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Knowledge of Lifestyle Modification Practices as a First-Line Therapy among Clients with Cardiovascular Diseases in a Nigerian Tertiary Hospital

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Abstract

Knowledge of a healthy way of life remains one of the cornerstones for the management of cardiovascular diseases at all levels of the disease course in order to reduce out-of-pocket expenses and minimize complications for overall quality of life. This study assessed the knowledge of respondents with cardiac conditions in a tertiary health care centre using a quasi-experimental design. An adapted WHO-STEP wise approach to the non-communicable

disease risk factor questionnaire was used to elicit information from participants in the study. Data were analyzed using descriptive tools and results were presented in tables depicting frequencies, mean, and percentages.

Findings show that 56.7% of the participants were females, 43.3% were males, and their overall mean age was 43 years ±6. Similarly, 60% were married, 30% were single, 76.7% had up to secondary education and 43.3% were artisans. The proportion of cardiac diagnoses among the participants was; hypertension (46.7%), heart failure (20%), cardiomyopathy (13.3%), atherosclerosis (10%), and hyperlipidemia (6.7%) while other diagnoses such as atria-fibrillation and heart block were just 3.3%. Knowledge of cardiac conditions and lifestyle modification was poor prior intervention ($\bar{x} = 1.63$) and ($\overline{x} = 1.38$) but significantly improved post- intervention ($\bar{x} = 2.87$) and ($\bar{x} = 2.82$) respectively.

The study concluded that many clients were not having adequate knowledge needed to manage their health conditions effectively as a first-line therapy hence, it was recommended that adequate health information and counselling should be provided to clients at first contact to enhance efficiency of other therapies.

Keywords: Cardiac Clients, Cardiovascular Diseases, Knowledge, Lifestyle Modification, Therapy

INTRODUCTION

Cardiovascular diseases (CVDs) are disorders involving the heart or blood vessels or both such as hypertension, heart failure, hyperlipidemia, cardiomyopathy, atherosclerosis, coronary artery disease, heart block, cerebrovascular disease, atrial fibrillation, and many more. The World Health Organization – (WHO, 2021) pronounced that CVD is the leading cause of death in both developing and developed countries. And despite cardiovascular diseases being a preventable and controllable disease that can be achieved through lifestyle modifications, it still accounts for 17.9 million deaths globally with hypertension found to be the number one silent killer (WHO, 2020).

Knowledge of lifestyle modification measures such as the Dietary Approach to Stop Hypertension (DASH), regular exercise, adequate rest, weight control, smoking cessation, and moderation in alcohol consumption are thought to help provide independent and adjunct benefits to reducing cardiovascular morbidity and mortality (Obirikorang, Obrikorang, Acheampong, Anto, Amoah, …Asiwu, 2018). Meanwhile, in actual practice, most individuals consume whatever available food to satisfy their appetite and indulge in all forms of unhealthy behaviours. In comparison, the ideal stipulates that these unhealthy behaviours should be avoided because of their detrimental effect on the cardiovascular system (WHO, 2018) in increasing blood pressure, occluding blood vessels, and inadvertently resulting in heart failure, high blood pressure, stroke, and other complications.

Previous studies showed that healthcare practitioners do not provide sufficient counselling to their clients on their cardiac conditions and the need for lifestyle modification while most patients have little information on healthy lifestyle practices to promote health and improve quality of life (Kebede, Taddese & Girma, 2022; WHO, 2023). Awad and Al-Nafisi, (2014) opined that inadequate knowledge of cardiac conditions lead to the development of preventable mental, physical, and social problems. Although, the primary objective of the outpatient clinic is to prevent complications and rehabilitate patients to lead a near-normal life, this aim is usually forfeited in many healthcare facilities because of inadequate health information on healthy living from the health care providers to the clients (Yu, Malik & Hu,

2018). Similarly, several reports maintained that lifestyle changes help provide independent and adjunct benefits in reducing cardiovascular morbidity and mortality (Obirikorang et al., 2018) in developed countries whereas, the situations are not always the same in many developing countries in Africa (Angelo & Geltore, 2020) including Nigeria (Ike et al., 2010) because of poor knowledge to behavioural modifications.

