https://www.inosr.net/inosr-applied-sciences/
Murungi
INOSR APPLIED SCIENCES 10(3):274-286, 2023

International Network Organization for Scientific Research ISSN: 2705-165X

Knowledge, Attitude, and Practice Regarding Risk of Cardiovascular Diseases among Adult Patients Attending Outpatient Department at Kampala International University Teaching Hospital

Murungi Esther

Department of Clinical Medicine and Dentistry Kampala International University-Western Campus Uganda.

ABSTRACT

The study aimed to evaluate the knowledge, attitude, and practice of cardiovascular disease risk among adult patients at Kampala International University Teaching Hospital. A cross-sectional study design was used, with data collected through a pretested questionnaire. The findings revealed that 79.3% of participants were aware of cardiovascular diseases (CVDs) from various sources, including radio, family, internet, and TV. Risk factors included smoking, stress, high blood pressure, diabetes, physical inactivity, and obesity. A positive attitude was found among participants, who strongly agreed that regular medical checkups, exercise, stress control, and smoking cessation could significantly prevent CVDs. However, a majority of participants disagreed with avoiding carbonated drinks, walking to nearby places, and consuming less oily foods. Despite this, 86.4% of participants were aware of CVDs, with 89.4% being aware of them. Some participants also engage in regular exercise, consuming less oily organic foods, and actively reducing stress. The study found that 79.3% of participants were aware of CVDs, primarily from radio, television, internet, and friends. Risk factors included high blood pressure, diabetes, smoking, stress, physical inactivity, high-fat diet, and obesity. The findings suggest that preventing CVDs can be achieved through regular medical checkups, exercise, and stress management.

Keywords: Non-communicable diseases, Untimely deaths, Cardiovascular diseases, High blood pressure.

INTRODUCTION

Non-communicable diseases (NCDs) pose a major health challenge globally, currently causing more deaths than all other causes combined. In 2012, about 38 million people died from NCDs and this is expected to increase to 52 million by 2030. About 80% of these deaths are caused by four NCDs: cardiovascular diseases (CVDs), cancers, chronic respiratory diseases and diabetes [1]. Cardiovascular diseases (CVDs) are not communicable diseases that involve the heart or blood vessels or both. They include coronary heart disease (CHD), cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism [2, 3]. CVDs account for almost half of NCDs deaths according to WHO which is estimated to be 17.3 million deaths annually, and 10% of the global disease daily burden. It is expected that by the year 2030, more than 23 million deaths will be caused by CVDs, with stroke and coronary heart disease (CHD) being the leading contributors [4]. Globally, deaths from CVDs have declined progressively over the past three decades in high-income countries because of the implementation of population-wide preventive strategies, effective primary

and secondary preventive healthcare, and the availability of improved treatment for acute events. However, rates of CVD deaths have increased in low and middle-income countries (LMICs) over the same period [5, 6]. In addition to the increased prevalence of risk factors of CVDs in these settings, this rise in CVD deaths reflects the lower availability of population strategies for prevention and health care [7, 8]. The rise in CVD risk factors in sub-Saharan Africa (SSA) is attributed to rapid urbanization, globalization, urban poverty, a change in diets and lifestyle, where traditional diets are replaced with energy-dense and processed foods and increasing physical inactivity [9-12]. As poverty and inequality trigger the upsurge of communicable diseases, as well as propagate risk factors for NCDs as smoking, drinking and poor diet, the burden of disease disproportionally affects the urban poor [13, 14]. In 2017, it was estimated that 17·8 million deaths were attributed to CVD-related deaths, of which more than three-quarters were in low-income and middle-income countries [15]. To help reduce the global burden of cardiovascular disease, WHO member states committed to providing counselling and drug treatments for at least 50% of eligible people (defined as aged 40 years or older and at high risk of cardiovascular disease) by 2025. To support such expansion of cardiovascular disease prevention and control efforts, WHO has developed tools and guidance, including risk prediction charts [4]. Non-communicable diseases (NCDs) particularly; cardiovascular diseases, diabetes, cancers, as well as chronic obstructive pulmonary diseases are becoming increasingly important as causes of morbidity and mortality in the Ugandan population. In Eastern Uganda, a study showed that village health team (VHT) members possessed some knowledge and awareness of NCDs but identified a lack of knowledge about NCDs in the communities they served. They were enthusiastic about incorporating NCD care into their role and thought that they could serve as effective conduits of knowledge about NCDs to their communities if empowered through NCD education, the availability of proper reporting and referral tools, and visible collaborations with medical personnel. The lack of financial remuneration for their role did not emerge as a major barrier to providing NCD services [16]. Uganda is an example of low and middle-income countries (LMIC) experiencing a growing burden of NCDs. The first nationally representative study of NCDs and their associated risk factors, completed in 2014 using the WHO STEPwise approach (STEPS), revealed that 25.8% of Ugandan men and 22.9% of women had hypertension; 9.5% of men and 19.5% of women were overweight (BMI ≥ 25 kg/m); 4.6% of participants were obese (BMI ≥ 30 kg/m); 3.3% had raised fasting glucose including diabetes; 6.7% had raised total cholesterol levels and 11% were current smokers [17, 18]. According to WHO [1], early detection among those with the diseases or at high cardiovascular risk needs early detection and management using counselling and medicines, as appropriate. Roth et al. [15], reported 17.8 million global annual CVD-related deaths. Similarly, the risk of CVDs ranged from 1.8% in a study among hospital staff in Nigeria to as high as 73% in a population-based survey in Uganda and 7% among University staff in Nigeria to 75.1% in a general population in Uganda; in which a high educational attainment and place of residence had a significant influence on the levels of knowledge for CVDs [19]. More so, Uganda Heart Institute records have demonstrated a 50% increase in outpatient attendance due to heart-related conditions over the past 7 years (2002-2009). The increased incidence of chronic NCDs is predicted to continue over the years fueled by the increasing exposure of our population to unhealthy lifestyles associated with urbanization. WHO predicts NCDs epidemic proportions by 2025 if preventive, control and surveillance measures are not undertaken immediately [1]. However, there exists no comprehensive study on knowledge of NCDs, risk of heart-related conditions and the limited empirical data on CVDs in western Uganda. This study therefore,

