm 0.9$  respectively. The study also demonstrated significant relationships between young and old concerning knowledge, attitude, practices, and confounding factors among diabetics. It is suggested that effective health education interventions are needed to improve diabetes knowledge, attitudes, and practices, particularly regarding lifestyle modifications, weight loss, proper adherence to prescribed medications, and dietary management.

**Keywords:** Diabetes, Bayelsa, Yenagoa, Ogbia Knowledge and attitude.

## Introduction

Diabetes is a chronic, metabolic disease characterized by elevated blood glucose levels (or blood sugar), which leads over time to serious damage to the end organs such as the heart, blood vessels, eyes, kidneys, and nerves (WHO, 2022). To reduce morbidity and mortality of the people affected with diabetes, there is a need for proper awareness regarding diabetes mellitus and its complications. Diabetes mellitus (DM) is also seen as a chronic metabolic disorder characterized by high blood sugar resulting from defects in insulin production, insulin action, or both. Type 1 Diabetes mellitus is characterized by destroying beta cells in the pancreas, typically secondary to an autoimmune process. The result is the absolute destruction of beta cells, and consequentially, insulin is absent or extremely low. [9].

Gestational diabetes mellitus (GDM) is a serious pregnancy complication in which women without previously diagnosed diabetes mellitus develop chronic hyperglycemia during gestation. In most cases, this hyperglycemia is the result of impaired glucose tolerance due to pancreatic  $\beta$ -cell dysfunction on a background of chronic insulin resistance. Risk factors for GDM include being overweight, obesity, advanced maternal age, and family history or any form of diabetes [25]. Type 2 Diabetes mellitus is associated with modifiable

risk factors such as obesity, unhealthy dietary habits, sedentary lifestyle, alcohol consumption, and cigarette smoking. This diabetes mellitus is characterized by hyperglycemia, dyslipidemia, and disordered immune function that result in micro and macrovascular complications such as peripheral neuropathy, retinopathy, nephropathy, peripheral vascular disease, stroke, and coronary artery disease. Despite advances in Diabetes mellitus diagnosis, therapies, and supportive management, these complications account for a growing burden of morbidity and mortality globally. [9]. Type 2 diabetes mellitus is a common clinical chronic disease and a group of metabolic syndromes characterized by absolute or relative insufficiency of insulin syndrome and decreased sensitivity of target organs to insulin, followed by fat, protein, water, electrolytes, and other metabolic disorders. This research aimed to assess the knowledge, attitude, practice, and confounding factors regarding diabetes mellitus among Bayelsans.

## Method

**Study Site:** The study area for this research is Federal Medical Centre Yenagoa (FMC), Niger Delta University Teaching Hospital Amassoma(NDUTH), Christ the King Catholic Hospital Imiringi(CKC).

**Study Design:** A hospital-based cross-sectional descriptive study.

**Sampling Techniques:** A Stratified random sampling method was used in this study.

**Data Collection:** A well-structured validated “Diabetes Knowledge Test (DKT)” questionnaire was used as an instrument to collect field data. The instrument was validated and certified by the competent authority. It was created and printed in hard copies and distributed also in hard copies to collect data from patients with Diabetes mellitus in Bayelsa state.

**Data Analysis:** IBM SPSS Version 23, GraphPad insta3.0, and Microsoft Excel were used to analyze field data. Descriptive statistics such as Frequency, mean and standard deviation were used on variables and further presented in charts.

**Ethical Consideration:** Approval and permission were obtained from Research and Ethics Committee Federal Medical Centre Yenagoa, Niger

Delta University Teaching Hospital Amassoma, and Christ the King Catholic Hospital Imiringi, all in Bayelsa state.

### Results

In this study, the majority were male; 221(55.3%) and female were 179(44.8%), the socio-demographic characteristics of the study group in Table are as follows: 10.5% of the diabetics are in the age group category of 10-20 years, 20.5% of diabetics are in the age group category of 21-30 years, 15.5% of diabetics are in the age group category of 31-40 years, 17.8% of the diabetics are in the age group category of 41-50years and 35.8% of the diabetics are in the age group category of above 50 years. In terms of marital status, 51.2% were married, 22.5% were single, and 25.8% were divorced or widowed. Approximately 60% of the participants had formal education, while 12.5% and 15.5% had O and A Levels respectively. Men 55.3% of diabetics were most affected in the study, which seems to be the same across the globe. 55.5% were Christians, 32% were Islam and 10% were traditional worshippers.

