# Knowledge, Attitude And Practices Regarding Lifestyle Modifications Among Type 2 Diabetes Mellitus Patients Attending Diabetic Clinic At General Hospital, Gbagada, Lagos State

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*Abstract-* Diabetes mellitus is one of the most common clinical conditions seen by health workers in their daily practice. They are constantly confronted with the burden of caring for poorly controlled and poorly adherent patients presenting with preventable debilitating, disabling and mutilating complications. Lifestyle modifications have been proven to contribute to the prevention and delay of complications. This study assessed the level of knowledge, attitudes and practices regarding lifestyle modifications among type 2 diabetes mellitus patients attending diabetic clinic at General hospital, Gbagada, Lagos State.

The study adopted a descriptive which is a form of non-experimental design to recruit 140 type 2 diabetic patients through a purposive sampling technique among type 2 diabetes mellitus patients attending diabetic clinic at General hospital, Gbagada, Lagos State. Closed-ended questionnaire was used to collect data from the respondents. Percentage and frequency tables were used for the data presentation.

The study showed that majority (88.6%) have heard of Life Style Modification (LSM), most (34.7%) of the respondents heard about LSM from health workers. The majority (62.1%) of the respondents had good knowledge. Also more than half (54.3%) had positive attitude towards LSM. 58.6% had high level of practice of LSM. There was significant association between knowledge of the respondents and their level of practice of LSM (P-value= 0.027) and between attitude of the respondents and their level of practice of LSM (P-value= 0.042).

In conclusion, patient's knowledge, attitude and practice towards the management of type 2 diabetes was fairly good. It is also important to make diabetes management everybody's business due to the fact that everyone is affected directly or indirectly, that is individual, families, communities and industries.

*Index Terms*- Attitude, knowledge, lifestyle modifications, practices, type 2 diabetes mellitus patients

## I. INTRODUCTION

The World Health Organization estimates that more than 220 million people worldwide have diabetes mellitus (DM) and without interventions, this number is likely to increase more than double by 2030. Almost 80% of diabetes deaths occur in low and middle income countries (WHO, 2015). Diabetes mellitus (DM) defined as a metabolic disorder or disease characterized by abnormally high glucose levels in the blood, excessive urination and persistent thirst (Okonta, Ikumbele & Ogunbanjo, 2014).

According to World Health Organization/International Diabetes Federation (WHO/IDF, 2014) from January to December 2013 there was 1.6% new cases of diabetes aged 5 to 17 years in Lagos. Nigeria is one of the sub-Saharan African countries where diabetes mellitus ranks among the top ten health conditions contributing to the disease burden and among the top 15 in-patient causes of death (WHO/IDF) 2014. In 2015 within the same age group the percentage of new diabetes cases increased to 3.9%. In 2016, the incidence of diabetes type 2 among children under 5 years old in Nigeria was 2.2%; and according to diabetes records the incidence in the same age group was 4.1%. In addition, in 2014 there were 925 deaths attributable to diabetes in females between the ages of 20 to 69 years in Lagos (Okonta, Ikumbele & Ogunbanjo, 2014).

Type 2 diabetes is the most common form of diabetes and primarily affects the poorest people living in urban areas in sub-Saharan Africa (Umeh & Nkonsua, 2017). Studies conducted show that Non-Communicable Diseases (NCDs) are on the increase, and Mohammadi, Karim, Talib and Amani, (2015) confirmed that changes in demographic status, development, urbanization and the impact of globalization have resulted in the rapid emergence of NCDs and their risk factors in sub-Saharan Africa, particularly urban areas. It is projected that by 2020, NCDs such as diabetes mellitus and high blood pressure will be the leading causes of death ahead of communicable diseases.

Ogunbanjo (2015) acknowledge that Type 2 diabetes is a public health challenge that is escalating in proportion to an ageing population and increasing incidence of overweight and obesity. Furthermore Life style modifications have been shown to prevent or delay the onset of diabetes and reduce the risk of chronic complications (Koffi, Helen, Clara & Mira, 2015).

