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Study of Cardiovascular Diseases, Hypertension and Dyslipidemia in a Group of Individuals in the Population of Durrës and Shijak

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Abstract: ***The purpose of the study is to determine the factors that affect development of cardiovascular disease in a group of individuals in the population of Durrësand Shijak, with 197 individuals (94 female and 103 male). Cardiovascular diseases takes in the study are: Angina Pectoris, Atrial Fibrillation, Myocardial Infarction, Ischemic Cardiopathy, Hypertensive Cardiopathy, Cardiac Arrest, Arterial Hypertension (HTA), Dyslipidemia. In this study were analyzed triglyceride, cholesterol, HDL - cholesterol, LDL - cholesterol values and their correlation with blood pressure to see the impact that the values of these components have on hypertension and in determining risk factors for cardiovascular diseases. Age is a risk factor affecting the development of cardiovascular disease. VII age group has the largest number of cases with cardiovascular diseases, where males are in greater numbers than the female gender. Arterial Hypertension and Angina Pectoris are the main diagnoses most often in individuals with cardiovascular disease. Individuals with Arterial Hypertension have concomitant diseases with a greater number of types than individuals with Angina Pectoris. The most common symptoms for individuals with cardiovascular diseases are: General weakness, headache and difficulty breathing. Symptoms in particular for Arterial Hypertension are: Tinnitus, headache. By correlative analysis between HDL - cholesterol and high blood pressure has negative correlation with value – 0.265. The importance of the study is the determination of risk factors and recognizing symptoms for the prevention of cardiovascular diseases, mainly the acute ones and health control routinely for individuals with chronic cardiovascular diseases.***

Keywords: Arterial Tension, Cardiovascular Disease, Cholesterol, Concomitant Disease, Symptoms

1. Introduction

Cardiovascular Disease (CVD) is a class of diseases which are related to the heart or blood vessels including stroke, heart failure, hypertension, coronary artery diseases, heart arrhythmia, peripheral artery disease, and atherosclerosis. Individuals with CVD are found to have the accompanying raised blood pressure, elevated glucose, smoking, obesity, lack of exercise, excessive alcohol consumption, and dyslipidemia. Fortunately, CVD can be properly managed and prevented by controlling blood pressure, glucose, lipid, smoking, and alcohol drinking and through lifestyle modifications for sleep, emotion, exercise, and diet.

Lipid profile: Cholesterol is a soft waxy fat that our body needs to function well. But too much cholesterol will become risk factors for human diseases like heart disease, stroke, and atherosclerosis. For those who have been diagnosed with diabetes, heart disease, and stroke or people who are taking medicine to control cholesterol level, taking cholesterol test every year is necessary. Generally, a cholesterol test includes total cholesterol, LDL, HDL, and Triglicerides.

Blood Pressure. Blood pressure is elicited by the force exerted by the blood against the blood vessels, which depends on the ejection of the heart and resistance of the blood vessels. Hypertension is another name of high blood pressure, a disease related to heart attack, stroke, heart failure, and other problems [2]. Cardiovascular Diseases (CVD) are growing radically with an estimation of 12 million people dying each year, mainly in the developing countries [14]. The risk factors of CHD have been divided into non - modifiable and modifiable. The non - modifiable risk factors include: age, male sex, and family history which cannot be altered. According to the American Heart Association [AHA] (2009), the modifiable risk factors which can be altered by medical and lifestyle interventions are: hypertension, hypercholesterolemia, physical inactivity, diabetes, overweight, obesity and tobacco smoking [12]. The most important way to prevent atherosclerotic vascular disease, heart failure, and atrial fibrillation is to promote a healthy lifestyle throughout life.2. A team - based care approach is an effective strategy for the prevention of cardiovascular disease. Clinicians should evaluate the social determinants of health that affect individuals to inform treatment decisions.3. Adults who are 40 to 75 years of age and are being evaluated for cardiovascular disease prevention should undergo 10 - year atherosclerotic cardiovascular disease (ASCVD) risk estimation and have a clinician–patient risk discussion before starting on pharmacological therapy, such as antihypertensive therapy, a statin, or aspirin [3]. The WHO has produced projections of the future of CVD up to 2030, based on current trends and analysis of relevant data. Their predictions for mortality show a rise in global annual CVD deaths to 18.1 million in 2010, 20.5 million in 2020 and up to 24.2 million by 2030. These represent 30.8%, 31.5% and 32.5% of all global deaths respectively. For male deaths due to CHD, there is a predicted rise from 13.1% of all male deaths in 2010, to 14.9% in 2030. Interestingly, the same statistic for women predicts a drop in deaths due to CHD, from 13.6% in 2010 to 13.1% in 2030. Stroke deaths are predicted to rise for both men and women (from 9.2% to 10.4% for men, and from 11.5% to 11.8% for women) [4]. Hypertensive heart disease was defined as an anatomofunctional alteration characterized by left ventricular hypertrophy (LVH) and cardiac failure in

