Demographic Variables and the Practice of Screen for Cardiovascular Risk Factors Detection Among Civil Servants in Uyo Metropolis

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ABSTRACT

The study examined the level of awareness of cardiovascular disease risk factors as well as the level of practice of screening tests for cardiovascular risk factors detection by female civil servants in Uyo Metropolis, Akwa Ibom State. Descriptive survey design was used for the study. The population for the study consisted all female Civil Servants in the AKS Civil Service. "CARDIOVASCULAR DISEASE RISK FACTORS AWARENESS AND PRACTICE OF SCREENING TESTS QUESTIONNAIRE (CDRFAPSTQ)" was used to collect data for the study as developed by the researcher. The instrument was validated by experts in Test, Measurement and Evaluation through face and content validity and the reliability coefficient of the instrument was .86 using Cronbach's statistical analysis. Data obtained were analysed using descriptive and inferential statistics. Findings of the study revealed that there is remarkable relationship between the level of awareness of cardiovascular disease risk factors and the level of practice of screening tests to detect cardiovascular disease risk by the female civil servants in Uyo. It was recommended that Government and health policy makers should conduct seminar regularly to lecture civil servants on the risk factors of cardiovascular disease and for them to be aware of the prevalence of the disease with a view to addressing gaps in knowledge with targeted information, education and preventive measures.

Key Words: cardiovascular disease, screening test, risk factors, risk detection, awareness

Background to the Study

Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels and they include: Coronary Heart Disease – disease of the blood vessels supplying the heart muscle, leading to heart attack; Cerebrovascular disease – disease of the blood vessels supplying the brain, leading to stroke; Peripheral artery disease – disease of the blood vessels supplying the arms and legs; Rheumatic heart disease – damage to the heart muscle and heart valves from rheumatic fever, caused by streptococcal bacteria; Congenital heart disease – malformation of heart structure existing at birth; Deep vein thrombosis and pulmonary embolism – blood clots in the leg veins, which can dislodge and move to the heart and lung (WHO 2012). Cardiovascular disease is the cause of worldwide preventable morbidity and mortality in developing countries and rates are expected to rise over the next few decades (Ejim, et al., 2011). WHO (2015) fact sheet, No. 317 reported that cardiovascular diseases (CVDs) are the number one cause of death globally; more people die annually from CVDs than from any other cause. The statistics about women heart disease is startling. One in three women die of cardiovascular disease compared to 1 in 31 women who die of heart attack. CVD claims twice as many women's lives as does all types of cancer combined. Every 90secs a woman suffers a heart attack. While the actual

numbers of death from heart disease have declined among both men and women, more women die of CVD each year than men. In fact rates of heart disease among younger women (aged 35-54) are actually increasing, a trend thought to be attributable to obesity.

The American Heart Association (AHA) (2014), stated that the key to preventing cardiovascular diseases is managing the risk factors such as high blood pressure, high cholesterol or high blood glucose. Cardiovascular disease risk factor awareness and knowledge are believed to be prerequisites for adopting healthy lifestyle behaviours both to prevent and detect these diseases and to curb the morbidity and mortality associated with it. Women's awareness of CVD and their perception of their risk for heart disease can greatly influence their decision making process in regard to health care decision. The general public still perceives heart disease as primarily a health problem for men. Evidence show that women perceive breast cancer as greater risk than cardiovascular disease. These misperceptions may lead women to underestimate their risk for CVD and fail to seek early intervention to prevent unnecessary morbidity and mortality. It is against this background that this study is carried out to assess the level of awareness of cardiovascular disease risk factors by the Female Civil Servants in Uyo, and the extent to which they have undergone the available screening tests to help detect risk factors of the disease.

Statement of Problem

The researcher has witnessed and heard of myriads of cases "Slumping and dying", in the offices, on walkways, in the market places, on the football fields, party houses, on the car steering, farms, homes and even in the churches while preaching or singing. It is baffling and seems to be in an epidemic proportion. Many of these cases are attributed to witchcraft attack by relatives and being struck by the ghosts (spirits) invoked by an enemy. Churches and prophets are not helping matters. Some of the "slumped" cases known had been known to be hypertensive. Some of them had been informed but refused to accept or believe due to ignorance and superstition. These incessant cases of slumping and death due to causes that can be averted has motivated the researcher to go into this study to ascertain women's level of awareness of the risk factors for cardiovascular disease and ways of preventing them.

