PREDICTIVE VALUE OF HEALTH-BELIEF AND INFORMATION-SEEKING FOR MEDICATION-ADHERENCE IN HYPERGLYCEMIA AMONG ADOLESCENTS ATTENDING DIABETES CLINIC AT LAGOS STATE UNIVERSITY TEACHING HOSPITAL IKEJA, NIGERIA

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ABSTRACT: Diabetes mellitus is one of the most common non-communicable diseases and has attained epidemic proportion due to the health transition phenomenon observed globally and constituting a serious global public health concern and of wide health and economic impact. This study hopes to identify gaps created in the health information, motivation received, behavioral skills and self-care that regulate glycemic control of diabetes mellitus. A crosssectional descriptive survey was used because it offers a true depiction of the respondents' attributes; Age, Gender, Knowledge, Perception, Social Support, and Medication-Adherence Level. 160 adolescents attending the diabetes clinic, who attend or may be referred to the clinic of the Lagos State University Teaching Hospital (LASUTH), in Ikeja Local Government, Lagos were the respondents. 1.7 million adults aged 20 years or older or 5.7% of all US adults with diagnosed diabetes reported both having type 1 diabetes and using insulin. 3.6 million adults aged 20 years or older or 12.3% of all US adults with diagnosed diabetes started using insulin within a year of their diagnosis. Findings from this study will contribute to the knowledge base on diabetic medication nonadherence and may encourage health care professionals to advocate for better medication adherence strategies among Adolescents with diabetes. A total of 160 questionnaires were administered and considered adequate for analysis and the demographics for the diabetes mellitus respondents are shown in table 4.1 below. Most of the respondents were female (62.5%), followed by the male counterpart (37.5%). Out of this figure those who believed in Christianity were (56.9%) followed by the Islamic religion (32.5%), while the least were those who were grouped as Traditional (10.6%). Similarly, (8.8%) were married respondents whereas (91.3%) were single. The level of education was stratified with (9.4%) having no formal education, (40.0%) completed primary school and (40.0%) completed secondary school, (10.6) were more than secondary school education. The occupation of the respondents varies with (5.6%) reporting as traders, (5.0%) reporting as Civil servants, (80.6%) reporting as student while (8.8%) were housewife. The average age of participants was 13 years and majority of the respondents had been visiting the hospital facility for up to eight years (48.1%) for treatment where this study was conducted. Our results suggest that respondent's hyperglycemic control is related to health information, motivation and behavioral skills and self-care which are important variables for promoting hyperglycemic control of diabetes mellitus. Motivation will improve patients' goals and interests, as well as how to elicit support in other to maintain adequate control of diabetes.

KEYWORDS: Adolescents, Health-Belief Model, Hyperglycemia, Information-Seeking, Medication-Adherence.





INTRODUCTION

The term diabetes is the shortened version of the full name diabetes mellitus.

Diabetes mellitus is derived from the Greek-word diabetes meaning siphon - to pass through and the Latin word mellitus meaning- honeyed or sweet. This is because in diabetes excess sugar is found in blood as well as the urine. It was known in the 17th century as the "pissing evil".

The term diabetes was probably coined by Apollonius of Memphis around 250 BC. Diabetes was first recorded in English, in the form diabetes, in a medical text written around 1425. It was in 1675 that Thomas Willis added the word "mellitus" to the word diabetes.

