

# A STUDY ON THE DIETARY ASSESSMENT AND LIFESTYLE INFLUENCE ON RISK OF CARDIOVASCULAR DISEASES IN ADULTS IN HYDERABAD.

1 Mrs.muthyala Sujatha,2 Mrs.Dhrupal, 3 Ms. Kola.yogeswari  
1Faculty -HOD,2Faculty-Lecturer ,3 Student  
Department of nutrition  
VLCC Institute of beauty and nutrition, Hyderabad, India.

**Abstract:** Cardiovascular disease (CVD) is a class of diseases that involve the heart or blood vessels.<sup>[2]</sup> CVD includes coronary artery diseases (CAD) such as angina and myocardial infarction (commonly known as a heart attack).<sup>[2]</sup> Other CVDs include stroke, heart failure, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, abnormal heart rhythms, congenital heart disease, valvular heart disease, carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, and venous thrombosis. A pooled study of individual-level analysis sampling of 60 cardiac patients was done. All the women were diagnosed with CVD. patients with or without co-morbidities like obesity and diabetes were included. According to some studies, diet does not play a primary role in causing CVD, but in this study, it is observed that a patient consuming diet rich in non-vegetarian food sources and less in fruits and vegetables are more likely to get hypertensive and diabetic disorders which can cause CVD. The consumption of foods low in sodium does play an important role by maintaining the serum Creatinine levels and TSH levels. The amount of physical activity correlates with the comorbidities during the initiation of CVD. This study can be concluded by stating that a diet rich in dairy products, plenty of green leafy vegetables, potassium-rich foods and enough amount of high biological value protein sources can prevent CVD with plenty amount of fluids.

**Keywords:** Cardiovascular disease (CVD) ,hypertension , diabetes,creatinine.

## INTRODUCTION:

Cardiovascular disease (CVD) is a class of diseases that involve the heart or blood vessels.<sup>[2]</sup> CVD includes coronary artery diseases (CAD) such as angina and myocardial infarction (commonly known as a heart attack).<sup>[2]</sup> Other CVDs include stroke, heart failure, hypertensive heart disease, rheumatic heart disease, cardiomyopathy, abnormal heart rhythms, congenital heart disease, valvular heart disease, carditis, aortic aneurysms, peripheral artery disease, thromboembolic disease, and venous thrombosis.<sup>[2][3]</sup> hypertension, diabetes, and obesity are the most common causes of CVD. High blood pressure (> 140mmHg of systolic or >90mmHg diastolic blood pressure) is estimated to account for approximately 13% of CVD deaths, while tobacco accounts for 9%, diabetes (blood sugar levels range more than 130 mg/dL (milligrams per deciliter) after not eating or drinking for at least 8 hours) 6% and obesity 5%.<sup>[2]</sup> Rheumatic heart disease may follow untreated strep throat.<sup>[2]</sup> It is estimated that up to 90% of CVD may be preventable.<sup>[4][5]</sup> Prevention of CVD involves improving risk factors through healthy eating, exercise, avoidance of tobacco smoke and limiting alcohol intake.<sup>[2]</sup>

## CLASSIFICATION:

There are many cardiovascular diseases involving blood vessels. They are known as vascular diseases.

- Coronary artery disease (also known as coronary heart disease and ischemic heart disease)
- Peripheral arterial disease – the disease of blood vessels that supply blood to the arms and legs
- Cerebrovascular disease – the disease of blood vessels that supply blood to the brain (includes stroke)
- Renal artery stenosis

- Aortic aneurysm

There are also many cardiovascular diseases that involve the heart.

- Cardiomyopathy – diseases of cardiac muscle
- Hypertensive heart disease – diseases of the heart secondary to high blood pressure or hypertension
- Heart failure - a clinical syndrome caused by the inability of the heart to supply sufficient blood to the tissues to meet their metabolic requirements
- Pulmonary heart disease – a failure at the right side of the heart with respiratory system involvement
- Cardiac dysrhythmias – abnormalities of heart rhythm
- Inflammatory heart disease
  - Endocarditis – inflammation of the inner layer of the heart, the endocardium. The structures most commonly involved are the heart valves.
  - Inflammatory cardiomegaly
  - Myocarditis – inflammation of the myocardium, the muscular part of the heart, caused most often by a viral infection and less often by bacterial infections, certain medications, toxins, and autoimmune disorders. It is characterized in part by infiltration of the heart by lymphocyte and monocyte types of white blood cells.
  - Eosinophilic myocarditis - inflammation of the myocardium caused by pathologically activated eosinophilic white blood cells. This disorder differs from myocarditis in its causes and treatments.
- Valvular heart disease
- Congenital heart disease – heart structure malformations existing at birth
- Rheumatic heart disease – heart muscles and valves damage due to rheumatic fever caused by *Streptococcus pyogenes* a group A streptococcal infection.

