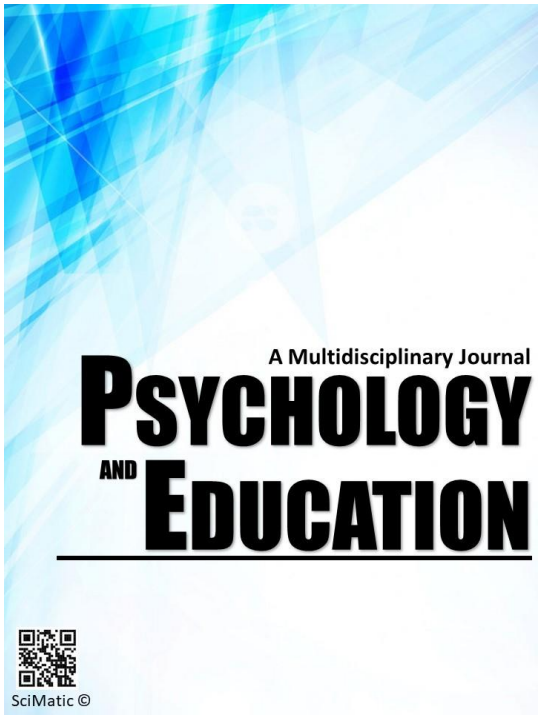
CARDIOVASCULAR DISEASE RISK LEVEL OF THE DIVISION OFFICE PERSONNEL OF THE DEPARTMENT OF EDUCATION, DIVISION OF BOHOL



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Research Article

Cardiovascular Disease Risk Level of the Division Office Personnel of the Department of Education, Division of Bohol

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Abstract

The study seeks to find out the Cardiovascular Disease Risk Level of the Division Office Personnel. The research looks at cardiovascular disease risk level as an individual's, in this case, the respondent's likelihood to develop a fatal or near-fatal cardiovascular incident or event in the next ten years. This pertains to a heart attack or a stroke that may result to death or a severe condition that may result to disability. The study eyes on the office-stationed personnel of the Schools Division Office of the Department of Education, Division of Bohol, located in Tagbilaran City, province of Bohol. Data is collected by means of a one-on-one interview between the researcher and the respondent using the modified risk assessment form as the instrument. During the interview, the researcher obtains necessary body measurements such as the height, weight, waist circumference, blood pressure etc. These are taken on top of asking for the personal information and health history of each respondent. The entire process is an adaptation of the Philippine Package of Essential and Non-communicable Diseases (PhilPEN) Protocol of the Department of Health, a program centered on detecting, preventing, and mitigating the prevalence of lifestyle-related diseases in the community setting. The data obtained is then analyzed through the World Health Organization – International Society for Hypertension (WHO-ISH) Risk Prediction Chart for the West Pacific Region B. Individual blood pressure readings aligned with the age, sex, and smoking habits of the respondent will be the bases for deriving the cardiovascular risk assessment level expressed in percentages of less than 10% up to 30% or greater. The said percentage is the chance or likelihood of each personnel to experience a heart attack or stroke in the next ten years from the date of assessment. Commencement and completion of the study projects that a majority of the respondents will have a normal cardiovascular risk level. This implies that there is still much headroom for the maintenance and improvement of the health status of the division office personnel, and enough time for the detection and treatment of moderate and severe case.

Keywords: *cardiovascular disease, disability, risk level, office personnel, Philippines*

Introduction

Cardiovascular diseases (CVDs) are ailments of the heart and blood vessels and include coronary heart disease, cerebrovascular disease, rheumatic heart disease, and other related conditions. Four out of five deaths from cardiovascular disease are a result of heart attacks and strokes. People at risk of cardiovascular diseases (CVDs) exhibit raised blood pressure, glucose, and lipids and are overweight or obese; these are easily measurable in primary care facilities. Identifying individuals at risk for cardiovascular diseases and making sure that they can receive proper treatment prevents premature deaths. Access to essential non-communicable diseases (NCD) medicines and appropriate health technologies in all primary health care settings is crucial to ensure that people who are in need receive adequate treatment (WHO).

Cardiovascular Diseases (CVDs) are the number one cause of mortality globally: more people die annually from cardiovascular disease than from any other cause. It is estimated that 17.9 million people have died from cardiovascular diseases in the year 2016, representing approximately 31% of all global deaths. Of these mortalities, 85% are attributed to heart attack(s) and stroke(s). More than three-quarters of CVD-related deaths occur in low-income and middle-income countries. Out of the 17 million premature deaths under the age of 70 due to non-communicable diseases (NCDs) in the year 2015, 82% came from low-income and middle-income countries, and 37% resulted from cardiovascular diseases.

Most cardiovascular conditions are highly preventable by addressing risk factors in behavior such as the use of tobacco products, unhealthy diets, and obesity, physical inactivity, and alcoholism. Individuals with CVD or who are at highly at risk due to the presence of one or more factors such as the existence of hypertension, diabetes, hyperlipidemia, or another already established condition, require early detection and management through appropriate counseling and medicines. (WHO). With the Philippines belonging to the low and middle-income country category, it puts the average Filipino in a precarious situation of risk concerning cardiovascular well-being,

A vast portion of the Filipino community suffers from Cardiovascular Diseases (CVDs) as Hypertension remains to be the third leading cause of illness in males and the second leading cause of the same in

females in the Philippines. Diseases of the Heart and Diseases of the Vascular System are also the first and the second leading causes of mortality among both male and female Filipinos, respectively as, of the consolidated data of the year 2014 (DOH).

According to data from the Field Health Services Information System, Essential or Primary Hypertension is identified as the second leading cause of morbidity in Region VII or Central Visayas while Diseases of the Heart (2nd), Cancer (3rd), Cardiovascular Disease (4th), Essential (Primary) Hypertension (5th), Diabetes Mellitus (6th), and Cerebrovascular Disease (8th) constitute six of the top ten leading causes of mortality in the region for the year 2017 (DOH-CHD VII).