intends to assess the knowledge, attitudes and practice regarding the risk of cardiovascular diseases among adult patients attending outpatient department at Kampala International University Teaching Hospital, Ishaka.

METHODOLOGY

Study Design

This was a cross-sectional and descriptive study assessing the knowledge, attitude and practice regarding the risk of cardiovascular disease among adult patients attending the outpatient department at Kampala International University Teaching Hospital. The study employed both quantitative and qualitative approaches. The quantitative methods under this design were employed to collect numerical data presented for example the proportions of knowledge regarding risks of CVDs while the qualitative method was used to collect non-numerical data.

Area of Study

This study was done at Kampala International University Teaching Hospital, Ishaka. Ishaka is a town in the Western Region of Uganda. It is one of the municipalities in Bushenyi District. Ishaka is located in Igara County, in Bushenyi District, approximately 62 kilometres (39 mi), by road, west of Mbarara, the largest city in the sub-region. This is about 6 kilometers (4 mi), west of Bushenyi, the location of the district headquarters. The coordinates of Ishaka are 0°32'42.0"S, 30°08'18.0" E (Latitude: -0.545006; Longitude: 30.13834.

Study Population

The participants were adult patients aged 18 years and above attending the outpatient department of Kampala International University Teaching Hospital in Ishaka.

Inclusion Criteria

All adult patients aged 18 years and above attending the outpatient department of Kampala International University Teaching Hospital in Ishaka who are willing to consent.

Exclusion Criteria

Adult patients aged 18 years and above who won't consent, Patients aged less than 18 years, patients who are brought unconscious or who are unable to talk and patients who are mentally ill were excluded.

Sample Size Determination

A sample size was determined using Kish Leslie's (1965) formula in which the sample size is given by the expression:

$n = z^2p\ (1\text{-}p)/e^2$

n = desired sample size

Z = Standard normal deviation set at 1.75 for maximum sample at 92 % confidencelevel.

p = the proportion of the characteristic in a sample 55.6%, (Muhamad R et al., 2012),

e= Amount of error at 92% confidence level or 0.08 probability level).

By Substitution we get:

$$n = \frac{1.75^2 \times 0.556 \times 0.444}{0.08^2}$$

n = 118 participants

Sampling Procedures

Simple random sampling was used to select the participants of the study who were present in the Outpatient Department at the time of selection and who met the inclusion criteria. They were requested to sign the consent form as a sign of acceptance and they were interviewed and requested to fill out the questionnaires.

Data Collection Tools

Questionnaires were used in which questions concerning age, sex, occupation, dietary intake, level of exercise, and physical activities were formulated to collect information from respondents. Data was collected using structured interviews. Interviewers read the questions exactly as they appeared on the survey questionnaires for the respondents to answer.

Data Collection Procedure

All patients attending the outpatient department at Kampala International University Teaching Hospital during the time of data collection were approached. Those who met the study criteria were told the purpose of the study verbally and after were asked to consent; they were then givenquestionnaires.

Data Analysis

Data from the survey was statistically analyzed using the Statistical Package for

Social Sciences (SPSS). Basic descriptive analysis was done using frequency distributions. Qualitative data was sorted, categorized and conceptualized systematically to see the knowledge, attitudes and practices regarding the risks of cardiovascular diseases. Measures of central tendency were used to give expected summary statistics of the variables studied. Descriptive statistics were used to describe a distribution of scores. Findings were presented using frequency distribution tables, charts and graphs.

