

Measurement the Physiological Properties of Water Pipe Smokers in Shekhan Distract

Abdullah. M. Al-Saiegh

Community Health
Shekhan Technical Health College
Duhok Polytechnic University
Duhok, Iraq
Abdulla.Ayoub@Dpu.Edu.Krd

Turki Sabri Haji

Community Health
Shekhan Technical Health College
Duhok Polytechnic University
Duhok, Iraq
Turkisabri77@Gmail.Com

Jihan Saado Ahmed

Community Health
Shekhan Technical Health College
Duhok Polytechnic University
Duhok, Country/ Iraq
Jihansaado1994@Gmail.Com

Alaa Azzo Aslo

Community Health
Shekhan Technical Health College
Duhok Polytechnic University
Duhok, Iraq
Alla.Khurma@Gmail.Com

Firas Faris Khalaf

Community Health
Shekhan Technical Health College
Duhok Polytechnic University
Duhok, Iraq
Firaskh32@Gmail.Com

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Smoking is one of the old habits used by humans before 400 years ago, where this custom was exclusively used in males with the development of time, tools, ingredients and flavors that used in hookah the women also started smoking, which led to an increase in the prevalence of use in many countries of the world Smoking is one of the reasons that lead to an increase in the percentage incidence of lung cancer, chronic lung disease ,mouth disease ,teeth deformation and gingivitis The aim of study to determine physiological status before, during and after smoking water pipe. To knowledge awareness of people of harmful smoking water pipe by interview with them and explain the effect and dangerous of water-pipe smoking on their health.

Sample had taken from 200 peoples, 100 of them are water pipe smoker, and other 100 from non-smoker. Sample had been taken through blood collection from 100 who are water pipe smoker and 100 who not smoke, and this include the following physiological test: Heart Rate, Blood Pressure, and Respiratory Flow Rate, in addition with laboratory hematological test Hemoglobin. The results showed an increase in the rate of (Blood pressure, Inspiratory Flow Rate, Heart rate, Hemoglobin) and rates higher after smoking as follow for Blood Pressure after smoking systolic was 141.9 ± 6.021 and diastolic 91.75 ± 4.459 While the inspiratory flow rate reading after smoking 963.5 ± 96.624 , the

heart rate reading after smoking was 83.27 ± 7.84 while the hemoglobin the reading was 15.68 ± 0.87 as recorded after finishing smoking . Water-pipe smoking has direct effect on Blood Pressure, Heart Rate and Inspiratory Flow Rate and water pipe smoking has have indirect effect on hemoglobin in smokers

Keywords: smoker, water pipe, heart rate, blood pressure, respiratory flow rate and hemoglobin .

1. INTRODUCTION

Smoking is a process in which a particular substance is burned, the most substance commonly used is tobacco, and after burning it is tasted and inhaled by a person. [1] The most common means of smoking at this time are cigarettes, whether they are industrial production or hand-wound, and there are other means and tools of smoking such as pipe and shisha [1]. tobacco is a species of plants in America that contains toxic substance the word is taken from the word "tabago", which is called on an island in the Gulf of Mexico, where it was first found, and was transferred to various parts of the world .smoking is consider as a risk factor for many disease like stroke, coronary heart disease (CHD) and cardiovascular disease (CVD) , the symptoms that come after one of these diseases may cause increased nervous and psychological pressure, which adversely affects the person's life, and the skin of the person smoked appears to make the owner appear older than it is, and affect the sense of taste and may cause impotence for men [2] giving up smoking will reduce the risk of these disease [1,2] The evidence proved that the greatest damage to the hookah is located on people who switch from smoking cigarettes to nargila and the proportion of chronic heart disease is very large [3,4] . Cigarette smoke contains more than 4,700 chemicals material studies have shown that 60 of these are substances that are likely to lead to cancer, and are therefore classified as cancerous. [4] When a person smokes, tobacco and other substances are subject to a range of chemical reactions to form. Smoke containing more than 400 substances, including: [5] hydrogen cyanide. carbon monoxide, nicotine, arsenic, vinyl chloride, ammonia, among the carcinogens [5] cadmium. Ammonia, nitrosamine, ouinoline, arsenic, hydrogen sulfur, nitrogen dioxide, formaldehyde, a harmful substance on the airway [4] hydrogen cyanide. Benzopyrene, water pipe tobacco have a synonyms also known as hubble bubble goza, nargila, shisha, hookah, and argileh. It is consist of head, body, bowl and hose. A smoker breathes in through the mouthpiece in the hose. [5] Smoking has increased in the recent period and the reason for the widespread prevalence of this habit among young people is because young people believe that smoking hookah is safer than smoking cigarettes and because of the presence of different flavors improve the taste of smoke as well as the spread of cafes that provide comfortable sessions and services for young people as it became a major lieutenant for young people and some girls during the health effect of a hookah depends on the length of the smoking cycle, which can range from 20-80 minutes and may be longer, and the number of suction times per cycle and the depth of suction, ranging from 50-200 suction per session with a depth of half a liter to a liter of air. research also shows that many people who smoke hookah are addicted to cigarette smoking later. therefore, it can be said that smoking hookah has become a major health problem among young people and the complications of smoking hookah is no less than smoking cigarettes as it causes addiction and increase the risk of cancer, chronic obstructive lung disease, vascular disease, gum disease, oral and esophageal tumors. And its effect in the environment or what is known as secondhand smoke is no less dangerous than cigarette smoking [6] the smoke consist of coal and tobacco. these include volatile aldehydes, nicotine, polycyclic aromatic hydrocarbons , nitric oxide , furans and nanoparticles [7].