patients with systemic hypertension. With this definition, HHD was made equivalent to heart failure [7]. Dyslipidemia is an abnormal metabolic status leading to persistent high plasma concentration of lipids. This condition can be divided into three different presentations, hypercholesterolemia (high cholesterol), hypertriglyceridemia, and mixed hyperlipidemia (both triglyceride and cholesterol are high). One of the most associated and recognized factors is dyslipidemia, which has been strongly associated with CVD and all its complications. In fact, one - third of all the ischemic heart diseases are said to be secondary to dyslipidemia and its effects [1]. Signs and Symptoms of Heart Attack. Consider the following: (1) prolonged crushing, squeezing, or burning pain in the center of the chest, (2) pain that radiates from the chest area to the neck, arms, shoulders, or the jaw, (3) shortness of breath, (4) dizziness, (5) nausea, (6) chills and sweating, (7) weak pulse, (8) cold and clammy skin, gray pallor, a severe appearance of illness. Signs and Symptoms of Stroke. Consider the following: (1) sudden numbness or weakness usually on one side of the body, 2) sudden confusion or a fit, (3) difficulty in speaking or understanding, (4) sudden difficulty in seeing in one or both eyes, (5) sudden difficulty in walking, (6) difficulty in swallowing, (7) sudden severe headache with no known cause, (8) loss of concentration and memory, (9) loss of control of passing urine or passing motion (incontinence), (10) sudden severe giddiness, loss of balance, or coordination [10]. Some individuals are at very high cardiovascular risk because they have already experienced a cardiovascular event, or have very high levels of individual risk factors [8]. The main forms of CVD are ischaemic heart disease (IHD) and stroke2. IHD is the leading single cause of mortality in Europe, responsible for 862, 000 deaths a year (19% of all deaths) among men and 877, 000 deaths (20%) among women each year [5].

2. Material and Methods

Data on the geographical position of Durrës and Shijak:

Durrës is the second most populous city of the Republic of Albania and seat of Durrës County and Durrës Municipality.

Durrës is located on the Bay of Durrës on a flat alluvial plain between the river mouths of Erzen and the Ishëm along the Adriatic Sea within the Mediterranean Sea. The municipality of Durrës is encompassed in the County of Durrës within the Northern Region of Albania and consists of the adjacent administrative units of Ishëm, KatundiRi, Manëz, Rrashbull, Sukth and Durrës as its seat. It stretches from the mouth of Ishëm River at the Cape of Rodon in the north across the Bay of Lalzi to the ShkëmbiiKavajës in the south [11]. Shijak municipality is located in the part of central Albania and is part of administrative district of Durrësand is bordered by Xhafzotaj, Gjepalaj and Maminas municipalities. In its composition there are respectively 3 neighborhoods: 1. Popular neighborhood; 2. Erzen neighborhood; 3. Kodra neighborhood [13].

