

## Assessment of Older Adult Health Literacy on Diabetes Mellitus in Tertiary Hospitals in Port Harcourt Metropolis, River State Nigeria

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### Abstract

### Original Research Article

The study assessed the older adult health literacy on diabetes mellitus in tertiary hospitals in Port Harcourt metropolis. Four objectives and four research questions guided the study. The study adopted descriptive survey research design. The population of the study comprised four thousand five hundred and nineteen (4519) diabetic patients drawn from the two tertiary hospitals UPTH and RSUTH Port Harcourt metropolis. The sample for the study consists of two hundred registered older adults living with diabetes mellitus in UPTH and RUSTH through purposive sampling technique. The instrument for data collection was questionnaire. The research questions were analyzed using weighted mean. The results of the study revealed that social media, community education, health talk at the hospital, newspaper, television programmes, centre for diseases control (CDC) and national library of medicine are sources of knowledge of causes of diabetes mellitus among older adults. Health literacy lifestyle skills adopted by older adults in management of diabetes mellitus are eating healthy foods, testing blood sugar, taking medication as prescribed, managing stress, regular medical check-up, skipping fad diet and loosing extra weight are literacy lifestyle skills engaged by the older adult diabetic patients. The study recommended that custodian of health information about the health status of diabetic patients should grant access to researchers on the subject matter in other to provide accuracy in their research findings, hospitals should provide enough knowledge on the causes and management of diabetes among older adult diabetic patients. Older adult diabetic patients should try as much as possible to attend to referral hospitals for proper care and medication.

**Keywords:** Health literacy, Diabetes mellitus, Older adults, Tertiary hospitals, Port Harcourt, Disease management.

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## INTRODUCTION

Diabetes Mellitus (DM) is a chronic, progressive, and non-communicable disease characterized by an increase in blood glucose secondary to an absolute or relative deficiency in insulin signaling. DM accounts for approximately 1.5 million deaths in the world yearly. However, hyperglycemia has been linked to an additional 2.2 million yearly deaths through increased risk for other conditions, in particular, cardiovascular disease (CVD); 43% of which occur in people under the age of 70. However, the patient knowledge of the causes and ways of management of diabetes mellitus is key to the survival of the patients. In many countries including Nigeria, people lack basic knowledge of health issues and so, there is high prevalence of common diseases that could have been prevented.

Health literacy is defined as the extent to which a person has the capacity to obtain, process and understand necessary and essential health information and services needed to make appropriate health decision, (Chesser, Wood, Smothers & Rogers, 2016). The level of health literacy determines the health behaviour and action of the individual and to an extent the health status of the person. According to Geboers, de Winter Lutten cited in Chesse (2016), good health literacy enables older adults to have sustained health conditions, autonomy and empowerment, whereas older adults with low health literacy level usually have risk health behaviour and health outcomes such as poor compliance with physical activity guidelines, frequent visits to medical doctors and higher prevalence of chronic condition.

The complications of DM entail important socio-economic consequences for the patients and their families, as well as for community and global public

health systems, owing to direct and indirect medical costs, which appear to be more severe in developing countries. There are two types of DM-type 1 and type 2; each of these types has varying degree of severity and complication and so requires different ways of management and medication. In Venezuela, Type 2 DM (DM2) represents one of the main causes of morbidity and mortality, with serious repercussions on lifestyle, being closely associated with feeding habits, stress management, and sedentary habits, among other determinants. In 2005, the Carmela study found 6% of the Venezuelan population had DM, 5.6% men and 6.3 women. In 2014, Lopez, found fasting dysglycemia in 38.95% of a Venezuelan sample, with a prevalence of 14.25% for DM and 40.7% for prediabetes. It was also found that hypertension, hypercholesterolemia, dysglycemia, and DM was more prevalent in females. In contrast, the world health organization (WHO) report shows an estimated prevalence of 8.8% for DM in Venezuela. The International Diabetes Federation (IDF) estimates, in its 2016 report, a prevalence of 11.1%. In Nigeria the population of people with diabetes is 11.2 million according to Onyedinefu (2022).