The aim of study:

Compare the physiological properties before smoking water pipe, during smoking water pipe, and after smoking water pipe in peoples .

Determine the effects that caused by the water pipe on blood pressure, heart rate, inspiratory flow rate and hemoglobin in peoples .

To knowledge awareness of people of harmful smoking water pipe by interview with them and explain the effect and dangerous of water pipe smoking on their health.

To determine physiological status before, during and after smoking water pipe .

2. METHODS AND MATERIALS

The study included Observation, Analysis level of physiological properties of the patient who smoke water pipe. The Sample collection start from 1st November 2018 to 28th February 2019, Sample has been taken from 200 people, 100 of them were water pipe smoker, and other 100 from non-smoker.

Sample had been taken through blood collection from 100 who were water pipe smoker from shekhan district and other areas and 100 who are not smoke taken from shekhan technical college and institute, as well as from shingal technical institute , and tests include the Heart Rate, Blood Pressure, Inspiratory Flow Rate, in addition with laboratory hematological test hemoglobin. we had taken blood samples from both smokers and nonsmokers before, during and after smoking water pipe for analyze all laboratory and physiological test that mentioned above to compare the reading .the materials and equipment that used in study were:

- Microcentrifuge (KOKUSAN Corporation)



Figure 1: Microcentrifuge

- Sphygmomanometer (MDF instruments)



Figure 2: Sphygmomanometer

- Stethoscope (MDF instruments)
- Spirometer (Plasti-Med)



Figure 3: Inspirometer

- PCV (Packed Cell Volume) Reader
- Syringes
- Tourniquet
- Alcohol 70%
- Cotton
- EDTA (Ethylenediaminetetraacetic acid) Tubes
- Capillary Tubes
- Gloves
- Timer
- Capillary tube sealant

2.1 Measuring Blood Pressure:

This for the purpose of determining the ranges of blood pressure and how it affected by smoking, which is done through measuring their blood pressure rate using sphygmomanometer and stethoscope, for nonsmokers should be comfortable, back supported and leg not cross each other and not drink any think such as tea, coffee for 10-15 minutes.

For smokers we measured blood pressure three times before smoking, during smoking and after smoking we compared the ranges after measuring and determined its changes

2.2 Measuring Heart Rate:

Heart rate measured using stethoscope and this is done after measuring blood pressure for 2-3 minutes, for non smokers heart rate measured once after blood pressure measured and for smokers we measured heart rate three times before smoking, during smoking and after smoking after measuring done data are calculated and then we compared results.

2.3 Measuring Hemoglobin

Hemoglobin measurement done for non smokers using lancet for puncture the area we want to collect blood sample which was thumb and using capillary tubes for collection of blood, after collection we used a dry cotton for few minutes to stop bleeding, after capillary filled with blood collected from patient, one head of tube is filled with capillary tube sealant this use to block removal of blood from tube while in microcentrifuge, after that we put this tubes into microcentrifuge

For smokers we collected blood using tourniquet and disposable syringe from basilic vein after that we put blood sample into EDTA tubes this tubes used to prevent blood coagulation, after collection capillary tubes been used to collect blood from EDTA tubes and using for microcentrifuge, then put capillary tubes into microcentrifuge to measure PCV after determining PCV we divide the results to 3.1 to calculate Hb rate.