Quality Control

This was done by ensuring that what was written in the report was a true reflection of what was said and done during the research activities.

Reliability

The questionnaires were pretested by giving some students of Kampala International University in the faculty of biomedical to assess the suitability and acceptability of the data collection tool, to the participants and the necessary adjustments were made to ensure adequate data quality. The questionnaires were administered by two trained nursing students and a principal investigator.

Measure to Eliminate Bias

To eliminate bias, simple random sampling was employed to ensure equal opportunities are given to participants attending the out-patient department at KIU Teaching Hospital.

Ethical consideration

Ethical approval was sought from the Kampala International University Western Campus faculty of clinical medicine and dentistry and Kampala International University Teaching Hospital, Ishaka, Ethics Committee. Also, participants were asked to sign an informed consent statement for their participation after a thorough explanation of the procedure and the importance of the study to them. Every participant had the right to refuse to participate by not signing the consent form orto withdraw from the study if they felt uncomfortable at some stage. For the purpose of confidentiality, questionnaires only used identification codes but not names.

RESULTS

Table 1: Socio-demographic Characteristics of the Study Participants

Variable	Frequency(N)	Percentage(%)
Age (Years)		
≤40	69	58.5
>40	49	41.5
Sex		
Male	60	50.8
Female	58	49.2
Marital Status		
Living alone	34	28.8
Living with a partner	84	71.2
Employment Status		
Employed	83	70.3
Unemployed	35	29.7
Education Level		
≤Primary	9	7.6
≥Secondary	109	92.4

The knowledge of risk factors of cardiovascular diseases among adult patients attending the outpatient department at Kampala International University Teaching Hospital.

According to the study findings, the majority (79.3%) were aware of cardiovascular diseases whereas a considerable number (20.3%) were not aware of cardiovascular diseases. See Figure. 1. This is generally from a network of sources and mostly, Radio (78.9%), Seen someone with the condition (72.6%), family (69.4%) and Internet (63.1%) as well as TV (60.0%). These majorly highlighted smoking, Stress, high blood pressure, diabetes, physical Inactivity and obesity with 78.2%, 73.6%, 71.5%, 65.2%, 64.2% and 62.1% respectively; as the risk factors for Cardiovascular diseases.

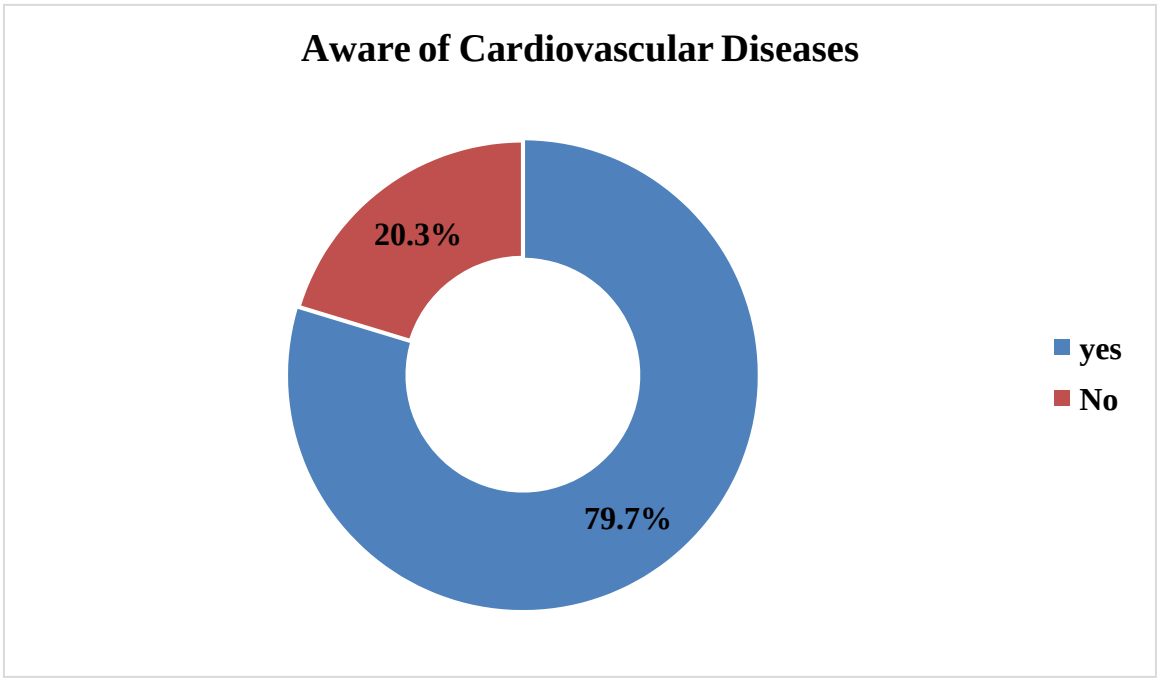

Figure 1: Awareness of Cardiovascular Diseases among the study participants.