Diabetes Mellitus (DM) is one of the leading chronic diseases of childhood and adolescence. Allen et al, (2004). Although numerous studies have documented worldwide increases in diabetes, few data exist on the population prevalence of diabetes mellitus amongst children in Nigeria. Diabetes mellitus is characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. This uncontrolled hyperglycemia results in dysfunction and failure of the eyes, heart, blood vessels, nerves, and kidneys. When diabetes mellitus occurs during childhood, it is assumed to be type1 or juvenile-onset diabetes mellitus. However, in the last two decades, type 2 diabetes mellitus, formerly known as adult-onset diabetes mellitus, has been reported amongst children with increasing prevalence in the United States of America (U.S) and Europe. Type1 diabetes mellitus results from autoimmune destruction of the pancreatic beta cells, causing complete loss of, or diminished insulin production. Children are usually affected by this type of diabetes, although it can also occur at all ages. Patients with type1 diabetes mellitus require exogenous insulin for survival. Type 2 diabetes mellitus is most commonly seen in adult populations. It is characterized by insulin resistance and / or abnormal insulin secretion, either of which may predominate but both are usually present. The specific reasons for the development of these abnormalities are largely unknown. Type 2 diabetes mellitus can remain asymptomatic for many years, and the diagnosis is often made from associated complications or incidentally through an abnormal blood or urine glucose test. Other specific types of diabetes mellitus include those due to genetic disorders of beta cell function (e.g chromosome, hepatic nuclear factor alpha [maturity onset diabetes of the young, chromosome, glucokinase, genetic defect in insulin action (Type A insulin resistance, Robson-Mendenhall syndrome, lipoatrophic diabetes), infections (Cytomegalovirus, Congenital Rubella), diseases of the exocrine pancreas (Pancreatitis, cystic fibrosis, fibrocalculous pancreatopathy), endocrinopathies (acromegally, Cushing syndrome, Pheochromocytoma, hyperthyroidism), and drugs (Glucocorticoid, Nicotinic acid, Diazoxide, Pentamidine). These last types of diabetes are relatively uncommon. In response to the growing public health concern about diabetes mellitus in the United States of America, the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) have funded a multicenter study titled SEARCH for Diabetes in Youth, to examine the current status of diabetes among children and adolescents in the United States. The reported global increase in the prevalence of diabetes mellitus in children that is being observed suggests a necessity for knowing the prevalence of diabetes mellitus among children in other countries of the world including Nigeria. Unfortunately, the literature on the prevalence of diabetes mellitus in Nigerian children is scarce. said that the occurrence of a defect in the mechanisms responsible for cellular and hormonal control and utilization of blood glucose would cause there to be excess sugar in circulation and create a pathological condition which would be detrimental to



the health of the individual if untreated. In addition It is important to note that the morbidity arising from the pathological defects in glucose metabolism are type-1 and type-2 Diabetes Mellitus, resulting from chronic deficiency in the production of insulin and inadequate production of the hormone by the pancreatic cells respectively (Andreas *et al.*, 2014). This hypothesized that high caloric intake accompanied by lack of exercise contribute significantly in developing DM in at-risk population

The Treatment of Type 2 Diabetes

Diabetes mellitus is one of the most common non-communicable diseases and has attained epidemic proportion due to the health transition phenomenon observed globally and constituting a serious global public health concern and of wide health and economic impact (<u>World Health Organization, 20</u>13). Each year, an estimated 3.2 million people around the world die from complications associated with diabetes.

According to International Diabetes Federation, 2016, It is also believed that in poor resource economy such as is characteristic of Low- and Middle-income countries, the situation becomes more complicated with poverty and require necessary intervention that may ameliorate escalating into an epidemic. The morbidity and mortality resulting from microvascular and macrovascular complications of type-2 diabetes place considerable financial burden on individual patients and society (Zimmet et al., 2001, According to the World Health Organization, non-adherence with long-term management for condition such as diabetes is a common problem that leads to compromised health benefits and serious economic consequences in terms of wasted time, money and uncured disease (Bartels, 2004). This implies that treatment effectiveness is determined jointly by the efficacy of the treatment agent and the extent of adherence to the treatment. Adherence is an active, voluntary and collaborative involvement of the patient in a mutually acceptable course of behaviour to produce a therapeutic result (Delameter, 2007).

It is a complex behavioural process and their antecedents determined by several interacting factors. These include attributes of the patient and the patient's environment (which comprises social supports, characteristics of the health care system, functioning of the health care team, and the availability and accessibility of health care resources). Despite the availability of efficacious interventions, non-adherence to treatment remains a problem across therapeutic areas.

Meichenbaum and Turk (1987) suggested that four interdependent factors operate on adherence behaviour and that a deficit in any one contributes to risk of non-adherence. These interdependent factors are knowledge and skills, beliefs, motivation and action to adhere to treatment. These interdependent factors are key constructs found in the Information, motivation and behavioural skill (IMB) model as described by Fisher and Fisher (1992).

The Information Motivation and Behavioural skill (IMB) model demonstrates that information is a prerequisite for changing behaviour, but in itself is insufficient to achieve this change (Mazzuca, 1982). Similarly, motivation and behavioural skills are critical determinants and are independent of behaviour change (Fisher and Fisher, 1992). While, Health Belief Model (HBM) the understanding dynamics involved why people do or do not participate in disease screening and disease preventive measures. Therefore, Health belief model was developed in the 1950s by a group of public health services and social psychologists (Hochbaum,



Rosenstock and Kegels) who wanted to explain why few people participate in program to prevent and detect diseases. Health belief model postulates that health-seeking behavior is influenced by a person's perception of a threat posed by a health problem and the value associated with action aimed at reducing the threat. The model was extended over time to study individual responses to disease and adherence to treatment.