Facing this alarming landscape, a plausible option to minimize its impact on the population is disease management through education and prevention, the later defined by the WHO (2021) as a set of measures aimed not just at preventing the onset of the disease, such as reducing risk factors, but also to stay in advance and attenuate its consequences once established, a goal that may be obtained by giving education to the patient at risk and his/her family group. Diabetes Mellitus if not treated seriously, is expected to cause the explosion of Diabetes Mellitus to 21.3 million in 2030. Indonesia's Health Profile in 2012 shows that DM is ranked 6<sup>th</sup> out of 10 main diseases in outpatients in Indonesian hospitals. Diabetes Mellitus is a chronic disease that requires long-term care and requires the thorough management of all medical teams at a health care centre in the hope that the patient will be able to manage and prevent acute and chronic complications (Ika, 2014). Diabetes mellitus management according to Perkeni (2011) has been identified to have four main pillars namely: health education, meal planning/diet, physical exercise, and pharmacological interventions

Health education is the first among the four main pillars of diabetes mellitus management. According to the American Diabetes Association (2003) report, 50% - 75% of patients with type 2 DM have undergone lower extremity amputation. Over 50% of amputations can be prevented by providing health education and foot care training and daily exercise. All medical personnel, especially the nursing profession play a major role in providing health care for people with diabetes mellitus. The low knowledge of people with diabetes mellitus provides opportunities for nurses to provide an educational role for people with diabetes mellitus. The role of nurses is not only to provide medical services but

also to provide education through health education to individuals, families, and communities. Health education can improve the knowledge of patients with diabetes mellitus and family, which is expected to form good behaviour for people with diabetes mellitus to achieve their ultimate goal of healthy blood sugar levels.

Therapeutic education involves the set of educational activities essential for the management of chronic diseases, carried out by health professionals trained in the field of education, the ultimate goal is to enable and empower patients to participate actively in their treatment and prevent avoidable complications while maintaining or improving their quality of life. Education is one of the main pillars in the treatment of DM2, as contemplated in the Declaration of Saint Vincent, which advocates for the need and importance of continuing education for all those with DM, their families, friends, and close acquaintances, as well as the health care team. One of the major manifestations of aging is declining health, the deterioration of the body's systems. Most older adults suffer from various diseases like stroke; heart failure and recuperation are very slow.

Finden and Formusa (2011) pointed out that policy around health education for the older adulthood emphasizes that active ageing can have a remarkable effect on the quality-of-life indicator. So, to flatten the curve of the rate of untimely death among older adults suffering from DM in Nigeria, the WHO protocols and domestic guidelines issued by local health authorities must be properly disseminated and the elderly educated in the manner that is simple and clear.

Several organizations have developed diabetes guidelines specific to, or including, older adults. The American Diabetic Association (ADA) includes a section on older adults in its annual Standards of Medical Care in Diabetes. The section discusses the heterogeneity of persons aged  $\geq 65$  years and the lack of high-level evidence. In collaboration with the ADA and other medical organizations, the California HealthCare Foundation/American Geriatrics Society panel published guidelines for improving the care of older adults with diabetes in 2003. In Nigeria the tertiary hospitals mostly the teaching hospitals are the places where people receive expert and comprehensive treatment of major and complicated illness. DM patients with major complications are referred to the teaching hospitals and other patients also consult these hospitals for their treatment and medical advice. These hospitals not only treat it; they also provide health education to their patients and non-patients through health education.

According to the most recent surveillance data (2022), the prevalence of diabetes among U.S. adults aged  $\geq 65$  years varies from 22 to 33%, depending on the diagnostic criteria used. Postprandial hyperglycemia is a prominent characteristic of type 2 diabetes in older adults, contributing to observed differences in

prevalence depending on which diagnostic test is used. Using the A hemoglobin A1C (HbA1C) test (A1C) or fasting plasma glucose (FPG) diagnostic criteria, as is currently done for national surveillance, one-third of older adults with diabetes are undiagnosed.

The epidemic of type 2 diabetes is linked to increasing rates of overweight and obesity in the U.S. population, but projections by the Centers for Disease Control and Prevention (CDC) suggest that even if diabetes incidence rates level off, the prevalence of diabetes will double in the next 20 years, in part due to the aging of the population. Other projections suggest that the number of cases of diagnosed diabetes in those aged  $\geq 65$  years will increase by 4.5-fold (compared to 3-fold in the total population) between 2005 and 2050. This trend is also peculiar to Nigeria.

Most of the people with DM have little or no knowledge of the causes and measures of management of DM. The consequence of the low literacy on DM is the increasing rate of the number of people with DM, increasing complications, wrong medications, and ultimately untimely death among older adults with DM.

