

# Diabetic Patients' Awareness and Compliance to Diabetic Health Information in Southeast Nigeria

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**Abstract:-** The nature of Diabetes Mellitus requires adjustments in lifestyles for it to be properly managed. For it to be successfully managed for a long time, the patient has to comply with variety of recommended measures received through various avenues including the mass media. This study aims to provide answers to the enquiry regarding diabetic patients' awareness to mass media health information on diabetes and their compliance to such information. Anchored on Health Belief Model, a survey involving a sample size of 400 diabetic patients was conducted in a multi-stage sampling technique. Findings from the study showed that diabetic patients are moderately exposed to health information on diabetes majorly through sources such as interpersonal, television and the internet. Half of the respondents indicated moderate level of compliance to diabetic information received. Supporting this, a little above half affirmed that their adherence to information on diabetics is fair. The study recommended therefore, that efforts should be made by concerned stakeholders to initiate and promote behavioural changes in diabetic patients. For this to happen, appropriate education and training program should be provided, using a multi-media approach, for all diabetic patients and their relatives, to provide the patients with the necessary and required knowledge and skills needed for the management of the disease.

**Keywords:-** Awareness, Compliance, Diabetes, Health Information, Patients, Southeast, Nigeria.

## I. INTRODUCTION

Diabetes Mellitus (DM) is on the rise globally. World Health Organization (2017) predicted that globally "diabetes will be the seventh leading cause of death by 2030". Advancement in age, obesity, lack of regular exercise, unhealthy diet, etc are some of the risk factors of diabetes identified by Basics about Diabetes (2012). The disease often times led to high number of Lower Extremity Amputation (LEA) in Nigeria as a result of foot ulcer (Odatuwa-Omagbemi & Adiki 2012). Fortunately, the risk of DM and its many complications can be reduced on individuals when people have necessary health information geared towards healthy behavioural changes, which is basically the focal point of health awareness and prevention campaigns. Globally, about 425 million people have diabetes (International Diabetes Federation (IDF), 2018). In 2014, IDF discovered that about 4 million people are with diabetic in Nigeria (IDF, 2014).

The nature of DM creates such scenario where the diabetic patient is likely to be the main caregiver to himself or herself. Thus, adequate knowledge of how DM works is required of every diabetic patient to prevent complications. Diabetes Mellitus needs therapeutic control, generally involving strict, rigorous and permanent lifestyle changes that include dietary interventions, physical activity, strict medication regimen and good metabolic control. Diabetes Federation (2005) cited in Mellor (2012) suggests that education should be offered at diagnosis and then frequently reviewed at changes of treatment. Bannister (2008) also observed that patients are also taught how to measure their own blood pressure and things to do when the result is below or above normal. Also, patients are guided to perform always the self-blood glucose monitoring. This is to ensure the normalcy of the blood sugar and to take needed actions when not normal.

In Nigeria, some groups engage in sensitization of the patients, patient-relatives and the public on DM and how it can be managed. One of such groups is The Diabetes Association of Nigeria (DAN) which is the national body for diabetes. It is a patient-centered initiative with a mandate of providing a platform to meet the needs of patients with diabetes in Nigeria. In South-East Nigeria, diabetic patients receive health information about diabetes from the hospitals, mass media and the new media. Such information on diabetes come inform-of medical personnel giving interpersonal counselling to diabetic patients on how to manage their health condition. Media houses with coverage range in the region and beyond offer health programmes where health messages on diabetes and other health challenges are disseminated to the public. Billboards, posters, the internet, mobile phones are also utilized.

However, in spite of the abundance of health information on diabetes mellitus and its management (Cerkoney & Hart, 1980) opined that the success of long term maintenance therapy for diabetes mellitus depends largely upon the patient's compliance with a therapeutic plan. Compliance of diabetic patients with medical advice which involves health information given to them on managing their health condition is essential for controlling the disease. Non-compliance to diabetic health information can be the fault of the patient, therapy, or healthcare. Some patients do not take good care of themselves. Most of them prefer self medications. The low economic base of most people living with diabetes is also another contributing factor militating against proper access to continuous therapy. Ignorance and insufficient health facilities/supplies

also adds to the previously highlighted factors. Diabetes is a pain free disease, compared to most others; this makes the patients nonchalant up until when they are hospitalized.