Table 2: The knowledge of risk factors of cardiovascular diseases among adult patientsattending outpatient department at KIU- Teaching Hospital

Variable	Frequency(N)	Percentage (%)
Source of information about cardiovascular diseases?		
Radio	75	78.9%
Television	57	60.0%
Magazine /Newspaper	20	21.0%
Internet	60	63.1%
Healthcare Professional	30	31.5%
Friends	52	54.7%
Family	66	69.4%
School Education	55	57.8%
Seen Someone With The Condition	69	72.6%
Health Campaigns	17	17.8%
Known risks of cardiovascular diseases		
High Blood Pressure	68	71.5%
Diabetes	62	65.2%
Smoking	75	78.2%
Obesity	59	62.1%
Physical Inactivity	61	64.2%
High Fat Diet	55	57.8%
Stress	70	73.6%
High Alcohol Consumption	45	47.3%

The attitudes towards prevention of cardiovascular diseases among adult patients attending outpatient department at Kampala International University Teaching Hospital.

According to the study findings, the majority showed a positive attitude 61(64.2%), 59(62.1%), 59(62.1%), and 56(58.9%) strongly agreed that having Regular medical checkups, doing exercise, controlling stress and Stopping smoking could to a larger extent prevent cardiovascular diseases. To a considerable extent; 51(53.7%) and 32(33.7%) agreed that Eating fruits and vegetables and Walking to nearby places respectively contribute to the same. However, 58(61.1%), 26(27.4%) and 19(20.0%) disagreed and strongly disagreed with Avoiding carbonated drinks, walking to nearby places and Taking less oily foods respectively.

Table 3: The attitudes towards prevention of cardiovascular diseases among adult patients attending outpatient departments at KIU-Teaching Hospital.

Variable	ongly Agree[N (%)]	Agree [N (%)]	Disagree [N (%)]	ngly Disagree[N (%)]
Stop smoking	56(58.9%)	20(21.1%)	14(14.7%)	4(4.2%)
Doing exercise	59(62.1%)	20(21.1%)	11(11.6%)	5(5.3%)
Walking to nearby places	29(30.5%)	32(33.7%)	26(27.4%)	8(8.4%)
Eating fruits and vegetables	29(30.5%)	51(53.7%)	11(11.6%)	7(7.4%)
Taking less oily foods	30(31.6%)	22(23.2%)	24(25.3%)	19(20.0%)
Avoid carbonated drinks	10(10.5%)	18(18.9%)	58(61.1%)	9(9.5%)
Regular medical checkup	61(64.2%)	27(28.4%)	5(5.3%)	2(2.1%)
Control stress	59(62.1%)	32(33.7%)	3(3.2%)	1(1.1%)

The practices aimed at preventing cardiovascular diseases among adult patients attending the Kampala International University Teaching Hospital outpatient department.

According to the study findings, the majority 102(86.4%) do exercise, of which 84(89.4%) are aware of Cardiovascular diseases. Those who exercise mostly 57(61.3%), 20(21.5%), 9(9.7%) and 7(7.5%) do walk around, jog, go to the gym and other exercises respectively. More, so, the majority 51(54.3%) do exercises 4 or more times a week. As well, 54(57.4%), do walk, as well, the majority 67(71.3%) of those aware of CVDs eat less oily organic foods. Also, 60(63.8%) actively reduce stress. However, whereas 10(10.6%) were aware but no exercise 6(25.0%) were neither aware nor doing exercise at all. 27(28.7%) and 13 (13.8%) use Boda and Car respectively. also, 20(21.3%) and 7(7.4%) of those aware of cardiovascular diseases eat oilier organic foods and synthetic foods respectively.

Table 4: The practices aimed at preventing cardiovascular diseases among adult patients attending the outpatient department at KIU Teaching Hospital