Purpose of the Study

The purpose of the study is to find out the level of awareness of cardiovascular disease risk factors as well as the level of practice of screening tests for cardiovascular risk factors detection by female civil servants in Uyo, Akwa Ibom State. The study specifically seeks to:

1) determine the level of awareness of the risk factors for cardiovascular disease (in particular heart attack and stroke) by the female civil servants in Uyo.
2) assess the practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo.

Research Questions

1) What is the level of awareness of the risk factors for cardiovascular disease (in particular stroke and heart attack) by the female civil servants in Uyo?
2) What is the level of practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo.

Research Hypothesis

1) There is no significant relationship between the level of awareness of cardiovascular disease risk factors and the level of practice of screening tests to detect cardiovascular disease risk by the female civil servants in Uyo.

Review of Related Literature

Overview of Cardiovascular Disease

Cardiovascular disease (CVD) is a term that refers to more than one disease of the circulatory system including the heart and blood vessels, whether the blood vessels are affecting the lungs, the brain, kidneys or other parts of the body. Within the heart, disease can affect the physical structure including the valves or the muscle wall. Cardiovascular disease also includes conditions of vascular function, inflammation or the electrical regulation of the heart beat (WHO 2012). According to Public Health Agency of Canada (2010) six types of cardiovascular diseases can be identified; (a) Ischaemic heart disease, - refers to problems with circulation of blood to the heart muscles resulting in partial or complete blockage of one or more of the coronary arteries can result in lack of enough oxygenated blood (Ischaemic) thus causing symptoms such as angina chest pain and dyspnoea (shortness of breath) or myocardial infarction commonly known as "heart attack". (b) Cerebrovascular disease (stroke); refers to problem with the circulation of blood in the blood vessels of the brain. A complete blockage with long term effect is referred to as a cerebrovascular thrombosis (clot) or accident or a stroke. (c) Peripheral vascular disease: Affects the circulation primarily in the (legs). Patients with this disease typically complain of pain in their calves especially when walking. (d) Heart failure occurs when the pumping action of the heart cannot provide enough blood to the rest of the body as it is needed. Resulting in a heart disease called a cardiomyopathy. (e) Rheumatic heart disease: This disease begins with a bacterial infection in childhood, affecting joints and heart valves. The heart problem appears many years later attacking the inner tissues of the heart including the valves (endocarditis) and the outer tissues overlying the heart (pericarditis). (f) Congenital heart disease: Is a problem with the structure of the heart arising because of a birth defect. Some congenital heart problems result in death unless immediately corrected by surgical intervention. Other cause disability to varying degrees and are treated by surgical later in life with correction of the problem sometimes requiring more than a single operation.

Signs and symptoms of CVD

According to Fuca (2015) major symptoms suggestive of CVD include: Angina - A tightness or squeezing sensation in the chest indicating heart attack or chest pain that gets worse when lying down and doesn't worsen with exertion, is likely to be a pericarditis; Leg Pain - Peripheral artery disease often leads to cramping and fatigue in the legs with exertion; Shortness of breath - Fluid backing up into the lungs from a failing heart leads to shortness of breath, which is often made worse by lying down; Fatigue - Caused by insufficient blood flow to the muscle along with the decreased availability of oxygen due to fluid in the lungs; Palpitation - Abnormal heart beats if it occurs with other symptoms point to arrhythmias; Light headedness and fainting - Caused by insufficient blood flow to the brain due to abnormal heart rhythm or rate, or to insufficient cardiac output.

