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THE EFFECT OF SMOKING AND TOBACCO CHEWING ON LIPID PROFILE AND VITALS IN ADULTS

[1]Dr. Pullemela Sridhar, [2]Dr. Gollamudi Peter Paul, [3]Dr. Vajra Madhuri Songa, [4]Dr. Lanka Keerthi, [5]Dr. Charulata Chandrakant Kadam, [6]Dr.W. Maruthi

[1]1st Year Post Graduate, Department of Physiology, Government Medical College, Suryapet, Telangana.
[2]Associate Professor, Department Of Physiology, Government Medical College, Eluru, Andhrapadesh.
[3]Associate Professor, Department of Periodontics, Government Dental College and Hospital, Kadapa, Andhra Pradesh.
[4]Assistant Professor, Department of Physiology, Symbiosis Medical College for Women, Symbiosis International University, Lavale, Pune.
[5]Assistant Professor, Department of Physiology, Symbiosis Medical College for Women, Symbiosis International University, Lavale, Pune.
[6]Professor and Hod, Department of Physiology, Siddhartha Medical College, Vijayawada, Andhra Pradesh.

Corresponding Author: Dr.W. Maruthi,
Professor and Hod, Department of Physiology, Siddhartha Medical College, Vijayawada, Andhra Pradesh.

ABSTRACT:

INTRODUCTION:

Despite significant advancements in the study of cardiovascular diseases' causes and treatments, individuals in developing countries like India continue to be affected by these conditions. The World Health Organization predicts that by 2020, coronary heart disease and stroke will rank first and third, respectively, among the leading causes of morbidity and mortality. Cigarette smoking remains the primary cause of preventable morbidity and premature death. Therefore, this current study aims to investigate the biochemical changes in lipid profiles among smokers and tobacco chewers.

AIM AND OBJECTIVES: The study's objective is to examine the impact of smoking and tobacco chewing on lipid profiles.

MATERIALS AND METHODS:

The study was conducted prospectively on individuals aged 25-45 years weighing 55-75 kgs, who were free of conditions such as diabetes mellitus, hypertension, hypercholesterolemia, and obesity. The study population was divided into three groups: group 1 - smokers, group 2 - tobacco chewers (individuals who consumed tobacco without smoking, consuming at least 4-5 leaves per day for the past 10 years), and group 3 - non-smokers and non-tobacco chewers.

RESULTS:

The results revealed significant differences in heart rate, blood pressure, triglycerides, HDL cholesterol, LDL cholesterol, VLDL cholesterol, and total cholesterol among the groups.

CONCLUSION:

In conclusion, the study demonstrated significant variations in cardiovascular and lipid parameters among the study groups, highlighting the health risks associated with smoking and

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tobacco chewing. Therefore, it is crucial to increase awareness about the harmful effects of tobacco and its derivatives in society.

KEY WORDS: Smoking, Lipid profile, heart rate, tobacco chewing.

1. INTRODUCTION:

Despite significant advancements in research on the causes and treatment of cardiovascular diseases, individuals in developing nations such as India continue to be affected by these conditions. The World Health Organization predicts that by 2020, coronary heart disease and stroke will rank as the top and third leading causes of illness and death. Cigarette smoking remains a primary contributor to preventable health issues and premature mortality. Nicotine, a highly addictive substance, impacts dopamine levels in the brain and leads to withdrawal symptoms upon cessation. While genetics may play a role in atherosclerosis, the majority of related conditions, including coronary heart disease, are preventable and typically manifest later in life (1). Tobacco use stands out as the primary risk factor for atherosclerotic events like coronary heart disease. The introduction of tobacco leaf for nicotine consumption dates back to the time when native Americans introduced it to Columbus. Nicotine is the primary component of tobacco that is responsible for its addictive nature. Those who are addicted to smoking regulate their nicotine intake and blood levels by adjusting the frequency and intensity of tobacco use in order to achieve the desired psychoactive effects and to avoid withdrawal symptoms. In developing countries, up to 30% of all deaths may be attributed to tobacco use, whether through smoking cigarettes, cigars, or in smokeless form (2). Tobacco is pathogenically a cholesterol-dependent risk factor and acts synergistically with other risk factors in causing coronary heart disease. There is a strong synergistic interaction between high cholesterol levels and tobacco consumption in the development of coronary heart disease. The World Health Organization has highlighted that coronary heart disease is a modern epidemic that impairs heart function due to inadequate blood perfusion caused by obstructive changes in the coronary circulation. Therefore, the present study aims to observe the biochemical changes in lipid profiles among smokers and tobacco chewers (3).