Risk factors:

Risk factors for developing heart disease include:

- Age: Aging increases your risk of damaged and narrowed arteries and weakened or thickened heart muscle.
- Sex: Men are generally at greater risk of heart disease. However, women's risk increases after menopause.
- Family history: A family history of heart disease increases your risk of coronary artery disease, especially if a parent developed it at an early age (before age 55 for a male relative, such as your brother or father, and 65 for a female relative, such as your mother or sister).
- Smoking: Nicotine constricts your blood vessels, and carbon monoxide can damage their inner lining, making them more susceptible to atherosclerosis. Heart attacks are more common in smokers than in nonsmokers.
- Certain chemotherapy drugs and radiation therapy for cancer. Some chemotherapy drugs and radiation therapies may increase the risk of cardiovascular disease.
- Poor diet: A diet that's high in fat, salt, sugar and cholesterol can contribute to the development of heart disease. High dietary intakes of saturated fat, trans-fats and salt, and low intake of fruits, vegetables and fish are linked to cardiovascular risk, although whether all these associations are a cause is disputed. The World Health Organization attributes approximately 1.7 million deaths worldwide to low fruit and vegetable consumption.<sup>[2]</sup> The amount of dietary salt consumed is also an important determinant of blood pressure levels and overall cardiovascular risk.<sup>[2]</sup> Frequent consumption of high-energy foods, such as processed foods that are high in fats and sugars, promotes obesity and may increase cardiovascular risk.<sup>[2]</sup>
- High blood pressure. Uncontrolled high blood pressure can result in hardening and thickening of your arteries, narrowing the vessels through which blood flows.

- High blood cholesterol levels. High levels of cholesterol in your blood can increase the risk of the formation of plaques and atherosclerosis.

Diabetes: Diabetes increases your risk of heart disease. Blood sugar control is at the center of any diabetes treatment plan. High blood sugar, or hyperglycemia, is a major concern and can affect people with both type 1 and type 2 diabetes. There are two main kinds:

- Fasting hyperglycemia. This is blood sugar that's higher than 130 mg/dL (milligrams per deciliter) after not eating or drinking for at least 8 hours.
- Postprandial or after-meal hyperglycemia. This is blood sugar that's higher than 180 mg/dL 2 hours after you eat. People without diabetes rarely have blood sugar levels over 140 mg/dL after a meal, unless it's really large.

Frequent or ongoing high blood sugar can cause damage to your nerves, blood vessels, and organs. It can also lead to other serious conditions. People with type 1 diabetes are prone to a build-up of acids in the blood called ketoacidosis.

- Both conditions share similar risk factors, such as obesity and high blood pressure.
- Obesity: Excess weight typically worsens other risk factors.
- Physical inactivity: Lack of exercise also is associated with many forms of heart disease and some of its other risk factors, as well.
- Stress: Unrelieved stress may damage your arteries and worsen other risk factors for heart disease.
- Poor hygiene: Not regularly washing your hands and not establishing other habits that can help prevent viral or bacterial infections can put you at risk of heart infections, especially if you already have an underlying heart condition. Poor dental health also may contribute to heart disease.

## Sleep

- Sleep disorders such as sleep-disordered breathing and insomnia, as well as the particularly short duration of sleep or particularly long duration of sleep, have been found to be associated with a higher cardiometabolic risk.<sup>[6]</sup>
- Symptoms;

Symptoms will vary depending on the specific condition. Some conditions, such as type 2 diabetes or hypertension, may initially cause no symptoms at all.

However, typical symptoms of an underlying cardiovascular issue include:

- pain or pressure in the chest, which may indicate angina
- pain or discomfort in the arms left shoulder, elbows, jaw, or back
- shortness of breath
- nausea and fatigue
- lightheadedness or dizziness
- cold sweats
- Although these are the most common ones, CVD can cause symptoms anywhere in the body

**Diagnosis:**

The tests you'll need to diagnose your heart disease depend on what condition your doctor thinks you might have. No matter what type of heart disease you have, your doctor will likely perform a physical exam and ask about your personal and family medical history before doing any tests. Besides blood tests and a chest X-ray, tests to diagnose heart disease can include:

- **Electrocardiogram (ECG).** An ECG records these electrical signals and can help your doctor detect irregularities in your heart's rhythm and structure. You may have an ECG while you're at rest or while exercising (stress electrocardiogram). Screening ECGs (either at rest or with exercise) are not recommended in those without symptoms who are at low risk.<sup>[7]</sup>
- **Holter monitoring.** A Holter monitor is a portable device you wear to record a continuous ECG, usually for 24 to 72 hours. Holter monitoring is used to detect heart rhythm irregularities that aren't found during a regular ECG exam.
- **Echocardiogram.** This noninvasive exam, which includes an ultrasound of your chest, shows detailed images of your heart's structure and function. Additionally, echocardiography is not recommended in those at low risk who do not have symptoms.<sup>[8]</sup>
- **Stress test.** This type of test involves raising your heart rate with exercise or medicine while performing heart tests and imaging to check how your heart responds.
- **Cardiac catheterization.** In this test, a short tube (sheath) is inserted into a vein or artery in your leg (groin) or arm. A hollow, flexible and longer tube (guide catheter) is then inserted into the sheath. Aided by X-ray images on a monitor, your doctor threads the guide catheter through that artery until it reaches your heart.

The pressures in your heart chambers can be measured, and dye can be injected. The dye can be seen on an X-ray, which helps your doctor see the blood flow through your heart, blood vessels, and valves to check for abnormalities.

- **Cardiac computerized tomography (CT) scan.** This test is often used to check for heart problems. In a cardiac CT scan, you lie on a table inside a doughnut-shaped machine. An X-ray tube inside the machine rotates around your body and collects images of your heart and chest.
- **Cardiac magnetic resonance imaging (MRI).** For this test, you lie on a table inside a long tube-like machine that produces a magnetic field. The magnetic field produces pictures to help your doctor evaluate your heart.

**II. RESEARCH METHODOLOGY****2.1 Population and Sample:**

A pooled study of individual-level analysis sampling of 60 cardiac patients was done. All the women were diagnosed with CVD. patients with or without co-morbidities like obesity and diabetes were included.

**2.2 Data and Sources of Data :**

The study was taken up by me pursuing Post graduate diploma in nutrition and dietetics as a part of their dissertation work. I have carried the study of 20 subjects individually from various hospitals of Hyderabad, overall 60 subjects were analyzed.

A format was designed and pre-tested for undertaking this study and the parameters consisted were a patient profile, subjective data, biochemical data, medication given and the patient's 24-hour dietary recall. Later the data was analyzed, and the comparison was done between before and after weight and biochemical parameters. The data was finally analyzed to conclude the result of the Study.

### III. RESULTS AND DISCUSSION

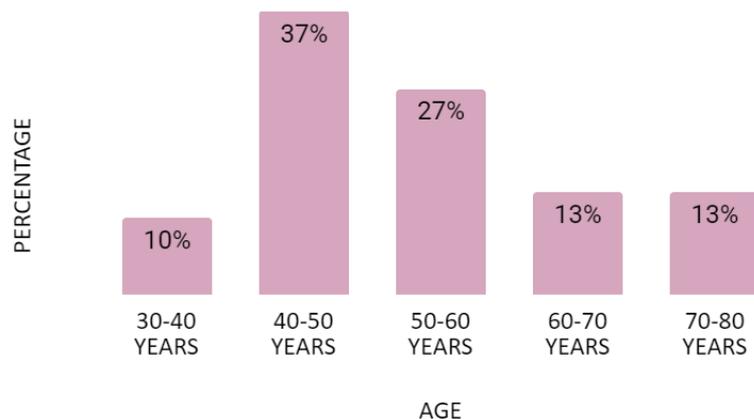
The following are the findings and results of the survey conducted.