This study thus, is focused on assessing how diabetic patients comply with diabetic information they have at their disposal.

#### A. Statement of the Problem

There is a consensus among medical experts that prevention is better than cure, thus, awareness creation through media mix has been identified as one of the viable ways of containing diabetes. The media have a responsibility to create awareness on all health related issues. Kreuter and McClure (2004) observed that rise on awareness of health issues with regards to practical changes is one of the fundamental ways the media can combat disease and educate the public on the appropriate health behaviour that can make them adopt preventive measures. However, the majority of the rural populations in Nigeria are highly ignorant of the common etiologies and risk factors for diabetes (Davidson, 2010). This is more so as the World Health Organization 2015 report indicates that Nigeria has the highest prevalence of the disease in Africa.

Patients' non-adherence to these health messages is a serious issue in healthcare because it hinders successful healthcare delivery and promotes negative health outcomes. In almost every country in the world, non-adherence has been reported as a serious problem (Khan, Lateef, Al Aithan, Bu-Khamseen, Al Ibrahim & Khan, 2012). Adherence to prescribed medications is of great concern to prescribers, governments, and other stakeholders because of the increasing evidence that shows that the refusal of patients to take their medications as prescribed is related to higher cost burdens on the healthcare system and preventable adverse outcomes (Osterberg & Blaschke, 2005). Patients' strict adherence to this self-care plans helps in improving their quality of life; however, complying with diabetic care plans is often difficult for patients and represents a big challenge for healthcare to professionals. Compliance rate to these information remains relatively low for overall treatment in individuals with diabetes.

It is, therefore necessary to uphold compliance to these health information and guidelines. The question therefore is, if diabetic patients in Southeast Nigeria are exposed to diabetic health information and if the information are utilized in improving their health conditions.

#### B. Objectives of Study

The purpose of this study is to assess diabetic patients' compliance to diabetic health information in South East Nigeria. Specifically, the objectives of this research are:

1. To determine diabetic patients' exposure to diabetic health information.
2. To ascertain the communication sources through which such diabetes information are received.

3. To determine diabetic patients' compliance with the diabetic health information towards adequate behaviour change.

#### C. Research Questions

The following research questions were posed for the study;

1. What proportion/percentage of diabetic patients are exposed to diabetic health information?
2. What are the communication sources through which such diabetes information is received?
3. To what extent do diabetic patients comply with the diabetes health information received towards adequate behaviour change?

## II. LITERATURE REVIEW

#### A. Conceptual Review of Diabetes

DM is said to exist in a body when a person has high blood glucose. For this to happen, it is either the body does not produce enough insulin or the cells do not respond to the insulin that is produced. The pancreas ought to produce the right amount of insulin to accommodate the quantity of glucose in the bloodstream. But it becomes a problem such as in the case of diabetic patients when the pancreas produces little or no insulin or the cells do not respond normally to the insulin being produced. This condition opined Mahan, Escott-Stump & Krause (2008) is known as insulin resistance. When not properly managed, diabetes results in high blood sugar and further affects vital organs and tissues in the body. Diabetes, just like any other disease, has its symptoms. The following are symptoms of diabetes as listed by IDF (2014): frequent urination, excessive thirst, increased hunger, weight loss, tiredness, lack of interest and concentration, a tingling sensation or numbness in the hands or feet, blurred vision, frequent infections, slow-healing wounds, vomiting and stomach pain (often mistaken as the flu).