The older adult population access to learning opportunities in the formal education is limited but their major source of updating their knowledge and retooling their skill has been through informal and non-formal education with the traditional media, the news media and community education platforms as the leading source of learning. If these sources of learning adequately reach out to the older adult cohort on public health education on DM, prevention and management, then the complication and death among the elderly would as well be reduced. Therefore, health literacy on diabetes mellitus (DM) is very important in promoting level of knowledge on causes and management of DM among older adults and it is the key to policy formulation on interventions on health education promotion. Most research on DM focus on medication, vaccine development and administration, economic consequences of the DM, treatment and prevention. Not much has been done in the area of assessment of level of health literacy on DM particularly among older adults. It is against this back drop that this study is been conducted. The study seeks to assess health literacy of older adult diabetic patients in tertiary hospitals in Port Harcourt, Rivers State, Nigeria.

### Aim and objectives of the Study

The aim of this study is to assess the older adult health literacy on diabetes mellitus in tertiary hospitals in Port Harcourt, Rivers State Nigeria. However, the objectives of the study are to:

1. examine the sources of knowledge on the causes of diabetes mellitus among older adults in tertiary hospital in port Harcourt metropolis;

2. examine the health literacy lifestyle skills adopted by the older adult diabetic patient on the management of diabetes mellitus
3. examine the health literacy coping strategies adopted by the older adult living with diabetes mellitus;
4. examine the factors affecting the health literacy coping strategies adopted by older adult diabetic patient.

### Research Questions

**This study was guided by the following research questions:**

1. What are the sources of knowledge on the causes of diabetes mellitus among older adults in tertiary hospital in Port Harcourt metropolis?
2. What are the health literacy lifestyle skills adopted by the older adult diabetic patient on the management of diabetes mellitus?
3. What are the health literacy coping strategies adopted by the older adult living with diabetes mellitus?
4. What are the factors affecting the health literacy coping strategies adopted by older adult diabetic patients

### METHODOLOGY

The study adopted the descriptive survey research design. A survey is a descriptive study which seeks or uses the sample data in an investigation to document, describe and explain what is in existence or non-existence, or the present status of a phenomenon being investigated. In survey, views, facts etc are collected, analyzed and used for answering research questions (Ali 2006) The survey research design was chosen because the population is large and it will allow for effective sampling of the population.

The population of this study comprises one thousand, one hundred and forty-two (1,142) registered diabetic patients drawn from two tertiary Hospitals (UPTH and RSUTH) medical records in Port Harcourt. The choice of these two hospitals was because they are the only referral hospitals in Rivers State with Medical Out-Patient Clinic (MOPC) facilities. MOPC is the department of internal medicine that treats diabetic patients. The breakdown of the population shows that 344 patients comprising 113 males and 231 females were from UPTH while 798 patients comprising 232 males and 566 females were from RSUTH respectively.

The sample size for this study is 200 registered older adults (100 males and 100 females) living with diabetes mellitus in UPTH and RSUTH. The researchers adopted purposive sampling technique to select 100 males and 100 females of diabetic patients that are 60years and above among the registered patients in the two teaching hospitals.

The instrument used for this study was structured questionnaire designed by the researchers. It is titled: Instrument for Assessment of Older Adult Health Literacy on Diabetes Mellitus (IAOAHLD). The instrument was based on a modified four-point Likert Scale. The response options are: Strongly Agree (SA), Agree (A), disagree (D) and strongly disagree (SD). The questionnaire was divided into two sections. Section A deals with the demographic details of the respondents; while the section B deals with the items that addresses the research questions. The questionnaire has a total of 40 items.

The instrument was subjected to content validation by the researcher's supervisor and two other experts in the field of adult and non-formal education. Their corrections and comments were used to modify and strengthen the instrument before administration.

In order to ascertain the reliability of instrument a test-retest method was used for the test of reliability. The instrument was administered to selected 20 diabetic patients who were not part of the study, response obtained after an interval of two weeks of the exercise was analyzed using Pearson Product Moment Correlation (PPMC) statistics to determine the reliability. A correlation coefficient of 0.9 was obtained indicating that the instrument was reliable.