With Hypertension and Diabetes being the common presentations of Cardiovascular Disease, and with CVD as one of the primary causes of illness in the National, Regional and Local arena, its degree of prevalence among Division Office employees/personnel of the Department of Education, Division of Bohol (DepEd-Bohol) remains unidentified.

Henceforth, this research study entitled Cardiovascular Disease Risk Level of the Division Office Personnel of The Department of Education, Division of Bohol is carried out to the Division Office-stationed Personnel (101 employees) of the Schools Division Office (SDO) of the Department of Education, Division of Bohol to identify the profile of the office personnel, highlight their lifestyles relative to smoking, diet, and exercise, examine their risk status for transient ischemic attack and stroke, uncover the prevalence of hypertension and diabetes, and shed light on their cardiovascular risk level. Additionally, the relationship between the profile of the office personnel to the prevalence of hypertension, diabetes, lifestyle, and cardiovascular risk level is tested. The results are used to determine and frame a risk management action plan that is proposed for the treatment and management of the respondents.

Research Questions

The object of this study was to determine the Cardiovascular Risk Levels of the Division Office Personnel of the Schools Division Office of the Department of Education, Division of Bohol during the School Year 2019-2020. The findings of this study served as the basis for the proposition of a Risk Management Action Plan. Specifically, it sought to answer the following:

1. What is the lifestyle of the respondents in terms of:
   1.1. Smoking;
   1.2. Alcohol Intake;
   1.3. Diet; and
   1.4. Physical Activity?
2. What is the prevalence of Hypertension among the Division Office Personnel in terms of the following?
   2.1. Known with/ Already Diagnosed with Hypertension; and
   2.2. Newly diagnosed with Hypertension?
3. What is the prevalence of Diabetes Mellitus among the Division Office Personnel in terms of the following?
   3.1. Known with/ Already Diagnosed with Diabetes; and
   3.2. Newly diagnosed with Diabetes?
4. What is the cardiovascular risk level of the respondents?
5. Is there a significant degree of relationship between the incidence of Diabetes and Hypertension?

Literature Review

Since the leading cause of morbidity and mortality is cardiovascular diseases, every individual should regularly think about possessing and maintaining good cardiovascular health. In reality, this self-processing delays until the occurrence of complications related to cardiovascular inefficiency manifested as chest pain and, or dyspnea. However, people should be trained to think about their cardiovascular health issues as a vital need from early childhood.

The sixth target in the Global Non-communicable Diseases (NCD) action plan calls for reducing by 25% the prevalence of raised blood pressure globally. Elevated blood pressure is a leading risk factor in cardiovascular disease. The global prevalence of elevated blood pressure in adults aged eighteen years and older was around 24.1% in males and 20.1% in females during the year 2015. The number of adults with raised blood pressure dramatically increased from 594 million in the year 1975 to a staggering 1.13 billion in 2015. The increase is mainly noticeable in low to mid-income countries. The reduction of the incidence of hypertension by the implementation of population-wide approaches to decrease the behavioral risk factors of harmful use of alcohol, physical inactivity, being overweight, obesity, and high dietary salt intake, is essential to attaining this target. A total-risk policy is adopted for early detection and affordable management of hypertension to successfully prevent heart attacks, strokes, and other possible complications.

The Global NCD action plan's eighth target states at least 50% of eligible individuals should receive drug therapy, counseling, and glycemic control to prevent the occurrence of heart attacks and strokes. The prevention of heart attacks and strokes through a total cardiovascular risk policy is more cost-effective than treatment decisions based on individual risk factor thresholds only and should be part of the essential benefits package in pursuing universal health coverage. Achieving this target requires the strengthening of key health system components, including health-care financing, ensuring access to necessary health technologies and essential non-communicable disease medicines.

Alcohol intake must be in moderation. Moderation refers to an average of one to two drinks per day for males, and one drink per day for females. (A drink can be twelve ounces of beer, four ounces of wine, one and a half ounces of eighty-proof spirits or an ounce of one-hundred-proof spirits. Drinking more alcohol increases such dangers as the development of alcoholism, high blood pressure, obesity, stroke, breast cancer, suicide, and the likelihood of accidents. Also, it is not possible to predict who among people will have future problems with alcoholism. Given these and other risks, the American Heart Association cautions people NOT to start drinking. If they are not already alcohol-drinkers, people should consult their physician on the benefits and risks of consuming it moderately. Too much intake of alcohol can raise the levels of some fats in the blood, particularly triglycerides. It can also lead to the development of high blood pressure, heart failure, and increase a person's calorie intake. Excessive drinking and, or binge drinking can lead to a stroke. It can also lead to other serious complications include fetal alcohol syndrome, cardiomyopathy, cardiac arrhythmia, and sudden cardiac death.

Researchers are being conducted to investigate the apparent benefits of consuming wine or alcohol in some population groups. The said apparent benefits may be attributed to the role of antioxidants, an increase in the levels of high-density lipoproteins (HDL) cholesterol, or potential anti-clotting properties. Cardio-protective effects of some antioxidants such as Vitamin E have not yet been established by clinical trials. Even if they were protective, antioxidants are readily obtainable from numerous fruits and vegetables, including from red grape juice. The best-known effect of alcohol is a small increase in high-density cholesterol. However, regular physical activity is another effective way to raise HDL levels, and niacin can be prescribed and taken to raise it to even a higher degree. Alcohol and other substances such as resveratrol that can be found in alcoholic beverages may prevent platelets in the blood from aggregating. Such may decrease clot formation and lessen the risk of stroke or heart attack. How alcohol or wine affects cardiovascular health or cardiovascular risk merits further study. As of the time being, the American Heart Association is not recommending the consumption of wine or any other form of alcohol to obtain these potential health benefits. The American Heart Association does recommend that to reduce risk, patients should talk to their doctor on how to lower cholesterol and lower high blood pressure, control weight, get enough physical activity, and follow a healthy diet. There is no scientific evidence that consuming wine or other alcoholic beverages can replace conventional measures of medicine.