The main function of the cardiovascular system is to transport blood throughout the body. Cardiovascular disease occurs when blood flow becomes obstructed. This is primarily caused by

Artherosclerosis – a build-up of deposits on the inside of arteries. Artherosclerosis is a gradual disease process. The inner layer of the arteries is normally smooth. During early adulthood fatty particles from the blood make their way into the inner layer of the arteries. They build up and form fatty streaks. Injuries to the internal lining from smoking, high blood pressure or diabetes, make it more likely that fatty particles will build up. As time goes on fat from low density lipoprotein (LDL_S) continues to build up. The lipids react with oxygen and are taken over by smooth muscle cells of the artery. The cells develop a foamy appearance. The foam cells attract platelet from the blood stream as well as calcium deposits and cell debris. The walls of the artery become inflamed as white blood cells try to heal the injured area. In the meantime, a fibre-like cap forms over the fatty mixture and create a hardened lesion called an "artherosclerotic plaque". As the plaque continues to grow, it narrows the affected artery and slows the flow of blood through it. At times the fibrous cap covering atherosclerotic plaque may rupture. When this happens platelets become exposed to the content of the plaque. This causes them to collect and form a clot at the site of the rupture (thrombosis). The clot may grow very large leading to total obstruction of flow in the artery. Pieces of clots (emboli) may also break off and travel downstream (AHA, 2013),

Risk Factors for CVD and Calculation for Risk Factors

Extensive clinical and statistical studies have identified several risk factors that increase the risk of coronary heart disease, heart attack and stroke. These risk factors also increase the chance that existing coronary heart disease will worsen (NHLBI 2015). A person may not necessarily develop cardiovascular disease if he has a risk factor. But the more risk factor he has the greater is the likelihood that he will, unless, action is taken to modify the risk factors and work to prevent them compromising health. The risk factors are grouped under modifiable (high blood pressure, smoking, high cholesterol in blood, diabetes mellitus, lack of exercise, being overweight or obese, and unhealthy diet) and non modifiable risk factors (age, gender, family history, and race). Modifiable risk factors are those which the patient can take measures to change them while non modifiable risk factors cannot be changed (UCSF 2015).

Risk classification has historically been calculated using the Framingham Risk score. Based on the presence of risk factors the likelihood of having a cardiovascular event within the next 10years can be calculated and thus doctors can compute how worried they should be about someone at risk for a cardiovascular event. However the Framingham score underestimates risk among women and is limited in estimating only the likelihood of coronary artery disease, not all forms of CVD. Because of this an alternative tool, the Reynolds risk score may be more appropriate for women. It is thus also useful for both the individual patient and for the clinician in helping decide lifestyle modifications and preventive medical treatments, and for patient education, by identifying men and women at increased risk for future cardiovascular events (Wilson & Basow 2010).

WHO (2012) published a pocket guideline on how to reduce the incidence of first and recurrent clinical events due to coronary heart disease (CHD) cerebrovascular disease (CeVD) and peripheral vascular disease in two categories of people namely: People with risk factors who have not yet developed clinically manifest CVD (primary prevention); and People with established CHD, CeVD or peripheral vascular disease (secondary prevention). NHS choices (2013) recommends prevention strategies for adults and children who have not yet developed risk factors to avoid the development of risk factors and the actual establishment of CVD in later life. The recommendations are as follows:

In Adults, Most risk factors for CVD are linked, which means that if one has one risk factor she will probably have others. For example, people who drink heavily usually have poor diets and are more likely to smoke. Obese people are also more likely to have other health problems such as diabetes, high cholesterol and high blood pressure. Addressing one risk factor such as giving up smoking will bring important health benefits. To significantly reduce the risk of developing CVD, the following lifestyles/habits should be considered: Alcohol intake should be limited to at least 21 units of alcohol, 25ml of spirit, and 125ml glass of wine weekly. A low-fat, high fiber diet (including whole grains and at least five portions of fruits and vegetables a day, with not more than 6g of salt a day. On the other hand foods high in unsaturated fat can help decrease cholesterol level. They are: oily fish, avocado, nuts and seeds rapeseed oil and olive oil. 30 minutes of aerobic exercise every day is recommended to help the overweight and obese to loose weights. It is strongly recommended that all smokers must give up all smoking. Medication is also prescribed for individuals who have a particularly high risk of developing CVD. Medications that sometimes help to prevent CVD include: Blood pressure tablets such as angiotensin converting enzyme (ACE) inhibitors, which are used to treat high blood pressure; Statins: used to lower cholesterol level; Low dose aspirin: used to prevent blood clots (NHS Choices 2013).