Two hundred (200) copies of the questionnaire were administered to the respondents by the researchers with the help of four research assistants on the clinic days. The researchers retrieved duly completed copies of the questionnaire. 180 copies of the questionnaire were duly filled and returned, giving 90% returned rate, and was used for the analysis. The breakdown of the returned and used questionnaire shows that 84 males and 96 females registered older adult living with diabetes.

The data gathered from the study were analyzed using mean statistic. The response to the questionnaire items were weighted on four-point scale of Strongly Agree 4, Agree 3, Strongly Disagree 2 and Disagree 1. The mean for each item was obtained using the total sum of the product of responses and their weighted mean ( $xw$ ) divided by the total number of the respondents. For any item in the questionnaire to be accepted, it must score a mean weight of 2.5 and above. Items whose mean scores were less than 2.5 were considered insignificant and rejected.

## RESULTS

### Research Question One:

What are the sources of knowledge on the causes of diabetes mellitus among older adults in tertiary hospital in Port Harcourt metropolis?

**Table 1: Mean Analysis of Sources of Knowledge of Causes of Diabetes Mellitus among Older Adults**

S/N	Statements	Selected Registered Older Male Adults Diabetic Patients in UPTH & RSUTH N=86		Selected Registered Older Female Adults Diabetic Patients in UPTH & RSUTH N=94	
		X	Decision	X	Decision
1	Social media is a source of knowledge	3.0	Agree	2.7	Agree
2	Through internet	1.7	Disagree	2.2	Disagree
3	Through community education	2.2	Disagree	2.6	Agree
4	Through health talk at the hospital	3.3	Agree	2.3	Agree
5	Through news paper	2.7	Agree	2.4	Agree
6	Through radio programme	3.1	Agree	2.7	Agree
7	Through television programme	2.1	Disagree	1.7	Disagree
8	Through group discussion	2.9	Agree	2.8	Agree
9	Through center for disease control (CDC)	2.1	Disagree	2.1	Disagree
10	Through National Library of Medicine	1.9	Disagree	2.4	Disagree
	<b>Grand Mean</b>	<b>2.5</b>		<b>2.4</b>	

Table 1 shows that the registered older male adult diabetic patients at UPTH and RSUTH agreed that social media, health talk at the hospital, newspaper, radio programme, and group discussion are their sources of knowledge of causes of diabetic mellitus. While registered older female adult diabetic patients at UPTH and RSUTH agreed that social, media, community education, television programme, and group discussion

are their sources of knowledge of causes of diabetic mellitus.

### Research Question Two:

What are the health literacy lifestyle skills adopted by the older adult diabetic patient on the management of diabetes mellitus?

**Table 2: Mean Analysis of Health Literacy Lifestyle Skills Adopted by Older Adult Diabetic Patient in the Management of Diabetes Mellitus**

Health Literacy Lifestyle Skills Adopted by Older Adult Diabetic Patient in Management of Diabetes Mellitus		Selected Registered Older Male Adults Diabetic Patients in UPTH & RSUTH N=86		Selected Registered Older Female Adults Diabetic Patients in UPTH & RSUTH N=94	
S/N	Statements	X	Decision	X	Decision
11	Making and eaten healthy food is a lifestyle skill of a diabetic patient	3.0	Agree	2.6	Agree
12	Testing blood sugar often is a lifestyle skill of a diabetic patient	2.7	Agree	2.5	Agree
13	Being active most days is a necessary lifestyle for diabetic patient	2.6	Agree	3.2	Agree
14	Taking medicines as prescribed, even if you feel good is a lifestyle for diabetic patient.	3.8	Agree	2.6	Agree
15	Learn ways to manage stress is a lifestyle skill for diabetes mellitus	2.7	Agree	3.1	Agree
16	Exercising regular is a lifestyle skill for diabetes mellitus	3.2	Agree	2.6	Agree
17	Regular medical checkup is a lifestyle skill for a diabetic Healthy patient	3.0	Agree	2.8	Agree
18	Skipping fat diets is a lifestyle skill for a diabetic patient	2.9	Agree	2.8	Agree
19	Losing extra weight is necessary for a diabetic patient	3.1	Agree	2.9	Agree
20	Engaging in intermittent fasting is a lifestyle skill for a diabetic patient	3.0	Disagree	2.9	Agree
<b>Grand Mean</b>		<b>3.0</b>		<b>2.8</b>	

Table 2 shows that the registered older male adult diabetic patients at UPTH and RSUTH responses on items 11-20 gave a mean score that ranges from 2.6-3.8 which are all greater than the criterion mean of 2.5. While responses from female older adult diabetic patients at UPTH and RSUTH gave mean scores that ranges from 2.5- 3.2, which are also greater than the criterion mean of 2.5. The result implies that both male and female registered older adult diabetic patients in UPTH and RSUTH agreed that making and eaten healthy

food, testing blood sugar, being active daily, taking drugs as prescribed, managing stress, regular medical check, skipping fat diet, loosing extra weight and engaging in intermittent fasting are health literacy lifestyle skills they adopt in management of diabetes mellitus.