Variable		Aware of CVS Diseases		TOTAL N (%)
		Yes [N (%)]	No [N (%)]	
Do you do exercises?				
Yes		84(89.4%)	18(75.0%)	102(86.4%)
No		10(10.6%)	6(25.0%)	16(13.6%)
If so, which exercises?				
Jogging		20(21.5%)	1(4.2%)	21(17.9%)
Walking		57(61.3%)	16(66.7%)	73(62.4%)
Going To Gym	9(9.7%)		1(4.2%)	10(8.5%)
Others	7(7.5%)		6(25.0%)	13(11.1%)
How many times do you do exercises?				
≥ times a week		51(54.3%)	10(41.7%)	61(51.7%)
Once A Week		25(26.6%)	7(29.2%)	32(27.1%)
Once A Month		11(11.7%)	1(4.2%)	12(10.2%)
N/A	7(7.4%)		6(25.0%)	13(11.0%)
Means of transport usually used				
Walking		54(57.4%)	10(41.7%)	64(54.2%)
Boda		27(28.7%)	9(37.5%)	36(30.5%)
Car		13(13.8%)	5(20.8%)	18(15.3%)
What kind of food do you have daily?				
Organic Less Oily foods		67(71.3%)	16(66.7%)	83(70.3%)
Organic More Oily Foods		20(21.3%)	5(20.8%)	25(21.2%)
Synthetic Foods	7(7.4%)		3(12.5%)	10(8.5%)
How do you reduce stress?				
Actively		60(63.8%)	11(45.8%)	71(60.2%)
Inactively		34(36.2%)	13(54.2%)	47(39.8%)

DISCUSSION

The knowledge of risk factors of cardiovascular diseases among adult patients attending the outpatient department at Kampala International University Teaching Hospital.

According to the study findings, the majority (79.3%) were aware of cardiovascular diseases whereas a considerable number (20.3%) were not aware of cardiovascular diseases. This is consistent with the studies done in Cameroon by Aminde et al. [20] in which the participants also agreed that smoking, stress, high blood pressure, lack of exercise and obesity were high-risk factors for one to get cardiovascular diseases. This study was found to complement the available knowledge in a study by Mensah et al. [21] in which it was concluded that 1 million deaths were attributable to CVD in sub-Saharan Africa alone, constituting 5.5% of all global CVD-related deaths and 11.3% of all deaths in Africa. The knowledge about cardiovascular diseases was mostly accessible through the radio (78.9%), through taking care of a person with the condition (72.6%), internet (63.1%), and television (60%) and by having a family member who had it (69. 4%). Some got the knowledge through school education (57.89%) and friends (54.7%) A few of the participants got knowledge from health professionals (31.5%), newspapers (21.0%) and health campaigns (17. 89%). Since, the area is exposed to media such as the radio, television and the internet there exists access to more knowledge but at the same time, many of them confessed to indulging in lifestyles that predispose

to getting cardiovascular diseases and hence are sure that it is a reason almost every family has individuals having cardiovascular diseases. These majorly highlighted smoking, stress, high blood pressure, diabetes, physical inactivity and obesity with 78.2%, 73.6%, 71.5%, 65.2%, 64.2% and 62.1% respectively; as the risk factors for cardiovascular diseases**.** This supplements a study by Aminde et al. [20] in which it was found that most of the participants knew smoking (82%), unhealthy diet (70.6%), lack of exercise (67.0%), obesity (69.7%), stress (73.1%), high blood pressure (HBP) (73.3%) and diabetes (60.8%) were potential risk factors for CVD but for family history of CVD, only 52.4% knew. Having a higher monthly income, a high level of education, a family history of CVD and being a former smoker was associated with an increased likelihood of having moderate-to-good knowledge of CVDs. These findings have implications for policymakers in their considerations of strategies in the fight against NCDs and CVD in particular.

The attitudes towards prevention of cardiovascular diseases among adult patients attending outpatient department at Kampala International University Teaching Hospital.

In this study, it was found that the attitude was generally good. In a study done by Verma et al. [22], the majority of the subjects had a good attitude Generally, the majority showed a positive attitude with 61(64.2%), 59(62.1%), 59(62.1%), and 56(58.9%) strongly agreed that having a regular medical checkup, doing exercise, controlling stress and stopping smoking could to a larger extent prevent cardiovascular diseases. This finding was consistent with the result of astudy Tiwari et al. [23], conducted in Kerala, India, in which 70% of the subjects had positive attitudes pertaining to this issue. Also, it was consistent with a study done by Mohammad [24], in which it was concluded that most of the subjects agreed that maintaining an active lifestyle, eating a healthy diet, maintaining BMI, doing regular medical checkups and controlling stress helps to prevent CVDs, to them stoppage of smoking was an absolute necessity to prevent CVDs contrary to this study whereby participants strongly believe stress control is an important factor in the prevention of cardiovascular. To a considerable extent; 51(53.7%) and 32(33.7%) agreed that eating fruits and vegetables and walking to nearby places respectively contribute to the same. Fruits and vegetables contain bioactive compounds that possess pharmacological effects including cardioprotective [25-28]. In this study, 58(61.1%), 26(27.4%) and 19(20.0%) disagreed and strongly disagreed with avoiding carbonated drinks, walking to nearby places and taking less oily foods respectively, are important factors in the prevention of cardiovascular. This is in line with Reid et al. [29] report in which it was stated that people prefer to laze around in fast-food restaurants, mostly the youth preferred to hang out at those places with their friends. Most of the fast food contains trans-fat. Similarly, Dhaka et al. [30] highlighted that trans-fat can reduce HDL levels in the body and thus increase the chances of developing CVD.

