



Principles of Nursing Care in Cardiovascular Patients with High Blood Pressure and Examination of Psychological Problems and Stress in Long-term Hospitalized Patients

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ABSTRACT:

The rapid transition of health, demographic changes, aging process and rapid lifestyle changes along with economic and social changes have led to an increasing trend of morbidity, disability and mortality caused by non-communicable diseases including cardiovascular problems. Cardiovascular diseases have been introduced as the most important cause of death in the world with 17 million deaths per year. Cardiovascular diseases include diseases of the vascular system that affect blood supply to the heart, brain and peripheral areas of the body. Meanwhile, coronary heart disease is one of the most common diseases. This disease is caused by the narrowing and blockage of the coronary arteries that bring oxygenated blood to the heart. Blood vessels are narrowed due to plaques that form in a disease called atherosclerosis. Occlusion occurs when a clot forms from plaques or blood platelets, gets stuck in an artery and blocks blood flow. The relationship between psychological health and cardiovascular diseases is complex. For this reason, many people with cardiovascular problems receive a wide range of psychological treatments in order to reduce depression, anxiety, stress, or maladaptive behaviors. All psychological treatments in this field emphasize four basic assumptions. The first premise is that cardiovascular diseases as well as medical and surgical treatments related to these diseases are considered as a source of stress. The second assumption is that psychological characteristics can play a role in creating or aggravating cardiovascular diseases. The third hypothesis states that psychological problems can increase health-threatening behaviors and finally, the fourth



hypothesis is that psychological treatments can correct such maladaptive behaviors. This can play an important role in preventing or treating cardiovascular problems.

1. Introduction

According to the report of the ministry of health, treatment and medical education, out of every 812 deaths in Iran, 303 cases are caused by cardiovascular diseases [1-3]. In Iran, the mortality rate due to these diseases has increased from 27% to 37% between 1989 and 2006 [4-6]. Other findings show that cardiovascular diseases are the first cause of death in Iran with 39.3% of all deaths, of which 19.5% are related to heart attack, 9.3% are caused by stroke, 1.1 3% is related to high blood pressure and the rest is related to other cardiovascular diseases [7-9]. In this regard, according to the information published by the World Health Organization, 41.3% of all deaths in 2005 in Iran were caused by coronary artery disease, and it is predicted that this figure will reach 44.8% by 2030 [10-12]. In the study of the prevalence of cardiovascular disease risk factors in Iran, the results showed that 96.7% of people aged 15-64 years had at least one risk factor for these diseases. Among them, 21.6% of people in the age group of 15-44 years and 52.9% of people in the age group of 45-64 years showed at least 3 risk factors in this connection [13-15]. In general, it can be said that cardiovascular diseases are chronic disorders that progress throughout life and are usually not detected until the advanced stage when symptoms occur. Although the death rate caused by these diseases has decreased in recent decades, they are still the cause of about one third of deaths in people over 35 years of age and cause the death of 17 million people in the world every year. It is predicted that if proper preventive measures are not taken by 2020, this number will increase to 24.8 million people [16].

2. Search strategy and Information sources

Search in Scopus, Google scholar, PubMed databases and by searching with keywords such as "Nursing Services", "Stress in Long-term Hospitalized Patients", "Principles of Nursing Care in Cardiovascular Patients", and "High Blood Pressure and Examination of Psychological Problems" to obtain articles related to the selected keywords [10-12]. Case report

articles, editorials, and articles that were not published or only an introduction of them were available, as well as summaries of congresses and meetings that were in languages other than English, were ignored. Only the original research articles that evaluated the effectiveness of different drugs in the treatment of COVID-19 using standard methods were studied (figure 1) [13].

3. Cardiovascular diseases

3.1. Psychology and cardiovascular diseases

In addition to the physical health of patients, cardiovascular diseases also affect their social relationships, lifestyle, family environment, job and income level. In this regard, the results show that cardiovascular diseases have many pathological effects on various aspects of a person's physical, mental, social and spiritual health [17-19]. Following coronary artery disease, patients often experience numerous problems such as pain, anxiety, depression, severe psychological manifestations, loss of job security, reduction in recreational activities, disruption in interpersonal relationships, disruption in family roles, and as a result ineffective adaptation to the disease. they do [20]. Each of these consequences causes further deterioration of a person's physical and mental condition, which will result in disability in all biological, psychological and social areas [21]. In this regard, the results show that several factors such as anxiety and depression, social stress, conflict and hostile behavior can lead to abnormal coronary contraction, increased coronary artery blockage, malignant heart rhythm irregularities, and as a result, heart failure [22]. In the context of explaining the relationship between the disease and its negative consequences that can lead to the worsening of the patient's condition, the findings show that cardiovascular problems as a stressful event affect affected patients [23]. The concept of stress refers to the occurrence of a threatening incident and a person's cognitive evaluation of the resources available to deal with that incident (Tanki et al., 2008). Stress can cause a