Figure 1: Map of Durrës and Shijakmunicipality

Analysis data were obtained from Durres and Shijak hospital, Albania. For the study of Cardiovascular Diseases in the selected population, are analyzed the values of triglycerides, cholesterol, HDL - Cholesterol, LDL - Cholesterol. In the study are taken 197 individuals (94 female and 103 male), where 50.8 % are individuals residing from Durrës and 49.2 % are individuals residing from Shijak. For this study was used the statistical processing with excel program. Individuals are divided in age groups. First age group (0 - 14 years old), second age group (15 - 24 years old), third age group (25 - 34 years old), fourth age group (35 - 44 years old), age group five (45 - 54 years old), age group six (55 - 64 years old), age group seven (65 years and over). By means of calculations is found the average value of each analytical component. For the description of statistical analyzes is used graphic construction. For changing analytical values between components and for the study of dependence between them is realized correlation method. Normal values of analytical components and analytical methods are taken from laboratory manuals [6], [9].

Table 1: Normal values for principal components

Principal Components	*Triglycerides*	*Cholesterol*	*HDL - Ch*	*LDL - Ch*
Normal Value (mg/ dl)	Male (60 - 165 mg/dl) Female (40 - 140 mg/ dl)	180 – 220 mg/ dl	>35 mg/dl	130 - 190 mg/ dl

3. Results and Discussion

Cardiovascular Disease include heart disease and vascular disease.

In the studied are these cardiovascular diseases: Angina Pectoris, Myocardia Infarct, IshemicCardiopathy, Atrial Fibrilacion, HTA, Dyslipidemia, Cardiac Arrest.

For each diseases these symptoms have been observed:

Table 2: Symptoms for cardiovascular disease

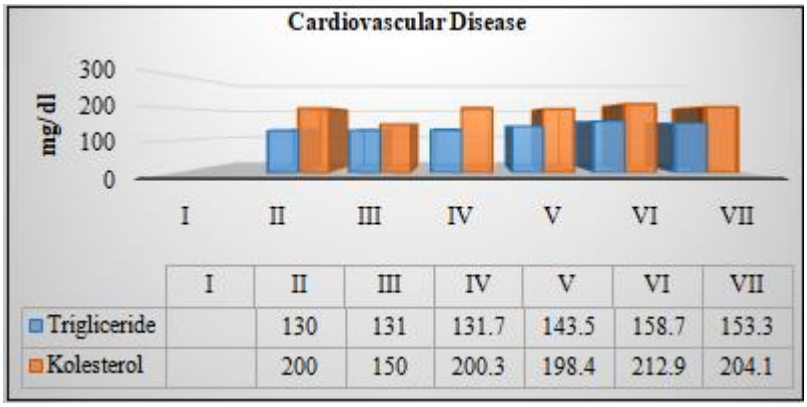
Diagnoses	*Symptoms*		
Angina Pectoris	General weakness	Difficulty breathing	Chest pain
Myocardial Infarction	General weakness	Difficulty breathing	Chest pain
Dyslipidemia	General weaknes	Headache	Dizzness
IshemicCardiopathy	General Weakness	Difficulty breathing	Sweating
Cardiac Arrest	Sweating	Paleness	Chest pain
	Difficulty breathing		
Atrial Fibrilacion	General weakness	Chest pain	Muscle pain
	Difficulty breathing	Dry mouth	
HTA	General weakness	Muscle pain	Headache
	Tinnitus	Low back pain	Anorexia
	Chest pain	Difficulty breathing	Fatigue

Symptoms as: General weaknes, headache, difficulty breathing are the most common in individuals with cardiovascular disease. These symptoms are associated with high values of lipids in the blood and high blood pressure.

Table 3: Presentation by age group of cardiovascular diseases as the main diagnosis having concomitant diseases