AIM AND OBJECTIVES:
To study the effect of chewing tobacco and smoking on the lipid profile.

2. MATERIALS AND METHODS:

This is a prospective study done on 25-45 years weighing 55-75 kgs. Subjects who are free of diseases like diabetes mellitus, hypertension, hypercholesterolemia and obesity were included in the study. We divided the study population into 3 groups, group 1-Smokers group 2-Tobacco chewers (These individuals were taking tobacco chewing without smoking at least taking 4-5 leaves per day for the last 10 years) and group 3-non-smokers and non-tobacco chewers.

3. RESULTS:

TABLE 1: BASIC DATA OF STUDY POPULATION

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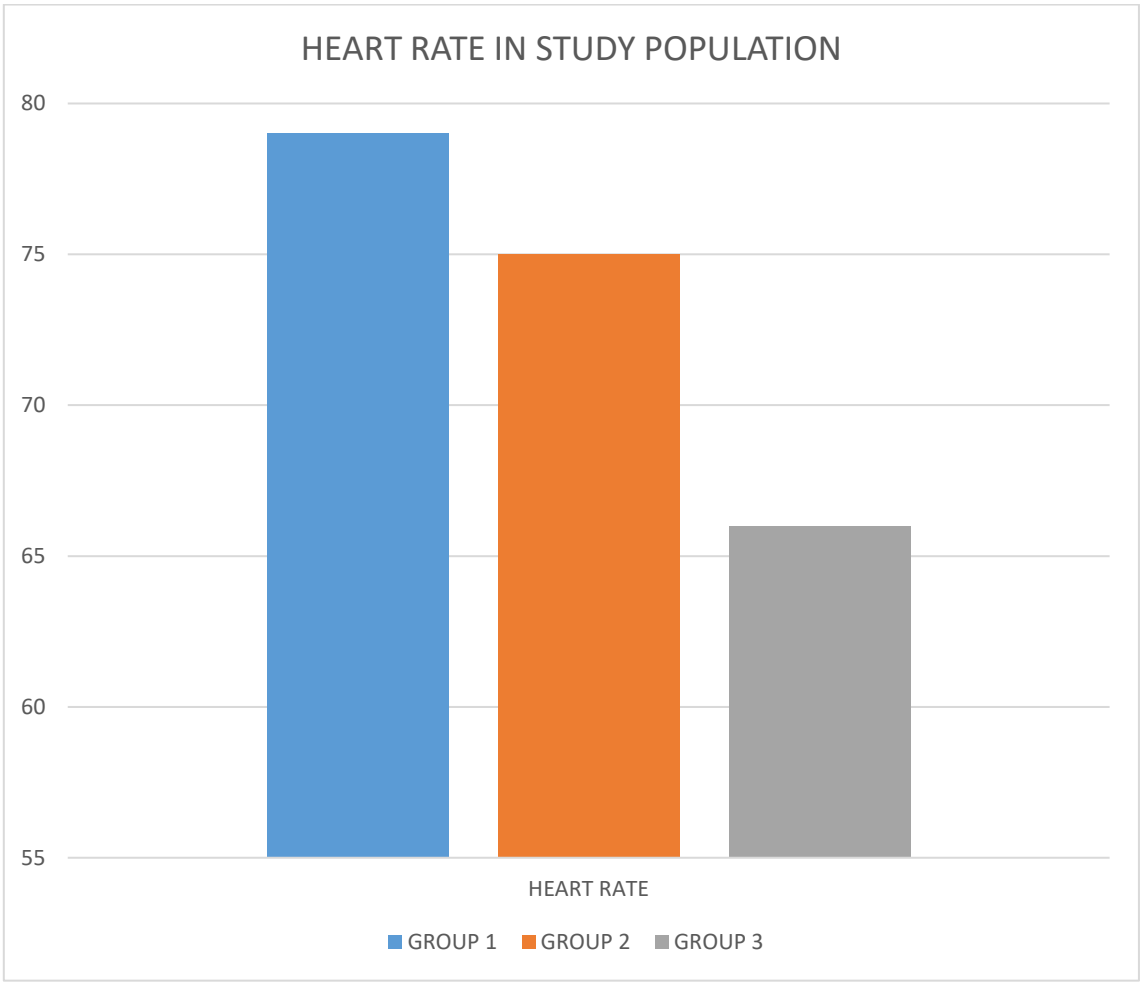
	GROUP 1	GROUP 2	GROUP 3	T-VALUE	P-VALUE	CRUDE VALUE
	MEAN	MEAN	MEAN			
HEART RATE	79.45	75.44	66.25	5.20	<0.01	4.34
BP(in mmHg)	138/90	132/88	120/78	4.72	<0.01	13.00
LDL Cholesterol	114.65	114.42	82.45	11.20	<0.01	29.78
HDL Cholesterol	52.07	53.62	60.75	5.27	<0.01	-7.21
Triglycerides	118.51	115.76	74.34	11.23	<0.01	21.39
VLDL Cholesterol	24.62	22.25	17.49	3.28	<0.01	4.06
Total cholesterol	200.67	192.47	163.45	9.06	<0.01	26.12