Around one billion adults worldwide smoke, with high prevalence in developing countries, where 49% of men and 11% of women use tobacco. Noting that the prevalence of current smokers has decreased periodically in several countries, the absolute global number of smokers has increased proportionally with the growth of populations. People have successfully quit by the pressure of policies and with the use of aids such as nicotine replacement therapy and the substitution of cigarettes with electronic cigarettes or e-cigarettes. In an English Health Survey in the years 2013 and 2014, 26% of current smokers reported wanting to cut consumption down but are not trying to stop, and 40-41% claimed that they smoked less than what they normally consumed in the previous year. The portion of smokers who smoke one to five cigarettes per day has gradually risen from 18.2% to 23.6% between the years 2009 and 2014, with a reminiscent pattern in the United States, where the proportion of smokers who smoke less than ten cigarettes per day rose from 16% to 27% between 2005 to 2014. Smoking a few cigarettes in a day, in general, is believed to be relatively safe. Such belief has been erroneously assumed for cigarettes that have light or low nicotine content. 10% among 24,658 American adolescents thought that smoking in light amounts was not harmful, and only 35% of presumed light smokers consider their habits to be linked to what is described as "a lot of harm." Decreasing the consumption of cigarettes can be expected to lessen harm proportionately. Smoking one instead of twenty cigarettes in a day has about one-twentieth/5% of the usual risk. This is perhaps the case for lung cancer, for which the American Cancer Society Prevention Study II uncovered an approximately linear relationship between the risk of lung cancer and the number of cigarettes smoked by an individual per day.

Persons who smoke or consume tobacco are two to four times more likely to develop heart disease. This risk is even greater for women who smoke take contraceptive pills at the same time. Cigarette smoke is also harmful to the people around a smoker. Second-hand smoke can cause lung cancer and heart disease in non-smoking people. The nicotine in smoke lessens the amount of oxygen that the heart receives, elevates blood pressure, hastens the heart rate, increases the likelihood of blood clots. Nicotine in the system can lead to a heart attack or a stroke and can harm the insides of the blood vessels, including those found in the heart.

A recent study discovered that smoking is also linked to a thickening of the heart and decreases the heart's pumping ability—both of which are associable with the occurrence of heart failure. The longer the time and the more cigarettes healthy people smoked, the greater the detriment to their hearts' function and structure. Past smokers have a similar heart structure and function compared to people who had never experience smoking, which highlights the importance of quitting smoking to possibly reverse any damage (Bartsch K. et al., 2017). Tobacco consumption is a common risk factor to the main non-communicable diseases (NCDs) - cardiovascular disease (CVDs), cancer, chronic respiratory disease, and other illnesses including tuberculosis (TB), and neurological disorders. Fourteen percent (14%) of all global NCDs deaths among adults aged thirty years and over are attributable to tobacco use. 3.7% of disability-adjusted life years globally is also associated with tobacco use.

The consumption of tobacco and tobacco products is the single most preventable cause of illness, disability, and mortality in the United States. Cigarette smoking and tobacco use harm almost all organs of the body; is associated with heart disease, multiple cancers, and lung conditions. Smoking pregnant women cause harm to their unborn fetus. In addition to negative effects on individual-level and population-level health, smoking passes on a huge financial burden to society, with over $170 billion in lost productivity costs, more than 480,000 premature deaths, and at least $133 billion in total for direct medical care expenditures in the United States annually. Using smokeless tobacco, pipes, and cigars, also poses deadly consequences such as lung, larynx, esophageal, and mouth cancers. The ill-effects of tobacco use are not purely confined to the user. Exposure to second-hand smoke can and will cause death and many serious diseases. These are lung cancer, heart disease, and stroke in adults, and respiratory illness, ear infections, asthma attacks, and sudden infant death syndrome in children and infants. It is estimated that one in four non-smokers (about 58 million people), including about two in five children, are exposed to second-hand smoke. Electronic cigarettes or e-cigarettes are also growing in popularity. Until recently, some also thought that these alternatives were safer than traditional cigarettes, but electronic cigarettes may be just as harmful to the heart and lungs as smoking tobacco-containing cigarettes. Research demonstrated that using either e-cigarettes or regular tobacco leads to similar levels of hardening in the aorta, the main artery in the heart, and both means raise blood pressure.

Despite of evidence of individual lifestyle factors that can be associated with the clinical parameters or cardiovascular disease outcomes, few studies have examined the mixed additive associations of multiple lifestyle factors with mortalities from cardiovascular diseases (CVDs). Also, there has been a little variation of ethnicity in the populations that were studied. Only one research has studied a Chinese community, an ethnic group, along with Asian Indians, that make up the most massive portion of the global populace. South and Southeast-Asian people are both experiencing an increase in the prevalence of cardiovascular disease and its many risk conditions such as diabetes mellitus. The researchers geared to examine the combined relationship of lifestyle factors such as dietary pattern, physical activity, alcohol intake, smoking, usual sleep, and relative weight with the risk of mortality from CVDs and the significant subgroups of CVD mortality (coronary heart disease and cerebrovascular disease mortality) in a Singaporean population-based cohort study of Chinese male and female adults.

Body mass index (BMI) is among the most known methods to calculate for the ideal weight range. Obtaining the current BMI is as easy as typing the height and weight into a calculator. A BMI result between 18.5 to 24.9 translates to a normal weight range for height. While a result under 18.5 is translated to underweight, results of 25 to 29.9 are deemed overweight. And if the number is 30 to 35 or greater, the result is obesity.