2.4 Measuring Inspiratory Flow Rate

Spiremeter is a device used to determine respiratory flow rate it's a basic test for the study of lung function, and its performance is necessary for the evaluation and follow-up of respiratory diseases , for non smokers is done one time through intense inspiration through mouth piece, and for smokers is done three times, before smoking , during smoking and after smoking through intense inspiration through mouth piece.

2.5 Statistical Analysis:

Statistical analysis and data entry were performed using Microsoft Excel and Statistical Package of social sciences-23 version (SPSS-23).

3. RESULTS

The total number of participants was 200 persons, all were males and then divided into two groups, the first group included 100 samples from nonsmokers in which taken the following physiological tests Blood Pressure, Heart Rate, inspiratory flow rate and Hemoglobin as shown in table 3.2.

Second group also included 100 samples from smokers where the physiological tests were measured included Blood Pressure, Heart Rate, Inspiratory flow Rate and Hemoglobin, and the results was as the following as shown in table 3.1

3.1 Blood Pressure Systolic and Diastolic

Mean of blood pressure systolic was 119.45 ± 6.7 and diastolic was 78.4 ± 5.983 this was about normal (120/80) before smoking water pipe , During smoking water pipe blood pressure was increased and systolic was 134.8 ± 6.192 and diastolic 88 ± 4.082 and after smoking of water pipe there was more in increase and systolic was 141.9 ± 6.021 and diastolic was 91.75 ± 4.459 This indicates that measurement of blood pressure is higher after smoking than before smoking water pipe as shown in table 3.1

3.2 Inspiratory Flow Rate

Mean of Inspiratory Flow Rate before smoking was 735.5 ± 103.303 , during the smoking phase there was an increase in the level of inspiratory flow rate 864 ± 105.906 and after finishing smoking the degrees was 963.5 ± 96.624 this refers that smoking have effect on inspiratory flow rate as show in table 3.1.

3.3 Heart Rate

Smoking results showed a direct effect on people heart rate because the heart rate of people before smoking was 72.56 ± 8.014 during smoking was 78.05 ± 8.152 and after smoking was 83.27 ± 7.84 this refers that smoking have effect on heart rate as show in table 3.1.

3.4 Hemoglobin

The results that recorded for examine the hemoglobin of nonsmoker was 14.8 ± 1.005 and the smokers was 15.68 ± 0.87 where there was found an increased in the percentage of people hemoglobin this indicates there are found a direct effect of smoking on a level of hemoglobin as show in the table 3.1 and 3.2

Table 3.1: The mean of physiological properties among water pipe smokers before, during and after water pipe smoking

Physiological Properties	Before Smoking water pipe	During Smoking water pipe	After Smoking water pipe
Blood Pressure Systolic	119.45 ±6.7	134.8 ±6.192	141.9±6.021
Diastolic	78.4 ±5.983	88 ±4.082	91.75 ±4.459
Inspiratory Flow Rate	735.5 ±103.303	864 ±105.906	963.5 ±96.624
Heart Rate	72.56 ±8.014	78.05 ±8.152	83.27 ±7.84
Hemoglobin	-----	-----	15.68 ±0.87

3.5: Mean of Non Water-Pipe Smokers

As shown in table 3.2 the mean of physiological properties blood pressure , inspiratory flow rate , heart rate and hemoglobin was normal , the results were as follows the blood pressure systolic and diastolic of nonsmokers was 117.9 ±9.46, 76.4 ±6.487, this refers that people who are not smokers have healthy blood pressure and inspiratory flow rate 798.7 ±143. also were are no any effected in people who are not smokers, the heart rate was also in normal condition was 72.02 ±7.742 beat per minute the mean of hemoglobin was 14.8 ±1.005 this refers to that people who are not smokers have healthy level of hemoglobin .

Table 3.2: The mean of physiological properties of nonsmokers water pipe .