METHODOLOGY

Study Design

A cross-sectional descriptive survey was used because it offers a true depiction of the respondents' attributes; Age, Gender, Knowledge, Perception, Social Support, and Medication-Adherence Level. 160 adolescent attending the diabetes clinic, who attend or may be referred to the clinic of the Lagos State University Teaching Hospital (LASUTH), in Ikeja Local Government, Lagos were the respondents.

Population

Adolescents attending diabetes clinic at Lagos State University Teaching Hospital, Nigeria. The study will be carried out among adolescent between age of (10 - 16) years

Study Location

Ikeja, town, capital of Lagos state, southwestern Nigeria. It lies 10.5 miles (17 km) northwest of Lagos city. Originally settled by the Yoruba people, the locality was raided for slaves until the mid-19th century. Early in the 20th century it became an agricultural hinterland for Lagos; kola nuts were first grown in Nigeria in this area. The opening of the Lagos-Ibadan railway in 1901 and the growth of Lagos as a port transformed Ikeja into a residential and industrial suburb of that city. In the mid-1960s an industrial estate was established, and in 1976 Ikeja became the capital of Lagos state.

The town's industrial estate contains cotton textile plants that are among Nigeria's largest, and there is also a wool textile plant. Other factories in Ikeja manufacture footwear, cosmetics, pharmaceuticals, plastics, paper and cork products, ceramics, paints, matches, and lighting products. There are a number of food processing plants and a large brewery in the town. Heavy industries in and around Ikeja include steel products, trailer-truck tanks, wire, and aluminum. Several publishers and printers and import-export businesses are also centered at Ikeja.

The Federal Institute of Industrial Research (1955) and a community nursing school are located in the town. The Lagos state radio broadcasting service has its headquarters in Ikeja. A housing project has been built in the town to help ease the overcrowding problems of Lagos. Murtala Mohammed International Airport, serving Lagos, is located in Ikeja. 470,200 Population. (2022) – Projection. 32.31km2 Area. 11,112/km2 Population. Density (2022). 2.5% Annual. Population Change (2006 - 2022). Ikeja, which was said to be abbreviated from Ikorodu and Epe Joint Administration was originally settled by the Benin and Awori people, the locality was raided for slaves until the mid-19th century. Early in the 20th century it became an agricultural hinterland for Lagos. The opening of the Lagos-Ibadan railway in 1901 and the growth of Lagos as a port transformed Ikeja into a residential and industrial suburb of that city.



In the mid-1960s an industrial estate was established, and in 1976 Ikeja became the capital of the Lagos state (The Editors of Encyclopædia Britannica (2015).

About Lagos State University Teaching Hospital (LASUTH)

The Lagos State University Teaching Hospital Ikeja emerged from a modest cottage hospital which was established 25th of June, 1955 by the old Western Regional Government to provide health care services for the people of Ikeja and its environment. The cottage hospital later metamorphosed into a full-fledged general hospital which served as a secondary level health care facility.

The need for a tertiary health care facility for the training of doctors and other allied health care professionals to provide high quality clinical services led to its upgrade from a general hospital to a modern, well equipped centre of excellence armed with the state of art equipment teaching hospital. The Lagos State Government formally converted the Ikeja General Hospital to the Lagos State University Teaching Hospital in July 2001.

Despite LASUTH's relatively young age as a teaching hospital, evidence abounds that it is one of the foremost teaching hospitals in West Africa in terms of the high-quality services rendered by highly skilled professionals using state-of-the-art equipment.

Sample size and Sampling Technique

This study employed the Cochran's sample size formula (1977) because it gives more precise estimates of population parameters from the target population.

$$n = \frac{(Z_{\alpha} + Z_{\beta})^2 \times P_0 (1 - P_0)}{(D)^2}$$

 $Z_{\alpha} = 95\%$ confidence interval i.e 1.96

$$Z_{\beta} = 80\%$$
 i.e 0.84

 $P_0 = prevalence (at 48.1\%)$

d= level of precision at 5%

$$n = \frac{(1.96 + 0.84)^2 \times 0.481(1 - 0.016)}{(0.05)^2}$$

$$\frac{(2.8)^2 \times 0.481(0.984)}{(0.05)^2}$$

=148.2

The total number of participants is 160



Method of Data Collection

A structured questionnaire was administered to 160 participants who are attending diabetes clinic that were agree to participate in the study.