Obesity is transforming into a global epidemic, and in the past ten years in the USA, remarkable increases in obesity have occurred both in children and in adults. The Metropolitan Life Insurance Company data which expresses body fatness as the percent ideal body weight has historically been in use, but currently, overweight and obesity are classifiable by body mass index (BMI). BMI which is the weight in kilograms over the height squared in meters is a substitute measure of fatness in children and adults. Overweight

in adults is a BMI result of 25.0 to 29.9 kg/m2 while obesity is a BMI of ≥30.0 kg/m2. The obesity epidemic that started in the 1980s is followed through the end of the century with the use of the Body Mass Index. The original alarm was raised in the year 1994 by the National Center for Health Statistics (NCFHS) when they reported their findings from the first three years of the conduct of the National Health and Nutrition Examination Survey (NHANES). The authors discovered that from NHANES 1988–1994 to NHANES 1999–2000, the occurrence of overweight in adults raised from 55.9% to 64.5%. During that same time, the prevalence of obesity rose from 22.9% to 30.5%. This sudden, unanticipated spike in the prevalence of obesity compelled the American Heart Association (AHA) to call for action to mitigate the consequences of the epidemic. In a more recent note, the American Heart Association addressed and examined a combination of weight-loss modalities for the management and treatment of obesity. Beyond being an unfavorable profile of risk, being overweight and obese also affects heart structure and function. Additionally, the clinical cardiovascular evaluation of obese patients is confined due to the morphologies of each individual. This statement reviews the available evidence of the impact of obesity on CVD, emphasizing on the evaluation of the cardiac structure and function of obese individuals and the effect of weight loss on the cardiovascular system.

A weight reduction of a mere 5% of body weight can lessen high blood pressure and total blood cholesterol. However, knowing one's weight is simply not enough in knowing one's health risk. How the human body contains excess weight, specifically fat, can adversely impact health. There are two methods of self-assessment today that can give a clearer view of how weight may be affecting health. These methods are measuring the waistline and calculating the Body Mass Index (BMI). Measuring the waist circumference helps assess obesity-related health risks. Even at a healthy weight, excess fat around the waist area increases the likelihood of high blood pressure, high blood cholesterol, heart disease, and type II diabetes mellitus. The ideal way to decipher if the waistline is increasing the risk of heart disease is simply by measuring it. In men, a waist circumference of more than 94 centimeters or 37 inches poses an increased risk, while more than 102 centimeters or 40 inches dramatically increases risk. Females with more than 80 centimeters or 31.5 inches are at an increased risk; more than 88 centimeters or 35 inches means substantially increased risk. Other risk factors such as ethnicity, pregnancy, medical history, family history, and individual risk factors, can play a role in risk, irrespective of the waist circumference. Possessing a waistline that is below the cut-off measurement does not necessarily mean a complete freedom from risk. Individual risk is influenced by one's health, medical history, and family history, hence the universal cut-points can be misleading.

With other risk factors, like diabetes, high blood pressure, or high cholesterol, the patient might need to lower his/her waist circumference to minimize risk. Reducing the waist circumference by 4 cm can have massive benefits to the risk profile and reduce the chances of developing diabetes, heart disease, and stroke. Measuring the waistline alone won't give all the information needed about weight. Knowing the waist circumference and Body Mass Index (BMI) will help to have a good conversation with a healthcare provider about how the body is changing with age. Body Mass Index is a ratio of height and weight. It applies to individuals aged 18 to 65 years old, except for those in pregnancy, those who are breastfeeding, or those who have very muscular build.

Blood pressure, like a fraction, is a measure with two numerical figures, with one number on top being the systolic pressure and one on the bottom being the diastolic pressure. An example would be that of 120/80 mm Hg. The numerator value refers to the amount of pressure in the arteries during the contraction of the heart muscles; hence called systolic pressure. The denominator value refers to the blood pressure when the heart muscles relax between beats; thus, called diastolic pressure. Both figures are essential in determining the state of health of the heart. Figureshigher than the ideal range mean that the heart is working too hard to pump blood throughout the body. A regular blood pressure reading must show a top number or a systolic pressure that is between 90mmHg and less than 120mmHg and a bottom number or diastolic pressure that is between 60mmHg and less than 80mmHg.

The American Heart Association (AHA) considers blood pressure to be normal when both systolic and diastolic figures are in the normal range. Blood pressure (BP) measurements are read in millimeters of mercury (mmHg). A regular reading would be a blood pressure measuring anywhere below 120/80 mm Hg and above 90/60 mm Hg in adults. If the blood pressure reading is within the normal range, medical intervention is not needed. Nevertheless, the person should still maintain a healthy lifestyle and a healthy weight to prevent hypertension from developing. Regular exercise and healthy eating are also quite helpful. Numbers higher than 120/80 mmHg are a red

flag that means the patient needs to pursue heart-healthy habits. When the systolic pressure is between 120-129-mm Hg, and the diastolic pressure is less than 80mmHg, it translates to an elevated blood pressure. Though these numbers are not always technically indicative of high blood pressure, the readings strayed from the normal range. Elevation in the blood pressure has a fair chance of becoming actual high blood pressure, which puts an individual at an increased risk for heart disease and stroke. Medications are not always necessary for elevated blood pressure. But this is when the patient should realize that he/she needs to adopt healthier lifestyle choices. A balanced diet and frequent exercise helps lower blood pressure to a healthy range and help stop elevated blood pressure from furthering into full-fledged hypertension.

High blood pressure happens when systolic blood pressure reaches between 130- and 139-mm Hg, or if diastolic blood pressure reaches between 80- and 89-mm Hg; this is considered Stage-I hypertension. However, the AHA notes that if the patient gets only one reading this high, then he/she may not yet have the condition of high blood pressure. Diagnosis of hypertension at any stage is the average of several readings over some time. Stage-II high blood pressure points to an even more severe condition. Blood pressure readings that show a numerator of 140mmHg or greater and a bottom number of 90mmHg or more is considered Stage-II hypertension. In this phase, the physician will recommend one or more medications for keeping the blood pressure controlled. But the patient should not depend entirely on medicines to treat hypertension. Lifestyle habits and changes thereto are just as crucial in Stage-II hypertension as they are in the other stages.

The World Health Organization formulated the Package of Essential Noncommunicable Disease Interventions (PEN) Protocol for Primary Health Care Institutions in low-resource settings, referred henceforth as the "WHO PEN". It is a prioritized set of cost-effective measures, methods, and aids that make possible to the delivery of an acceptable level of quality of care by primary care doctors and non-physician health workers. Inherent to the packages are evidence-based interventions that are in the form of simple flow charts with clear referral criteria in the clinical protocols. The cardiovascular disease risk prediction tool empowers health workers to eye on people who have the highest risk for heart attacks, strokes, kidney failure, and amputation. The integrated multifactorial risk approach improves outcomes and is more cost-effective.