Objective of the study

This study was therefore carried out to;

1. assess the pre and post-intervention levels of knowledge of cardiac conditions of the respondents.
2. assess the pre and post-intervention levels of knowledge of lifestyle modification of clients with cardiovascular conditions.
3. determine the proportion of various cardiac diagnoses of the respondents (hypertension, heart failure, cardiomyopathy, atherosclerosis and others)

Methodology

Study Design

The study adopted a one-group pre and post-quasi-experimental design in assessing the phenomena under study. A quasi-experimental design is an empirical pre and post-interventional study used to estimate the causal impact of an intervention and an outcome on the target population without randomization (Harris, McGregor, Perencevich, Furuno, Zhu, Peterson & Finkelstein, 2006). The design is used when it is not logistically feasible or ethical to conduct a randomized control trial (Handley, Lyles, McCulloch & Cattamanchi, 2018.) **Study Setting**

This is an institutional study carried out at Federal Medical Centre Abeokuta which is one of the tertiary hospitals in Ogun State, Southwest Nigeria. The centre is a 350-bedded regional specialist hospital which serves as a hub to more than fifteen primary care centers as part of a federal government scheme for the provision of community-based medical services with over 200 consultants in different specialties.

Inclusion and Exclusion Criteria

The target population for this study was 92 who were the newly diagnosed cardiac patients and enrolled at the cardiac clinic in a month according to the clinic register at the commencement of the study. Also, adult patients aged 18 years and above, diagnosed with cardiac-related diseases, and gave informed consent to participate in the study were included.

Exclusion criteria involve cardiac patients that are less than 18 years and those that have other co-morbidity such as type 2 diabetes mellitus, renal involvement, and cognitive impairment or otherwise related.

Sample Size and Sampling Technique

The sample size was determined using Slovin's formula, (1960) which is used to calculate the sample size necessary to achieve a certain confidence interval when sampling a population with obvious subgroups, thus, n = sample size, population size (N) = 92, marginal error (e) = 0.05, and confidence level of 95% was assumed. A purposive sampling technique was used to select the respondents needed for the study after elimination of participants who were not eligible such as cardiac patients with co-morbidity like type 2 diabetes, renal involvement or cognitive impairment.

Instrumentation

An adapted WHO-STEP wise approach to non-communicable disease risk factor surveillance with a 3-point rating scale based on the objectives was used. Literature review and theoretical

framework were used to guide the questionnaire in eliciting information from the respondents. The questionnaire contains the following;

Section A: Socio-demographic profile of the respondents with 10 items

Section B: Level of knowledge of cardiac conditions and with 19 items

Section C: Level of knowledge of lifestyle modification with 17 items

Thirty-five (35) questionnaires were administered and thirty (30) valid responses were gotten at a response rate of 86%. Each item was measured separately with the minimum mean score for correct response being 2.0 while the lowest score was 0. Mean scores between 1.0 and 1.9 were regarded as poor, mean scores of 2.0 – 2.4 were average and good knowledge had a mean of 2.5 and above. The reliability of the instrument was determined through pre-testing of the instrument using Cronbach Alpha and yielded a reliability coefficient of 0.719

Method of Data Collection

Data was collected through administered questionnaires at the commencement of the training and at the end of the 6th week of training. A thorough explanation of the purpose of the study was given to the respondents before signing the consent form. Completed questionnaires within the estimated were collected immediately from the respondents to prevent alteration.

Ethical Consideration

Ethical approval was sought from the Babcock University Human Research Ethics Committee (BUHREC: NHREC/24/01/2020) where the concept of the study originated and also from the HREC (FMCA/470/01/2022/06) of the study setting. We also sought the consent of the participants after explaining the study objectives and methods to them. There were no consequences for non-participation. Equally, we ensured privacy of the participants through anonymity. The chance to participate was equally distributed as well as the risks and benefits of the study were thoroughly explained to them.

Results

Socio-demographic characteristics

Table 1 shows that 56.7% of the participants were females while the remaining 43.3% were males and their overall mean age was 43years ±6 which implied that cardiovascular conditions were common to adults of this age group. Similarly, 60% were married, 30% were single, 76.7% had up to secondary education and the majority of them (43.3.3%) were artisans.

Table 1: Socio-Demographic Characteristics of the Respondents.

		Freq. (N=168)	Percent (%)
Age	≤ 21yrs	3	10.0
	21-30yrs	8	36.7
	31-40yrs	4	13.3
	41-50yrs	4	13.3
	51-60yrs	8	36.7
	≥ 61yrs	3	10.0
	Mean Age ($\bar{x}$)	**43.60 = 43years ± 6**	
Gender	Male	13	43.3
	Female	17	56.7
Religion	Christianity	13	43.3
	Islam	16	53.4
	Traditionalist	1	3.3

Marital Status	Single	9	30.0
	Married	18	60.0
	Divorced	2	6.7
	Widow	1	3.3
Ethnicity	Yoruba	14	46.7
	Hausa	6	20.0
	Igbo	9	30.0
	Others	1	3.3
Education	No Formal Edu.	1	3.3
	Primary	2	6.7
	Secondary	23	76.7
	Tertiary	4	13.4
Occupation	Trading	6	20.0
	Artisan	13	43.3
	Civil Servant	10	33.3
	Students	-	0
	Others	1	3.3

Source: Research Data

The Proportion of Cardiac Diagnosis of the Respondents.