#### 3.1. GENERAL INFORMATION

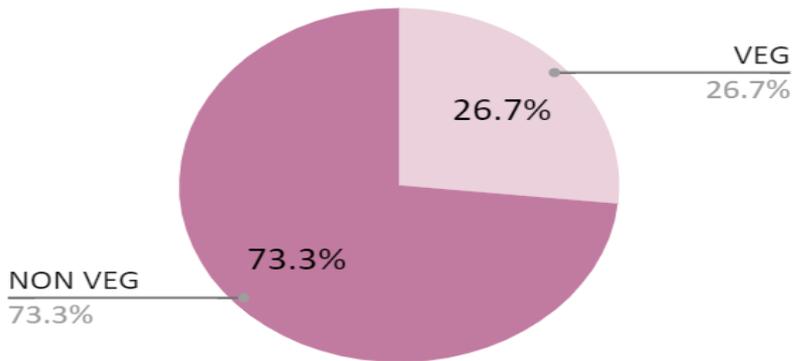
##### 1.AGE CLASSIFICATION

SNO	AGE	PERCENTAGE
1	30-40 YEARS	10%
2	40-50 YEARS	37%
3	50-60 YEARS	27%
4	60-70 YEARS	13%
5	70-80 YEARS	13%

##### AGE CLASSIFICATION



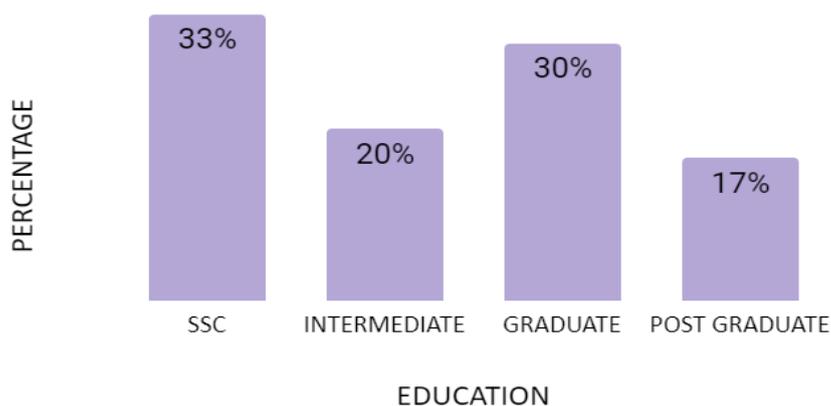
The findings of this study showed that more than 30% of adults are diagnosed with CVD (cardiovascular diseases) lie in the age category of 40-50 years. the second-highest range at more than 20% of the age category at 50-60 years, followed by 60-70 years & 70-80 years with 13% of prevalence of CVD. It also stated that >80 years of aged people are more to CVD, where only 10% lies in 30-40 years of age group.

**2. DIET PATTERNS:****DIET PREFERENCES**

Among the survey conducted 73.3% of the people were observed to have non-veg as their diet preference whereas 26.6% were pure vegetarians.

**3. EDUCATION:**

SNO	EDUCATION	PERCENTAGE
1	SSC	33%
2	INTERMEDIATE	20%
3	GRADUATE	30%
4	POSTGRADUATE	17%

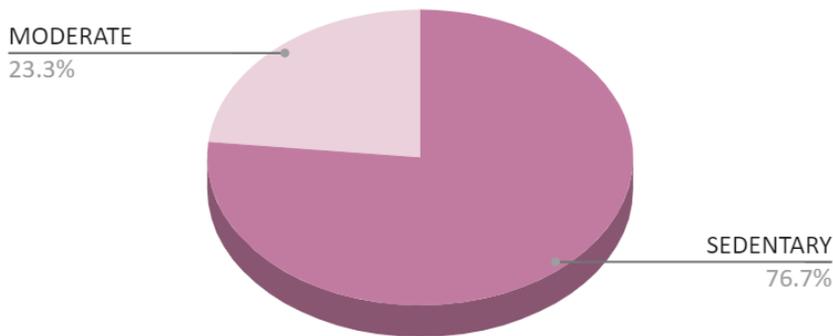
**EDUCATION**

The educational status plays an important role as seen in the findings 33% of adults have completed their schooling with less knowledge about the condition, 30% of the adults are graduates and have Knowledge about the condition. Whereas 20% have completed their secondary education and 17% are postgraduates.

**4.WORK TYPE:**

SNO	WORK TYPE	PERCENTAGE
1	SEDENTARY	77%
2	MODERATE	23%

PERCENTAGE



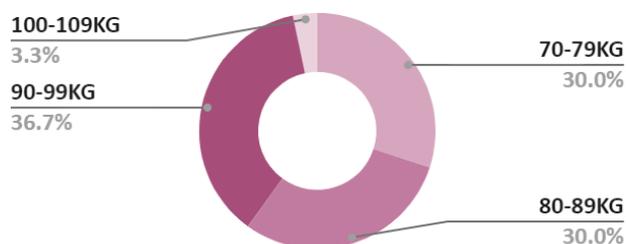
The study shows that more than 75% of adults lead a sedentary lifestyle while the remaining 23.3% are moderately working.