Validity and Reliability

Validity and reliability are two important factors to consider when developing and testing any instrument (e.g., questionnaire) for use in a study. The questionnaire will undergo the two types of tests.

Validity: Validity refers to the accuracy or truthfulness of a measurement. Validity has to do with whether the instrument is measuring what it is intended to measure.

Construct Validity: The logic of items which comprises measures of social concepts. The theoretical foundations underlying the measurements and variables in the study were connected in explaining the phenomenon.

Content Validity: This indicates the extent to which items adequately measure or represent the content of the property or trait that the researcher which to measure. In this case, the instrument (questionnaire) was given to experts in the field that are experience for contributions. The researcher's supervisor and other professionals in the field of public health reviewed the questionnaire before they were pretested. Also, Validation of the translation of the instrument to measure reliability of written information was done.

Statistical Analysis

Data collected were coded, cleaned and analyzed using the Statistical Package for the Social Sciences (the Statistical Package for Social Sciences (SPSS) software version 23.0. Descriptive statistics such as frequencies, means, standard deviations and percentages was used to analyze the Socio demographic characteristics and factors medication-adherence. The arithmetic mean was used as a summary statistic for quantitative data. The standard deviation was used as a measure of dispersion. Pearson correlation coefficient will be used to test hypothesis of significant relationship between psycho-cognitive characteristics of knowledge, attitudinal dispositions and perceptions regarding their information seeking dispositions and medication-adherence in hyperglycemia control among adolescents attending diabetes clinic at Ikeja Teaching Hospital. To determine the significant predictors of the patient's overall knowledge and attitude scores related to hyperglycemia control and its consequences. For all statistical analyses, a P-value < 0.05 were considered to be significant.

Ethical Consideration

All interviews were done in privacy. The participants will be informed that their decision regarding participation would not affect their treatment or their relationships with their physicians. Only participants who will be willing to participate in the study, after being fully informed of the aim of the study and methodology, was included in the target sample of the study. All participants have the right not to participate in the study or to withdraw from the interview before completion. Participants need not to mention their names during the interview so as to be anonymous. Data was treated confidentially by the Researcher and other Research Assistants.



Informed Consent: The objectives, content, risk and benefit of the research was explained to the respondents. An informed consent of the respondents was obtained before administering questionnaires.

Voluntary Participation: The respondents were enticed in taking part in the study; neither will they be coerced in providing information. Participation in the study will be voluntary.

Confidentiality: The names, residential address or any information that will reveal the personal identity of the respondents were made confidential by the researcher. Also information gathered will be treated with utmost confidentiality.

Non-maleficence: There were no medical test or risks involved throughout the field work and respondents were forced to divulge any information they are not comfortable with.

Beneficence: there was benefits for participation in the study as respondents were exposed to the findings of the study which provided information on factors that affect psycho-cognitive characteristics of knowledge, attitudinal dispositions and perceptions regarding their information seeking dispositions and medication-adherence in hyperglycemia control among adolescents attending diabetes clinic at Ikeja Teaching Hospital.

Ethical clearance was obtained from Babcock University Health Research Ethics Committee.

RESULTS / FINDINGS

A total of 160 questionnaires were administered and considered adequate for analysis and the demographics for the diabetes mellitus respondents are shown in table 4.1 below. Most of the respondents were female (62.5%), followed by the male counterpart (37.5%). Out of this figure those who believed in Christianity were (56.9%) followed by the Islamic religion (32.5%), while the least were those who were grouped as Traditional (10.6%). Similarly, (8.8%) were married respondents whereas (91.3%) were single. The level of education was stratified with (9.4%) having no formal education, (40.0%) completed primary school and (40.0%) completed secondary school, (10.6) were more than secondary school education. The occupation of the respondents varies with (5.6%) reporting as traders, (5.0%) reporting as Civil servants, (80.6%) reporting as student while (8.8%) were housewife. The average age of participants was 13 years and majority of the respondents had been visiting the hospital facility for up to eight years (48.1%) for treatment where this study was conducted.

	Variable	Frequency (n)	Percentage (%)
Age (years)	10-13	110	48.1
	13-15	104	31.3
	15 -16	100	20.6
Sex	Male	60	37.5
	Female	100	62.5
Religion	Christianity	91	56.9
-	Islam	52	32.5
	Traditional	17	10.6

Table 4.1: Demographic characteristics of the respondents used in this study (n=160)



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Marital Status	Single	146	91.3
	Married	14	8.8
Educational Status Non formal education Primary education		15	9.4
		64	40.0
	Secondary education		40.0
	Above secondary education	17	10.6
Occupation	Trader	9	5.6
	Civil Servant	8	5.0
	Student	129	80.6

Test of Research Questions

Research Questions 1 What is the level of knowledge received regarding the control of diabetes mellitus among the respondents?