The proportion of cardiac diagnoses of the participants enrolled in the study shows that the most occurrence diagnosis was hypertension (46.7%), followed by heart failure (20%), cardiomyopathy (13.3%), atherosclerosis (10%), and hyperlipidemia (6.7%) while other diagnoses such as atria-fibrillation and heart block were just 3.3%.

Table 2. The proportion of Cardiac Diagnosis of the Respondents.

Cardiac Diagnosis	Frequency	Percent
Hypertension	14	46.7
Heart Failure	6	20.0
Cardiomyopathy	4	13.3
Atherosclerosis	3	10.0
Hyperlipidemia	2	6.7
Others	1	3.3
Total	**30**	**100.0**

Source: Research Data

Levels of Knowledge of Cardiac Conditions

Findings from the study show a marginal difference between the pre and post-intervention mean values of knowledge of cardiac conditions. Against the minimum mean score ($\ddot{x} = 2.0$), the respondents' pre-intervention knowledge was poor on the understanding of their health conditions, impact of genetic disposition, unhealthy lifestyles, and behavioural changes in addition to medication with mean scores of 1.63, 1.30, 1.33, and 1.53 respectively. However, their post-intervention mean scores revealed significant improvement in knowledge with mean scores of 2.86, 2.87, 2.90, and 2.83 in the same order. See details in Table 3.

Table 3. Levels of Knowledge of Cardiac Conditions

	Pre-Intervention		Post-Intervention		
Items	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Decision**
Hypertension means BP of 140/80mmHg and above	1.1000	.40258	2.9667	.18257	Highly Sig.
Heart failure is overworking of the heart	2.0333	.88992	1.7667	.43018	Not Sig.
Failure occurs when heart can't pump blood to the body	2.1333	3.6552	2.4333	.85836	Significant

Cardiomyopathy is the presence of fat in the heart	2.6000	.56324	2.0333	.31984	Not Sig.
Cardiomyopathy is dilated or enlarged heart chambers	2.0333	.92786	2.8000	.48423	Highly Sig.
CVDs are caused by too much stress or thinking	1.4000	.81368	1.8667	.50742	Not Sig.t
Cardiovascular diseases are due to a family history	1.3000	1.1492	2.8667	.43417	Highly Sig.
An unhealthy lifestyle can result to cardiac problems	1.0667	.36515	2.8667	.50742	Highly Sig.
Alcohol/cigarettes are major risk factors for CVDs	1.3333	.71116	2.9000	.40258	Highly Sig.
Overweight/lack of exercise promotes heart problems	1.4000	1.8495	2.7333	.69149	Highly Sig.
Headache, chest pain or palpitation are signs of CVDs	1.2000	.55086	2.3667	.80872	Significant.
Signs like loss of hair are due to heart problems	2.1667	.64772	1.9333	.25371	Not Sig.
A change in diet can prevent heart problems	1.3667	.71840	2.7000	.65126	Highly Sig.
Regular exercise can help prevent heart diseases	1.3333	.66089	2.7333	.63968	Highly Sig.
Hyperlipidemia is a heart-related problem	1.3667	.66868	2.6667	.71116	Highly Sig.
Diabetes and hepatitis are parts of cardiac problems	2.2333	.50401	1.9667	.31984	Not Sig.
Drugs only is a way of treating cardiac problems	2.2333	.62606	2.0667	.25371	Not Sig.
Lifestyle modification practices are first-line care of CVDs	1.5333	2.2242	2.8333	.53067	Highly Sig.
Overall knowledge of the cardiac conditions	1.6333	.92786	2.8667	.50742	Highly Sig.

Source: Research Data

Levels of knowledge of lifestyle modification among the respondents

From the findings of our study on respondents' level of knowledge on lifestyle modification, the need for a change in behaviour and maintenance of such behaviour as well as the importance of health education from the healthcare providers were highly significant post-intervention with mean values of 2.93, 2.86, and 2.83 respectively. (See Table 4)