GRAPH 1: COMPARISON OF HEART RATE AMONG THE STUDY POPULATION



GRAPH 2: COMPARISON OF SYSTOLIC BLOOD PRESSURE AMONG THE STUDY POPULATION

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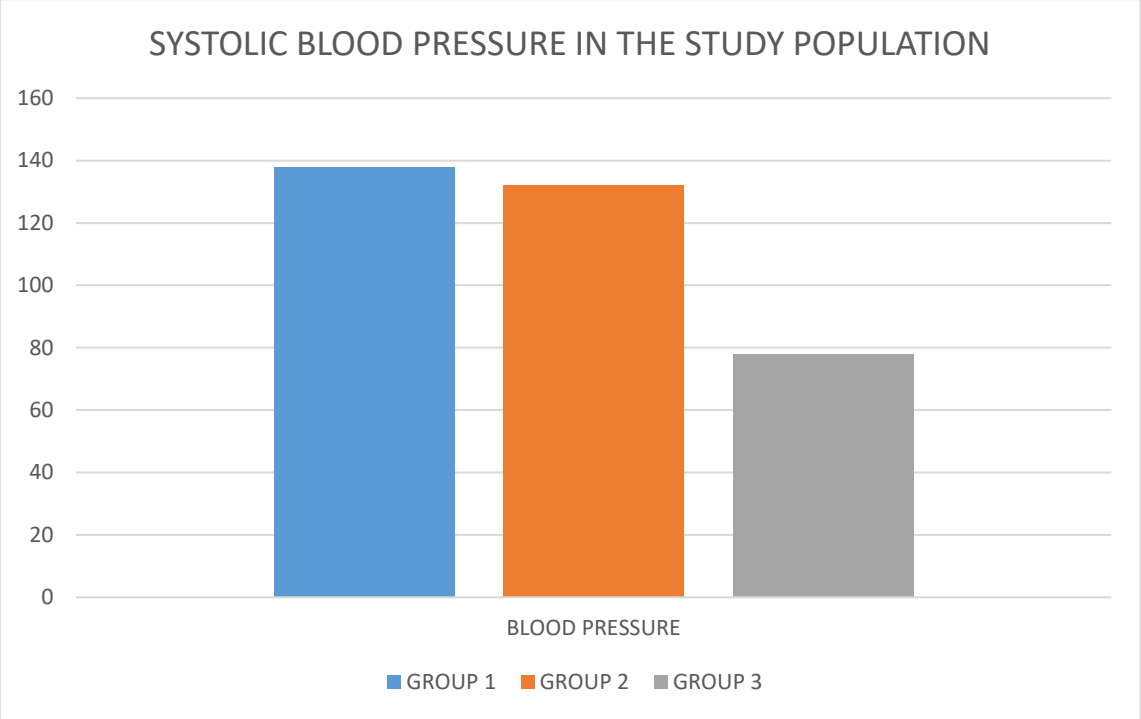
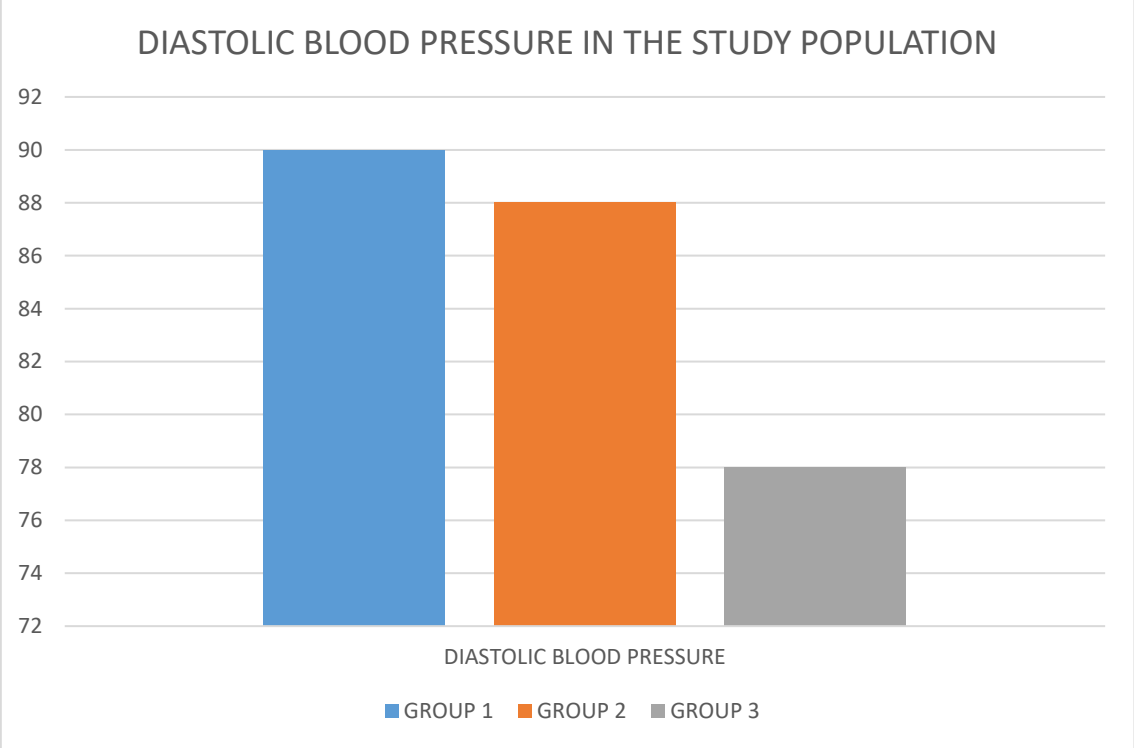