As shown in Table 4.2 the level knowledge about diabetes mellites received were statements such as 'Diabetes is a disease (61.3%), Diabetes only affect adults (29.4%), Diabetes can be cured (75.6%), Diabetes also known as blood sugar disease (31.9%), The illness is associated with witchcraft (79.4%), Diabetes is a spiritual illness (63.1%), This illness was caused because you disobeyed your parents (91.9%), The illness is caused by faulty pancreas (16.9%), Diabetes is for life but has drugs for controlling it (65.6%). the level of knowledge received regarding the control of diabetes mellitus among the respondents measured on 15-point rating scale

Table 4.2: Level of Knowledge of diabetes mellitus received by respondents in the study as determined by the HBM model (n= number of respondents, %= percentage). a. Predictors: (Constant), Level of perceptions regarding diabetes mellites measured on 21-point rating scale, Level of knowledge about diabetes mellites measured on 15-point rating scale, Level of attitudinal disposition towards diabetes measured on 24-point rating scale b. Dependent Variable: Level of Health-Seeking behaviour involved in the treatment of diabetes mellites measured on 27-point rating scale

Test of Research Questions

Research Questions 2: What is Level of Knowledge about Consequences of Diabetes Mellites received by respondent?

Poorly treated Diabetes can kill (54.4%), Diabetes makes the urine to attract ants and insects (49.9%), Sick people with Diabetes are always feel thirsty (48.8%), A Diabetic person needs to always take their prescribed medicines to feel well (43.1%), It is not necessary for diabetic people to be on a special diet (50.6%), Diabetes is a spiritual illness (63.1).

Table 4.3: Knowledge about Consequences of Diabetes Mellites					
Statement	True	False			
Poorly treated Diabetes can kill	87 (54.4%)	27 (16.9%)			
Diabetes makes the urine to attract ants and insects	79 (49.4%)	24 (15.0%)			
Sick people with Diabetes are always feel thirsty	78 (48.8%)	25 (15.6%)			
A Diabetic person needs to always take their prescribed medicines to	69 (43.1%)	28 (17.5%)			
feel well					
It is not necessary for diabetic people to be on a special diet.	81 (50.6%)	25 (15.6%)			
Diabetes is a spiritual illness	59 (36.9%)	101(63.1%)			



Question 4.3: What is the level of attitudinal disposition towards the control of diabetes?

a number of situations are known to trigger emotional responses from individuals representing their dispositions towards health outcomes. I am not satisfied with the treatment I am receiving (43.1%), I am always apprehensive to discuss my health condition with the health care workers (56.3%), I am comfortable to seek information about diabetes from peers (41.9%), I accept all information about diabetes from social media platforms I visit about diabetes (38.1%), Regular monitoring of Blood Sugar is an inconvenience (46.3%), I do not bother to seek information about my illness to be better acquainted with what to do (63.1%), I am concerned about the cost of treatment to my finances (60.6%), I would prefer to be treated the traditional way than in the hospital (46.3%).

Table 4.4: What is the level of Perceptions Regarding Consequences of Diabetes

Attitudinal Disposition Towards the Control of Diabetes	1(SD)	2 (D)	3 (A)	(4 SA)
I am not satisfied with the treatment I am receiving.	41(25.6%)	8(5.0%)	69(43.1%)	42(26.3%)
I am always apprehensive to discuss my health condition with the health care workers	90(56.3%)	23(14.4%)	12(7.5%)	35(21.9%)
I am comfortable to seek information about diabetes from peers.	67(41.9%)	18(11.3%)	31(19.4%)	44(27.5%)
I accept all information about diabetes from social media platforms I visit about diabetes.	39(24.4%)	18(11.3%)	42(26.3%)	61(38.1%)
Regular monitoring of Blood Sugar is an inconvenience.	74(46.3%)	12(7.5%)	20(12.5%)	54(33.8%)
I do not bother to seek information about my illness to be better acquainted with what to do	101(63.1%)	10(6.3%)	24(15.0%)	25(15.6%)
I am concerned about the cost of treatment to my finances.	97(60.6%)	31(19.4%)	15(9.4%)	17(10.6%)
I would prefer to be treated the traditional way than in the hospital	74(46.3%)	38(23.8%)	21(13.1%)	27(16.9%)

Question 4.4: What is the level of Perceptions Regarding Consequences of Diabetes and its Control received by the respondent?