#### Research Question Three:

What are the health literacy coping strategies adopted by the older adult living with diabetes mellitus?

**Table 3: Mean Analysis of Health Literacy Coping Strategies Adopted by Older Adult Living with Diabetes Mellitus**

Health Literacy Coping Strategies Adopted by Older Adult Living with Diabetes Mellitus		Selected Registered Older Male Adults Diabetic Patients in UPTH & RSUTH N=86		Selected Registered Older Female Adults Diabetic Patients in RSUTH N=94	
S/N	Statements	X	Decision	X	Decision
21	Self-encouragement is a coping strategy for an older adult living with diabetes	1.9	Disagree	3.4	Agree
22	Spiritual self-motivation is a coping strategy for an older adult living with diabetes	2.2	Disagree	2.9	Agree
23	Talking to health care providers to acquire self-care information is a coping strategy for a diabetic patient	2.1	Disagree	2.5	Agree
24	Ask if help is available for the costs of diabetes medicines and supplies	3.3	Agree	3.2	Agree
25	Collaboration with other diabetic patient is a coping strategy for diabetes mellitus	2.3	Disagree	2.5	Agree
26	Participating in regular physical activity is coping strategy for diabetes mellitus	3.4	Agree	2.9	Agree
27	Talk to other people with diabetes	2.3	Disagree	2.7	Agree
28	Managing stress is a coping strategy for a diabetic patient	2.2	Disagree	2.2	Disagree
29	Maintaining one's peace of mind is coping strategy for a diabetic patient	2.4	Disagree	2.5	Agree
30	Engaging self-care social motivation	3.1	Agree	2.9	Agree
<b>Grand Mean</b>		<b>2.5</b>		<b>2.8</b>	

Table 3 shows that the registered older male adult diabetic patients in UPTH and RSUTH agreed that asking for available help for the cost of diabetes drug and supply, participating in regular physical activity and engaging in self-care social motivation are coping strategies they adopt to live with diabetes mellitus. They disagree that practicing self-encouragement, spiritual self-motivation, talking to health care providers for self-care information, collaboration with other diabetic patient, talking with other people with diabetes, managing stress, and maintaining one's peace of mind are not coping strategies they adopt as older adult living with diabetes mellitus. While registered older female adult diabetic patients in UPTH and RSUTH agreed that

practicing self-encouragement, spiritual self-motivation, talking to health care providers for self-care information, asking for available help for the cost of diabetes drug and supply, collaboration with other diabetic patient, participating in regular physical activity, talking with other people with diabetes, managing stress, maintaining one's peace of mind and engaging in self-care social motivation are all coping strategies they adopt as older adult living with diabetes mellitus.

#### Research Question Four:

What are the factors affecting the health literacy coping strategies adopted by older adult diabetic patients?

**Table 4: Mean Analysis of Factors Affecting Health Literacy Coping Strategies Adopted By Older Adult Diabetic Patients**

S/N	Statements	Selected Registered Older Males Adults Diabetic Patients in UPTH & RSUTH N=86		Selected Registered Older Females Adults Diabetic Patients in UPTH & RSUTH N=94	
		X	Decision	X	Decision
31.	Environmental pollution influences older adult living with diabetes	3.4	Agree	3.4	Agree
32.	Improper management of stress affect older adult diabetic patient	3.5	Agree	3.1	Agree
33.	Sleeplessness affects older adult living with diabetics	3.2	Agree	2.8	Agree
34.	Hereditary affects coping strategies adopted by older adult diabetic patient.	3.6	Agree	3.3	Agree
35.	Lack of physical activities affects coping strategies for diabetes mellitus.	3.2	Agree	3.0	Agree
36.	Lack of access to services influence coping strategies for diabetes mellitus.	3.8	Agree	3.4	Agree
37.	Nutritional values affect coping strategies	3.5	Agree	3.2	Agree
38.	Poor economic status affects older adult diabetics patients	3.2	Agree	3.2	Agree
39.	Lack of social support influence the older adult diabetes mellitus coping strategies	3.4	Agree	3.4	Agree
40.	Cost of treatment affect the older adult diabetic patient	3.6	Agree	3.5	Agree
<b>Grand Mean</b>		<b>3.4</b>		<b>3.2</b>	