When Typhoon Haiyan locally known as Yolanda hit the Philippines on the 8th of November of 2013 and caused massive devastation, health facilities were destroyed or were left non-functioning, and medical supplies were quickly exhausted. Consequently, people with non-communicable diseases (NCDs) were more vulnerable due to the lack of access to health care. Similarly, this was also reported after the earthquake in China, where there were high morbidity and deaths from non-communicable diseases due to a lack of chemotherapy, dialysis, and other medical support for individuals with an NCD. The World Health Organization (WHO) Package of Essential Non-communicable Disease Interventions (PEN) is a "prioritized set of cost-effective interventions that is deliverable to an acceptable quality of care even in resource-poor settings." These interventions are the minimum standards needed to integrate and further the care of non-communicable diseases in primary health care as well as guaranteeing equity in the provision of health care and the achievement of universal coverage of health reforms. The PEN approach was then adopted by the Department of Health (DOH) of the Philippines for implementation nationwide; however, implementation was not rapid due to issues with logistics and workforce. After Haiyan/Yolanda, the implementation of PEN in primary health care facilities was to become a priority, with Region 8 selected as the pilot site for health system recovery post-disaster through the use of PEN. This brief report narrates the application of two of the four PEN protocols in Region 8 with Protocol 1 focusing on managing and preventing heart attack, stroke and renal disease and Protocol 2 centering on health education and promotion and the advocacy of smoking cessation. The critical areas for PEN implementation included the use of the PEN approach in restoring service delivery and management in primary health care facilities in Region 8, the training of health workers on PEN implementation, and the provision of needed materials and tools for PEN implementation. Monitoring visits that came with supportive supervision were also performed in primary health care facilities in the six provinces of Region 8. These examined the use of the PEN protocols, availability of PEN implementation methods and tools, and whether the implementation targets for Region 8 had been successfully met.

Non-communicable diseases (NCDs), including cardiovascular diseases, chronic respiratory diseases, diabetes, accidental injuries, and cancer are now the most frequent causes of demise in the Philippines. Communities contend with the burden of both communicable and non-communicable diseases

(NCDs). NCDs are the predominant cause of death, and infectious diseases are the principal cause of morbidity in the country. Risk factors such as tobacco use or smoking, high blood pressure, high cholesterol, and lipid levels, and diabetes are contributing to the development and rise of NCDs. With NCDs increasing substantially, a call for more attention for preventive health care and health promotion is indicated. While a share of the increase in the proportion of deaths is associated to the aging of the population and having more people that are at risk, the rise of the rates of NCDs in younger ages can also be an expected result. NCDs ultimately affect the working-age community and increase economic burdens for the country.

Deaths related to Non-Communicable Diseases in the Philippines link to cardiovascular diseases at 33%, cancer at 10%, diabetes at 6%, and chronic respiratory diseases at 5%. The National Nutrition Survey of the Food and Nutrition Research Institute (FNRI) shows that from 2008 to 2013, there is an increasing prevalence in the following behavioral factors: overweight among adults from 26.6% to 31.1% and diabetes from 4.8% to 5.4%. It also shows decreasing trends of current adult smokers from 31.0% to 25.4% and hypertension from 25.3% to 22.3%.

In the year 2016, the Department of Health launched the establishment of the DOH Hypertension and Diabetes Clubs; this was then scaled-up nationwide to enhance the initiatives in addressing Non-Communicable Diseases (NCD) and served as a support group in communities in disseminating information and ensuring the appropriate management of all patients. More than 600,000 patients registered in the club as of February 2017. To be a member of the DOH Hypertension and Diabetes Club, a client needs to consult the nearest health center or primary health care facility and undergo assessment, screening, and management using the Philippine Package of Essential Non-communicable Disease Intervention or the "PhilPEN protocol". Once a diagnosis of hypertension and, or diabetes is made, the patients enroll in the club. Members are given access to DOH drugs for hypertension such as Losartan, Amlodipine, and Metoprolol as well as medicines for diabetes, namely Metformin. Enrolled members also benefit from healthy lifestyle-promoting activities.

Implementing essential NCD interventions in primary care has the potential to prevent complications from NCDs such as blindness, renal disease, amputations, heart attacks, and strokes, through early detection and treatment of high-risk individuals. There are numerous cost-effective and impactful interventions that feasibly deliverable in primary care in low-resource settings by a physician as well as non-physician health workers. These include: the prevention of heart attacks and strokes by using hypertension and diabetes as entry points through cardiovascular risk assessment and management, the avoidance of the complications of diabetes such as chronic renal disease through the detection and follow-up of diabetes, and smoking cessation counseling to minimize the progression of chronic respiratory disease, among others.

DOH-Calabarzon, in cooperation with local health executives in the region, and the Philippine Society of Hypertension, have agreed to implement the Package of Essential Non-communicable Disease Interventions known as PhilPEN.

Methodology

Research Design

A quantitative approach was employed in the study. This approach often uses deductive logic, in which the researcher begins with hypotheses and collects data which is used to determine whether empirical evidence exists to support the hypothesis. The quantitative approach was used with the aid of standardized questions adapted from the Department of Health's (DOH) Philippine Package of Essential Non-Communicable Diseases (PhilPEN) Protocol utilizing a random sample of the population.

This study aimed to gather the necessary baseline data, vital signs, and anthropometric measurements of the division office personnel to appraise their Cardiovascular Disease Risk Level and identify high-risk/priority clients.