The global estimates of the number of people with type 2 diabetes mellitus in Africa was approximately 3 million in 2014 and was projected to go through a 2-3 fold increase by the year 2020 (WHO/IDF, 2014). In South Africa, according to the Medical Research Council (MRC), diabetes mellitus was responsible for the deaths of 22,412 South Africans in 2014 which makes it the fifth leading cause of death in this country (Moodley, & Rambiritch, 2017) while in Nigeria, the South-Western part of

the country was ranked the highest with 1.8 % (new cases) of diabetics aged 18 years and older in 2015. Furthermore in 2016, 993 deaths per 100 000 were attributed to diabetes, this rate was higher than that of neighbouring countries namely South Africa, Angola and Botswana (WHO, 2015).

Type 2 Diabetes mellitus occurs throughout the world, but is more common in the more developed countries. However, in developing countries, urbanization and lifestyle changes, perhaps most importantly adoption of a "Western-style" diet seems to also contribute to the increase in incidence of obesity and diabetes mellitus (Abdulkadir et al., 2014; Alouki, Delisle, Bermudez-Tamayo & John, 2015; Oguntibeju, Odunaiya & Oladipo, 2016; Ojo, 2015; World Health Organization, 2015)

According to the WHO, by 2020, approximately 2.3 billion adults will be overweight and more than 700 million will be obese worldwide (WHO/IDF, 2014). Intensive lifestyle intervention programme for the prevention and management of type 2 diabetes mellitus with the main elements of the intervention program as nutritional intervention, exercise training (minimum of 150 minutes at moderate intensity per week), psychosocial support and education should be encouraged to increase the knowledge, attitude and practices (Gojka & Katz, 2017; Adeleke & Makinde, 2015; Ojo, 2015; Goedecke, & Ojuka, 2014; Harris, Petrella, & Leadbetter, 2013).

## Research Questions
1. What is the knowledge about lifestyle modifications among type 2 diabetes mellitus patients attending diabetic clinic at General hospital, Gbagada, Lagos State?
2. What are the attitudes of type 2 diabetes mellitus patients attending diabetic clinic at General hospital, Gbagada, Lagos State regarding lifestyle modifications?
3. What is the level of practice of lifestyle modifications among type 2 diabetes mellitus patients attending diabetic clinic at General hospital, Gbagada, Lagos State?

## Hypotheses
Ho1: There is no significant association between the knowledge of the respondents and their attitude towards life style modification

Ho2: There is no significant association between the knowledge of the respondents and their level of practice of life style modification

Ho3: There is no significant association between the attitude of the respondents and their level of practice of life style modification

## Material and methods
**Research design:** This study utilized a descriptive design which is a form of non-experimental research design to collect data on the knowledge, attitude and practices regarding lifestyle modifications among type 2 diabetes mellitus patients attending diabetic clinic at general hospital, gbagada, lagos state.

## Research setting
The study was conducted at diabetic clinic of the General Hospital, Gbagada, Lagos State. It is a secondary health care institution situated on 1, Hospital road Gbagada in Kosofe Local Government area of Lagos state, Nigeria. The Institution was established to provide qualitative and affordable health care services to the people of Lagos state and indeed all Citizens in all areas of health.

## Sample and Sampling technique
The respondents for this study were drawn using Leslie Kish (1965) formula for calculating sample size. Convenience sampling technique was used to select the respondents who participated in the study.

$$N = \frac{Z^2 \times P \times (1-P)}{d^2}$$

**Where:**
N= required sample size
Z= 1.96 @ 95% Confidence Level
P= Estimated population Proportion=10%
d= acceptable margin of error at 5%

$$N = \frac{1.96^2 \times 0.1 \times (1-0.1)}{0.05^2}$$
$$N = \frac{3.8416 \times 0.1 \times 0.9}{0.0025}$$
$$N = \frac{0.345744}{0.0025}$$
N= 138.6976≈140

Purposive sampling technique was used to recruit 140 type 2 diabetic patients as respondents for the study.