The practices aimed at preventing cardiovascular diseases among adult patients attending the Kampala International University Teaching Hospital outpatient department.

According to the study findings, the majority (86.4%) do exercise, which contributed a bigger part(89.4%) of those who were aware of cardiovascular diseases. Those who exercise mostly 57(61.3%), 20(21.5%), 9(9.7%) and 7(7.5%) do walk around, jog, go to the gym and other exercises respectively. This coincides with a report by Mohammad [24], where it was stressed that the current study population very often do vigorous work during their working hour and take plenty of vegetables.

However, some were aware of CVDs but no exercise while others were neither aware nor doing exercise at all. 27(28.7%) and 13 (13.8%) use Boda and Car respectively. Also, 20(21.3%) and 7(7.4%) of those aware of cardiovascular diseases eat oilier organic foods and synthetic foods respectively. This adds to findings

by Muhamad et al. [31] study which showed very poor practice in performing regular exercise and low percentages of taking fatty food less than 3 times per week and taking omega 3. This could be owing to a lack of finances and lack of knowledge of the importance of a gym, most of the participants do vigorous work during their working hours. This as well demonstrates that the participants lack motivation to jog as they don't find it necessary even when most of them know its importance to heart health. There are no other studies written about the prevalence of doing exercises in the Bushenyi district, the research shows moderately good exercise practice behaviours. Though there is a lack of knowledge of the importance of doing exercises more often for longer durations, these are reportedly more helpful in keeping the heart and its vessel healthy. The difference in the percentage of those who eat less oily organic food and oilier organic food is small because as Ishaka is getting urbanized most of the participants reported they are almost always busy for them to prepare food conservatively, thus, they resort to eating in restaurants or food courts around Ishaka town which serve mostly fried foods even when they are organic. On the other hand, the ones who eat processed foods were mostly the employed (majority of the participants) who find it easier to eat processed food as they proceed with their busy schedules.

CONCLUSION

According to this study, the knowledge of CVDs stands at 79.3% among the participants mostly from radio, television, internet, friends and or they had or have a person who has a cardiovascular disease, few learnt from school, health campaigns and healthcare professionals. The known risk factors include high blood pressure, diabetes, smoking, stress, physical inactivity, high-fat diet and obesity many believe that adopting certain behaviors like stopping smoking, doing exercises, eating fruits and vegetables, regular medical checkups and controlling stress can prevent cardiovascular diseases. Similarly, to prevent CVDs, they do physical exercises such as walking around, jogging, going to the gym and other exercises for a particular duration as well as eating less oily and eating vegetables and water. However, some were aware of CVDs but no exercise while others were neither aware nor doing exercise at all and used Boda and Car for transport purposes and believed walking around was enough to keep the heart healthy yet usually consume fast foods (that are oily).

REFERENCES

1. World Health Organization (WHO). Global status report on non-communicable diseases 2014. World Health Organization. Geneva; 2014
2. Alum, E. U., Obeagu, E. I., Ugwu, O. P.C., Aja, P. M., & Okon, M. B. (2023). HIV Infection and Cardiovascular diseases: The obnoxious Duos. *Newport International Journal of Research in Medical Sciences (NIJRMS)*, 2023; 3(2): 95-99. https://nijournals.org/wp-content/uploads/2023/07/NIJRMS-3-295-99-2023.pdf.
3. Uti, D. E., Ibiam U. A., Omang, W. A., Udeozor, P. A., Umoru, G. U., Nwadum, S. K., Bawa, I., Alum, E. U., Mordi, J. C., Okoro, E. O., Obeten, U. N., Onwe, E. N., Zakari, S., Opotu, O. R., & Aja, P. M. (2023). Buchholzia coriacea Leaves Attenuated Dyslipidemia and Oxidative Stress in Hyperlipidemic Rats and Its Potential Targets In Silico. *Pharmaceutical Fronts.,* 05(03): e141-e152. DOI: 10.1055/s-0043-1772607.
4. World Health Organization (2019) Cardiovascular Disease Risk Charts: Revised Models to Estimate Risk in 21 Global Regions The WHO CVD Risk Chart Working Group Published: September 02. DOI:https://doi.org/10.1016/S2214-109X (19)30318-3.
5. Agbafor, K. N., Onuoha, S. C., Ominyi, M. C., Orinya, O. F., Ezeani, N., & Alum, E. U. (2015). Antidiabetic, Hypolipidemic and Antiathrogenic Properties of Leaf Extracts of Ageratum conyzoides in

Streptozotocin-Induced diabetic rats. *International Journal of Current Microbiology and Applied Sciences*, **4(11):** 816-824. http://www.ijcmas.com. https://www.ijcmas.com/vol-4-11/Agbafor,%20K.%20N,%20et%20al.pdf