**TABLE1.1: SOCIO-DEMOGRAPHIC CHARACTERISTICS**

DEMOGRAPHICS		FREQUENCY	VALID PERCENTAGE
TOTAL		400	100%
GENDER	MALE	221	55.3%
	FEMALE	179	44.8%

**TABLE1.2: SOCIO-DEMOGRAPHIC CHARACTERISTICS WITH AGE**

DEMOGRAPHICS		FREQUENCY	VALID PERCENTAGE
AGE	31 – 40YRS	62	15.5%
	41 – 50YRS	71	17.8%
	51 YRS & ABOVE	143	35.8%
	SINGLE	90	22.5%

**TABLE1.3: SOCIO-DEMOGRAPHIC CHARACTERISTICS WITH MARITAL STATUS**

DEMOGRAPHICS		FREQUENCY	VALID PERCENTAGE
MARITAL STATUS	MARRIED	205	51.2%
	DIVORCED	103	25.8%
	OTHERS	2	0.5%

	O Level	50	12.5%
	A Level	62	15.5%
EDUCATION	OND/HND	129	32.3%
	Graduate (BSc,BEd)	88	22.0%
	Masters	10	2.5%
	PhD	14	3.5%
	Others	47	11.8%
RELIGION	Christianity	222	55.5%
	Islam	128	32.0%
	Traditional	40	10.0%
	Others	10	2.5%

Source: Field Work (2023)

**Table 1** Below shows the socio-demographic characteristics of the study group indicated by the percentage of scores by the participants.

**TABLE2: LEVEL OF KNOWLEDGE OF DIABETES AMONG VARIOUS AGE GROUPINGS**

s/n	Variables	10-20 YRS	21-30 YRS	31-40 YRS	41-50 YRS	51 YRS & ABOVE
1	Diabetes means an elevated blood glucose level (YES)	10.5%	20.0%	15.5%	16.8%	34.8%
	<b>Frequency</b>	42	80	62	67	139
2	Diabetes is commonly the result of a viral infection	7.5%	18.5%	9.0%	1.5%	5.5%
	<b>Frequency</b>	30	74	36	6	22
3	Diabetes is a chronic (long-lasting) health condition that affects how the body turns food into energy	7.5%	10.0%	9.5%	14.2%	19.3%
	<b>Frequency</b>	30	40	38	57	77
4	Diabetes is a disease of abnormal carbohydrate metabolism	4.5%	6.5%	7.0%	14.8%	17.0%
	<b>Frequency</b>	18	26	28	59	68
5	Diabetes can be induced by heavy alcohol intake	2.5%	9.5%	6.5%	10.8%	12.0%

	<b>Frequency</b>	10	38	26	43	48
6	Diabetes can be induced by heavy smoking	1.5%	11.5%	8.0%	9.8%	10.5%
	<b>Frequency</b>	6	46	32	39	42
7	Diabetes can be induced by obesity	2.0%	13.1%	8.5%	8.8%	12.1%
	<b>Frequency</b>	8	52	34	35	48
8	Diabetes is commonly the result of an unhealthy lifestyle	4.5%	4.0%	2.5%	9.5%	23.3%
	<b>Frequency</b>	18	16	10	38	93
9	<b>Hereditary / family history plays a vital role in diabetes mellitus</b>	6.5%	16.0%	12.5%	13.5%	25.3%
	<b>Frequency</b>	26	64	50	54	101
10	<b>Age plays a role in Type 1 and 2 diabetes</b>	5.4%	17.5%	13.5%	15.3%	25.3%
	<b>Frequency</b>	22	70	54	61	101
11	<b>Diabetes can be cured</b>	5.4%	17.6%	13.6%	12.8%	22.4%
	<b>Frequency</b>	22	70	54	51	89
12	Gestational diabetes is diagnosed first time during pregnancy	2.5%	10.0%	9.0%	13.8	10.5%
	<b>Frequency</b>	10	40	36	55	42

Source: Field Work (2023)

**Table 2** Below shows the level of knowledge of diabetes among various age groupings regarding diabetes mellitus indicated by the percentage of scores by the participants.

**TABLE3: LEVEL OF KNOWLEDGE OF DIABETES MELLITUS**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage%</b>
Diabetes means an elevated blood glucose level	390	97.5
Diabetes is commonly the result of a viral infection	168	42%
Diabetes is a chronic (long-lasting) health condition that affects how the body turns food into energy	242	60.5%
Diabetes is a disease of abnormal carbohydrate metabolism	199	49.8%
Diabetes can be induced by heavy alcohol intake	165	41.3%
Diabetes can be induced by heavy smoking	165	41.3%
Diabetes can be induced by obesity	177	44.3%
Diabetes is commonly the result of an unhealthy lifestyle	175	43.8%
Hereditary / family history plays a vital role in diabetes mellitus	295	73.8%

Age plays a role in Type 1 and 2 diabetes	308	77%
Diabetes can be cured	286	71.5%
Gestational diabetes is diagnosed first time during pregnancy	183	45.8%

Source: Field Work (2023)

**Table 3** below shows the level of knowledge regarding diabetes mellitus indicated by the frequency and percentage of scores by the respondents.