To prevent CVD in children, according to NHS (2014) research has clearly shown that the eating and drinking habits one get into as a child can continue into adulthood. Bad eating habits in children could lead to serious health problems later in life. Four points to consider are: Fat in the child's diet should be reduced, Salt in the child's diet should be between 0.8g – 2.4g per day, reduced Sugar intake and greater amount of exercise is recommended for children.

Screening for cardiovascular risk detection

Cardiovascular screening is the practice of using tests or examination to see if a person is at risk of certain kinds of heart disease. Primary prevention of cardiovascular disease is aimed at risk factor identification and treatment as well as screen individual with vascular and cardiac test aimed at identifying early abnormalities likely to progress and to measure risk contributors susceptible to therapy. The screening tests are effective in uncovering unsuspected early cardiovascular disease in which targeted treatment could be effective in reducing the incidence of cardiovascular event in susceptible individuals. Cardiac disease which may lead to heart failure is commonly asymptomatic. Although atherosclerosis is a common cause of such disease left ventricular dysfunction frequently is idiopathic.

A comprehensive array of non invasive testing, imaging and biochemical method have been developed using techniques that have either been established or advocated for early detection. Screening consist of 3 phases: (1) Risk category assignment; (2) Early disease assessment and; (3) Modifiable disease contributor assessment. The extensiveness of the screening evaluation and its cost is based on risk category assignment. Certain tests are highly unlikely to be abnormal in low-risk individuals. Individuals are placed in low or high risk categories on the basis of information obtained on initial interview. The criteria for high risk assessment are: Age - women above 55years and men above 45years; Family history - Individuals with one primary relative (parent or sibling) or 2 secondary relatives (grand parent, cousin etc) with cardiovascular disease or diabetes before the age of 65 in women or before 55 in men; Personal history - Individuals who are present with a history of an abnormal risk factor (blood pressure, cholesterol, blood sugar or a previous presumed cardiovascular event); Smokers

and; Abnormal test results. The screening tests employed are designed to separately assess early markers for arterial and left ventricular disease.

Summary of Literature Review

Different work by different authors and scholars relating to the topic on "awareness of cardiovascular disease factors and screening practices by female civil servants in Uyo" were reviewed. The review focus on the concept of cardiovascular disease and its epidemiology, risk factors of the disease both modifiable and non modifiable were highlighted as well as screening modalities to detect risk factors. It is shown that if the risk factors are detected early and treatment instituted the dreaded heart attack and stroke will be averted.

MATERIALS AND METHODS

Research Design

The research design used for the study was Descriptive survey design.

Area of Study

The study area was the entire Akwa Ibom State Civil service which included all the ministries, board, agencies and parastatals sited in Idongesit Nkanga Secretariat Complex, Uyo, Akwa Ibom State.

Population of study

The total population of employees working in the AKS Civil Service is13,537 (Civil Service Commission, 2011), while the target population consist of all female civil servants numbering 6,243.

Sample

The sample size of 376 respondents was drawn from 6,243 female civil servants using Taro Yamane's (1967) formula given as:

$$n = \frac{N}{1 + N(e)^2}$$

Inclusion Criteria

- Female civil servants who are still in service, and have their names in the nominal roll of their different departments, and those who are willing to participate in the study.

Sampling procedure

The sample size of 376 respondents was selected using stratified random sampling technique and 6.02% of the total population (6,243) was used for the study.

Instrument for data collection

The researcher developed an instrument tagged "CARDIOVASCULAR DISEASE RISK FACTORS AWARENESS AND PRACTICE OF SCREENING TESTS QUESTIONNAIRE (CDRFAPSTQ) the questionnaire is made up of two sections, sections A and B. Section A is made up of the demographic data of the respondents while section B is made up of the other variables of the research objectives each of which was measured with 5 items.

Validity of the Instrument

The face and content validity of the instrument was ascertained by experts in test, measurement and evaluation in the field.