short-term stoppage of blood flow to the heart, which will cause angina pectoris. Also, stress can increase blood pressure [24]. Blood pressure has no obvious symptoms, but its presence indicates that the heart is working harder than usual. High blood pressure increases the risk of arteriosclerosis and causes narrowing and hardening of the arteries. This condition increases the risk of blood clotting in the artery and ultimately leads to a heart attack [25]. In fact, the formed clot can block the artery and if this artery is one of the coronary arteries, this blockage can lead to a heart attack [26]. In general, stress can cause inefficient cardiovascular changes and make a person susceptible to such diseases. The results in this field show that there are high levels of activated platelets and LDL in the blood of people who experience a lot of stress [27]. The most evidence for the relationship between psychological disorders and cardiovascular problems is in the context of the presence of depression and its negative consequences for patients [28]. The results show that the prevalence of symptoms of major depression after heart attack is 20% and mild symptoms of depression are 7-31% [29]. Depression with cardiovascular problems can be 1.5 to 2 times more likely than other people to have serious consequences of a heart attack such as death or re-attack [30]. In general, depression in patients with cardiovascular problems is associated with prolonged hospitalization, poorer functional outcomes, more preoperative problems, poorer health-related quality of life, progression of vascular occlusion disease, increased readmission rates, and mortality [31]. Increased cortisol has negative effects on the inner lining of the coronary artery and plays an important role in the growth of blood platelets [32]. In the field of anxiety, the results show that 30 to 40 percent of people with cardiovascular problems experience high levels of anxiety [33]. Anxiety can exist as a cause of cardiovascular problems or as a consequence of these problems. In general, the results show that anxiety can lead to a negative prognosis such as mortality or recurrence of cardiovascular diseases [34]. The effective mechanism of anxiety is the same as depression. In fact, anxiety also causes an increase in the secretion of adrenal hormones and cortisol, which along with the increase in blood flow during stress can cause damage to the coating surface of the artery.

3.2. Underlying factors of cardiovascular diseases

Predisposing factors mean behaviors or conditions that increase the likelihood of contracting a disease. The underlying factors of cardiovascular problems can be examined from two perspectives.

The first point of view examines the underlying hereditary and acquired factors. Hereditary risk factors cannot be changed, but the impact of these factors can be reduced by changing lifestyle and health care. The underlying acquisition factors refer to the type of activities and behaviors that people do in their lives. These factors can be eliminated or controlled by lifestyle changes and medical care. The second point of view examines the underlying factors of the disease from the aspect of being correctable and non-correctable. Among the uncorrectable underlying factors related to cardiovascular diseases are the existence of a family history of cardiovascular diseases, the existence of a family history of hypertension, type 2 diabetes, blood lipid disorders including high LDL and low HDL.

In the context of the relationship between aging and cardiovascular problems, the results show that with aging and especially after the age of 75, major changes occur in the functioning of body organs [35]. These changes cause hardness, increase in thickness and narrowing of blood vessels. Among the underlying factors that can be corrected, we can mention smoking, taking birth control pills, overweight and obesity, high blood pressure and diabetes, stress, insufficient physical activity and improper nutrition [36]. In the context of the relationship between modifiable underlying factors and cardiovascular diseases, smoking increases the risk of coronary artery disease by 80% (Ambrose and Barwa, 2004). Also, obesity is one of the very important factors of cardiovascular diseases, which is related to several main risk factors, including type 2 diabetes, increased blood pressure and blood lipids. Obesity increases the risk of developing coronary heart disease by 25-50% (Capwell et al., 2009). The results have shown that the most common risk factors for cardiovascular diseases in Iran are daily stress and then lack of physical activity (Rezabigi et al., 2015). Also, the results have shown that the personality trait of neuroticism and avoidant coping style can also be associated with the increase of these diseases (Khanjani, Farooqi and Yagoubi, 2009). It should be noted that although



the presence of one or more underlying factors in a person does not necessarily mean that a person will suffer from cardiovascular disease, and the control of a risk factor does not mean the absence of these diseases, but the control of the underlying factors can minimize the risk of disease and control the speed of disease progression and its complications.

3.3. Stress and heartache

Stress and heart pain are two constant companions, in the sense that nervous pressure is the most common cause of chest pain. Although pain is considered one of the most important symptoms of most diseases, sometimes people do not distinguish between types of pain, the most common of which is the difference between heart pain and anxiety pain [37].

4. pain and heart rate

4.1. What are the most important features of heart pain?

Typical heart pain is the most important symptom of occlusion of the artery feeding the heart. The intensity of heart pain is variable, which means that when the patient starts feeling heart pain, the pain increases and then slowly decreases until the pain stops. Typical heart pain requires immediate referral to a cardiologist. The symptoms of this pain are:

1- Heart pain usually lasts between 2 and 5 minutes. Sometimes the heart pain spreads in the chest, shoulders or arms, you may feel the heart pain in an area from below the jaw to above the navel, such as between the shoulder blades, neck, jaw, teeth, stomach.

2- In the first experiences of heart pain, pain may occur during physical activities such as walking or during excitement and stress.

3- Heart pain caused by activity or stress disappears within one to five minutes after stopping physical activity or moving away from stress.

4.2. How to treat heart pain

Taking sublingual tablets can relieve a person's heart pain as soon as possible. If the heart pain lasts for more than five minutes and its intensity is greater than the heart pains you have experienced before and you do not get better with rest and sublingual tablets, the patient should go to the emergency

room immediately. It is possible that heart pain with these features is a sign of worsening coronary artery disease and the possibility of heart attack in these cases is high.