Even though diabetes has the above mentioned effects, they are preventable consequences. It demands that people living with it should possess a good knowledge of self-care to enable them stand against of its complications (Iwueze, 2007). Expected patient self-care behaviour in diabetic care plan management usually includes (a) self-monitoring blood glucose (SMBG); (b) using prescribed medications as instructed; (c) exercising regularly; (d) following a meal plan; and (e) keeping doctor's appointments (Funnell & Anderson, 2004; Chatterjee, 2006; Poskiparta, Kasila, & Kiuru, 2006; Xu, Pan, & Liu, 2010). The danger posed by the disease has given rise to concerns among individual groups from all strata of the society.

#### B. Sources of Health Information to Diabetic Patients

The first point of call on health information on Diabetes Mellitus is health professionals. Their health messages are usually reliable and trusted. Fox & Purcell (2010) observed that patients preferred to receive health information from their health care providers. Apart from diabetes health care givers, other sources of information on

the disease abound. The traditional and new media are utilized even groups, relatives and friends. Information from these sources have impact on diabetic patient's behaviours (Gretchen, Susan & D'Veira, 2008). These information according to Dick, Nundy, Solomon, Bishop, Chin & Peek (2011) and Nundy, Dick, Hogan, Lu, Soloman, Bussie & Peek (2012) can be disseminated to the patients as text messages either as mere information on the disease or to remind them of their drugs or to remind them to monitor their glucose or to care for their feet. Also, medical libraries can be utilized for health information on diabetes. These sources of health information on diabetes can be utilized effectively when readily available or accessible. It is on this basis that the present study sought to determine level of compliance of diabetic patients to diabetic information accessed through these various sources.

#### *C. Compliance of Diabetic Patients to Diabetic Health Information*

Compliance to a diabetic health condition becomes complete when the patients can take proper care of themselves based on the health messages given to them and maintain the required blood sugar level. The seriousness of the disease itself alongside its complications can be viable in determining a higher quality of adherence (Shah, Murata, Duckworth, Hoffman & Wendel, 2003). Patients can easily be at home with treatments which seems effective, treatments which its perceived benefits outweighs the costs and when they feel they have a better chance of success. Compliance of the patients can be determined from the way the patients handle their health life in terms of medication and things they should avoid or take as well as how often they do those things (Soliman, 2003). However, some conditions like not remembering to take drugs or not being able to reach or access the places they would be treated can lead to poor compliance or even the sizes of the drugs (Caraceni, Fainsinger & Foley, 2009).

Several factors have been observed that interfere with treatment compliance in type 2 diabetes specifically. Abdulazeez, Omole & Ojulari (2014) are of the view that education qualification of the patients can determine compliance. WHO (2010) opined that non-compliance from patients can be demographic (age, gender, educational level, and marital status) and psychological (patients' beliefs and motivation towards the therapy, negative attitude, patient-prescriber relationship, understanding of health issues, and patient's knowledge). Those on therapy can be route of medication, duration of treatment, complexity of treatment, and the side effects of the medicines, while those related to healthcare system can be availability, accessibility and the physician (WHO, 2010).

#### *D. Empirical Reviews*

Addisu, Eshete and Hailu (2013) conducted a study on diabetic patients' perception of diabetic disease and self-care practice in Dilla University Referral Hospital, South Ethiopia. The main focal of the study was to investigate the knowledge, perception and self-care practices of patients towards the management of diabetes. It adopted the

qualitative and quantitative methods. In the study, a total of 310 participants with DM were interviewed. Face-face interviews were used for quantitative data; and qualitative data were collected by in-depth interview. The study found that 76.8% of them had good practices of the recommended self-care. Among the recommended self-care behaviours, drug adherence (93.2%), dietary in-take (49.7%), and regular exercise (44.5%) were the most practiced self-care. Self-blood glucose monitoring was the least practiced, which accounted 20%. Majority (79.4%) of the respondents were knowledgeable about diabetes, but those diabetic patients who were knowledgeable on DM were less likely to practice recommended self-care practices in the management of their conditions.