Reliability of the Instrument

The reliability of the instrument was determined by carrying out a pretest on 30 civil servants in the Federal Secretariat Uyo. To establish the reliability of these instruments, a test re-test was done one week apart. The set of test scores obtained were subjected to Cronbach's statistical analysis to determine the consistency of the instrument. A reliability coefficient result of 0.86 was obtained thus the instrument was considered reliable for the study because the value (0.86) was substantially high enough for use of the instrument in the study.

Procedure for Data Collection

Four research assistants were trained on the purpose of the study and how to collect data from the respondents. Three hundred and seventy-six (376) questionnaires were administered to the women who met the inclusion criteria.

Method of data analysis

Analysis of the data was carried out using Statistical Package for Social Sciences (SPSS). Descriptive analysis was used to answer each of the research questions while the hypotheses were tested with inferential statistics (Pearson Product Moment Correlation Analysis) at 0.05 alpha levels.

Results and Discussion of Findings

Results

Research Question One

The research question sought to find out the level of awareness of the risk factors for cardiovascular disease (in particular stroke and heart attack) by the female civil servants in Uyo. To answer the research question, descriptive analysis was performed on the data (see table 1)

Table 1: Descriptive analysis of the level of awareness of the risk factors for cardiovascular disease (in particular stroke and heart attack) by the female civil servants in Uyo.

Awareness of the risk factors for cardiovascular disease	Arithmetic mean	Expected Mean	Remarks
I have heard of hypertension as one of the risk factors of heart attack and stroke.	4.47	3.00	H
Increase weight gain and lack of exercise are also the risk factors of heart attack and stroke.	4.47	3.00	H
High cholesterol (bad fat) is also a risk factor for heart attack and stroke.	4.20	3.00	H
High blood glucose/diabetes has been identified as one of the risk factors of heart attack and stroke.	4.87	3.00	H
Smoking cigarette is also a risk factor for heart attack and stroke.	4.60	3.00	H
WEIGHTED MEAN	**4.52**		
GRAND MEAN	**22.61**	**15.00**	

H = High; L = Low

Source: Field Survey

The result of the above table 1 presents the descriptive analysis of the awareness of the risk factors for cardiovascular disease (in particular stroke and heart attack) by the female civil servants in Uyo. From the table, it was observed that all factors with respect to the awareness of the risk factors for cardiovascular disease (in particular stroke and heart attack) by the female civil servants in Uyo as responded by the respondent were observed to be high, being that their observed mean value were higher the expected mean (3.00). Factor identified with high mean value were that "high blood glucose/diabetes has been identified as one of the risk factors of heart attack and stroke" (4.87), "smoking cigarette is also a risk factor for heart attack and stroke"(4.60), "increase weight gain and lack of exercise are also the risk factors of heart attack and stroke"(4.47), and finally, "I have heard of hypertension as one of the risk factors of heart attack and stroke" (4.47).

Finally, the weighted mean for all the items (4.52) was higher than the expected mean (3.00) and the observed grand mean (22.61) was also higher than the expected grand means of (15.00) and this signifies that the level of awareness of the risk factors for cardiovascular disease (in particular stroke and heart attack) by the female civil servants in Uyo is remarkably high.

Research Question Two

The research question sought to find out the level of practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo. To answer the research question, descriptive analysis was performed on the data (see table 2).

Table 2:
Descriptive analysis of the level of practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo.

Practice of screening test for cardiovascular disease risk factors	Arithmetic mean	Expected Mean	Remarks
I check my blood pressure regularly	2.48	2.5	L
I check my blood glucose level at least every year	2.13	2.5	L
I check my blood cholesterol level yearly	1.80	2.5	L
I check my body weight regularly	3.08	2.5	H
I visit the clinic for general checkup regularly.	1.76	2.5	L
WEIGHTED MEAN	2.25		
GRAND MEAN	11.25	12.5	

H = High; L = Low
Source: Field Survey

The result of the above table 2 presents the descriptive analysis of the practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo. From the table, it was observed that few factors with respect to the practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo as responded by the respondent were observed to be high, being that their observed mean value were higher the expected mean (2.5). however, most factors were identified with low means. Factor identified with high mean value

was "I check my body weight regularly" (3.08), while the factors identified with low mean value were "I check my blood pressure regularly" (2.48), "I check my blood glucose level at least every year" (2.13), "I check my blood cholesterol level yearly" (1.80), and "I visit the clinic for general checkup regularly." (1.76).

