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Original article

Effect of Health Literacy on Medication Adherence among Diabetic Patients

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ABSTRACT

Introduction: Diabetes mellitus is a major threat in developing countries around the world;thousands of peoples die of diabetic-related cases due to low medication adherence. Most scholars believe that proper health education is a way forward.**Objectives:**To determine the correlation between health literacy and medication adherence among Diabetic patients.**Material and method**: A correlational research design was used to correlate health literacy and medication adherence among diabetic patients.All registered diabetic patients that are willing to participate in the study from the three hospitals were used for the study.The instrument used was Morisky Medication Adherence Scale (MMAS-8) and Short Functional Health Literacy in Adults Test (STOHFLA). The questionnaires were administered to 180 participants and same were retrieved. Data collected was coded and imputed into SPSS statistics 21 for analysis at 0.05 level of significant.**Results:** The findings showed that 100 (55.6%) of the participants had low adherence level, 70(38.9%) had medium adherence level and 10(5.6%) of the participants had higher adherence level. It was also found that 33.3% of the participants had adequate health literacy and 66.7% of the participants had inadequate health literacy. The correlation showed that health literacy with p- value of 0.05 is statistically significant to medication adherence.**Conclusion**: The study shows that inadequate health literacy among diabetic patients is responsible for low medication adherence. The researchers, therefore, suggested that nurses need to step uptheir effort on improving the health literacy of patients, which is a fundamental approach to achieving better health management for diabetic patients.

KEYWORDS: Diabetes Mellitus, Medication Adherence, Diabetic Patient and Health Literacy

INTRODUCTION

Diabetes mellitus (DM) is a chronic medical illness that hasenormous effect on people's finance, health and total living condition. The disease and its associated complications remain one of the major global threat. The World Health Organisation reported thatthe population of people suffering from the disease is quadruped in 2014 with an estimated population of about 422 million, which indicates that the disease prevalence has doubled (4.7%-8.5%) of adult population especially in the developing countries like Nigeria[1]. Diabetes mellitus cases in Nigeria impose a larger financialload on persons, the health care team, and other workforces involved in health care delivery system and this is attributed to poor medication adherence and poor health literacyamong diabetic patients [1].

Thelevel of medication adherence and health literacy level determine the health outcome of patients with chronic diseases [2]. Health literacy is a mental and social motivation that help an individual to develop an interest in seeking health information, understand it and utilize the knowledge in a way to enhance and maintain good health behaviours. Meaning, there are more to health literacy than just reading medication charts like a newspaper or ability to keep to medication appointment, it means expanding the consciousness of patient about disease prevention, treatments, and rehabilitation therapy that can promote quick recovery from a diseasecondition[3].

Though health literacy is relatively new in the modern management of Diabetes mellitus but its effect on medication adherence and overall treatment outcome cannot be underrated [4]. Health literacy is gradually being incorporated into the health care delivery system, because of its prospective influence on the effective management of diabetic patients [5]. Despite the importance of these variables, the researchers found that there are limited research studies on the relationship betweenhealth literacy and medication adherence inNigeria.

Objectives:

1) To find out the level of medication adherence among diabetic patients
2) To assess health literacy level of Diabetic patients
3) To determine the correlation between health literacy and medication adherence among Diabetic patients.

MATERIALS AND METHODS

A correlational research design was adopted, in other to be able to determinerelationship between health literacy and medication adherence among patients with diabetes mellitus in Benin-city in Edo state, Nigeria.

Population of the Study:The research population is made of all diabetic patients in the University of Benin teaching hospital, state hospital,and Faith Mediplex hospital Benin-city, Edo state, Nigeria.

Sampling Technique:A total enumeration sampling technique was adopted for the study, where all the registered adult patients, and who are willing to participate in the study were used for the study. This type of sampling technique is more appropriate because the size of the population can easily be managed by the researcher. This resulted in a sample size of 180 diabetic patients.

Instrumentation: Short Functional Health Literacy in Adults Test is a standardized scale that is often used by researchers to measure health literacy level of the patient. The test was adopted to measure health literacy in diabetic patients. No copyright is required in the use of this scale. The instrument consists of 16 items which was used to assess the functional health literacy of an adult patient that scored thus: 1=Always, 2= Often, 3=Sometimes, 4= occasionally, 5=Never. The questionnaire involved items that were to be answered on a scale of five points ranging from always to never. Based on the test, the diabetic patients were rated as follows: adequate health literacy if the patient has STOFHLA score that ranges from 17 and above, and rated inadequate if the STOFHLA score falls within 1–16 [6].