5. Mental stress

5.1. What is mental stress?

Psychological stress means tearing the body apart due to pressures on the body. Psychological stress in psychology is a person's response to stressful factors and threatening situations and events that limit his ability to cope. The word psychological pressure is derived from the word pressure in physics with the assumption that humans are like objects, like metals for example, and resist moderate external forces, but when the forces become too much, they lose their flexibility and reversibility, but unlike metals, humans can think and reason. Because humans are placed in thousands of different social and environmental situations. Psychological pressure is inevitable in human life and sometimes it is also useful, but if it goes beyond the limit. It causes serious problems for human health. A combination of biological, psychological and social factors plays an important role in properly controlling mental stress and maintaining a healthy lifestyle. Mental stress is a sign of our age. Everywhere we look, we see people who want to reduce the effects of life's intense stresses by jumping up and down and exercising, going to gyms and following special diets. Even some companies have developed detailed programs for managing mental stress in order to teach their employees how to cope with stressful life situations. Because they have understood how stress-related disorders reduce productivity and how much they cost [38].

5.2. Health psychology and behavioral medicine

Recently, two relatively new fields of study called health psychology and behavioral medicine have been proposed, which emphasize the important role of people's lifestyles and mental states in health.

1- Health psychology: it focuses on the role of psychology in increasing and maintaining health and disease prevention and treatment.

2- Behavioral medicine: It is an interdisciplinary field that uses behavioral knowledge and medical biological knowledge and their integration to increase health and reduce disease.



These two areas examine the effects of mental stress on the work of the body's immune system. Health experts also believe that psychological and social factors are involved in many chronic diseases. In fact, the two disciplines of health psychology and behavioral medicine have been formed to some extent to investigate these factors and find more effective ways for people to cope with these factors. Today, in developed countries, people's attention to changing disease patterns has fueled their interest in health psychology and behavioral medicine. A century ago, the most important causes of human death were infectious diseases such as influenza, tuberculosis, polio, typhoid fever, measles, and smallpox, but now none of these diseases are among the main causes of death in developed countries. Rather, 7 of the 10 leading causes of death in the United States are related to people's personal habits and lifestyle. Currently, the main causes of death are heart disease (36%), cancer (22%) and stroke (17%). Other chronic diseases such as diabetes are among the main causes of disability and death [39].

5.3. Response to stress

When our body is under stress, it prepares itself to endure and cope and responds to the stress factor with two physiological and cognitive aspects.

A) Physiological response to mental stress: When faced with mental stress, a series of physiological changes occur in the body. In order to understand the relationship between mental stress and health and the body's response to it, the term general adaptation syndrome has been proposed, which has three stages:

1- Warning stage: In the warning stage, the body's first reaction to the psychological stress generator is temporary shock. At this stage, the body's resistance to disease and mental stress decreases. In the warning phase, two neural pathways are activated in order to react to psychological stress:

✓ **The first pathway:** the neuroendocrine-immune pathway: the neuroendocrine-immune pathway goes from the hypothalamus and the pituitary gland to the adrenal glands, where cortisol is secreted. Cortisol is a steroid that is good for the body in the short term. Because it causes cellular fuel to reach the muscles, but the increase in the amount of cortisol

damages the body in the long run. Because it causes a decrease in the immune system and a decrease in brain cell efficiency. At the same time, too much cortisol increases appetite and causes weight gain.

✓ **The second pathway:** the pathway of the sympathetic nervous system: the pathway of the sympathetic nervous system passes through the hypothalamus and the sympathetic nervous system and goes to the adrenal glands. This gland secretes epinephrine and norepinephrine. The release of epinephrine and norepinephrine hormones leads to certain physiological changes such as an increase in blood pressure. This increase in blood pressure in the long run increases the risk of diseases and illnesses such as cardiovascular disease.

6. blood pressure

6.1. What does high blood pressure mean?

High blood pressure or high blood pressure occurs when a patient's blood pressure rises to an unhealthy level. Several factors usually cause this disease, the most important of which is the change in the size of the arteries. In fact, the narrower the arteries are, the higher the blood pressure. Long-term high blood pressure can cause serious damage to the veins and other organs of the body, especially the brain, heart, eyes and kidneys [40].

6.2. Getting to know the types of hypertension

In general, the types of high blood pressure are divided into two categories, each of which has different reasons:

1- Primary hypertension:

2- Secondary hypertension:

1- Primary hypertension: Primary hypertension is a type of high blood pressure that occurs over time and without a specific reason. Most people with hypertension have primary hypertension. Scientists have not yet discovered the cause of primary hypertension, but they speculate that one of the following factors may be involved: genetic factors, physical changes such as obesity or lack of physical activity, and environmental factors such as stress.

Many factors cause high blood pressure to be seen more often in working people. These factors include: improper nutrition



at work, lack of rest time and insufficient hours for sleep, and not having enough time for exercise and physical activity.

Various conditions can cause secondary hypertension:

- ✓ kidney Diseases.
- ✓ Interrupted breathing during sleep.
- ✓ Thyroid related problems.
- ✓ Side effects of medication.
- ✓ Congenital heart failure.
- ✓ Drug and alcohol use.

6.3. What is meant by high blood pressure, the silent killer?

High blood pressure in the early stages rarely leaves any clinical symptoms, so that according to the available statistics, about half of the people with high blood pressure are not aware of their disease and do not take any treatment to solve this problem and subsequently suffer complications. This disease is like heart attack, stroke, kidney disease and premature death. Therefore, in the world, high blood pressure is known as the silent killer.