6. Aja, P M., Chiadikaobi, C D., Agu, P C., Ale, B A., Ani, O G., Ekpono, E U. et al. (2023). Cucumeropsis mannii seed oil ameliorates Bisphenol-A-induced adipokines dysfunctions and dyslipidemia. *Food Science & Nutrition,* 18;11(6):2642-2653. doi: 10.1002/fsn3.3271. PMID: 37324904; PMCID: PMC10261814
7. Offor, C. E., Anyanwu, E., Alum, E. U., & Egwu, C. (2013). Effect of Ethanol Leaf-Extract of *Ocimum basilicum* on Plasma Cholesterol Level of Albino Rats. *International Journal of Pharmacy and Medical Sciences*, **3 (2):** 11-13. DOI: 10.5829/idosi.ijpms.2013.3.2.1101.
8. Aja, P. M., Nwuguru, M. E., Okorie, U. C., Alum, E. U., & Offor, C. E. (2015). Effect of Decoction Extract of *Whitfieldia lateritia* on Lipid Profiles in Hypercholesterolemic Albino Rats. *Global Veterinaria,* **14**(3): 448-452. DOI: 10.5829/idosi.gv.2015.14.03.93130.
9. Ezeani, N. N., Edwin, N., Alum, E. U., Orji, O.U., & Ugwu, O. P. C. (2017). Effect of Ethanol Leaf Extract of *Ocimum gratissmum* (Scent Leaf) on Lipid Profile of Alloxan-Induced Diabetic Rats. *International Digital Organization for Scientific Research Journal of Experimental Sciences*, **2(1):** 164-179.www.idosr.org. https://www.idosr.org/wp-content/uploads/2017/07/IDOSR-JES-21-164-179-2017.-ezeani-2-updated.pdf
10. Obeagu, E. I., Chijioke, U. O., & Ekelozie, I. S. (2018). Hypertension a great threat to human life. *Int. J. Adv. Res. Biol. Sci.*, *5*(10), 159-161.
11. Uti, D. E., Igile, G. O., Omang, W. A., Umoru, G. U., Udeozor, P. A., Obeten, U. N., Ogbonna, O. N., Ibiam U. A., Alum, E. U., Ohunene, O. R., Chukwufumnanya, M. J., Oplekwu, R. I., & Obio, W. A. (2021). Anti-Diabetic Potentials of Vernonioside E Saponin; A Biochemical Study. *Natural Volatiles and Essential Oils*, **8(**4): 14234-14254. https://www.nveo.org/index.php/journal/article/view/3067.
12. Ugwu, O. P.C., Alum, E. U., Obeagu, E. I, Okon, M. B., Aja, P. M., Samson, A. O., Amusa, M. O., & Adepoju, A. O. (2023). Effect of Ethanol leaf extract of *Chromolaena odorata* on lipid profile of streptozotocin induced diabetic wistar albino rats. *IAA Journal of Biological Sciences,* **10**(1):109-117. https://www.iaajournals.org/effect-of-ethanol-leaf-extract-of-chromolaena-odorata-on-lipid-profile-of-streptozotocin-induced-diabetic-wistar-albino-rats/.
13. Alum, E. U., Inya, J. E., Ugwu, O. P. C., Obeagu, I. E., Aloke, C., Aja, P. M., et al. (2023). Ethanolic leaf extract of *Datura stramonium* attenuates Methotrexate-induced Biochemical Alterations in Wistar Albino rats. *RPS Pharmacy and Pharmacology Reports*, 2(1):1–6. doi: 10.1093/rpsppr/rqac011.
14. Obeagu, E. I., Ugwu, O. P. C., & Alum, E. U. (2023). Poor glycaemic control among diabetic patients; A review on associated factors. *Newport International Journal of Research in Medical Sciences (NIJRMS)*, 3(1):30-33. https://nijournals.org/wpcontent/uploads/2023/05/NIJRMS-3130-332023.pdf
15. Roth, G. A., Abate, D., Abate, K. H., et al. (2018). Global, regional and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study. *Lancet*, 392: 1736-1788
16. Ojo, T. T., Hawley, N. L., Desai, M. M. et al. (2017). Exploring knowledge and attitudes toward non- communicable diseases among village health teams in Eastern Uganda: a cross-sectional study. *BMC Public Health,* 17, 947 doi: 10.1186/s12889-017-4954-8.
17. Bahendeka, S., Wesonga, R., Mutungi, G., et al. (2016). Prevalence and