An average number of the Participants demonstrated a high level of knowledge regarding various aspects of diabetes specifically 97.5% understood diabetes as elevated blood glucose levels, 60.5% pictured diabetes mellitus as a chronic (long-lasting) health condition that affects how the body turns food into energy, 73.8%, and 77% affirmed that hereditary/ family history and age respectively play a vital role in type 1 and type 2 DM. The majority of the respondents had limited knowledge of DM. Precisely, 41.3%, 44.5%, and 43.8% agreed that diabetes can be induced by alcohol intake/smoking, obesity, and unhealthy lifestyle respectively. A few participants 42% and 71.8% had the misconception that diabetes mellitus results from viral infections and can be cured respectively.

**TABLE 4: ATTITUDE OF DIABETIC CARE AMONG VARIOUS AGE GROUPINGS**

s/n	Variables	10-20 YRS	21-30 YRS	31-40 YRS	41-50 YRS	51 YRS & ABOVE
1	Diabetes mellitus is a global concern	10.5%	8.5%	6.5%	9.8%	22.8%
	<b>Frequency</b>	42	34	26	39	91
2	All adults should be tested for diabetes	4.5%	7.5%	4.5%	2.8%	11.3%
	<b>Frequency</b>	18	30	18	11	45
3	Diabetes affects only the rich people	1.5%	0.0%	0.5%	0.0%	2.5%
	<b>Frequency</b>	6	0	2	0	10
4	Only heavyweight people suffer from diabetes mellitus	0.5%	0.0%	0.5%	0.0%	2.05
	<b>Frequency</b>	2	0	2	0	8
5	A healthy lifestyle is effective in controlling diabetes	5.0%	2.0%	1.5%	5.0%	14.2%
	<b>Frequency</b>	20	8	6	20	57
6	Diabetic people should check their blood glucose regularly	8.5%	16.0%	5.5%	17.3%	29.8%
	<b>Frequency</b>	34	64	22	69	119
7	Diabetes and its complications are seen as an evil spirit	8.0%	11.0%	3.5%	7.3%	21.7%
	<b>Frequency</b>	32.0	44	14	29	87

<b>8</b>	Diabetes can be cured using herbs only	6.0%	4.5%	2.5%	5.0%	8.3%
	<b>Frequency</b>	24	18	10	20	33
<b>9</b>	Modification of diet and lifestyle can delay the early onset of diabetes	3.0%	0.5%	0.5%	4.8%	11.8%
	<b>Frequency</b>	12	2	2	19	47
<b>10</b>	Compliance with prescribed diabetic agents is key to the prevention or delay of diabetic complications	6.0%	8.0%	4.5%	14.2%	19.3%
	<b>Frequency</b>	24	32	18	57	77

Source: Field Work (2023)

**Table 4:** below shows the level of attitude toward diabetic care among various age groupings regarding diabetes mellitus indicated by the percentage of scores by the participants.

**TABLE 5: LEVEL OF ATTITUDE OF DIABETIC CARE**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Diabetes mellitus is a global concern	323	58.1%
All adults should be tested for diabetes	122	30.5%
Diabetes affects only the rich people	18	4.5%
Only heavyweight people suffer from diabetes mellitus	12	3.0%
A healthy lifestyle is effective in controlling diabetes	111	27.8%
Diabetic people should check their blood glucose regularly	308	77.1%
Diabetes and its complications are seen as an evil spirit	206	51.5%
Diabetes can be cured using herbs only	105	26.3%
Modification of diet and lifestyle can delay the early onset of diabetes	82	20.5%
Compliance with prescribed diabetic agents is key to the prevention or delay of diabetic complications	208	52%

Source: Field Work (2023)

**Table 5** Below shows the level of attitude toward diabetic care indicated by the frequency and percentage of scores by the respondents.

The overall Attitude towards diabetic care of the respondents was sub-optimal as only a few of them were found to demonstrate a positive attitude towards diabetic care. 58.1% envision DM as a global concern, 77.1% checked their blood glucose regularly, 27.7% agreed that a healthy lifestyle is effective in controlling diabetes 51.5% and 26.3% viewed diabetes and its complications as evil spirits and can be cured using herbs only respectively. Only a few 19.8% and 51.8% agreed that modification of diets, lifestyle, and compliance with prescribed diabetic agents can delay diabetic onset and prevent diabetes complications respectively. This implies that even though over 50% of them demonstrated a negative attitude towards diabetic care they had average knowledge of diabetes mellitus as compared to the Rajaei et al (2019) work on the Epidemiology of diabetes mellitus among children and adults aged 10 to 65 years in the United States of America which reports that 1 in 11 adults globally has diabetes mellitus and 90% has Type 2 diabetes and approximately 45% of children aged 10 to 14 years have Type 1 diabetes raising an alarm of early onset of diabetes and its complications.