GRAPH 3:COMPARISON OF DIASTOLIC BLOOD PRESSURE AMONG THE STUDY POPULATION



GRAPH 4: MEAN LDL CHOLESTEROL LEVELS IN THE STUDY POPULATION

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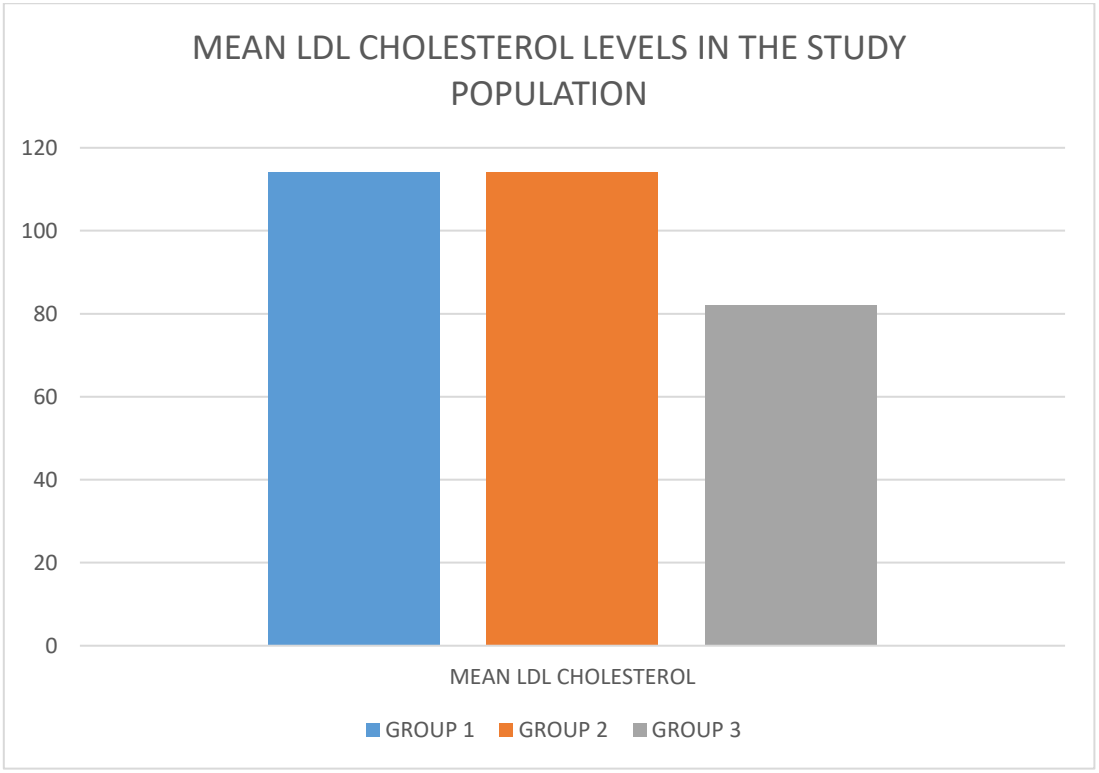
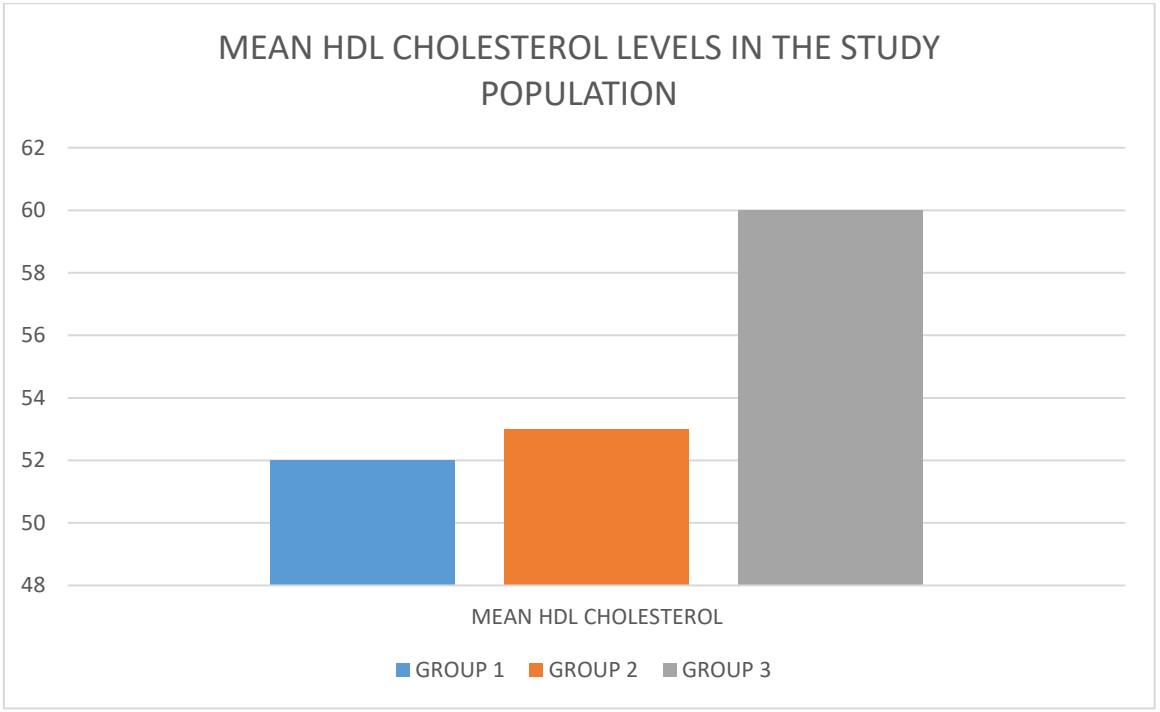