Respondents

Out of 209 employees of the Schools Division Office of the Department of Education, Division of Bohol, a total of 101 Division Office-stationed personnel/employees took part in the study. The said personnel are the permanent employees of the Division Office who report to the office regularly and are enrolled in the Blood Pressure Monitoring System. As depicted, the majority of the respondents are from Schools Governance and Operations Division (SGOD), represented by forty-seven (46.5%); followed by the Office of the Schools Division Superintendent/Assistant Schools Division Superintendent (OSDS/OASDS) groups with forty-four or (43.6%); while the least numbered group

comes from the Curriculum Implementation Division (CID) with ten or (9.9%) respondents. This is consistent with the relative sizes of the functional sections of the Schools Division Office; with the OSDS-OASDS and SGOD being of the same size and number of employees, and the CID being the smallest of the sections with the least number of employees.

Table 1. *Distribution of Respondents* N=101

Items	*F*	*%*	*Rank*
Respondent Groups			
Office of the Schools Division Superintendent/Office of the Assistant Schools Division Superintendent (OSDS-OASDS)	44	43.6	2
Schools Governance and Operations Division (SGOD)	47	46.5	1
Curriculum Implementation Division (CID)	10	9.9	3
Total	101	100	

Instrument

This study used the Modified NCD Risk Assessment Form in the interview and assessment of 101 Division Office-stationed personnel of the Schools Division Office of the Department of Education, Division of Bohol. The tool was an adaptation from the Department of Health specifically and practically modified to suit the health care setting of the School Health and Nutrition Section of the Schools Division Office.

The Modified NCD Risk Assessment Form was the means for collecting baseline data. The baseline data collected were the reference for deriving the Cardiovascular Disease Risk Level through the use of the World Health Organization (WHO)/ International Society of Hypertension (ISH) Risk Prediction Chart. The said chart uses a color-coded scheme to categorize the different Cardiovascular Disease Risk Levels (Raymundo et al., 2011).

Once the interview process was completed for each respondent, the data collected from his/her answers to the questions in the Modified NCD Risk Assessment Form were referenced to the World Health Organization (WHO)/ International Society of Hypertension (ISH) Risk Prediction Chart. The Respondent's Age, Gender, existence or absence of Diabetes Mellitus, presence or absence of smoking behavior, and Systolic Blood Pressure reading were then referenced to the color-coded chart, determining and predicting the Cardiovascular Disease Risk Level for the respondent. The Risk Prediction Chart has separate reference graphs for Males and Females, smokers and non-smokers, diabetics, and non-diabetics respondents.

Data Gathering Procedure

The researcher submitted and presented the study for a proposal to the Director of Graduate School and Professional Studies (GSPS), selected panelists, and thesis adviser. Recommendations from the panels were applied to the paper through revisions. After the proposal, the paper was subjected to changes based on the recommendations of the group. After approval from the thesis adviser, the research paper was submitted to the UB Ethics Board for review. The conduct of an ethics review was done to ensure that the ethical considerations were adequately followed and observed. Upon approval of the proposal, the letter was submitted to the Vice President for Academics and to the Director of the GSPS who permitted the conduct of such a study outside the school premises. Once approved, another letter was submitted to the Schools Division Superintendent, the Chief Education Supervisor, and the Medical Officer of the Department of Education, Division of Bohol which indicated the intent of conducting the study. The data gathering was done utilizing the Modified NCD Risk Assessment Form by interview and assessment of the target respondents. Collection, coding, encoding, and analysis of gathered data was made using the Statistical Package for Social Sciences computation. The data were then subjected to statistical treatment to test the hypotheses. The findings were the basis for drawing conclusions and recommendations. The researcher then presents the data to the Director of the Graduate School and Professional Studies and the research panels for the final oral defense.

Ethical Consideration

Before data gathering, the study underwent an ethical review in line with the ethical guidelines set by the Ethical Research Committee of the University of Bohol. The research ensured strict compliance with the ethical standards and procedures where written informed consent was presented and explained to the respondents before participation. Strategic portions of the questionnaire were already in Filipino to make sure the respondents correctly understood everything. The privacy of each respondent was strictly ensured, and the confidentiality of data was observed. Participation was voluntary, and the respondents were made to understand that they can withdraw from the study at

any time without fear of penalty or consequences should they have felt violated. The respondents were given the right to obtain and see the results of the study if they wished to do so. They were handled with the utmost respect and dignity, as their rights and welfare are a primary concern. If any potential harm or risk to the respondent was expectable, they were informed before giving their consent.

Results and Discussion

Data gathered are presented, analyzed, and interpreted using statistical tools and in reference to existing theories and literature.

Lifestyle

Table 2 shows the lifestyle of the respondents according to smoking, alcohol consumption, diet, and physical activity. Data revealed that a huge majority or 91.1% of the respondents claimed that they Never Smoked, while only 8.9% said that they are Current Smokers, or have smoked tobacco at some point in their lives. With regards to the consumption of alcohol, the results of the study revealed that sixty-six or 65.3% of the respondents claim to have Never Consumed alcohol, while 34.7% consumed at least 5 servings of alcoholic beverages in a month.

The low prevalence of *alcohol consumption* is because most of the employees are females who are highly educated females who are aware of the negative effects of alcohol not just to their bodies, but to their work performance as well. Drinking alcohol not only increases the possibility of employees getting injured, but it can also lead to more on-the-job accidents. Additionally, alcohol can cause a lack of concentration and coordination in an employee's work performance. This reduces productivity, which in turn impacts business goals and objectives (Galbicsek, C. 2019). *Smoking* also has a low prevalence among the respondents not just because most of them are female, but because employees are mindful of DepEd Order 48, s. 2016 or the Policy and Guidelines on Comprehensive Tobacco Control that prohibits the smoking or selling of tobacco in and near DepEd Schools and offices, thus helping deter tobacco use and aid cessation efforts.

With regards to the *respondent's Diet*, seventy-five or 74.3% of the respondents consume High-fat and Salty foods such as instant noodles, hamburgers, fries, fried chicken skin, and "ihaw-ihaw" on a weekly basis. However, 91.1% also claimed to have a sufficient Dietary Fiber Intake. This can be attributed to the respondents mostly living in towns outside the city wherein they commute or leave from home early in the morning and come home in the evening with little time left to prepare healthy meals, hence they may resort to eating take out foods or cook processed foods that can be prepared quickly. However, this does not hinder the respondents from having a sufficient dietary fiber intake as they are still mostly able to consume at least 3 servings of vegetables and 2-3 servings of fruits daily.