### Discussion

In this study, the majority were male; 221(55.3%) and female were 179(44.8%), the socio-demographic characteristics of the study group in Table are as follows: 10.5% of the diabetics are in the age group category of 10-20 years, 20.5% of diabetics are in the age group category of 21-30 years, 15.5% of diabetics are in the age group category of 31-40 years, 17.8% of the diabetics are in the age group category of 41-50 years and 35.8% of the diabetics are in the age group category of above 50 years. In terms of marital status, 51.2% were married, 22.5% were single, and 25.8% were divorced or widowed. Approximately 60% of the participants had formal education, while 12.5% and 15.5% had O and A Levels respectively. Men 55.3% of diabetics were most affected in the study, which seems to be the same across the globe. 55.5% were Christians, 32% were Islam and 10% were traditional worshippers. This finding was indifferent to [20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33] studies.

The overall knowledge and attitude (KA) of diabetes mellitus of the respondents were sub-optimal as only a few of them were found to demonstrate a good knowledge and positive attitude respectively. This implies that even though over 50% of them demonstrated a negative attitude towards diabetic care, they had average knowledge of diabetes mellitus as compared to the Rajaei et al (2019) work on the Epidemiology of diabetes mellitus among children and adults aged 10 to 65 years in the United States of America which reports that 1 in 11 adults globally has diabetes mellitus and 90% has Type 2 diabetes and approximately 45% of children aged 10 to 14 years have Type 1 diabetes raising an alarm of early onset of diabetes and its complications. The Majority, 35.8% of the respondents are in the age group category of above 50 years and were the most age group affected which implies that old age plays a vital role in diabetes mellitus.

Findings from the study showed that 97.5% of the participants understood diabetes as elevated blood glucose levels, 60.5% pictured diabetes mellitus as a chronic (long-lasting) health condition that affects how the body turns

food into energy, 73.8%, and 77% affirmed that hereditary/ family history and age respectively play a vital role in type 1 and type 2 DM. Data also showed that the majority of the respondents had limited knowledge of DM. Precisely, 41.3%, 44.5%, and 43.8% agreed that diabetes can be induced by alcohol intake/smoking, obesity, and unhealthy lifestyle respectively. A significant number of participants 42% and 71.8% had the misconception that diabetes mellitus results from viral infections and can be cured respectively.

Findings from the study also showed that the overall Attitude towards diabetic care of the respondents was sub-optimal as only a few of them were found to demonstrate a positive attitude towards diabetic care. 58.1% envision DM as a global concern, 77.1% checked their blood glucose regularly, and 27.7% agreed that a healthy lifestyle is effective in controlling diabetes, this corroborates the findings of [15] in which Age, poor dietary habits, high adiposity indices, physical inactivity, positive family history, and educational status were significantly associated with Type 2 Diabetes mellitus in both sexes 51.5% and 26.3% of the respondents viewed diabetes and its complications as evil spirits and can be cured using herbs only respectively. Only a few 19.8% and 51.8% agreed that modification of diets, lifestyle, and compliance with prescribed diabetic agents can delay diabetic onset and prevent diabetes complications respectively. This study is similar to findings by [15] and [8] where 56.4% could define diabetes and only 40.77% could mention some ocular complications of diabetes with a limited level of attitude towards diabetic care. However, findings by PanelQuantaMa et al, 2023, [10, 11, 12, 13, 15, 16, 17, 18]. Research work on the relationship between type 2 diabetes mellitus and intestinal flora showed an increased rate of diabetes incidence globally.

### Conclusion

This study has been able to detail the knowledge, attitude, practice, and confounding factors of diabetes among diabetes patients in Bayelsa state. About half of the participants demonstrated a high level of knowledge regarding various aspects of diabetes care and management. Furthermore, a sub-optimal attitude toward diabetic care and management was identified in this study. There are some misconceptions in attitude towards diabetic care; using herbs only, therefore this needs proper awareness and orientation.

### Recommendation

The findings suggested that effective health education interventions are needed to improve diabetes knowledge, attitude, and practices, particularly regarding lifestyle modifications, weight loss, proper adherence to prescribed medications, and dietary management.

### Contribution to Literature

This study helps to identify gaps in knowledge and misconceptions, allowing for targeted educational interventions to improve understanding and awareness of diabetes and its complications. The study also provides information on the effectiveness of current practices and interventions by identifying areas for improvement.

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**Conflict of interest:** There was no conflict of interest among the researchers.

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