A number of circumstances are known to trigger consciousness of the threat to life based on our views and understanding of the meanings of these circumstances. If I do not take my drugs as prescribed there could be likely health consequences (50.6%), I am likely to react unfavourably if I do not follow a strict diet low in sugar-based foods (52.5%), I cannot afford

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a health crisis because of not taking my drugs regularly (50.6%). Statement regarding Seriousness of complications in Diabetes: Regular monitoring of Blood Sugar should help me know when my blood sugar is high to avoid complications in diabetes (52.5%), Complications of poorly controlled diabetes can be very severe with threat to life (49.4%), It is possible in poorly controlled blood sugar in diabetes to have limbs amputated due to complications arising (57.5%), It is always beneficial to have the required medications around and take them as prescribed to avoid complications (51.2%),

Table 4.5 Question 4.5: What is level of Information-seeking and Medication

Statement regarding Susceptibility complications in Diabetes	of	1(SD)		2 (D)	3 (A)		(4 SA)
If I do not take my drugs as prescrib there could be likely health consequence	ed es.	42(26.3%	6)	13 (8.1%)	24(15.0%)	81(50.6%)
I am likely to react unfavourably if I do n follow a strict diet low in sugar-bas foods	not sed	28(17.5%	6)	6(3.8%)	42(26.3%)	84(52.5%)
I cannot afford a health crisis because not taking my drugs regularly.	of	20(12.5%	6)	10(6.3%)	49(30.6%)	81(50.6%)
Statement regarding Seriousness of complications in Diabetes	1(5	SD)	2 (1	D)	3 (A)	(4	SA)
Regular monitoring of Blood Sugar should help me know when my blood sugar is high to avoid complications in diabetes.	19	(11.9%)	16((10.0%)	41(25.6%)	84	.(52.5%)
Complications of poorly controlled diabetes can be very severe with threat to life.	21	(13.1%)	22((13.8%)	38(23.8%)	79	(49.4%)
It is possible in poorly controlled blood sugar in diabetes to have limbs amputated due to complications arising.	220	(13.8%)	18((11.3%)	28(17.5%)	92	2(57.5%)
It is always beneficial to have the required medications around and take them as prescribed to avoid complications.	820	(51.2%)	30((18.8%)	18(11.3%)	30	(18.8%)

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Question 4.5: What is level of Information-seeking and Medication-Adherence Practices in the Control of Diabetes received by respondent?

I visit the library in the school to get correct information about diabetes mellites to be well informed (40.0%), Generally, I search for information from healthcare persons to be knowledgeable about my illness (34.4%), When I need clarity about my condition, I find no one to explain things for me (36.3%). Statement regarding Medication-Adherence in Diabetes. I take the medications prescribed for my condition by the clinic personnel (50.6%), How often do you not take your prescribed (43.1%), How often do you not take your prescribed medication for diabetes because it is finished (43.1%), How often do you not to take your medications for diabetes mellites (41.3%), How often do you include traditional herbal preparations (Agbo) in the treatment (43.8%).

Table 4.6: Statement regarding Information-seeking Behaviour related

Statement regarding Information-seeking	NA = 1	R = 2	O = 3	A = 4
Behaviour related to Diabetes Mellites				
I visit the library in the school to get correct	48(30.0%)	10(6.3%)	38(23.8%)	64(40.0%)
information about diabetes mellites to be well				
informed.				
Generally, I search for information from healthcare	39(24.4%)	18(11.3%)	55(34.4%)	48(30.0%)
persons to be knowledgeable about my illness.				
When I need clarity about my condition, I find no	50(31.3%)	20(12.5%)	32(20.0%)	58(36.3%)
one to explain things for me.				
Statement regarding Medication-Adherence in	NA = 1	R = 2	O = 3	A = 4
Diabetes				
I take the medications prescribed for my condition	20(12.5%)	10(6.3%)	49(30.6%)	81(50.6%)
by the clinic personnel.				
I measure my blood sugar as required.	41(25.6%)	8(5.0%)	69(43.1%)	42(26.3%)
How often do you not take your prescribed	41(25.6%)	8(5.0%)	69(43.1%)	42(26.3%)
medication for diabetes because it is finished?				
How often do you not to take your medication	20(12.5%)	63(39.4%)	58(36.3%)	19(11.9%)
because you are busy?				
How often do take your medications for diabetes	27(16.9%)	66(41.3%)	39(24.4%)	28(17.5%)
mellites?				
How often do you include traditional herbal	70(43.8%)	13(8.1%)	58(36.3%)	19(11.9%)
preparations (Agbo) in the treatment?				