For the *Physical Activity*, results revealed that only 35.6% of the respondents have achieved at least 2 and ½ hours of moderate-intensity physical activity per week, while the remaining majority of 64.4% of the respondents were not able to perform such activity. The majority of the respondents are office-based personnel work from eight in the morning to five in the afternoon. During the work shift, they are confined to paperwork at their desks and cubicles, allowing little to no time for brisk walking or other physical activities.

Table 2. *Lifestyle* N=101

Smoking (Tobacco/Cigarette)	*Frequency*	*Percent*	*Rank*
Never smoked	92	91.1	1
Current smoker	9	8.9	2
Total	101	100.0	
Alcohol Intake			
Never consumed	66	65.3	1
Yes	35	34.7	2
Total	101	100.0	
Diet			
1. High Fat/High Salt Food Intake Eats processed/fast foods (e.g., instant noodles, hamburgers, fries, fried chicken skin, etc.) and ihaw-ihaw (e.g., isaw, adidas, etc.) weekly	*Frequency*	*Percent*	*Rank*
No	26	25.7	2
Yes	75	74.3	1
Total	101	100.0	
2. Dietary Fiber Intake			
No	1	1.0	3
3 servings of vegetables daily or 2-3 servings of fruits daily	8	7.9	2
3 servings of vegetables daily and 2-3 servings of fruits daily	92	91.1	1
Total	101	100.0	
Physical Activity			
Does at least 2 ½ hours a week of moderate-intensity physical activity	*Frequency*	*Percent*	*Rank*
No	65	64.4	1
Yes	36	35.6	2
Total	101	100.0	

Prevalence of Hypertension among the Division Office Personnel

The study defined "Newly Diagnosed with Hypertension**"** as an individual who was recently identified with hypertension for less than one (1) month from the date of consultation/interview and did not have a prior diagnosis from a physician. Moreover, a "Known with/Already Diagnosed with Hypertension" was an individual who had already been identified and diagnosed by a physician to have had hypertension for one (1) month or more from the date of consultation/interview.

Table 3 illustrates that the majority or 68.3% of the respondents were not diagnosed with Hypertension, 24.8% were known to be Hypertensive (as previously diagnosed by a physician) and were taking medications, while a few (6.9%) were also known to be Hypertensive (as previously diagnosed by a physician) but were still to begin taking their medications for hypertension or were not taking their medications for hypertension at all. In the study of Pipo, M., et al. in 2015, patients with less severe hypertension tended to deviate from compliance to their medication regimen compared to patients with more severe hypertension who received closer follow-up and monitoring. Or in the case of this study, the few known hypertensive respondents who are not taking their medications could still be in the state of denial.

Table 3. *Presence or absence of Hypertension* N=101

Was the patient diagnosed as having hypertension?	*Frequency*	*Percent*	*Rank*
No	69	68.3	1
Yes, Without Medications	7	6.9	3
Yes, With Medications	25	24.8	2
Total	101	100.0	

Prevalence of Diabetes Mellitus among the Division Office Personnel

The study defined "Newly Diagnosed with Diabetes as an individual who was recently identified with diabetes for less than one (1) month from the date of consultation/interview and did not have a prior diagnosis from a physician. Moreover, a "Known with/Already Diagnosed with Diabetes" was an individual who had already been identified and diagnosed by a physician to have had diabetes for one (1) month or more from the date of consultation/interview. There were no newly diagnosed diabetic respondents among the employees as the diagnoses of new diabetics by the medical officer were done more than a month to several months prior to the conduct of the study.

Table 4 shows the Prevalence of Diabetes Mellitus among the respondents. Data revealed that only four or 4% of the one-hundred-one respondents have diabetes mellitus and are currently taking their medications for diabetes.

Table 4. *Presence or absence of Diabetes* N=101

Was the patient diagnosed as having diabetes?	*Frequency*	*Percent*	*Rank*
No	97	96.0	1
Yes, With Medications	4	4.0	2
Total	101	100.0	

Cardiovascular Risk Level of the Respondents

The respondent's cardiovascular risk level is presented in table 16. The cardiovascular risk level was obtained by cross-referencing the respondent's diabetic or non-diabetic status, age, sex, smoking habit, and systolic blood pressure reading at the time of the interview with the varying levels of risk of the World Health Organization-International Society of Hypertension (WHO-ISH) West Pacific Region (WPR) Sub Region B chart. The said chart is intended for use in settings where blood cholesterol cannot be measured (Cambodia, China, Cook Islands, Democratic People's Republic of Korea, Fiji, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia (The Federated States of), Mongolia, Nauru, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Vietnam) compliant with the PhilPEN protocol (Raymundo, R., et al. 2011). Table 16 shows the cardiovascular risk level of the respondents.

In determining the cardiovascular risk level, the following information were necessary: the presence or absence of diabetes, gender, being a smoker or non-smoker, age, and systolic blood pressure. The first step was selecting the appropriate chart depending on the presence or absence of diabetes then followed by the selection of male or female tables. Selection of smoker or non-smoker boxes then followed and then the selection of the age group box. Within the said boxes, was found the nearest cell where the individual's systolic blood pressure (mm Hg) and total blood cholesterol level (mmol/l) cross. The resulting color of the cell determined the respondent's 10-year cardiovascular risk (Raymundo, R., et al. 2011).

The data as shown in table 5, revealed that an overwhelming majority (98%, n=99) of the respondents were with a Normal Cardiovascular Risk

Level of <10%. One (1) respondent had a Mild Risk Level Status of 10% to <20%, while another had a Severe Risk Level Status of ≥30%. The percentages reflect the likelihood of the occurrence of a fatal or near-fatal cardiovascular event within the next ten years. This meant that majority of the respondents had a less than 10% risk of developing a fatal or non-fatal heart attack or stroke in the next decade.