6.4. Cause of high blood pressure

The causes of high blood pressure are classified into two primary and secondary groups.

1- Primary hypertension: usually more than 95% of high blood pressures are of the primary type. The reason for this name is that this type of high blood pressure does not have a specific underlying cause and cannot be related to a specific disease.

2- Secondary hypertension: When there is a specific cause or disease to cause hypertension, it is called secondary hypertension. Among the causes of high blood pressure, we can mention kidney diseases, which are actually the most common diseases in this field.

6.5. What are the symptoms of high blood pressure?

High blood pressure usually has no specific symptoms and it may take years for the symptoms of high blood pressure to appear in a person. The main symptoms of high blood pressure are:

- ✓ Headache.
- ✓ Shortness of breath.

- ✓ Nosebleed.
- ✓ Dizziness
- ✓ Chest pain.
- ✓ Weakness in vision.

Symptoms of high blood pressure require immediate care. These symptoms are not seen in all people with high blood pressure. The occurrence of these symptoms is not necessarily a sign of high blood pressure, but not paying attention to these symptoms in a patient can be dangerous. The best way to know if you have high blood pressure is to measure your blood pressure regularly. Most doctors measure their patient's blood pressure at every visit. Unfortunately, about half of those who have higher than normal blood pressure does not know about their disease, so they do not take any measures to treat it. Uncontrolled high blood pressure has serious consequences, such as heart attack, stroke, and kidney disease. These issues further define the necessity of regular blood pressure measurement and knowing its number.

6.6. Complications of hypertension and high blood pressure

Among the complications of this disease, the following can be mentioned:

- ✓ Increase in the rate of heart diseases.
- ✓ Heart attacks and strokes.
- ✓ kidney Diseases.
- ✓ Damage to vital organs.
- ✓ Early death.
- ✓ Factors causing and aggravating high blood pressure

Many factors can cause or aggravate this disease, including:

- ✓ Smoking and alcohol consumption.
- ✓ Eating fatty and salty foods.
- ✓ Not consuming enough fruits and vegetables.
- ✓ Lack of physical activity.
- ✓ Stress.
- ✓ Obesity [40]

6.7. High blood pressure in workers and its reasons

It is interesting to know, the results of the recent pharmaceutical research by Dr. Obedi indicate that seventy percent of the employees surveyed in the workplace have higher than normal blood pressure. In the investigation of the



factors that cause this disease in the work environment, the following points of reflection have been obtained:

- ✓ Stress and pressure.
- ✓ Improper nutrition and diet plan.
- ✓ Not dedicating enough time to physical activities.
- ✓ Lack of rest time.
- ✓ Improper timing of sleeping hours.

6.8. Definitive treatment of high blood pressure

Lifestyle changes can help control high blood pressure. Among these changes, we can mention the following:

- ✓ Choosing the right diet for cardiovascular problems.
- ✓ Salt control.
- ✓ Daily and continuous exercise.
- ✓ Having the right weight and losing weight if you are overweight.
- ✓ Alcohol control.

It should be noted that following the mentioned items cannot always control high blood pressure. In such cases, it is necessary to go to the doctor and, if necessary, prescribe antihypertensive drugs by him, to reduce the high blood pressure to normal levels. In some cases, it is necessary to prescribe several drugs at the same time to bring the blood pressure to a normal level.

6.9. Who can get high blood pressure?

- ✓ People who have a history of high blood pressure in their family.
- ✓ smokers.
- ✓ Pregnant women.
- ✓ Women who take birth control pills.
- ✓ People over 35 years old.
- ✓ People with weight gain, or obese people.
- ✓ People who do not exercise.
- ✓ People who eat a lot of high-fat and high-salt foods.
- ✓ People who drink too much alcohol.

High blood pressure is a silent disease and in almost all cases there are no symptoms. To diagnose high blood pressure, it is necessary to measure blood pressure at specific intervals by a health care worker. Factors such as how we prepare for the blood pressure measurement and the position of the arm can affect the numbers measured for our blood pressure by about

ten percent or sometimes more. The same amount of error in measurement is enough to wrongly prescribe a medicine for a healthy person that he does not need, or on the contrary, high blood pressure of another person is not detected and the person remains without treatment.

6.10. The basis of important points in blood pressure measurement

International guidelines have published specific recommendations for correct blood pressure measurement. Sometimes, a doctor, physician assistant or nurse may not follow these tips. It is necessary for our health to ask them to consider these important points of blood pressure measurement according to the recommendations of international guidelines.

6.11. Eight important points for correct blood pressure measurement

- ✓ Now let's talk about the most important points that must be observed in blood pressure measurement:
- ✓ Avoid drinking tea, coffee and other caffeinated beverages 30 minutes before blood pressure measurement.
- ✓ Refrain from smoking or being exposed to secondhand smoke 30 minutes before blood pressure measurement.
- ✓ Sit quietly for 5 minutes before measuring blood pressure.
- ✓ Sitting on a chair with both feet on the floor, forearms supported and elbows almost at heart level.
- ✓ Covering at least 80% of the arm surface with the inflatable part of the blood pressure cuff.
- ✓ Placing the armband on the skin, not on the clothes.
- ✓ Avoid talking during blood pressure measurement.
- ✓ Measuring blood pressure twice in a row with a short interval.