Connor, Goering, Matthias and Mac Neill (2011) investigated diabetic patients' utilization of information received. The study focused on patients' perspectives on available sources of information related to diabetes. 21 individuals (aged between 26 to 73 years) with Type 2 of the ailment were studied. In addition, interviewees were asked to rate the importance of the most common sources of information. Findings were that diabetics received general health information messages on diabetes, for example; recommended in-take of medications, healthy eating choices, possible treatments, appropriate blood sugar check time and recommended supplements via sources like; print advertisements, television advertisements, the Internet, news reports, friends and family, doctors, spoken information from the pharmacist, other health providers, labels on prescriptions, written information provided by their pharmacist, magazine article, diabetes and education programs. Data also show that 71% of the respondents rated doctors as the most important source of messages on diabetes, closely followed by the internet, diabetes education programs and practitioners. 43% of diabetic patients were discovered as not adhering to recommended regimen by their sources.

#### *E. Theoretical Framework*

This study is anchored on health belief model which was propounded by Becker and Maiman (1975). This theory believes that individuals will react positively against any disease if they know that their positive actions will save them from the severe consequences of the disease. According to Glanz, Lewis, & Rimer (1990), an individual's behavior can be predicted based on certain issues that the individual may consider (perceived susceptibility, perceived severity, perceived benefits, and perceived barriers) when making a decision about a particular behavior concerning his or her health. Thus, diabetic patients in Southeast Nigeria may take their treatments if they see diabetes as severe ailment that may cost their lives.

Applicably, diabetic patients in South-East Nigeria may take heed towards recommended positive health action if they understand their probably yet uncomplicated health condition may alter their existing plans, method of doing things and attitudes in the progress of time. Furthermore, the level of believability in the efficacy of recommended

diet and aerobic regimen, as well as, the ease of practice regarding the duo will determine the extent of adherence among diabetics in South-East Nigeria.

**III. METHODOLOGY**

This study adopted the survey method. Using Comrey and Lee (1992), a sample size of 400 was drawn from a total population of 10,612 which constituted diabetic patients from three randomly selected federal hospitals in South-East Nigeria; University of Nigeria Teaching

Hospital, Enugu (UNTH), NnamdiAzikiwe University Teaching Hospital, Nnewi (NAUTH) and Federal Teaching Hospital, Abakaliki (FETHA). To arrive at the specific respondents, a three step multi-stage sampling technique was adopted.

**IV. RESULTS**

Results from the survey which involved 400 diabetic patients in South-East Nigeria were as follows:

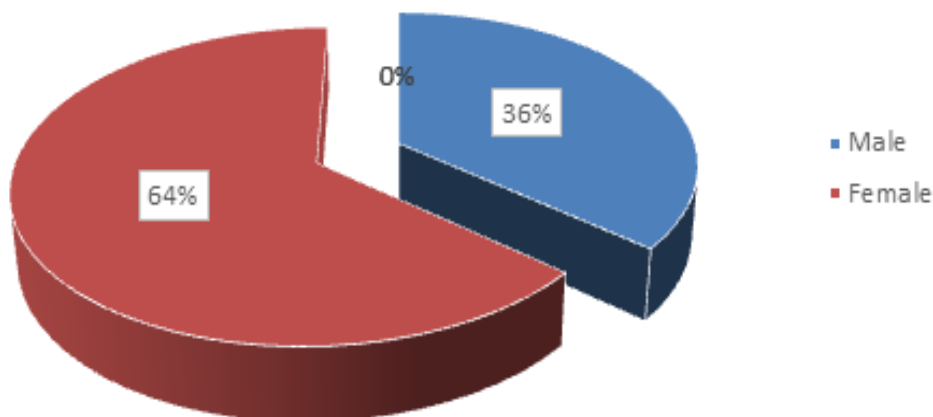


Fig 1:- Respondents' Sex

The respondents' sex analysis presented in figure 1 above shows that 64% of the respondents sampled were female, while 36% were male. This data suggests a

dominant presence of the females among the total number respondents sampled in this study.