Physiological Properties	Non smokers
Blood pressure Systolic	117.9 ±9.46
Diastolic	76.4 ±6.487
Respiratory flow rate	798.7 ±143.081
Heart rate	72.02 ±7.742
Hemoglobin	14.8 ±1.005

4. DISCUSSION

Aim of the study is to measure physiological properties of smoker, we have identified that systolic blood pressure increased during and after smoking water pipe by about 22 mmHg in systolic and in diastolic blood pressure by about 13 mmHg, this means there are found a direct effect on blood pressure [8] . Smoking will lead to a greater effect on blood pressure in case of water pipe smoking [9] . The continuous rise in blood pressure may lead to renal disease and this is consider as a one of the reasons for high blood pressure, thus, the continuous increased in blood pressure may lead to a condition called end-stage renal disease the toxic chemicals materila that located in tobacco smoke has a directly effect on blood cells. and cases a damage in the cardiovascular function . this damage increases the risk of atherosclerosis. smoking is a major risk factor for heart disease. When combined with other risk factors such as unhealthy blood cholesterol , high levels of blood pressure, increased the weight or obesity smoking increases the risk of heart disease. it is also a major risk factor for peripheral artery disease (PAD). PAD is a condition in which plaque builds up in arteries that carry blood to the head, organs and extremities. People with PAD are at increased risk for heart disease, heart attack and stroke. [10] . Other traits that have been measured are heart rate, which has been recorded as an increase in heart rate during and after smoking, where the increase was about 11 beats per minutes and this is agree with [11] . this increase in degree consider as the risk factor for cardiovascular disease and other serious diseases. smoking is a major risk factor for development and progression of cardiovascular disease [12] . Studies have shown that smoking has a direct effect on the heart where it causes myocarditis, leading to dysfunction in systolic and diastolic blood pressure arrhythmia However, the mainThe effect of smoking will formation atherosclerosis, that occurs in the coronary arteries, because of decrease oxygen supply and increased myocardial action. Smoke contains carbon monoxide (CO) which combine With hemoglobin to form carbohydrate, that Inhibits oxygen uptake, causes cases called cellular hypoxia also possibly coronary and ventricular spasms Carditis . the toxic material that located internal of tobacco Including nicotine directly affects the lining tissues which leading to coronary vasoconstriction and increased blood Coagulation [13] The results also showed an increase in the rate raise of inspiratory flow rate during and after smoking water pipe where the increase was about 125 degree bear one second This increase considers as predisposing factor for developing many serious respiratory diseases such as asthma, chronic obstructive pulmonary disease. some of them may have fast breathing or difficult breathing. lung cancer and chronic obstructive pulmonary disease are most commonly respiratory diseases that caused by smoking . [14] The effect of smoking on the respiratory system is concentrated in the epithelial membrane that enveloped the respiratory cavity. This layer is considered the first line of defense to control toxic raids, pollutants and microorganisms that are located in the air Which in turn cause infections for respiratory system especially the upper part The smoke from smoking leads to infections in the eye, throat and pharynx, which confirmed by the researcher [15] The results showed an increase in the level of hemoglobin for smokers than non-smokers because it leads to a decrease in the proportion of oxygenated blood and increase in the proportion of carbon monoxide. The air of inhalation in non-smokers contains 80% oxygen, 29% nitrogen and less than 1% first carbon dioxide and water vapor, but smokers when smoked, the air contains a large proportion of carbon monoxide, this gas will combined with hemoglobin faster than oxygen and prevent the red blood cells to carry oxygen. And this will causes of hypoxia, which activates the secretion of erythropoietin hormone from the kidneys that will stimulate The bone marrow for increases the secretion of red blood cells , Thus leading to feeling tired and less effort for smoker, increase the proportion of hemoglobin blood than natural may lead to clots in the legs, and then move to the lungs. [16] , Other effects of smoking on the human body where it leads to neonatal weight loss and periodontal disease Studies have confirmed that smoking has an effect on the skin due to the toxic substances that present in tobacco studies have shown that smokers are exposed to skin cancer, which is called squamous cell carcinoma, also increasing the risk of ectopic pregnancy reducing the baby's birth weight increasing the risk of preterm delivery damaging the fetus's lungs, brain, and central nervous system increasing the

risk of sudden infant death syndrome contributing to congenital abnormalities, such as cleft lip or cleft palate[17]

5. CONCLUSION

Since the ban on smoking in 2007, the proportion of smoking nargileh has increased, increasing by 210% in cafes using nargile. Recent studies have confirmed that smoking hookah has a significant impact on the human body and this effect comes through PAHS, volatile aldehydes, CO, NO, nicotine, furans and nanoparticles. As these substances have a wide impact on the human body and is represented by cancer and respiratory disorders in addition the smoking has a highly effect on blood presser, heart rate, inspiratory flow rate the smoking had no effect on the level of smoking. Smoking had no significant effect on the level of hemoclobin as the effect was very low.

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