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Group Statistics

Gender	Ν	Mean	Std. Deviation	Std. Error Mean
Level of knowledge aboutMALE	60	10.2000	1.85765	.23982
diabetes mellites measuredFEMALE	100	9.9600	1.86363	.18636
on 15-point rating scale				
Level of attitudinalMALE	60	13.9833	6.89508	.89015
disposition towards diabetesFEMALE	100	14.6000	6.35801	.63580
measured on 24-point rating				
scale				
Level of perceptionsMALE	60	13.9500	5.40378	.69763
regarding diabetes mellitesFEMALE	100	13.5100	5.81099	.58110
measured on 21-point rating				
scale				
Level of Perception of MALE	60	6.2833	2.90582	.37514
likelihood of complicationsFEMALE	100	6.2000	3.19090	.31909
in poor treatment of diabetes				
measured on 9-point rating				
scale				
Level of perceivedMALE	60	7.6667	2.91499	.37632
seriousness of complicationsFEMALE	100	7.3100	3.11949	.31195
in diabetes measured on 12-				
point rating scale				
Level of Health-SeekingMALE	60	15.0333	2.51751	.32501
behaviour involved in theFEMALE	100	14.6700	2.94754	.29475
treatment of diabetes mellites				
measured on 27-point rating				
scale	_			
Level of information-seekingMALE	60	4.8667	1.61000	.20785
involved in diabetes mellitesFEMALE	100	4.8000	1.85864	.18586
measured on 9-point rating				
scale	- 0			• • •
Level of Self-reportedMALE	60	10.1667	1.99293	.25729
Medication adherenceFEMALE	100	9.8700	1.96255	.19626
involved in the treatment of				
diabetes measured on 18-				
point rating scale				



Figure 1: Histogram Chart of Level of information-seeking involved in diabetes Histogram





Source: Author's Computation

Figure 2: Normal P.P Chart of Regression Standardize Residual: Level of information-seeking involved in diabetes

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Level of information-seeking involved in diabetes mellites measured on 9-point rating



Source: Author's Computation



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Figure:3: Histogram chart: Level of health-seeking behaviour involved in treatment of diabetes mellites



Source: Author's Computation





Source: Author's Computation

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Dependent Variable: Level of Health-Seeking behaviour involved in the treatment of diabetes mellites measured on 27-point rating scale Mean = 4.32E-16 Std. Dev. = 0.997 N = 160 25 20 Frequency 15 10 5 0 -3 -2 -1 0 1 2 3 **Regression Standardized Residual**

Histogram

Figure 5: Normal P.P Chart of Regression Standardize Residual

Figure 6: Histogram chart of Attitudinal Disposition towards diabetes

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Level of Health-Seeking behaviour involved in the treatment of diabetes mellites measured on 27-point rating scale



Source: Author's Computation

Source: Author's Computation





Figure 7: Histogram chart of Attitudinal Disposition towards diabetes

Figure 8: Histogram chart of Attitudinal Disposition towards diabetes

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Level of Health-Seeking behaviour involved in the treatment of diabetes mellites measured on 27-point rating scale



Source: Author's Computation

Source: Author's Computation





Figure 9: Histogram chart of Attitudinal Disposition towards diabetes

Source: Author's Computation

Figure 10: Level of Health-Seeking Behaviour involved in the treatment of diabetes mellites measured on 27-point rating scale



Source: Author's Computation

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DISCUSSION AND CONCLUSION

Diabetes mellitus possess a high disease burden in developing countries such as Nigeria and when hyperglycemic control is not optimized, diabetes imposes additional burdensome care requirements, health-care costs and high risk of disabling complications (Shaw and Borch-Johnsen, 2011).

SUMMARY

This study was proposed to use Health Belief Model which has been largely used in an effort to understand why people do or do not participate in disease screening and disease preventive measures. The health belief model was originally developed in the 1950s by social psychologists: Godfrey Hochbaum, Irwin Rosenstock et al., and Howard Leventhal in the United States. To conceptualize the determinants of hyperglycemic control among respondents attending diabetes clinic at Lagos State University Teaching Hospital in Lagos State, Nigeria. This study was designed to determine the levels of health information received, motivation received, behavioural skill and self-care regarding the hyperglycemic control of diabetes mellitus.