GRAPH 5: MEAN HDL CHOLESTEROL LEVELS IN THE STUDY POPULATION



GRAPH 6: MEAN TRIGLYCERIDES LEVELS IN THE STUDY POPULATION

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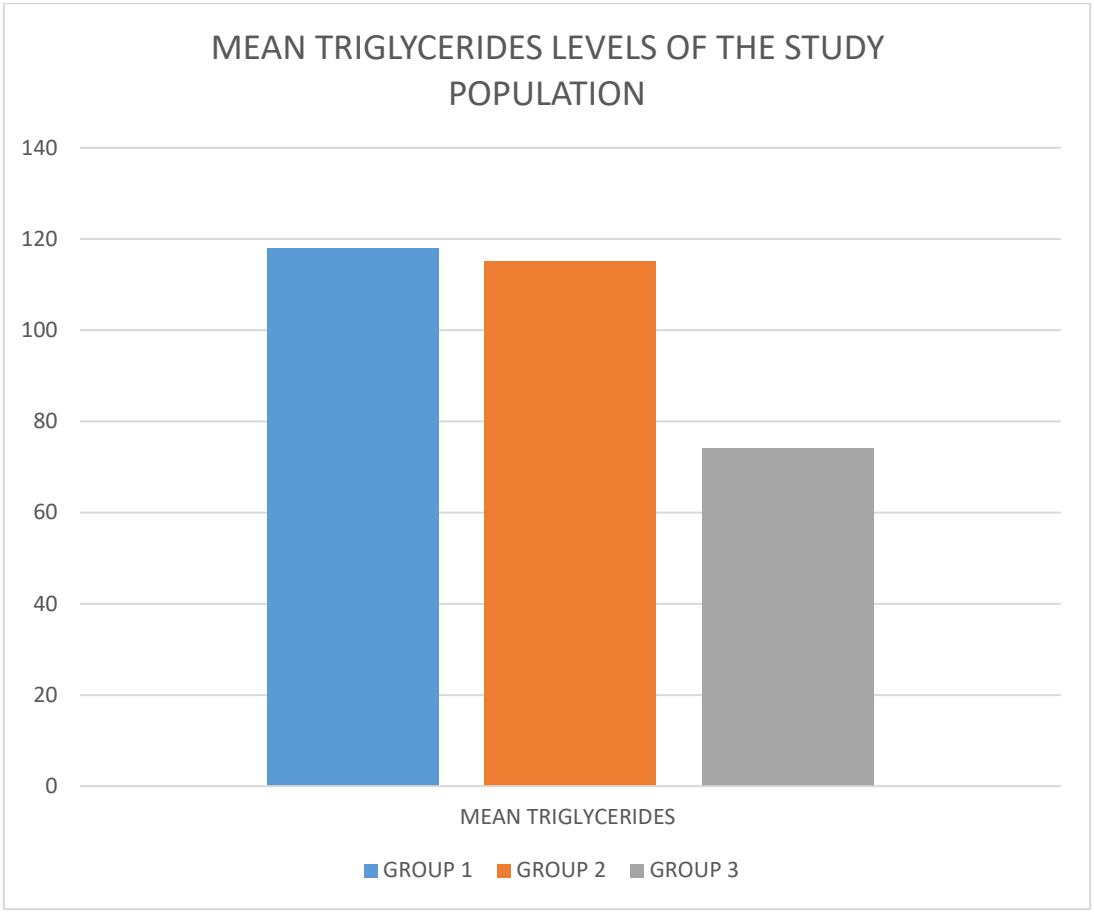
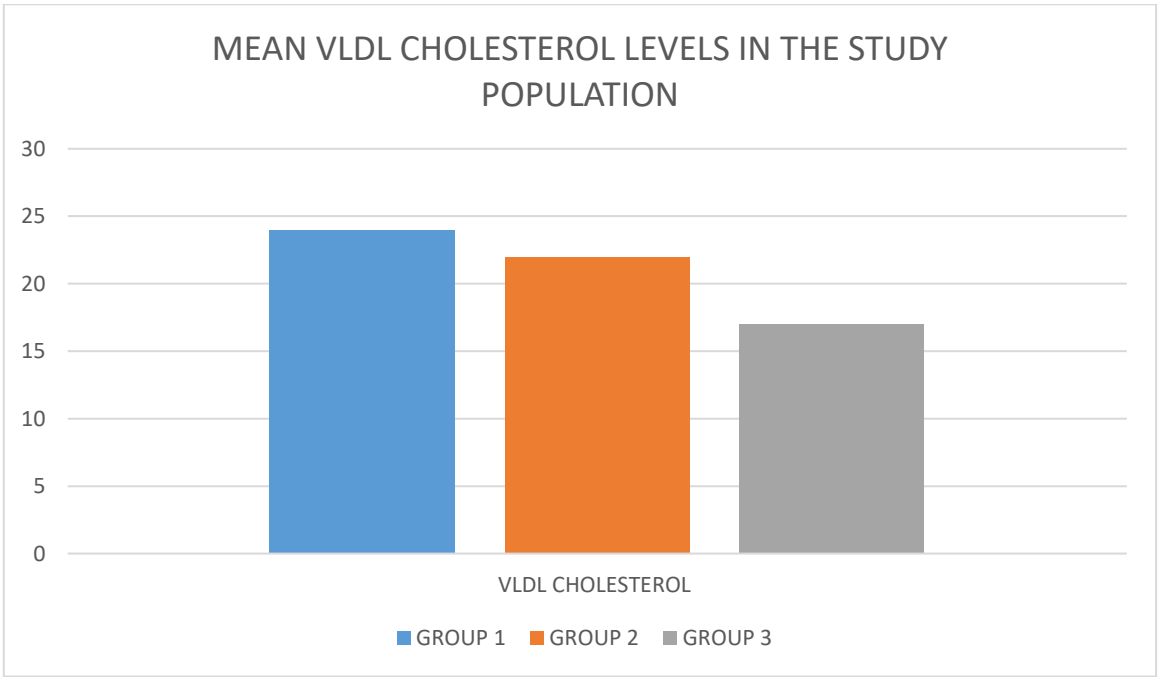