6.12. Diagnosis of high blood pressure

Since blood pressure is very variable during the day and night, the doctor is not satisfied with a single measurement to diagnose high blood pressure. Usually, the doctor asks the person who had high blood pressure in the first visit to visit again for blood pressure measurement. Of course, the above recommendation does not apply to someone who had blood pressure higher than 180/110 mm Hg in the first appointment.



People with blood pressure this high usually need immediate treatment [39].

6.13. Time interval between blood pressure measurement appointments

As a general principle, the higher a person's blood pressure, the earlier the next blood pressure measurement should be. For example, someone whose blood pressure is between 100.160 and 179.109 mmHg should visit the doctor again two weeks later for blood pressure measurement. Those whose blood pressure is within the normal range should have a medical visit to measure their blood pressure annually.

6.14. Prevention of high blood pressure

High blood pressure is one of the diseases that can be prevented by following very simple tips, which include the following:

- ✓ Regular measurement of blood pressure, blood fat and blood sugar.
- ✓ Allocation of hours of the day to perform physical activity according to physical conditions.
- ✓ Doing moderate physical activity for at least 30 minutes a day.
- ✓ Weight loss if overweight.
- ✓ Quit smoking [38]
- ✓ Consume at least 5 servings of fruits and vegetables during the day.
- ✓ Reducing salt consumption and consuming less processed and salty foods.

6.15. Is high blood pressure the silent killer?

High blood pressure or hypertension often does not have clear signs and symptoms that indicate that something abnormal is happening. The best way to protect yourself is to be aware of the consequences of high blood pressure and make lifestyle changes to prevent it. Always remember the following points:

- ✓ A large number of people with high blood pressure are unaware of having it.
- ✓ High blood pressure develops slowly and over time and can be related to various factors.
- ✓ High blood pressure cannot be cured, but it can be effectively controlled by changing lifestyle and taking medication if needed.

6.16. How can high blood pressure be treated?

Knowing about the type of high blood pressure (primary or secondary) and the factors affecting it is very effective in treating high blood pressure. If a person has primary hypertension, lifestyle modification can have a direct effect on lowering his blood pressure. However, if lifestyle modification alone is not enough, or if it loses its effect on a person's health after some time, there is a possibility that the doctor will prescribe medication to complete the treatment of high blood pressure. Quitting smoking, proper diet such as eating several times of fish per week and consuming vegetables and legumes and regular exercise can have a direct effect on reducing and treating high blood pressure. Of course, the doctor may determine that another problem is the cause of the patient's high blood pressure. In this situation, the doctor tries to fix the hidden problem first. For example, it is possible that kidney diseases are the cause of his high blood pressure.

6.17. Controlling and lowering blood pressure at home

- ✓ In the continuation of this article, we have presented 10 lifestyle changes to reduce blood pressure and keep it low. By making these 10 changes in our lifestyle, we can lower our blood pressure and reduce the risk of heart disease.
- ✓ Lose weight and watch your waist size.
- ✓ Blood pressure often increases with weight gain.
- ✓ Being overweight can also cause sleep-disordered breathing, which leads to increased blood pressure. As a result, we can say that weight loss is one of the most effective lifestyle changes to control blood pressure.
- ✓ If we are overweight or obese, losing a small amount of weight can help lower our blood pressure. In general, by losing weight, we can lower our blood pressure by about 1 mm of mercury per kilogram of our weight.
- ✓ In addition to losing weight, we should also take care of our waist size. A high waistline can put us at risk of high blood pressure. If the waist circumference is more than 102 cm in men and more than 89 cm in women, they are at risk of high blood pressure.



- ✓ If we have high blood pressure, regular physical activity such as 150 minutes a week or about 30 minutes most days of the week can lower our blood pressure by about 5 to 8 mm Hg. It is important to be consistent in this direction. Because if we stop exercising, our blood pressure will increase again.
- ✓ If our blood pressure is a little high, exercise can help us prevent hypertension.
- ✓ If you already have high blood pressure, regular physical activity can bring your blood pressure to safer levels.

Some aerobic exercises may also lower our blood pressure:

- ✓ Walking.
- ✓ Run.
- ✓ riding bike.
- ✓ Swim.
- ✓ Dance
- ✓ Strength training can also help lower blood pressure.

7. Eat a healthy diet

If we have high blood pressure, a diet rich in whole grains, fruits, vegetables, and low-fat dairy products, along with reducing saturated fat and cholesterol, can lower our blood pressure by up to 11 mm Hg. Reduce sodium in your diet. Even a small reduction in sodium in our diet can improve our heart health and lower our blood pressure by about 5 to 6 mm Hg if we have high blood pressure. The effect of sodium consumption on blood pressure is different among different groups. It is generally good if we limit our daily sodium intake to 2,300 milligrams or less. Keep in mind that lower sodium intake is ideal for most adults.

To reduce sodium in your diet, consider these tips:

- ✓ Read food labels. If possible, choose low-sodium options from the foods and drinks we usually buy.
- ✓ Eat less processed foods. Only small amounts of sodium are found naturally in foods, but more sodium is added to foods during processing.
- ✓ Do not add salt to your food. Just one teaspoon of salt has 2300 mg of sodium. We can use herbs or spices to add flavor to our food.
- ✓ If we feel that we cannot reduce the sodium in our diet all at once, reduce it gradually [40].