## Instrumentation
Data were collected using a structured questionnaire. The questionnaire consists of four sections:

Section A: Socio-demographic data

Section B: contains 10 items assessing respondent's knowledge about life style modification. No point was given for wrong answer while the correct answer to the knowledge question was given a score of one pant. Based on such grading, a total of 10 points were allocated to this section. Those who scored 5 -10 point were considered to have a good knowledge while a score of 0-4 points was considered as poor knowledge.

Section C Attitudinal scale is a 5- point Likert scale ranging from strongly agreed (5) to strongly disagreed (1). The sum of scores for each respondent was 25point with a score of less than 13 point classified as negative attitude while score of 13 and above were classified as positive attitude

Section D: Practice of lifestyle modification in type 2 diabetic mellitus is a (4) point Likert scale ranging from always (4) to (1). The sum of scores for each respondent was 24 point with a score of less than 12 point classified as low level practice while score of 13 and above are classified as high level practice.

## Validity and Reliability
Face and content validity of the instrument were ensured by experts in Community/Public Health. To ensure reliability, the instrument was pre-tested on 14 patients with type 2 diabetic mellitus in General hospital, Lagos, Cronbach's Alpha coefficient was found to be 0.78 which was considered reliable.

## Procedure

Ethical clearance was obtained from Babcock University Health Research and Ethics Committee and a formal permission to utilize the hospital from the Chief Medical Director and Head of the unit. Data collection took place at Gbagada general hospital on the clinic days, the respondents were addressed, detailed explanation on the purpose of the study and the manner in which the questionnaire should be filled was stated and participants were allowed to willingly participate in the study. Repeated visit was made to the clinic until the desired sample size was attained.

## Data analysis

Data gathered from the respondents was assessed for completeness, coded and analyzed using Statistical Package for Social Science (SPSS, version 21). Descriptive statistics (frequency tables and percentages) was used to describe participants' demographic characteristics and answer the research questions asked. The three hypotheses were tested using correlational analysis.

## Ethical considerations

Permission to conduct the study was sought from the Chief Medical Director and unit head. All the participants were informed about the study and its purpose, consent was gained from them. The right of the participants to privacy and confidentiality was maintained throughout the study and all information gathered from participants was made confidential. The issue of anonymity of the respondents was maintained in that the respondents' names were not asked in the questionnaire.

## Results

A total of 140 participants were involved in the study. Data on demographic characteristics captured include age, sex, marital status, religion, educational status, and employment status. Table1 showed that 8 of the respondents falls between18-27 age range, 12, 28-37 years old, 48, 38-47 years old, 42, 48-57 years old, and 30 above 57 years. 83 of the respondents were females, 87 married, 74 of them were Christian, 49 had secondary education, and 39 of the respondnets were self-employed.

## Responses on Level of Awareness of Life Style Modification among the Respondents

Table 2 revealed that majority (88.6%) have heard of Life Style Modification.

## Responses on the source of LSM information

Table 3 revealed that 43 respondents heard about LSM from health workers, 38 respondents heard about it from mass media, 22 respondents got their information from social media, 13 respondents heard of it from friends/family while only 3 respondents heard of it from school.

## Research question one: Responses on knowledge of LSM

Table 4 revealed that 86 respondents agreed that LSM is important in the management of DM, healthy diet (92 respondents), regular exercise (74 respondents), weight control (68 respondents), smoking cessation (65 respondents), alcohol cessation (71 respondents), health checks and screening (98 respondents) while limit fatty foods (82 respondents).

## Knowledge Scale of LSM

Table 4.5 showed that 87 respondents had good knowledge (scale of 5-10) while 53 respondents had poor knowledge (scale of 0-4) of LSM.

## Research question two: Responses on Attitude towards LSM

Table 6 showed that of the respondents strongly agreed, 42 (LSM is important in the management of type 2 Diabetics), 29 (traditional healers can cure diabetics with herbs), 33 (regular exercise can prevent complications of Diabetics), 26 (eating controlled and planned diet is essential in the management of type 2 DM) while 34 (smoking and alcohol cessation can prevent complications of Diabetics).

Table 7 showed that 76 of the respondent had positive attitude while 64 had negative attitude towards LSM.