GRAPH 7: MEAN VLDL CHOLESTEROL LEVELS IN THE STUDY POPULATION



GRAPH 8: MEAN TOTAL CHOLESTEROL LEVELS IN THE STUDY POPULATION

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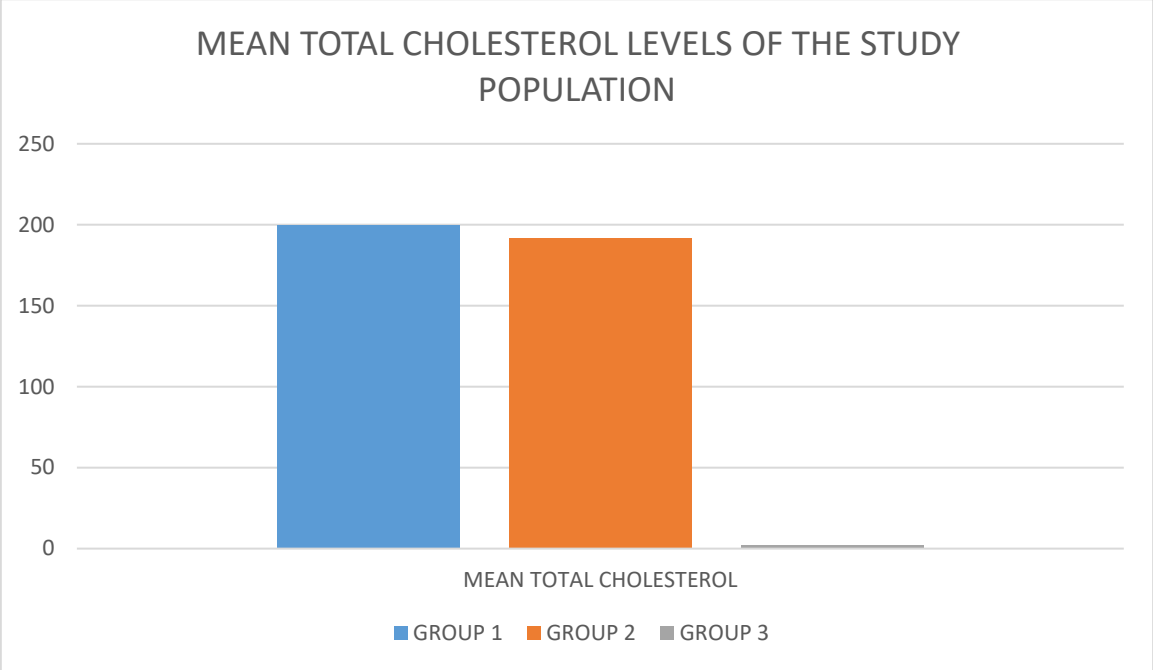