	Main Diagnosis	*Concomitant Disease*	*Main Diagnosis*	*Concomitant Disease*
Age Group II	1. HTA	1. Adenoma of the Prostate		
Age Group IV	1. Angina Pectoris	1. HTA		
Age Group V	1. Angina Pectoris	1. HTA	2. Myocardial Infarction	1. HTA
		2. Diabetes Melitus		
		3. Hypertensive Cardiopathy		
		4. Renal Failure		
		5. Bronchopneumonia		
	3. HTA	1. Anemia	4. Dyslipidemia	1. HTA
		2. Diabetes Melitus		
		3. Dyslipidemia		
		4. Disc Hernia		
		5. Glaucoma		
		6. Hypertension		
Age Group VI	1. HTA	1. Diabetes Melitus	2. Angina Pectoris	1. HTA
		1. Parkinson		2. Dyslipidemia
		2. Osteoporosis		3. Acute Bronchitis
		3. Hyperthyroidism		4. Urinary Tract Infection
		4. Atrial Fibrillation		5. Hypertensive Cardiopathy
		5. Dyslipidemia		
		6. Pulmonary Emphysema		
		7. Acute bronchitis		
		8. Adenoma of the Prostate		
	3. Dyslipidemia	1. HTA	4. Ischemic Cardiopathy	1. HTA
		2. Arrhythmia		2. Diabetes Mellitus
		3. Renal Tumor		
Age Group VII	1. HTA	1. Arrhythmia	2. Angina Pectoris	1. HTA
		2. Adenoma of the Prostate		2. Diabetes Mellitus
		3. Rheumatoid Arthritis		
		4. Bronchial Asthma		
		5. Angina Pectoris		
		6. Dyslipidemia		
		7. Depressive Syndrome		
		8. Glaucoma		
		9. Oseoartrit		
		10.Neuropathy		
	3. Cardiac Arrest	1. HTA	4. Atrial Fibrillation	1. Chronic Renal Disease
				2. HTA
				3. Anemia
				4. Hypertensive Cardiopathy

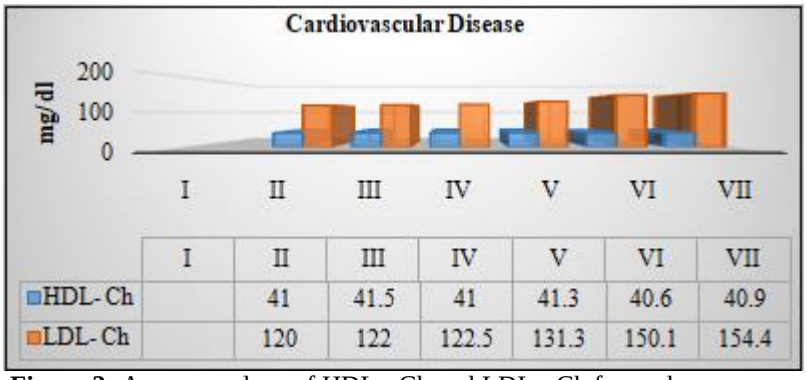
The main diagnoses most often are: HTA, Angina Pectoris. HTA as the main diagnoses with more concomitant diseases is in the VII age group, with 10 different concomitant diseases in total. Angina Pectoris as the main diagnosis with most concomitant diseases is in the VI age group, with 5 different concomitant diseases in total.



	I	II	III	IV	V	VI	VII
Trigliceride		130	131	131.7	143.5	158.7	153.3
Kolesterol		200	150	200.3	198.4	212.9	204.1

Figure 2: Average triglyceride, and cholesterol values for each age group

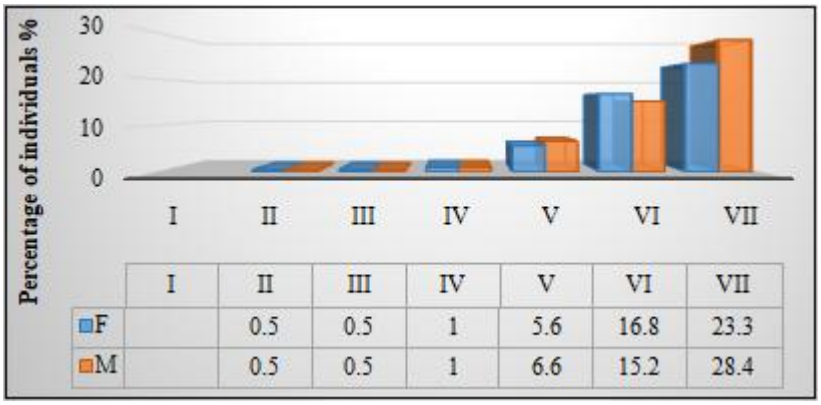
The first age group has no individuals with cardiovascular disease. Age group VI (55 - 64 years old), has the highest average value of triglycerides and cholesterol, respectively 158.7 mg/ dl and 212.9 mg/ dl.