## Research question three: Responses on the practice of LSM

Table 8 showed that 7 of the respondents always smoked, 10 always take alcohol, 53 always follow controlled and planned diet, 46 always monitor body weight, 38 always go for health checks and screening while 55 always exercise regularly.

## Practice scale

Table 9 showed that 82 respondents had high level of practice of LSM (scale of 13-24) while 58 had low level practice of LSM (0-12)

## Testing Hypotheses

### Ho1: Association between knowledge of the respondents and their attitude towards LSM

Table 10 revealed a positive correlation between the knowledge of the respondents and their attitude towards LSM, hence the null hypothesis is rejected and alternate hypothesis is accepted.

### Ho2: Association between knowledge of the respondents and their level of practice of LSM

Table 11 revealed a positive correlation between the knowledge of the respondents and their practice of LSM, hence the null hypothesis is rejected and alternate hypothesis is accepted.

### Ho3: Association between attitude of the respondents and their level of practice of LSM

Table 12 revealed that there is no correlation between the knowledge of the respondents and their attitude towards LSM, the null hypothesis is rejected, hence there is a significant association between attitude of the respondents and their practice of LSM.

## Discussion of findings

There were more females (59.3%) in this study, a reflection of the gender ratio attendance of patients in the diabetic clinic at General Hospital, Gbagada. More recent reports from developing countries have found that diabetic melitus and its risk factors are more common in women (Afifi & Adawi, 2015). This finding is in keeping with the results from a study conducted in Adam Hospital Medical College, Oromia Region, Ethopia in which 81.1 % of the respondents were females (Abdulkadir et al., 2014).

Majority of respondents in this study are from the age groups 38-47 years (34.3%) respectively, this reflects the fact that type 2 diabetes mellitus usually has its onset after the age of 40 years (Gojka & Katz, 2017; Gill et al., 2015; Harris, et al., 2013). It was also found that married participants constituted 62.1% of the study population. A similar study by Afifi and Adawi (2015) reported that 57.3% of participants were married. The majority of the participants had secondary education (35.0%).

The study showed that majority (88.6%) have heard of Life Style Modification. Most (34.7%) of the respondents heard about LSM from health workers, followed by mass media (30.6%) and social media (17.7%). The majority (62.1%) of the respondents had good knowledge. In line with this finding, Nisar and colleagues (2015) found in their study that majority of respondents (67.0%) were knowledgeable about lifestyle modifications. This finding contradicts the findings of Okonta et al., (2014) which recorded low level of knowledge among the respondents. The differences in the results of studies may be due to the differences in educational level of the diabetic patients and accessibility of information and diabetes education. It is well established that patient knowledge are very important for better management of diabetes. Lack of knowledge of diabetes care among patients can have adverse effects on their capabilities to control diabetes.

This study showed that more than half (54.3%) had positive attitude. This revealed relatively similar results with study conducted on 100 patients attending diabetic clinic at Adam Hospital Medical College, Oromia Region, Ethiopia which recorded 59% of patients answered greater than or equal to 50% of attitude question (Abdulkadir, 2014). This finding is similar to a study done in South Africa in a semi urban Omani population in which the majority of respondents (51.6%) had positive attitude towards lifestyle modifications.

This study showed that 58.6% had high level of practice of LSM. This could be due to majority of the patients had limited resources and low income which limit their affordability for a well-balanced dieting and necessary equipment to exercise. This result was similar with study conducted among urban residents in Cameroon which reported 49.5% of the respondents were not exercising regularly and 48% of the participants were not following recommended diet and less than 40% exercise regularly and only 56% of the patients adhered to recommended diet respectively (Kiawi et al., 2016).

Regarding smoking and consumption of alcohol, the results of this study is promising as 86 % and 40 % patients never smoke and took any type of alcohol respectively. This result is similar with study conducted in Western Nigeria in 2015 which reported 54% study patients neither consume alcohol nor smoke cigarette (Adeleke & Makinde, 2015). The other similar study conducted in Omani in the year 2013 also reported out of 106 study patients, only 30.6% were smokers.