Caffeine can raise blood pressure by up to 10 mm Hg in people who rarely drink it, but people who drink coffee regularly may have little effect on their blood pressure. Although the long-term effects of caffeine on blood pressure are not known, it may increase blood pressure slightly. To make sure if caffeine raises our blood pressure, we can check our blood pressure within 30 minutes after consuming a caffeinated drink. If our blood pressure increases by 5 to 10 mmHg after consuming caffeine, it may indicate that we are sensitive to the blood pressure-raising effects of caffeine. It's a good idea to talk to your doctor about the effect of caffeine on your blood pressure. Chronic stress may play a role in high blood pressure, although more research is needed to determine the exact effect of chronic stress on blood pressure. We may use junk food, alcohol or cigarettes as a reaction to our temporary stress. Therefore, temporary stress can also play a role in high blood pressure. It is necessary to take some time to understand what makes us feel stressed. These can include work, family, finances or illness [38].

When we understand the cause of stress in ourselves, think about how we can eliminate or reduce this stress. Regular monitoring of blood pressure gives us confidence that the changes we have made in our lifestyle have been effective. Also, on the other hand, it can warn us and our doctor about our health condition. Blood pressure monitoring devices are readily available without a doctor's prescription. It is necessary to consult your doctor before starting to measure blood pressure. Regular visits to the doctor are also important to control blood pressure. If our blood pressure is well controlled, it is necessary to consult with our doctor about the number of times required to check blood pressure [40]. The doctor may recommend that we check our blood pressure daily or less frequently. In case of any changes in medications or other treatment methods prescribed by the doctor, the doctor may recommend that we check our blood pressure two weeks after the treatment changes and one week before the next visit. Our family and people around us can help us heal and be healthy. People around us can accompany us to the doctor, or start an exercise program with us.

8. The effect of Corona on blood pressure

Hypertension is a preventable cause of death worldwide. More than 30% of adults have high blood pressure. However,



only 1 out of 7 people have their blood pressure under control. Most people who have high blood pressure are not aware of it. Because high blood pressure may not have warning signs. That's why we call high blood pressure the silent killer. Since the beginning of the corona virus epidemic, there were many concerns that some classes of antihypertensive drugs aggravate the symptoms of corona infection, but after a while, all the scientific associations of the world, including the American and European Heart Associations, emphasized that there is no connection between the use of these drugs. There is no blood pressure and increased risk of contracting the corona virus. Even the percentage of deaths in people who regularly took the prescribed drugs has been significantly reduced. As a result, it is necessary to observe this point that people with high blood pressure during the outbreak of the corona virus should not arbitrarily and without the doctor's discretion stop taking their blood pressure control drugs or replace them without a doctor's prescription. According to the recommendations of the American center for disease control and the world health organization, patients with high blood pressure should take their medications exactly as prescribed by the doctor during the outbreak of the corona virus[41, 42].

9. Complications of arbitrary discontinuation of blood pressure medication

- ✓ Arbitrary discontinuation and non-use of medication leads to the patient's blood pressure not being controlled and causes damage to the body's organs.
- ✓ Complications of uncontrolled high blood pressure include the following:
- ✓ Clogged and ruptured cerebral vessels and as a result stroke.
- ✓ Kidney damage and acute kidney failure.
- ✓ Damage to the heart due to the pressure on the walls of the vessels and the reduction of blood supply to the heart, which may lead to heart failure and heart attack.

Note that high blood pressure can be asymptomatic. In other words, the person will be exposed to these complications without warning signs. People with high blood pressure face a higher risk of contracting the corona virus. The possibility of hospitalization, severity of symptoms and death due to corona virus will be more if high blood pressure is not controlled. Studies show that people who have uncontrolled

blood pressure, or who have discontinued their treatment, are more likely to develop severe symptoms from the coronavirus and die from it, compared to people who are receiving medical treatment. The most important point in the situation of the spread of the corona virus for a person with high blood pressure is to visit the doctor regularly and follow his instructions. In fact, regular use of blood pressure control drugs and simple lifestyle changes can help patients to control their blood pressure and reduce the risks.

10. Anxiety and stress pain

10.1. How is anxiety and stress pain?

Anxiety usually starts in childhood and is present in adolescence and youth, but its intensity decreases in middle age and old age. Stress is considered to be one of the most common mental disorders, which due to the wrong way of life of people today has become one of the underlying disorders of all kinds of diseases. Mentally and psychologically, anxiety can facilitate the onset of depression and obsession. If you are an anxious person, you may feel fear and worry, your hands and feet become cold, your heart beats faster, and you also breathe faster and more often, you may feel scattered pains in your head, neck, limbs, chest, and abdomen.

10.2. The difference between heart pain and anxiety pain

- ✓ Knowing the characteristics of the difference between heart pain and anxiety pain will significantly help you in dealing with chest pain.
- ✓ Typical heart pain occurs at an older age than anxiety pain.
- ✓ Heart pain occurs during activity or sudden excitement and stress, but anxiety pain mainly occurs when anxiety and depression intensify.
- ✓ Heart pain is usually felt in the chest, shoulders and arms, but anxiety pain is scattered and occurs in a different part each time.
- ✓ Heart pain usually lasts for a few minutes, but anxiety pain is momentary and spotty.
- ✓ Heart pain is usually improved with sublingual tablets such as nitroglycerin, but anxiety pain is reduced with anti-anxiety and antidepressant drugs such as propranolol.