Table 5. *Cardiovascular Risk Level* N=101

Risk Level	*Scale*	*Frequency*	*Percent*	*Rank*
Normal	<10%	99	98.0	1
Mild	10% to <20%	1	1.0	2
Moderate	20% to <30%	0	.0	3
Severe	≥30%	1	1.0	2
Total		101	100.0	

Relationship between the Incidence of Diabetes and Hypertension

Table 6 portrays the relationship between the incidence of Diabetes and hypertension among the respondents.

The p-value of 0.45708 was greater than the 0.05 level of significance. This translated to an insignificant result, accepting the null hypothesis that there was no significant degree of relationship between the incidence of hypertension and the incidence of diabetes among the respondents. This meant that respondents who had hypertension did not necessarily have diabetes, and vice versa.

Table 6. *Relationship between the Incidence of Diabetes and Hypertension* N=101

Variables	*P-VALUE*	*df*	*Interpretation*	*Decision*
Incidence of Diabetes and Incidence of Hypertension	0.45708	2	Insignificant	Ho: Accepted

Conclusion

Quality education should be learner-based, but more often than not, the holistic welfare of employees in the Department of Education is frequently neglected or not given due attention. This is ever true in the office setting. Personnel constantly meet hectic deadlines, crowded working quarters, heavy paperwork, and other workloads. These, in time, prevent them from giving consideration for physical activity, leading to a sedentary lifestyle and poor diet choices; all of which may result in the development of, or worsening of already existing cardiovascular diseases.

Despite the aforementioned circumstances, this study entitled Cardiovascular Disease Risk Level of the Division Office Personnel of the Department of Education, Division of Bohol, has gathered and analyzed data that illustrate that most, if not all of the office personnel, are still in good health. Good health in the sense that the majority of those who took part in the study were discovered to be at a Normal Cardiovascular Risk Level of <10%, meaning that they are not likely to develop a fatal or non-fatal cardiovascular event in the next ten years, as long as they do not aggravate their existing lifestyle and health status.

However, this study has also unearthed startling statistics, statistics such as the prevalence of sedentary lifestyles, high fat and high salt food intake, category 1 obesity at 38.6%, prominence of increased central adiposity or in layman's term, a large waistline of an average of 90cm - way beyond the upper limit of 80cm for adult females, and just at the precipice of the 90cm upper limit for adult males.

Hypertension and Diabetes also lead the trend as the most common familial diseases of the personnel, making the possibility of cardiovascular diseases ever more imminent. It is quite fortunate however, that smoking and alcohol are of low incidence among employees, and none of the respondents has had an experience of an impending heart attack or stroke. It was also found that there are indeed relationships between the male sex and the inclination to smoking tobacco, smoking tobacco and having elevated diastolic blood pressure, being asthmatic, or having a family history of asthma, but able to have a sufficient dietary fiber intake. The prevalence of high central adiposity or high waist circumference was also discovered among those with hypertension.

Moreover, this study illustrates that there is no significant relationship between the incidence of Hypertension and Diabetes among the respondents.

All of these substantial findings point to a risk management action plan. A plan that will cater to the employees, who, are mostly made up of individuals possessing a normal cardiovascular risk. The plan shall

be realized through health education, the promotion of a healthy lifestyle through promoting a low-salt and low-fat diet, smoking-cessation interventions, the fostering of health-seeking behaviors through hypertension and diabetes clubs, the implementation of adequate follow-ups, and monitoring. Similarly, several individuals who were identified to have moderate and severe cardiovascular risk levels shall also be given adequate and appropriate care at the office level through closer monitoring, and referral for further management and treatment in higher health care facilities.

Based on the aforementioned findings and conclusions, the following recommendations are proposed: (1) Health Clubs be instituted at the Schools Division Office to enlist all employees as members. The club shall be geared to achieving the following goals: (1.1) Promote Physical Activity at work. Such may be supplemented by weekly or bi-weekly "Zumba" sessions at the end of the workday; (1.2) Promotion of a Healthy Diet through Health Lectures and other means highlighting the negative impact of high salt, high-fat food, and alcohol intake; (1.3) Smoking cessation campaigns through 'Brief Tobacco Intervention (BTI) sessions; (1.4) A group support system to increase compliance to medications, adherence to medical advice, and "BP Watch"; (1.5.) Promotion of overall wellness in the workplace pursuant to the wellness programs being initiated by the Department of Education. (2) The Medical Officer or the head of the School Health and Nutrition Section should strengthen the implementation of the control and prevention program of DepEd towards non-communicable diseases (NCD), and lobby for the sustainability of the program to the management committee by the continuous provision of BASIC screening paraphernalia and supplies; such as cholesterol meters and test strips, glucometer and blood-glucose testing strips, urinary ketone testing kits, and the like. (3) The School Health and Nutrition Personnel to Integrate non-communicable disease and cardiovascular risk screening procedures in the routine activities of the school visit and other related activities. (4) NCD Risk assessment activities and initiatives be incorporated into the Key Result Areas (KRAs) of the Individual Performance Commitment and Review Form (IPCRF) of the DepEd Nurses, to ensure the competent implementation of the non-communicable diseases program. (5) Compliance with the annual physical, medical, and dental examination be improved by providing subsidization or other forms of assistance to employees in availing necessary laboratory and diagnostic procedures such as cardiac panel and other relevant work-ups. (6) DepEd employees, in general, should be more health-conscious, be more mindful not just with regard to cardiovascular health, but with health overall. They should demonstrate and practice health-seeking behaviors by means of a healthy lifestyle, and by the compliance with medical advice, health policies, and programs. (7) That other stakeholders from both the government and non-government sectors will use the findings of this study to replicate the initiatives for non-communicable disease control and prevention in the workplace, or in the school, to benefit both employees and learners. (8) For further studies to take a deeper look at cardiovascular risk by means of more thorough, and more advanced screening methodologies. And that future researchers, uncover more data and discoveries regarding non-communicable diseases in the context of public or occupational health. (9) The implementation of the Risk Management Action Plan, and the launching of the Health Clubs, shall be disseminated through a series of office memoranda and issuances that shall institute the appropriate measures as part of the workplace to maximize integration and effectiveness.

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