	I	II	III	IV	V	VI	VII
HDL- Ch		41	41.5	41	41.3	40.6	40.9
LDL- Ch		120	122	122.5	131.3	150.1	154.4

Figure 3: Average values of HDL - Ch and LDL - Ch for each age group

The lowest average value of HDL - Ch is in the VI age group (55 - 64 years old), with value 40.6 mg/ dl. Highest average value of LDL - Ch is in the VII age group (65 years and above).



	I	II	III	IV	V	VI	VII
F		0.5	0.5	1	5.6	16.8	23.3
M		0.5	0.5	1	6.6	15.2	28.4

Figure 4: Percentage of individuals with cardiovascular disease for each age group for females and males.

Age group VII (65 years and over) has the largest number of cases with cardiovascular diseases, where the male gender is in greater number in this age group.

Table 4: Correlation Value for high and low blood pressure in relation to the main analytical components of cardiovascular disease.

Components	*Correlation Value*
High tension - Triglyceride	0.13
High tension - Cholesterol	0.039
High tension - HDL - Ch	- 0.265
High tension - LDL - Ch	0.02
Low tension - Triglyceride	0.0104
Low tension - Cholesterol	- 0.22
Low tension - HDL - Ch	- 0.063
Low tension - LDL - Ch	- 0.28

The highest correlation value is between high blood pressure and HDL - Ch, with negative correlation – 0.265. With decreasing values of HDL - Ch, blood pressure rises.

4. Conclusions

With age the values of lipids in the blood increase. Age is risk factor for developing cardiovascular disease. Highest average value of Triglycerides and Cholesterol is in the VI age group (55 – 64 years old). The lowest average value of HDL - Ch is in the VI age group (55 - 64 years old). Highest average value of LDL - Ch is in the VII age group (65 years and over).
With age the number of cardiovascular disease cases increases significantly. Age group VII (65 years and over), has the largest number of individuals with cardiovascular diseases, where males have the largest number of cases. Reduction of HDL - Ch values (good cholesterol), affects the increase of blood pressure.

The most common symptoms for individuals with cardiovascular disease are: general weakness, headache, difficulty breathing. Symptoms in particular for individuals with HTA are: Tinnitus and headache. For diagnoses Angina Pectoris, Myocardial Infarction, Cardiac Arrest, Arrest Kardiak and Atrial Fibrillation are symptoms: Chest pain and difficulty breathing. For Dyslipidemia are symptoms: Headache and dizziness. For Ischemic Cardiopathy are symptoms: Difficulty breathing and sweating.

HTA and Angina Pectoris are the main diagnoses most often in individuals with cardiovascular diseases. Individuals with HTA have concomitant diseases with a larger number of types in individuals with Angina Pectoris. This is observed in the VII age group, where the individuals with HTA have 10 different types of concomitant diseases in total (Adenoma of the Prostate, Arrhythmias, Aritmi, Rheumatoid Arthritis, Bronchial Asthma, Angina Pectoris, Dyslipidemia, Depressive Syndrome, Osteoarthritis, Neuropathy, Glaucoma. In the age group VI, individuals with Angina Pectoris there is greater variety, of five different types of concomitant diseases (HTA, Dyslipidemia, Acute Bronchitis, Urinary Tract Infection, Hypertensive Cardiopathy).

5. The importance of the Study

Providing knowledge from this study is important for determining risk factors affecting of cardiovascular disease. For routine health control from individuals with chronic cardiovascular disease such as blood pressure control, lipids profile analysis (triglyceride, cholesterol, HDL - Ch, LDL - Ch), regular treatment, balanced food diet, physical activity. Knowledge of risk factors and knowledge of symptoms are important for the prevention of cardiovascular disease.

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