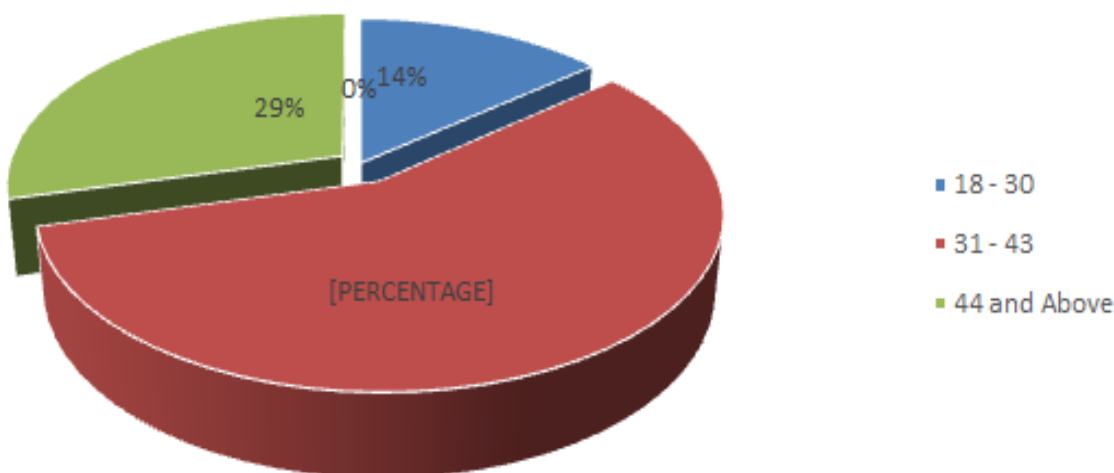


Fig 2:- Respondents' Age Distribution

Figure 2 shows the respondents' age, where the age brackets of 31 – 43 were predominant with 57%. This was followed by the respondents who fall under the age bracket of 44 and above with 29%. Only 14% were in the age

bracket of 18 – 30 years. These findings in figure 2 suggest that respondents within the age bracket of 33 – 43 years constitute the highest population sampled.

Variables	Newspaper	Magazine	Health Poster	Television	Radio	Internet	Inter Personal	Bill board
Regularly	- -	15% (N=49)	9% (N=33)	36% (N=141)	36% (N=134)	35% (N=102)	19% (N=72)	3% (N=9)
Occasionally	46% (N=154)	15% (N=32)	60% (N=217)	49% (N=190)	47% (N=173)	40% (N=119)	63% (N=243)	20% (N=61)
Rarely	39% (N=128)	85% (N=184)	31% (N=112)	15% (N=57)	17% (N=65)	25% (N=73)	18% (N=73)	77% (N=241)
<b>Total</b>	100% (N=331)	100% (N=216)	100% (N=362)	100% (N=388)	100% (N=372)	100% (N=294)	100% (N=388)	100% (N=311)

Table 1:- Respondents' frequency of exposure to health care messages

Table 1 above establishes the frequency of exposure to health-care messages among the respondents via specific media channels. Across the array of media channels, through which diabetic patients receive health-care messages, data show a regular level of exposure among less than half (36% down to 3%) of the respondents. Readings from the data presented above also establishes that more of the respondents are occasionally exposed to health-care messages, especially through interpersonal channels, health posters, television, radio, newspapers and the Internet. Over two-third (85%) of the respondents sampled in the study are rarely exposed to health-care messages via magazines. This could be as a result of the periodic nature of most magazines, with regards to its system of publication. Following this, about seventy-seven percent of the respondents are as well rarely exposed to health-care information on billboards. Since it appears, as shown by data, that more of respondents are occasionally exposed to health-care messages through most of the possible channels of dissemination, the implication is that this observed level of exposure is most likely to be evident as regards their level of exposure to health messages on diabetes.