Table 4: Knowledge of Lifestyle Modification

Items	Pre-Intervention		Post-Intervention		
	Mean	Std. Dev.	Mean	Std. Dev.	Decision
There is a need for change in my lifestyle behavior	1.0333	.18257	2.9333	.36515	Highly Sig.
Considered a change in eating pattern e,g. low salt intake	1.2000	.55086	2.8667	.43417	Highly Sig
Regular exercise improves wellness	1.1667	.46113	2.7333	.63968	Highly Sig
Cutting down on alcohol is part of lifestyle changes	1.7931	1.93426	2.9333	.36515	Highly Sig
Cessation of smoking can help reduce blood pressure	1.6333	.88992	2.8667	.50742	Highly Sig
Increase fruits and vegetables intake helps prolong lives	1.3333	1.82574	2.8667	.50742	Highly Sig
Health teaching facilitates change in behaviours	1.1000	.40258	2.8333	.53067	Highly Sig
LSM can improve drug step-down	1.2667	.63968	2.8667	.43417	Highly Sig
I don't always enjoy tasteless food.	1.8667	.73030	2.4667	.77608	Significant
Overall knowledge of LSM	**1.3770**	**0.84634**	**2.8185**	**.50666**	**Highly Sig**

Source: Research Data

Discussion

The study revealed that the mean age of participants was 43years±6.7 which was in line with Kebede et al, (2022) who affirmed that the majority of hypertensive patients in East Africa were middle-aged individuals. It also buttresses the findings of Durai and Rani Muthuthandavan, (2015) who worked among 100 males newly diagnosed with hypertension at Sri Ramachandra University Medical College and Hospital, Porur, Chennai and found a similar age bracket, 64% less than 50 years of age. This implies that cardiac problems have a high propensity for the age of 40 years and above.

The findings further showed that the majority of the respondents were females (56.7%), 60% were married, 30% were single, and 76.7% had up to secondary education. This was incongruent with Kebede et al, (2020) who reported a higher percentage of male respondents with hypertension (43.3%) in a study done in East Africa that the prevalence of hypertension was high among the male gender than the female because of their negative lifestyle. Meanwhile, family background, educational status and ethnicity are all pertinent to engaging and maintaining a positive healthy lifestyle which lends credence with Danyuthasilpe, (2018) who opined that individual personal, socio-cultural, biological and psychological factors and experiences help to shape one's actions and have a direct influence on health behaviours.
Similarly, the proportion of cardiac diagnoses showed a higher percentage of hypertension (47%) than other conditions. This lends credence to the work of Okwuonu et al (2014); Durai and Rani Muthuthandavan, (2015); Oyewole et al (2019), and Kebede et al, (2022) all of who affirmed that hypertension is one of the leading causes of global morbidity and mortality as enshrined in WHO facts sheet (WHO, 2023).

The findings from this study on the level of knowledge of the respondents showed that they had poor knowledge regarding their heart-related conditions prior to intervention with means scores lower than 1.9 on the understanding of their health conditions (1.63), the impact of genetic disposition (1.30), unhealthy lifestyles (1.33), and behavioural changes needed in addition to medication use to prevent cardiac problems (1.53). Oyewole, Olorunfemi & Olawale (2020) found a significant difference in the level of knowledge post-intervention among hypertensive patients in a Nigerian hospital compared with their poor knowledge prior to intervention. However, it was in contrast to the work of Kebede et al, (2022) who reported improved knowledge in a cross-sectional study among participants suffering from hypertension in an East African hospital. This might be due to the different locations of the study and the information available to the participants at the time of the study. Since WHO, (2016) affirmed that CVDs are the leading cause of death in both developing and developed countries as well as one of the preventable and controllable diseases which can be achieved through lifestyle modifications, an improved level of knowledge would be helpful in decreasing unhealthy practices (Awad & Al-Nafisi, 2014) and minimize risk of complications (Mukattash, Shara, Jarab, Al-Azzam, Almaaytah & Al Hamarneh, 2012).

The level of knowledge among the participants was poor prior intervention on the understanding of their health conditions, consideration for change in their eating habits, cutting down alcohol intake, cessation of smoking and high intake of fruits and vegetables for longevity of life with low mean scores. This was in accordance with Okwuonu, Emmanuel & Ojimadu, (2014) in a study done in Southeast Nigeria and found that respondents were unaware that regular exercise, moderation in alcohol intake, and the role of vegetables, fruits, grains and unsaturated fats and oils intake were components of LSM practices. Also, Durai and Rani-Muthuthandavan, (2015) found poor knowledge about the need for fruit intake and the addition of extra salt to food while a sizable percentage of their respondents were smokers and alcoholics.

Conclusion

The study assessed the knowledge of lifestyle modification practices as a first-line therapy among clients with cardiovascular diseases in a Nigerian Tertiary Hospital and concluded that individuals that are newly diagnosed with cardiac problems had poor knowledge prior to engagement with health providers. Also, the onset of development of cardiac-related problems within the age bracket of 40years and above was noted. The study concluded that many clients are not having adequate knowledge needed to manage their health conditions

effectively. It is therefore, recommended that efforts should be geared toward health education of the general public by all stakeholders on the risks factors of developing cardiovascular-related disorders.

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