correlates of diabetes mellitus in Uganda: a population-based national survey. *Trop Med Int Health.,* 21(3):405–16.
18. Guwatudde, D., Kirunda, B. E., Wesonga, R., et al. (2016). Physical Activity Levels among Adults in Uganda: Findings from a Countrywide Cross-Sectional Survey. *J Phys Act Health.*, 13(9):938–45.
19. Boateng, D., Wekesah, F., Browne, J. L., Agyemang, C., Agyei-Baffour, P., Aikins, Ad-G., et al. (2017). Knowledge and awareness of and perception towards cardiovascular disease risk in sub- Saharan Africa: A systematic review. *PLoS ONE*, 12(12): e0189264. doi: 10.1371/journal.pone.0189264.
20. Aminde, L. N., Takah, N., Ngwasiri, C. et al. (2017). Population awareness of cardiovascular disease and its risk factors in Buea, Cameroon. *BMC Public Health,* 17. doi: 10.1186/s12889-017-4477-3.
21. Mensah, G. A., Roth, G. A., Sampson, U. K., Moran, A. E., et al. (2015). GBD 2013 Mortality and Causes of Death Collaborators. Mortality from cardiovascular diseases in sub-Saharan Africa, 1990-2013: a systematic analysis of data from the Global Burden of Disease Study 2013. *Cardiovasc J Afr.*, 26(2 Suppl 1):S6-10. doi: 10.5830/CVJA-2015-036.
22. Verma, A., Mehta, S., Mehta, A., & Patyal, A. (2019). Knowledge, attitude and practices toward health behaviour and cardiovascular disease risk factors among the patients of metabolic syndrome in a teaching hospital in India. *J Family Med Prim Care*, 8: 178-83.
23. Tiwari, R., Deb, P., Debbarma, A., Chaudhuri, R., Chakraborty, A., Lepcha, M., et al. (2006). Tobacco use and cardiovascular disease: A knowledge, attitude and practice study in rural Kerala. *Indian JMed Sci.*, 60: 271–6.
24. Mohammed, J. (2012). Knowledge of and Attitude to Cardiovascular Disease Risk Factors among Members of the Nigerian Armed Forces. *World J Public Heal Sci.*, 11(2):23–7.
25. Alum, E. U., Ibiam, U. A., Ugwuja, E. I., Aja, P. M., Igwenyi, I. O., Offor, C. E., Orji, O. U., Aloke, C., Ezeani, N. N., Ugwu, O. P. C., & Egwu, C. O. (2022). Antioxidant Effect of *Buchholzia coriacea* Ethanol Leaf Extract and Fractions on Freund's Adjuvant-induced Arthritis in Albino Rats: A Comparative Study. *Slovenian Veterinary Research*, 59 (1): 31–45. doi: 10.26873/svr-1150-2022.
26. Ugwu, O. P.C., Alum, E. U., Okon, M. B., Aja, P. M., Obeagu, E. I., & Onyeneke, E. C. (2023). Anti-nutritional and Gas Chromatography-Mass spectrometry (GC-MS) analysis of ethanol root extract and fractions of *Sphenocentrum jollyanum*. *RPS Pharmacy and Pharmacology Reports*, 2:1-7. DOI:10.1093/rpsppr/rqad007/7085509
27. Alum, E. U., Aja, W., Ugwu, O. P. C., Obeagu, E. I., & Okon, M. B. (2023). Assessment of vitamin composition of ethanol leaf and seed extracts of *Datura stramonium*. *Avicenna J Med Biochem.*, 11(1):92-97. doi:10.34172/ajmb.2023.2421.
28. Alum, E. U., Oyika, M. T., Ugwu, O. P. C., Aja, P. M., Obeagu, E. I., Egwu, C. O., & Okon, M. B. (2023). Comparative analysis of mineral constituents of ethanol leaf and seed extracts of *Datura stramonium*. *IDOSR Journal of Applied Sciences,* **8**(1):143-151. https://doi.org/10.59298/IDOSR/2023/12.1.7906.
29. Reid, K. J., Baron, K. G., & Zee, P. C. (2014). Meal timing influences daily caloric intake in healthy adults. *Nutr Res.*, 34(11):930-5. doi: 10.1016/j.nutres.2014.09.010. Epub 2014 Oct 2. PMID: 25439026; PMCID: PMC4794259.
30. Dhaka, V., Gulia, N., Ahlawat, K. S., & Khatkar, B. S. (2011). Trans fats-sources, health risks and alternative approach. A review. *J Food Sci Technol.*, 48:534–41.
31. Muhamad, R., Yahya, R., & Yusoff, H. M. (2012). Knowledge, attitude and practice on cardiovascular disease among women in north-east coast Malaysia. *Int J Collab Res Intern Med Public Health.*, 4:85–98.

CITE AS: Murungi Esther (2023). Knowledge, Attitude, and Practice Regarding Risk of Cardiovascular Diseases among Adult Patients Attending Outpatient Department at Kampala International University Teaching Hospital. INOSR APPLIED SCIENCES 10(3):274-286.