Table 4 shows that the registered older adult both male and female diabetic patients in UPTH and RSUTH agreed that environmental pollution, improper management of stress, sleeplessness, hereditary, lack of physical activities, lack of access to services, improper nutrition, poor economic status, lack of social support and high cost of treatment are factors that are affecting their diabetics health literacy coping strategies.

## DISCUSSION OF THE FINDINGS

The findings of this study revealed that older adult diabetes patients in UPTH and RSUTH agreed that social media, health talk at the hospital, newspaper, radio programme, and group discussion are their sources of knowledge of causes of diabetic mellitus. This is in contrast to the findings of Kalantzzi et al (2015) in their study on information seeking behavior diabetes patients

in which they found out that majority of diabetics patients relied on their physicians as their primary source of information on diabetes. But Hu, Gruber, Liu, Zhao & Garcia (2013) pointed out that knowledge of diabetes is an important component of diabetes self-management and in their study found out that level of education, duration of diabetes, visits to a dietician and diabetes self-management are associated with diabetes knowledge. Findings also show that diabetes patients who participate in diabetes educational programme had higher scores on diabetes knowledge than simple informational leaflets on diabetes given out by health providers because this may not be an effective way to communicate important health information; more interactive means of communicating educational materials are necessary. Diabetes education programmes may be a key factor in increasing diabetes knowledge but

age, education, a family history of diabetes, and attending diabetes class are factors associated with increased levels of diabetes knowledge. According to Owen, Peter, Yohane, Gugulethu and Shile (2022) media plays a significant role in raising awareness of diabetes because media presents an opportunity for health professionals to convey messages on diabetes prevention and management. Social media can be used for creating or sharing content contributing to personal and social development. It is, therefore, important to design awareness campaigns with the use of the media as a way through which to pass important preventive messages. Older adult with adequate knowledge of diabetes will contribute to their effective management of the disease. According to Zowgar, John, and Isaac (2018), understanding a disease's symptoms and indicators is essential for early discovery, which aids in the condition's efficient management. Therefore, it is critical to comprehend the various levels of diabetes knowledge in order to develop effective interventions aimed at enhancing diabetes prevention and managing the disease effectively. However, patients and medical professionals have been the primary subjects of the majority of studies on diabetes knowledge.

In this study, older adult diabetic patients acknowledged that maintaining a healthy diet, checking blood sugar, taking prescribed medications, controlling stress, getting frequent checkups, avoiding fad diets, and losing excess weight are health literacy lifestyle practices they undertake. They also consent to intermittent fasting as a lifestyle choice they make for managing their diabetes. Health literacy is a set of skills needed to function in the healthcare industry. The unequal burden of diabetes-related ailments may be exacerbated by low levels of health literacy. The finding is in support of Schillinger D., Grumbach K., Piette, J., Wang, F., Daher, Palacio, Sullivan & Bindman. (2002) asserted that insufficient health literacy among those with type 2 diabetes is independently linked to worse glycemic control, higher prevalence of retinopathy, and worse self-rated health. John (2014) affirmed that health literacy is related to literacy and refers to a person's ability to access, comprehend, evaluate, and apply health information in order to make decisions about their own care, the prevention of disease, and the promotion of their own health in order to maintain or enhance their quality of life over the course of their lives. Because people are expected to participate in health decisions and take charge of their own health despite more complex health issues and the need to traverse a more convoluted health system, having enough health literacy may be more crucial than ever. With health literacy, they are better able to manage their health and make decisions involving it. Knowledge, motivation, and competence in accessing, understanding, evaluating, and applying health information for decision-making comprise health literacy. Low health literacy is linked to a number of negative health outcomes and erroneous utilization of medical services.