The Level of Health Information Received

The study set out to determine the level of health information received by the diabetic respondents attending diabetes clinic at Lagos State University Teaching Hospital in Lagos State, Nigeria. The finding from this study revealed that 61.3% of the health information was received by the respondents. Although over 40% health information may seem adequate but, in this study, also some of our respondents had no formal education and some were traders which possess the question that the nature and type of health information, they received will depend largely on the hyperglycemic status which must reflect in the control of diabetes mellitus. This finding is consistent with other empirical tests of the Health Belief Model of adherence which suggest that the effect of information on adherence was mediated by behavioral skills. They also found a trend toward a direct effect of information on adherence, which may be because people feel that they are at risk, they are unlikely to change their behavior which may affect adherence through the enactment of behavioral skills, people who are young and healthy may believe that they are very unlikely to develop diabetes. (Godfrey Hochbaum et al., 1985; Champion et al., 2008). Due to internal consistency concerns with their measure of information, only limited knowledge about medications was accounted for. Thus, identification of other types of information important for adherence was advised. Our results suggested that respondents with higher educational levels had greater information. With respect to information, perhaps the better educated patients might have a relatively stronger thirst for knowledge as well as more means to acquire knowledge.

The Level of Motivation Received

This study also sorts to determine the level of motivation received by the diabetic respondents in the same Hospital. The finding revealed a strong predictor for the level of motivation (social and personal) received. It shows that over 90% of the motivation (personal and social) is required to adequately control the hyperglycemic condition for diabetes mellitus to be adequately control was received by the respondents. Other found in the context of adherence



to HIV medications and information was not associated with personal or social motivation to adhere, suggesting the assessed adherence information was insufficient to motivate participants to adhere, and being motivated to adhere did not ensure participants had accurate and sufficient adherence information (Strarace et al., 2006; Aminco et al., 2009). Regarding motivation, the individuals with greater education might have a more positive disposition toward hyperglycemic control and they might also have the ability to obtain more social support for rational drug use from family members and/or friends.

Behavioural skills regarding hyperglycemic control of diabetes mellitus among the respondents

This study also revealed the impact of information and motivation on behavior was mainly mediated by behavioral skills.

The factor variable that predicts hyperglycemic control of diabetes mellitus more significantly

The results of the model indicated that information and motivation not only affected behavior indirectly through behavioral skills but also directly influenced behavior. Our data also showed that the direct effect of information on behavior was greater than the indirect effect of that on behavior and that the direct effect of motivation on behavior was greater than its indirect effect on behavior. These results indicated that behavioral skills greatly influence by health information and motivation received. In the case of this study, there occurred the direct pathways about the effect of information and motivation on behavior was more complex and that complex or new behavioral skills did not appear in the enforcement of the practice thus resulting in poorly controlled diabetes mellitus.

CONCLUSION

Our results suggest that respondent's hyperglycemic control is related to health information, motivation and behavioral skills and self-care which are important variables for promoting hyperglycemic control of diabetes mellitus. Health Belief Model Cues to action explain that diabetes respondents must possess appropriate knowledge about their medication regimen (that is dosing schedules, handling missed medications etc) and skills to obtain adequate health information when needed (access trustworthy sources and ask providers about medications). Motivation will improve patients' goals and interests, as well as how to elicit support in other to maintain adequate control of diabetes. The more cues to action people are exposed to, the more they are likely to consider change.

RECOMMENDATIONS

Thus, this study recommends that the government should upgrade primary health care centers to offer diabetes treatment especially to adolescents.



CONTRIBUTION TO KNOWLEDGE

This study has revealed the issue of self-care in the treatment of diabetes mellitus by the used of Health Belief Model theory to understand the dynamics involved which other studies have not thoroughly considered.

By the use of Health Belief Model this study has shown that information alone is not sufficient to bring about behavioural change or drive behaviour. Other factors are necessary such as motivation and behavioural skills which this study has demonstrated. Therefore, any health promotion, intervention in the clinical setting that does not consider seriously motivation may only achieve very little in the behaviour of interest.

The healthcare provider should be trained in motivational counselling in other to arouse appropriate concern required to maintain adequate self-care.

LIMITATIONS TO STUDY

None

SUGGESTION FOR FURTHER STUDY

It is recommended for researchers interested in this field to source for respondents in secondary school this could ease access to respondents thereby increasing the number of respondents.

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