Data collection procedure**:**Data collection is a systematic way of gathering information on a particular identified variable of interest, to enable the researcher to answer research questions and test the hypothesis. The researcher established the rule of inclusion and exclusion to identify the qualified participants for the study, and all available registered diabetic patients in the diabetic clinic who met with the rules of inclusion were selected from the three hospitals in Benin-city. The selected clients were invited to join the study voluntarily and informed verbal consents were obtained, after explaining the importance of the study.

The participants were asked to fill the research instrument on 1) Morisky Medication Adherence test to find out the level of medication adherence among diabetic patients, 2) Demographic data to determine personal information of the participants and 3) Functional Health Literacy in Adults (TOHFLA**)** test to determine the level of acquiring diabetes-related information among diabetes patients in the identified hospitals. At the point of collection, the researcher was present in person during the administration to answer questions, make corrections and ensure a fairly high percentage of return of responses.

Method of Data Analysis: Data analysis is a process of subjecting the data gathered from the field of study into statistical testing in order to make an inferential conclusion. The analyses were done on the computer through the use of Statistical Package for the Social Sciences (SPSS version 21). Statistical techniques used in the study were; percentage and simple frequency distribution table and bar chart for descriptive analysis, while correlational statisticwas used for inferential analysis, based on the objective of the study. In this study, patients with medication adherence of score zero (0) were rated as higher adherence, 1-2 score of medication adherence were rated as average adherence and 3-8 score of medication adherence were rated as Poor adherence, while health literacy score of 1–16 were taken as inadequate and score of 17 and above were taken as Adequate health literacy.

RESULTS

Concerning age, 8(4.4%) were in age group of 27-36 years, 49(27.2%) were in age group of 37-46 years, 30(16.7%) were in age group of 47-56 years, 39(21.7%) were in age group of 57-66 years, 43(23.9%) were in age group of 67-76 years and 11(6.1%) were in age group of 77 years & above. Mean age was 57.18, median= 60, mode =75 and Standard Deviation (SD) =14.15. Regarding sex of the respondents, 80 (44.4%) were male and 100 (55.6%) were female. Concerning the marital status of the respondents, 90(50%) were married, 70(38.9%) were single and 20(11.1%) were divorced. With regard to a stream of the education level of the respondents, 10(5.6%) had no formal education, 64(35.6%) had primary education, 77(42.8%) had secondary education and 29 (16.1%) had a college education. On economic and income level, the table shows that 92(51.1%) monthly salary is less than ₦75000, 66(36.7%) earned between ₦75,000 to ₦100,000 and 22(12.2%) earned above ₦100,000 monthly (Table 1).

100 (55.6%) of the participants had low medication adherence level, 70(38.9%) of the participants had medium medication adherence level and 10(5.6%) of the participants had higher medication adherence level. This analysis could show that majority of the participants had a low level of medication adherence.33.3% of the participants had adequate health literacy level and 66.7% of the participants had inadequate health literacy level. That means that most of the participants (diabetic patients) had a low level or little knowledge about the disease (Table 2).

Correlation of health literacy and medication adherence among diabetic patients shows a Spearman's rho value of -.146 and a p-value of 0.050. Testing at an alpha level of 0.05, the p-value is equal to the alpha level, this shows that there is a weak correlation between health literacy and medication adherence. Consequently, the research hypothesis which states that there is no correlation between health literacy and medication adherence is rejected, and alternate hypothesis is accepted, which states that there is a significant correlation between health literacy and medication adherence. (Table no 4).