**Correlation between Knowledge, Attitudes and Practices of LSM**

The study revealed that there is no significant association between knowledge of the respondents and attitude towards LSM ($X^2$= 3.16, df=1 and P-value= 0.111). This means that the respondents' knowledge about LSM did not affect their attitude towards it. This finding is not in line with the findings in a study done in South Africa in a semi urban Omani population in which there was a significant relationship between the knowledge and attitude of the respondents towards LSM (Mollentze & Levitt, 2015).

There is a significant association between knowledge of the respondents and their level of practice of LSM ($X^2$= 5.22, df=2 and P-value= 0.027). This means that the more respondents were knowledgeable, the better they were practicing healthy lifestyle. This result was similar with study conducted among urban residents in Cameroon which reported a significant relationship between the knowledge and practice of LSM (Kiawi et al., 2016). It is well established that patient's knowledge are very important for better management of diabetes. Lack of knowledge of diabetes care among patients can have adverse effects on their capabilities to control diabetes.

There is a significant association between attitude of the respondents and their level of practice of LSM ($X^2$= 3.63, df=1 and P-value= 0.042). This means the better the patients had positive attitude toward LSM, the better they were practices healthy life style modification. This finding also contradicts the findings of Okonta et al., (2014) which recorded that there is no significant relationship between the attitude and practice of LSM.

**Conclusion**

In conclusion, the result of this study showed, majority of type 2 DM patients had good knowledge, positive attitude and good practices towards LSM.

**Recommendations**
The following recommendations were made based on the findings of this study:
- A comprehensive health education and promotion programme for diabetes on the prevention, management and treatment as well as risk factors should be encouraged.
- Health care providers must emphasize the importance of life style modification (exercise, good dietary practices and weight loss).
- It is important to make diabetes management everybody's business due to the fact that everyone is affected directly or indirectly, that is, individual, families, communities, churches, schools, all government sectors, nongovernmental organizations, business communities and industries. Include and encourage healthy lifestyle practices into the social and cultural ways of the lives of communities' health education and awareness.

**Tables**
**Table 1: Socio-Demographic Characteristics of the Respondents**

| Variable | Frequency N=140 | Percentage (%) |
|---|---|---|
| Age | | |

| 18-27 | 8 | 5.7 |
|---|---|---|
| 28-37 | 12 | 8.6 |
| 38-47 | 48 | 34.3 |
| 48-57 | 42 | 30.0 |
| >57 | 30 | 21.4 |
| **Sex** | | |
| Male | 57 | 40.7 |
| Female | 83 | 59.3 |
| **Marital Status** | | |
| Single | 46 | 32.9 |
| Married | 87 | 62.1 |
| Divorced | 4 | 2.9 |
| Widowed | 3 | 2.1 |
| **Religion** | | |
| Christianity | 74 | 52.9 |
| Islam | 66 | 47.1 |
| **Educational Status** | | |
| None | 11 | 7.9 |
| Primary | 38 | 27.1 |
| Secondary | 49 | 35.0 |
| Tertiary | 42 | 30.0 |
| **Employment Status** | | |
| Unemployed | 21 | 15.0 |
| Student | 33 | 23.6 |
| Retired | 5 | 3.6 |
| Self-employed | 39 | 27.8 |
| Private-employed | 14 | 10.0 |
| Government-employed | 28 | 20.0 |

**Table 2: Level of Awareness of Life Style Modification among the Respondents**

| Ever heard of LSM in the management of DM | Frequency N=140 | Percentage (%) |
|---|---|---|
| Yes | 124 | 88.6 |
| No | 16 | 11.4 |

**Table 3: Source of Information about LSM**

| Variable | Frequency N=124 | Percentage |
|---|---|---|
| Health workers | 43 | 34.7 |
| Mass media | 38 | 30.6 |
| Social media | 22 | 17.7 |
| Friends/ Family | 13 | 10.5 |
| Schools | 8 | 6.5 |