11. What is premature stroke?

A premature stroke occurs when a woman under 65 years old and a man under 50 years old has a stroke. Of course, the stroke of women under 65 years old can indicate that she is diabetic. Regarding the role of stress in causing heart pain or angina, it should be said that always hearing bad news, excitement and stress cause spasm. Spasm is effective in causing both heart pain and heart attack. For this reason, people should do a heart checkup. Men from the age of 60 and above can have an echocardiogram and echo every six months if they have no problems, but from the age of 40, once a year is sufficient.

12. Prevention of cardiovascular diseases

According to the World Health Organization (2016), approximately 75% of cardiovascular diseases can be prevented. In this context, the results show that diet has the greatest impact on controllable underlying factors such as high blood fat, high blood pressure, obesity and diabetes. Also, changing the lifestyle from inactive to active also reduces the risk of coronary artery disease by 30% (Capul et al., 2009). In this regard, the World Health Organization recommends at least 30 minutes of moderate-intensity physical activity on most days of the week to prevent these diseases. The results of the studies conducted in Iran have also shown the appropriate effect of education on a consistent lifestyle on blood cholesterol levels, systolic and diastolic blood pressure, as well as smoking. In general, it can be said: 80 to 90 percent of premature deaths caused by cardiovascular diseases can be prevented by lifestyle modification.

13. Discussion

Cardiovascular diseases are one of the major causes of death in the world and account for one third of all deaths in the world, of which about 30% of cases occurred in people under 75 years of age. The majority of the 32 million people who suffer heart attacks worldwide each year have one or more underlying risk factors, including high blood pressure, diabetes, smoking [37], poor diet, high blood cholesterol [36], and physical inactivity [39], most of which can be controlled or corrected. Are. Primary hypertension is hypertension that does not have an identifiable organic cause and is usually caused by a combination of physical and psychological

factors. High blood pressure is an unusual disorder that has no obvious symptoms, and it is possible that a person with this disease is dangerous [25], but because he does not feel it from the inside, he never pays attention to it. During the past years, many researches have shown that stressful events are effective in the emergence of physical and mental diseases, and in fact, one of the factors that alone or in combination with other factors plays a major role in high blood pressure [38-40]. During stress and threatening situations, the vessels of the visceral organs contract, in this case the pulse beats fast and the blood pressure rises. Some researchers believe that different environmental and situational characteristics are effective in experiencing the level of stress. Accordingly, events that create many demands and demands and are considered an imminent threat can cause a lot of stress in a person [39]. Also, researchers have found the change in environmental and life conditions to be stressful, and environmental factors such as ambiguity in the position or role, whether the situation is favorable or not, and the controllability or uncontrollability of the situation have also been found to be effective in experiencing stress. Stress is: experiencing events that are considered dangerous for a person's physical or psychological well-being [11], and it is considered one of the factors that explain the possibility of adopting coping styles by people in stressful situations, and perceived stress is one of the factors that It can play a role in contracting many diseases and disorders or smoothen the conditions of contracting diseases and disorders, and the intensity of perceived stress refers to a person's belief in the seriousness of stress. In fact, perceived stress is: the body's reaction to a change that requires adaptation or a physical, mental or emotional response that can be caused by any stress-causing factor or stimulus. From the point of view of pathology, stress at the individual level causes physical and mental injuries, and at the social level it causes the occurrence and exacerbation of social problems [29]. Currently, new stress theorists are trying to break down these whole concepts into their components and mechanisms, including the mechanism through which stress causes illness, disturbing thoughts, mental preoccupations, automatic thoughts, and traumatic memories. The results of various researches have shown that the reaction style of cardiac patients to environmental stimuli is associated with stress and irritability,



which itself causes cardiovascular complications such as high blood pressure in them. Considering that a person's blood pressure is affected by various factors, including stress and emotions. As a result, it is possible that a person may become stressed and the patient's blood pressure increases when visiting the doctor under the influence of the doctor and the conditions of the office or hospital. When a diagnosis of high blood pressure is made for the disease, this requires the user to spend the costs of visiting medical centers and wasting the patient's time for frequent visits and so on. Therefore, high blood pressure caused by stress occurs when a person's blood pressure is high in the doctor's office or medical center, but it is normal with the use of a Holter monitoring device [27].

This phenomenon makes these people not respond positively to common antihypertensive treatments. Medicinal and non-medicinal methods are used in the treatment of high blood pressure. Non-drug treatment or psychological interventions such as lifestyle modification, diet, cognitive-behavioral therapy, yoga, meditation and hypnosis have been used. Yang et al have stated that along with drug therapy, non-pharmacological methods and complementary therapy can have a major contribution in reducing blood pressure in patients with primary high blood pressure. Hypnosis and relaxation techniques in a scientific and developed style are among the special treatment methods that are used in a wider range than in the past. Hypnosis is an advanced concentration condition in which a person focuses on a specific stimulus and does not pay attention to other stimuli such as environmental or bodily stimuli [12]. According to Kaplan and Sadok, hypnosis is a psychotherapy method that by changing the state of consciousness and using the three components of concentration, distraction and suggestibility, puts the audience in a condition where the process of hypnosis can be applied to him [9].