Table 1: Demographic Data of the Study Subjects

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Age(years)				
27-36	8	4.4	4.4	4.4
37-46	49	27.2	27.2	31.6
47-56	30	16.7	16.7	48.3
57-66	39	21.7	21.7	70.0
67-76	43	23.9	23.9	93.9
77 & ABOVE	11	6.1	6.1	100.0
Mean=57.18, median=60,	mode=75 and	Standard	deviation=14.15	
Sex				
Male	80	44.4	44.4	44.4
Female	100	55.6	55.6	100.0
Marital Status				
Married	90	50.0	50.0	50.0
Single	70	38.9	38.9	88.9
Divorce	20	11.1	11.1	100.0
Education				
No formal education	10	5.6	5.6	5.6
Primary	64	35.6	35.6	41.1
Secondary	77	42.8	42.8	83.9
College	29	16.1	16.1	100.0
Economic and	**income level**			
Less than 75,000 Naira	92	51.1	51.1	51.1
75,000-100,000 Naira	66	36.7	36.7	87.8
Greater than 100,000 Naira	22	12.2	12.2	100.0

Table 2: The frequency distribution of medication adherence level among diabetic patients.

Variables	Frequency	Percent	Valid Percent	Cumulative Percent
Low Adherence	100	55.6	55.6	55.6
Medium Adherence	70	38.9	38.9	94.4
Higher Adherence	10	5.6	5.6	100.0
Total	180	100.0	100.0	

Rating scale: 0 score = higher adherence, 1-2 scores=medium adherence, 3-8 scores =low adherence

Table 3: The frequency distribution of health literacy level among diabetic patients.

Variable	Total no.	Percentage
Adequate literacy	60	33.3
Inadequate literacy	120	66.7
Total	180	100

Table 4: Spearman's rho correlation of health literacy and medication adherence among diabetic patients

Variables	*N*	*Spearman's rho*	*Sig. (2-tailed)*	*Remarks*
Medication	*Adherence*			
Health literacy	*180*	*-.146*	*.050*	*Sig.*

α= 0.05

DISCUSSION

This study shows that majority of the participants had a low level of medication adherence. This is mostly because, most of the subjects are retired civil servants, with little or no income, therefore, most of them cannot afford the drugs and even the young ones among them are not gainfully employed. During this study the researchers noticed that most of the patients visit traditional healer because of hospital and drug bills and only visit the hospital when they had developed Diabetics associated complications. Ahmad M. Ramli et al [7] in their own study saidthat medications adherence level in diabetic patients is greatly below average and this is associated with a lot of life threaten complications that increase the cost of management with optimal health outcomes, and also identified the factors that can predispose diabetic patient to medication non-adherence

such as the presence of age, and level of health literacy. In another study it wasdiscovered that between 36 -93% of diabetic patients do not keep to the prescription of diabetic medications therapy for several months because of cost of medication [8].

This Study further reveals that most of the diabetic patients had a low level of health literacy. The researcher's interaction with the dwellers of the research settings shows that, in a family of ten, you will find about seven that have dropped out from school because they believe that it will not meet up with their immediate financial requirements, most dropped school to travel to Italy, for different illegal Business to make money, therefore, you can hardly find them sourcing for health information that will not put immediate money in their pockets.

This could be what is responsible for low level of health literacy among the subjects, which is in agreement with the Institute of Medicine reportthat health literacy is the capability or capacity of patients to source for basic health materials, read it and comprehend it in a way that it will help them to make positive health decisions that will improve his or her health condition[9]. Cavanaugh K.[10] in his own studysaid that inadequate levels of health literacy are predominant among diabetic patients and linked with processes of healthcare and significant health consequences. This is also in line with Dewalt D. Berkman et al [2]in their own study where they found out that inadequate health literacy is more predominant among susceptible people, such as the aged, minorities, illiterates, and persons with enduring diseases.

Moreover, this study reveals that there is a significant correlation between health literacy and medication adherence. This finding agreed with Schillinger D. Grumbach et al [11] in their own study state that inadequate health literacy is independently associated with worse glycemic control and higher rates of retinopathy and insufficient health literacy added to the disproportionate problem of diabetes-related complication among underprivileged populations whileMoss V. [12] in his own study state thatinadequate health literacy is linked with poor medication adherence among diabetic patients.

CONCLUSION

From the above study, it is concluded that there is a relationship between health literacy and medication adherence, andmost diabetic patients have a low level of health literacy which is responsible for poor medication adherence among them. All efforts by hospital management and health care system, towards the management of diabetic patient in Nigeria, will be a mere mirage if health literacy level of patients is not improved upon. Public health literacy campaign, affordable health coverage, provision of health literacy materials in the hospitals,and subsidizing the cost of drugs by the government will go a long way in reducing the menace of poor medication adherence and other associated complications among diabetic patients.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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