The study established that older adults living with diabetes adopt a variety of adaptive coping strategies which include self-encouragement, spiritual self-motivation, communication with healthcare professionals for information on self-care, requesting financial assistance for the cost of diabetes medication and supplies, collaboration with other diabetic patients, regular physical activity, speaking with other people with diabetes, managing stress, maintaining one's peace of mind, and self-care social motivation.

*This study showed that the most frequently used coping strategies were religion, active coping, instrumental use and acceptance. These strategies are considered adaptive in light of people with chronic diseases such as diabetes and non-clinical samples. Despite the fact that people with diabetes tended to employ adaptive coping techniques more often than maladaptive ones, everything but active coping and emotional support were unrelated to psychological outcomes. Adaptive coping techniques address issues head-on, assess them in a way that is practically realistic, identify and alter inappropriate emotional responses, and guard against negative consequences on the body. Carver (1997) asserted that individuals who employ adaptive strategies are active coping, informational support, planning, and positive reframing, are effort to alter the stressful circumstance. For instance, diabetics may use coping mechanisms to alter treatment and food-related issues that they may find upsetting. According to Carver (1997), emotional coping mechanisms try to control feelings brought on by stressful circumstances. Patients frequently experience distressing feelings, such as anxiety over low blood sugar levels, worry about potential consequences, and guilt when their diabetes treatment isn't on track. To deal with these emotions, people frequently utilize emotional coping methods. Many people employ emotional focused coping, which is used when a situation is beyond one's power to control. Adults, as opposed to teenagers, employ emotional coping mechanisms to control their emotions in stressful situations related to their diabetes. According to Kalra, Jena, and Yeravdekar (2018), psychological and emotional support has been shown to improve people's capacity to adapt or assume enough responsibility in managing their diabetes. According to data from a recent systematic review, Pamungkas, Chamroonsawasdi, and Vatanasomboon (2017) argued that emotional strategy favorably effects a healthy diet, enhanced perceived support, higher self-efficacy, improved psychological well-being, and better glycemic control.*

Findings of his study also show that improper management of stress, hereditary, lack of physical activities, lack of access to services, improper nutrition, poor economic status, lack of social support and high cost of treatment are factors that are affecting their diabetic health literacy coping strategies. This is line

with Hapunda (2022) observation that low social support, financial stress or constraints, external locus of control, poor problem-solving skills, stressful life events, low educational level, low health literacy/numeracy, external focus (taking care of others), poor prioritization skills, lack of access to providers and diabetes educators, compounding health issues (physical or cognitive limitations), and perceived stigma at work are all potential barriers to health literacy coping strategies.

The registered older adult diabetics patients in the two hospitals disagree that environmental pollution and sleeplessness do not constitute factors that affect the health literacy coping strategies they adopt in the management of their diabetes. But an obstacle to effective coping may also come from the environment of the individual. For instance, urban cities may have a high concentration of convenience businesses but few grocery stores, which discourages people from eating well.

## CONCLUSIONS

In conclusion, the study established that in the management of diabetes, awareness and knowledge of what contribute to rise in blood sugar level and how to control it is very important and this awareness and knowledge can be gotten from different sources which must cut across literate and non-literate older adults. In the management of diabetes, older adult should adjust their lifestyles to that which will reduce the risk factors of diabetes; and to live well as diabetic patient, older adult needs to engage in different coping strategies that will help them live healthy, which they can get from health literacy programme.

## Recommendations

Following the results of this study, it can be recommended that:

1. Studies of this nature should be conducted on a larger population in Rivers State.
2. Custodian of health information about the health status of diabetic patients should grant access to research on the subject matter in order to provide accuracy in their research findings.
3. Quantitative studies should be conducted in addition to qualitative studies on diabetic status of victim of the ailment for adequate health control measures.
4. Government should provide victims of DM with the needed provisions in order to salvage their health.
5. Hospitals should provide adequate knowledge on the causes and management of diabetes mellitus among older adult diabetic patient.
6. Older adult diabetics patient should try as much as possible to attend to referral hospitals for proper care and medication.
7. There should be concerted efforts from both the medical doctors and older adult's diabetic patient joining force in fighting diabetes

mellitus to reduce the increase of complications, amputation, blindness, wrong medication, and ultimate untimely death, through proper health literacy programmes in the hospital.

8. Medical doctors should introduce self-kits (accu-check) to the older adults' diabetic patients for regular monitoring of the blood sugar level at home.

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