**Table 4: Knowledge Scale of LSM among the Respondents**

| Life Style Modification | Yes (%) | No (%) |
|---|---|---|
| LSM is important in the management of type 2 Diabetics Mellitus | 86(61.4) | 54(38.6%) |
| Healthy diet | 92(65.7) | 48(34.3) |
| Regular exercise | 74(52.9) | 66(47.1) |
| Weight control | 68(48.6) | 72(51.4) |
| Smoking cessation | 65(46.4) | 75(53.6) |
| Alcohol Cessation | 71(50.7) | 69(49.3) |
| Health checks and screening | 98(70) | 42(30) |
| Limit fatty foods | 82(58.6) | 58(41.4) |

**Table 5: Knowledge scale of LSM among the respondents**

| Knowledge | Score Range | Frequency | Percentage |
|---|---|---|---|
| Good knowledge | 5-10 | 87 | 62.1 |
| Poor Knowledge | 0-4 | 53 | 37.9 |

**Table 6: Attitude towards LSM among the Respondents**

| Attitude | SA (%) | A(%) | N(%) | D(%) | SD(%) |
|---|---|---|---|---|---|
| Life style modification is important in the management of type 2 Diabetic | 42(30) | 33(23.6) | 28(20) | 11(7.8) | 26(18.6) |
| Traditional Healer can cure Diabetics mellitus with herbs | 29(20.7) | 41(29.3) | 32(22.9) | 22(15.7) | 16(11.4) |
| Regular exercise can prevent complications of Diabetics | 33(23.6) | 38(27.1) | 30(21.4) | 18(12.9) | 21(15.0) |
| Eating controlled and planned diet is essential in the management of type 2 DM | 26(18.6) | 32(22.9) | 22(15.7) | 24(17.1) | 36(25.7) |
| Smoking and Alcohol cessation can prevent complications of Diabetics | 34(24.3) | 38(27.1) | 18(12.9) | 28(20) | 22(15.7) |

**Table 7: Attitude scale of LSM among the respondents**

| Attitude Scale | Frequency | Percentage |
|---|---|---|
| Positive | 76 | 54.3 |
| Negative | 64 | 45.7 |

**Table 8: Practice of LSM among the respondents**

| Life Style Modification | Always(%) | Sometimes(%) | Occasionally(%) | Never(%) |
|---|---|---|---|---|
| I smoke | 7(5.1) | 16(11.4) | 31(22.1) | 86(61.4) |
| I take alcohol | 10(7.1) | 34(24.3) | 40(28.6) | 56(40) |
| I follow a controlled and planned diet | 53(37.9) | 44(31.4) | 31(22.1) | 12(8.6) |
| I monitor my body weight | 46(32.9) | 51(36.4) | 33(23.6) | 10(7.1) |
| I go for health checks and screening | 38(27.1) | 60(42.9) | 28(20) | 14(10.) |
| I exercise regularly | 55(39.3) | 43(30.7) | 34(24.3) | 8(5.7) |

**Table 9: Practice Scale**

| Practice | Score Range | Frequency | Percentage |
|---|---|---|---|
| High level | 13-24 | 82 | 58.6 |
| Low level | 0-12 | 58 | 41.4 |

**Table 10: Correlation between knowledge of the respondents and their attitude towards LSM**

| | | Positive Attitude | Negative Attitude |
|---|---|---|---|
| Knowledge | Pearson correlation | .211** | .256** |
| | Sig. (2-tailed) | .000 | .000 |
| | N | 76 | 64 |

**Correlation is significant at the 0.01 level (2-tailed)

**Table 11: Correlation between knowledge of the respondents and their level of Practice of LSM**

| | | High level of practice | Low level of practice |
|---|---|---|---|
| Knowledge | Pearson correlation | .190** | .241** |
| | Sig. (2-tailed) | .000 | .000 |
| | N | 82 | 58 |

**Correlation is significant at the 0.01 level (2-tailed)

**Table 12: Correlation between their level of practice and their attitude towards LSM**

|  |  | High level of practice | Low level of practice |
|---|---|---|---|
| Attitude | Pearson correlation | .085** | .150** |
|  | Sig. (2-tailed) | .008 | .014 |
|  | N | 82 | 58 |

**Correlation is significant at the 0.01 level (2-tailed)

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