In this special state of consciousness, the words of the therapist penetrate into the subject's conscious and unconscious mind and are recorded in the depths of his mind. This feature makes the hypnosis treatment effective and stable. In hypnosis, people who are more hypnotizable respond more to suggestions. Also, many researchers and clinical experts have now observed that hypnosis produces a synergistic effect in combination with other treatment

methods. In addition, it has been proven in many researches that the use of hypnotherapy in the treatment of depression as well as stress symptoms such as insomnia, muscle tension, worry, etc., has a significant effect, although the researches emphasize more on its effect on reducing stress and anxiety. they do. Several studies have shown that chronic exposure to stress has an effect on blood pressure, and high blood pressure when exposed to stress is effective in causing silent strokes and death due to heart diseases, and on the other hand, the side effects of taking chemical drugs are secondary problems. It creates patients for patients [8].

During the review of the background of studies conducted in Iran, no study was found that directly examines the effectiveness of hypnotherapy on reducing perceived stress and reducing systolic and diastolic blood pressure in patients with primary hypertension, but several studies indicate the role of stress in The increase in blood pressure of patients with high blood pressure, the relationship between stress and blood pressure of students, the effectiveness of hypnotherapy in reducing the anxiety of patients with anxiety disorders and the effect of hypnotherapy in the treatment of depression, anxiety and sleep disorders caused by tinnitus in patients [18].

Researchers found that long-term stress is associated with increased blood pressure and the prevalence of coronary heart disease. In fact, in these patients, emotion-oriented coping is known as an effective short-term strategy, but in the long term, it hinders psychological adaptation and increases the symptoms of helplessness. In other words, the use of these strategies by people with high blood pressure prevents them from directly and effectively dealing with problems and reduces their ability to solve the problem. This situation causes disturbance in intellectual coherence and emotional disturbance and reduces their physical health. Methods such as relaxation help to reduce the stress and nervous tension of these people. Also, the mental and physical quality of a person have a two-way relationship with each other.

This means that mental tensions cause the intensification or formation of physical tensions, and physical tensions also play a role in the occurrence of psychological problems. For this reason, relaxation is one of the ways to overcome stress, the final result of which is the adjustment of mental pressure and the feeling of relaxation, and in fact, the above



explanation can be expressed as relaxation is one of the main techniques of hypnosis. Therefore, it reduces the number of breaths and helps the person to control his muscle tension. It also leads to the coordination of physiological changes, including a decrease in oxygen consumption and an increase in carbon dioxide excretion, a decrease in heart rate and blood pressure, a decrease in energy consumption and a decrease in muscle contraction, and as a result, a decrease in perceived stress and mental pressure. These changes are caused by a general decrease in the activity of the sympathetic nervous system. As reported by Player et al., there is a high level of anger and hostility in hypertensive individuals and they mentioned it as a risk factor for progression to hypertension.

They also linked long-term stress with an increase in blood pressure and the prevalence of coronary heart disease. In these patients, emotion-oriented coping is known to be effective as a short-term strategy, but in the long-term, it hinders psychological adaptation and increases the symptoms of helplessness. On the other hand, hypnotherapy has a significant effect on reducing systolic blood pressure in patients with primary hypertension in Mashhad. The results obtained from the statistical tables showed that hypnosis reduced the systolic blood pressure of patients with primary hypertension. In explaining this hypothesis, it should probably be said that, because the excessive physiological arousal that occurs in stressful situations increases the production of epinephrine norepinephrine hormones and increases the heart rate and blood pressure in the same proportion. This excessive physiological response probably increases the incidence of hypertension. On the other hand, chronic stress is potentially associated with adaptive regulation of some natural immune variables and downregulation of some special immune functions.

Therefore, the use of psychotherapy intervention can be useful to adjust and control the psychological consequences of mental stress. Hypnotherapy techniques such as inducing positive thinking, replacing efficient thoughts instead of ineffective ones, awareness of the subconscious mind improve positive mood and as a result lower blood pressure. Probably when people feel that they have control over their living environment and can cause environmental changes. Because they feel good about themselves, their blood pressure

is at a more normal level. Because getting rid of the feeling of helplessness and lack of environmental control will make people review their successful experiences, increase their self-confidence and self-efficacy in controlling stressful life situations and generalize it to other life situations, and this positive inner understanding of people about themselves. It controls mental pressure and consequently lowers blood pressure. On the other hand, the suspension of critical thinking in the hypnotic state makes the patient more suggestible and makes him accept the persuasive conversations of the therapist.

14. Conclusion

According to the mentioned materials, it can be said that cardiovascular diseases, as the most important cause of death in the world and in Iran, are related to various psychological conditions such as stress, depression, anxiety and personality traits such as neuroticism. Psychological components can be considered as underlying factors as well as consequences of cardiovascular diseases. It was also found that psychological processes are directly and indirectly related to this category of diseases. The management of these psychological processes can be effective in reducing the causes of cardiovascular diseases as well as reducing their consequences and negative prognosis. In the end, it can be said that the mentioned cases and the results of various researches show the role of psychology in preventing, treating and reducing the effects of cardiovascular problems as the biggest health problem in the world. Dr. Richard Wright, a cardiologist at Providence St. John's Health Center, told Medical News Today that systematic reviews show how mental illness, at least in theory, makes patients more susceptible to heart problems that we usually only think might happen to them.

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