Variables	Frequency	Percent
Yes	308	79
No	80	21
<b>Total</b>	<b>N=388</b>	<b>100%</b>

Table 2:- Respondents exposure to health messages on diabetes

In Table 2 there is an indication that (n=308) 79% of the diabetic patients are exposed to health information on diabetes, whereas, (n=80) 21% are not. The stance that over two-third are exposed to health messages on diabetes implies that exposure rate among the respondents is high.

Variables	Frequency	Percent
Health Posters	25	8
Internet	72	23
Television	71	23
Radio	48	16
Magazine	4	1
Health Workers	90	29
Newspaper	-	-
<b>Total</b>	<b>N=310</b>	<b>100%</b>

Table 3:- Respondents' main source of exposure to health messages on diabetes

Among the respondents studied, the main source of information was health workers. About (n=90) 29% said they depended on health workers for health messages regarding diabetes. Sixteen percent noted they depended on radio for health messages on diabetes. Data also indicated evenness (23%) among respondents who said they depended on the Internet alongside those who depended on television. About (n=25) 8% depended on health posters; while (n=4) 1% said the magazine was their main source of information. This finding suggests that health workers (as interpersonal sources of health information), the internet and television seem to be the preferred means of credible and reliable health information among the respondents. This finding here chimes with what is obtainable in behaviour change communication practice, where interpersonal communication strategy is a focal point for effectiveness. Furthermore, giving the popularity of radio in Nigeria and the audio-visual base of the television, more use, apparently, is made of these media for dissemination of health messages.

Variables	Frequency	Percent
Regularly	84	27
Occasionally	185	60
Rarely	41	13
<b>Total</b>	<b>N=310</b>	<b>100%</b>

Table 4:- Respondents' frequency of exposure to health messages on diabetes via their main sources.

In the table above, an attempt was made to establish frequency of exposure among diabetics, regarding their main source of information on diabetes. The data generated shows that less than one-third of the respondents are regularly exposed to health messages on diabetes through the main source compared to above one-third of the same respondents who received health messages on diabetes

occasionally through their main source, while the frequency of exposure among those who rarely exposed to health messages on diabetes through their main source were in their 10s. Thus the emerging data suggest a moderate level of exposure to health information on diabetes among the respondents.

Variables	Nutritional management	Physical exercises	Self-monitoring blood glucose	Self-care education	Self-care practice on taking medication
Regularly	58% (N=181)	37% (N=115)	24% (N=74)	30% (N=94)	31% (N=96)
Occasionally	33% (N=101)	36% (N=111)	61% (N=190)	63% (N=196)	57% (N=177)
Rarely	9 % (N=28)	27% (N=84)	15% (N=46)	7% (N=20)	12% (N=37)
<b>Total</b>	100% (N=310)	100% (N=310)	100% (N=310)	100% (N=310)	100% (N=310)

Table 5:- Respondents’ rate of compliance to diabetic health messages

The study then sought the opinion of the respondents on how frequently they apply some of the above diabetic health messages to daily living. Table 5 displays the summary of diabetic patients’ degree of adherence to diabetic health information. The data specified that the frequency of adherence by the respondents sampled was distributed almost along the same percentage pattern within the various variables in the matrix. For example, (n=181) 58% of the respondents regularly adhere to messages on nutritional management and (n=115)37% indicated that they adhere to messages on physical exercises all the time. In the Table also, (n=74)24% noted that they personally monitor their blood glucose level regularly, whereas (n=94) 30% affirmed to regular self-care education. Thirty-one percent on the other hand, indicated regular adherence to messages on self-care practice on taking medication.

adherence to diabetic health messages is good. Also, more than half (n=172 56%) of the respondents admitted to their compliance level being fair, whereas, about 3% (N=9) see their compliance level as poor. This data chimes in with Table 6, where more of the respondents were inclined towards exhibiting a care-free attitude towards adherence to recommended positive health actions.