4. DISCUSSION:

The mean heart rate of group 1 subjects is 79.45 beats/min, the mean heart rate in group 2 subjects is 75 beats/min and the mean heart rate of group subjects was 66 beats/min.p-value for comparison of heart rate in between the groups was <0.01 which was statistically significant in between the groups. The mean blood pressure of group 1 was 138/90 mmHg, group 2 was 132/88mmHg and the mean blood pressure of group 3 was 120/78 mmHg.P-value for comparison of blood pressure in between the groups was <0.01 which was statistically significant in between the groups. The mean LDL cholesterol levels for group 1 subjects is 114.65mg/dl and for group 2 subjects the mean LDL cholesterol level is 114.42 and in group 3 the mean LDL cholesterol levels were 82.45 mg/dl.P-value for comparison of LDL cholesterol levels in between the groups was<0.01 which was statistically significant. The mean HDL cholesterol levels in group 1 was 52.07 mg/dl, in group 2 the mean HDL cholesterol levels was 53.62 mg/dl and in group 3 the mean HDL cholesterol levels was 60.75 mg/dl.P-value for comparison of triglyceride levels in between the group was <0.01 which was statistically significant in between the groups.

The mean triglycerides levels in group 1 was 118.51mg/dl, in group 2 the mean triglycerides levels were 115.76 mg/dl and in group 3 the mean triglyceride levels was 74.34 mg/dl.P-value for comparison of HDL cholesterol levels in between the group was <0.01 which was statistically significant in between the groups. The mean VLDL cholesterol levels in group 1 was 24.62 mg/dl, in group 2 the mean VLDL cholesterol levels was 22.25 mg/dl and in group 3 the mean VLDL cholesterol levels was 17.49 mg/dl.P-value for comparison of VLDL cholesterol levels in between the group was <0.01 which was statistically significant in between the groups. The mean total cholesterol levels in group 1 was 200.67 mg/dl, in group 2 the mean total cholesterol levels were 192.47 mg/dl and in group 3 the mean total cholesterol levels were 163.45mg/dl.P-value for comparison of total cholesterol levels in between the group was <0.01 which was statistically significant in between the groups. The decrease in HDL cholesterol in heavy smokers, as observed by INGO STUBBB et al, is consistent with our current study findings. The Framingham heart study by VALENTINE FUSTER and ANTONNIO M.

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GOTTO demonstrated elevated BP, total cholesterol, and LDL cholesterol, aligning with our research. R. Samba Siva Rao et al's study on smoking's influence on BP revealed a significant association between smoking and increased HR and systolic BP, which is in line with our present study. The health risks linked to smokeless tobacco use in India encompass cancers in various areas, such as the upper respiratory and digestive tracts, as well as adverse reproductive outcomes. Research has also shown the impact of smokeless tobacco on blood pressure and cardiac health. Moreover, the consumption of areca nut, often combined with tobacco, can lead to diabetes mellitus and worsen asthma (5). Nicotine from chewing tobacco affects the sympathetic nervous system, causing blood vessels to constrict and resulting in increased pressure within the circulatory system. In India, tobacco-related cancers make up a significant portion of all cancer cases, with a 36-fold increased risk observed in individuals retaining the quid overnight (6). The majority of lesions in a case series study were found in areas most exposed to betel quid, typically in the buccal mucosa. Adverse reproductive outcomes resulting from the use of smokeless tobacco during pregnancy have been extensively documented. The act of using oral tobacco products increases the incidence of public spitting, which poses a significant public health risk. Despite the common belief that smokeless tobacco is less harmful than smoking, it is imperative to dispel this misconception. This can be accomplished through a sustainable public education system that provides ample scientific evidence and clear reasoning (7). Unfortunately, the use of smokeless tobacco is often overlooked in the planning and implementation of comprehensive tobacco control measures. Policy makers in developing countries must be informed that smokeless tobacco use is just as detrimental to society, the environment, and individual and community health (8). Many pregnant women continue to use smokeless tobacco due to a lack of information. Community discussions have revealed that some individuals switch from smoking to smokeless tobacco under the mistaken belief that it is safer during pregnancy (10).

5. CONCLUSION:

Significant differences in cardiovascular and lipid parameters were observed between the study groups. Therefore, both smoking and chewing tobacco are hazardous to health. It is crucial to increase awareness about the impacts of tobacco and its related compounds in society.

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