Finally, the weighted mean for all the items (2.25) was lower than the expected mean (2.50) and the observed grand mean (11.25) was also lower than the expected grand means of (12.5) and this signifies that the level of practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo is remarkably low.

Hypothesis Testing

The null hypothesis states that there is no significant relationship between the level of awareness of cardiovascular disease risk factors and the level of practice of screening tests to detect cardiovascular disease risk by the female civil servants in Uyo. In order to test the hypothesis, two variables were identified as follows:-

1. The level of awareness of cardiovascular disease risk factors as the independent variable.
2. Level of practice of screening tests as the dependent variable.

Pearson Product Moment Correlation analysis was used to analyze the data. (see Table 3).

TABLE 3: Pearson product moment correlation analysis of the relationship between the level of awareness of cardiovascular disease risk factors and the level of practice of screening tests to detect cardiovascular disease risk by the female civil servants in Uyo.

Variable	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r
Level awareness of cardiovascular disease (X)	8680	202456	112448	0.54*
Level of practice of screening test (Y)	4812	64624		

***Significant at 0.05 level; df = 374; N = 376; Critical r-value = 0.113**

The above table presents the obtained r-value of (0.54). This value was tested for significance by comparing it with the critical r-value (0.113) at 0.05 level with 374 degree of freedom. The obtained r-value (0.54) was greater than the critical r –value (0.113). Hence, the result was significant, meaning that there is significant relationship between the level of awareness of cardiovascular disease risk factors and the level of practice of screening tests to detect cardiovascular disease risk by the female civil servants in Uyo.

Discussion of Findings

The result of the data analysis in tables 1 signifies that the level of awareness of the risk factors for cardiovascular disease (in particular stroke and heart attack) by the female civil servants in Uyo is remarkably high. The result of the data analysis in table 2 signifies that the level of practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo is remarkably low. The low level of screening creates a lot of problem to women. That is

why finding of AHA (2013) showed that women's heart disease awareness is increasing, with the number of women aware that heart disease is the leading cause of death nearly doubling in the last 15 years but that this knowledge still lags in minorities and younger women.

The result of the data analysis in table 3 was significant due to the fact that the obtained r-value (0.54) was greater than the critical r –value (0.113) at 0.05 level with 374 degree of freedom. The result implies that there is significant relationship between the level of awareness of cardiovascular disease risk factors and the level of practice of screening tests to detect cardiovascular disease risk by the female civil servants in Uyo. The result therefore was in agreement with AHA (2014) which reported that Cardiovascular disease risk factor awareness and knowledge are believed to be prerequisites for adopting healthy lifestyle behaviours both to prevent and detect these diseases and to curb the morbidity and mortality associated with it. Since women's awareness of CVD and their perception of their risk for heart disease can greatly influence their decision making process in regard to health care decision. The significance of the result caused the null hypotheses to be rejected while the alternative one was accepted.

Conclusion

Based on the findings of the research work, the researcher concludes that female civil servants in Uyo are highly aware of the risk factors and the screening tests detection for cardiovascular disease (in particular stroke and heart attack), but the level of practice of screening for cardiovascular disease risk factors by the female civil servants in Uyo is low. Therefore, there is remarkable relationship between the level of awareness of cardiovascular disease risk factors and the level of practice of screening tests to detect cardiovascular disease risk by the female civil servants in Uyo.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Government and health policy makers should conduct seminar regularly to lecture civil servants on the risk factors of cardiovascular disease and for them to be aware of the prevalence of the disease with a view to addressing gaps in knowledge with targeted information, education and preventive measures.
2. It should be made clear to the populace to disabuse their minds of superstitious beliefs in witchcraft and "ghost strikes" with respect to sudden death but with proof of medical test should tie some death occurrence to risk factors for cardiovascular disease. And women should subject themselves to regular screening to detect CVD risk factors.

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