**V. DISCUSSION OF FINDINGS**

This work provides insight into the extent diabetic patients in Nigeria, particularly, South-East are exposed to health messages on diabetes and the level at which they comply to recommended positive health actions via their main sources of information. It was revealed that there are more female diabetic patients than the males in the sampled hospitals. The data also show that diabetic patients between the age brackets of 31-43 constitute the highest number of patients who made up the study.

From the findings of this study, the diabetic patients sampled in this study are moderately exposed to health messages on diabetes, through major sources like the Internet, the television and through health workers/doctors. The findings disagree with that of Addisu, Eshete and Hailu (2013), which found that 79.4%, representing the majority, were exposed to health messages on diabetes. This reduced exposure among diabetic patients as it is evident in this present study can imply that exposure, as a variable, changes amidst time and other influencing factors. The finding that major sources of information on diabetes among the respondents were Internet, television and health workers closely chimes in with that of Connor, Goering, Matthias and Mac Neill (2011), which established that 71% of the respondents rated doctors as most important sources of information on diabetes, closely followed by other health professionals and then, the Internet. Although other sources of information were seen to be relatively unimportant, a few of the patients indicated they were their major sources of information. This will suggest that believability is more

According to this table, more of the respondents are inclined to exhibit a care-free attitude towards adherence. For example, over half of the respondents (n=196, 63%), as revealed by the data, occasionally adhere to messages on self-care education, (n=190)61% some of the time adhere to diabetic messages on self-care monitoring of blood glucose, while (n=177)57% occasionally adhere to diabetic health messages self-care practice of taking medications.

Variables	Frequency	Percentage
Good	129	42
Fair	172	56
Poor	9	3
<b>Total</b>	<b>N=310</b>	<b>100%</b>

Table 6:- Respondents’ evaluation of their level of compliance to health-care messages on diabetes.

The study further accessed the respondents’ own view on the nature of their adherence to diabetic information. This is intended to establish possible variations from the data in Table 6. As seen in Table 6 above, (n=129) 42% of the respondents think their compliance level with regards to

likely to be accorded to interpersonal forms of communicating health messages, like diabetes, more than any other source.

This study was able to establish respondents' compliance to health messages on diabetes. Data on self-evaluation of diabetic patients' compliance equally shows laxity, giving the stance that more than half (56%) indicated a fair compliance level, while less than two-fourth (42%) affirmed otherwise. Three percent poorly comply with recommended regimen. Though the percentage involved in the context of this study might seem negligible, further research in other context might reveal something more significant.

## VI. CONCLUSION AND RECOMMENDATIONS

Most of the patients studied were yet to take the issue of compliance to a level that commiserates with the seriousness of the disease. This finding chimes in with the first scenario that had been envisaged in the framework supporting this study. Also, as stated, the HBM explains this finding, because those respondents who complied regularly with recommended regimen, and who indicated a good compliance level, most likely have a specific health belief about their vulnerability to the risk or the complications associated with diabetes and also beliefs about the consequence of a complicated health status. The findings from this study on the respondents level of compliance is supported by that of Oladapo, Koleosho and Ayodele (2013), where it was established that the fasting blood sugar of the respondents was above the normal range, an indication that the diabetics were carefree about their dietary lifestyles.

Therefore, the researchers recommend that;

- Enough education and training programme should be provided, using a multi-media approach, for all diabetic patients and their relatives and supplemented using posters with pictures that can be understood by all, its management and prevention of diabetes complications to provide the patients with the necessary and required knowledge and skills.
- Since findings indicated that doctors/other health professionals emerged higher as major sources of information, using the mass media, the physicians should therefore be encouraged and further sensitized on the need to continue living up to expectation in the dissemination of helpful health messages while creating and maintaining a cordial doctor-patient relationship.
- Considering the finding that the print media, especially newspapers seem to have failed in its social responsibility role, it becomes imperative that owners of print media establishments and media houses in general to be up and doing in rendering their lawful services to their information hungry audience, especially in health related issues as serious as diabetes.

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