**3.2 ANTHROPOMETRIC MEASUREMENTS**

**5.WEIGHT:**

SNO	WEIGHT	PERCENTAGE
1	70-79KG	30%
2	80-89KG	30%
3	90-99KG	37%
4	100-109KG	3%

WEIGHT

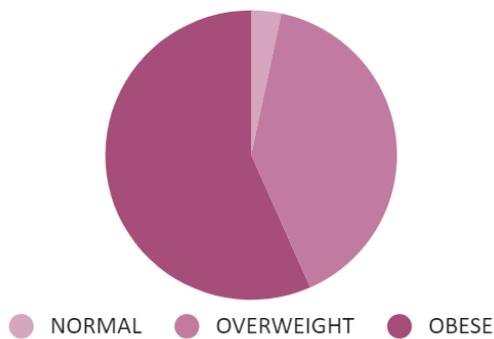


This study has shown that 36.7% of CVD persons are 90-99kg followed by 23% who are 90-99kg and 30% of people are under 60-89kg category comprising 20% every 10 kg. Only 3.3% of people diagnosed with CVD are in 100-109 kg range of body weight.

## **6.BMI PROFILE:**

SNO	BMI	PERCENTAGE
1	NORMAL	3%
2	OVERWEIGHT	40%
3	OBESE	57%

### **BMI PROFILE**



The BMI in this study was observed to be on the very less on the normal range which is seen to be only 3%, whereas people who range in 40% are overweight and 57% are categorized under obese criteria.

## **3.3 BIOCHEMICAL INVESTIGATIONS**

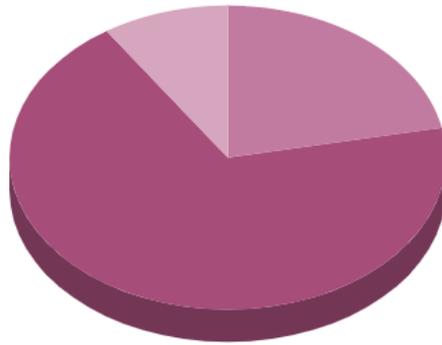
## **7. BIOCHEMICAL ANALYSIS:**

The subjective data of the patients were evaluated and interpreted. The details are shown in the below table(1).

### **BIOCHEMICAL PARAMETERS:**

SNO	BIOCHEMICAL PARAMETERS	PERCENTAGE
1	ANEMIC	22%
2	DIABETES	69%
3	INCREASED CREATININE	9%
4	INCREASED TSH	0%

## BIOCHEMICAL PARAMETERS



● ANEMIC ● DIABETES ● INCREASED CREATININE

The study also observed the co-morbidities of CVD such as anemia, diabetes, increased creatinine levels, and increased TSH levels. Among the survey conducted 69% of adults were diagnosed with diabetes, 22% were anemic and 9% of creatinine accompanied by CVD.

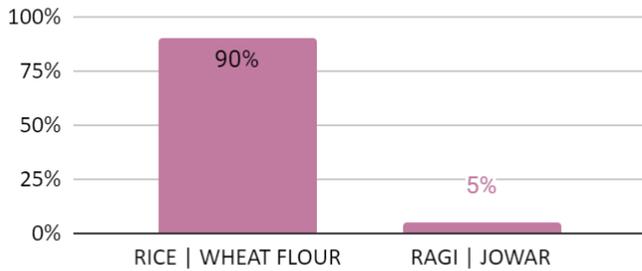
### 8. FOOD FREQUENCY :

FOOD ITEMS	DAILY	WEEKLY ONCE	WEEKLY TWICE	MONTHLY
CEREALS	Rice, Wheat flour (90%)	Ragi   Jowar (5%)	-	-
PULSES	Black gram (10%)   Green gram (10%)	Red gram (80%)	-	-
GREEN LEAFY VEGETABLES	10%	-	78%	2%
OTHER VEGGIES	65%	25%	10%	-
FRUITS	100%	-	-	-
MILK & MILK PRODUCTS	100%	-	-	-
MEAT / CHICKEN/FISH	50%	30%	20%	10%

**1.CEREALS & MILLETS:**

CEREALS	
RICE   WHEAT FLOUR	90%
RAGI   JOWAR	5%

CEREALS



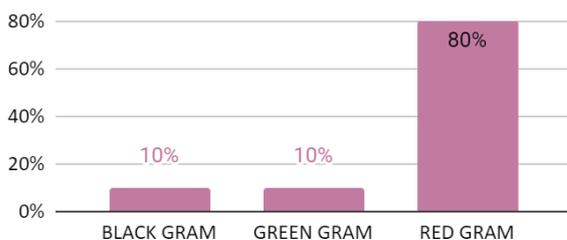
CEREALS

According to this study, about 95% of the cereals consumed on a daily basis are Rice and wheat flour in the form whereas about 5% of people consume millets such as jowar or ragi weekly once.

**2.PULSES:**

PULSES	
BLACK GRAM	10%
GREEN GRAM	10%
RED GRAM	80%

PULSES

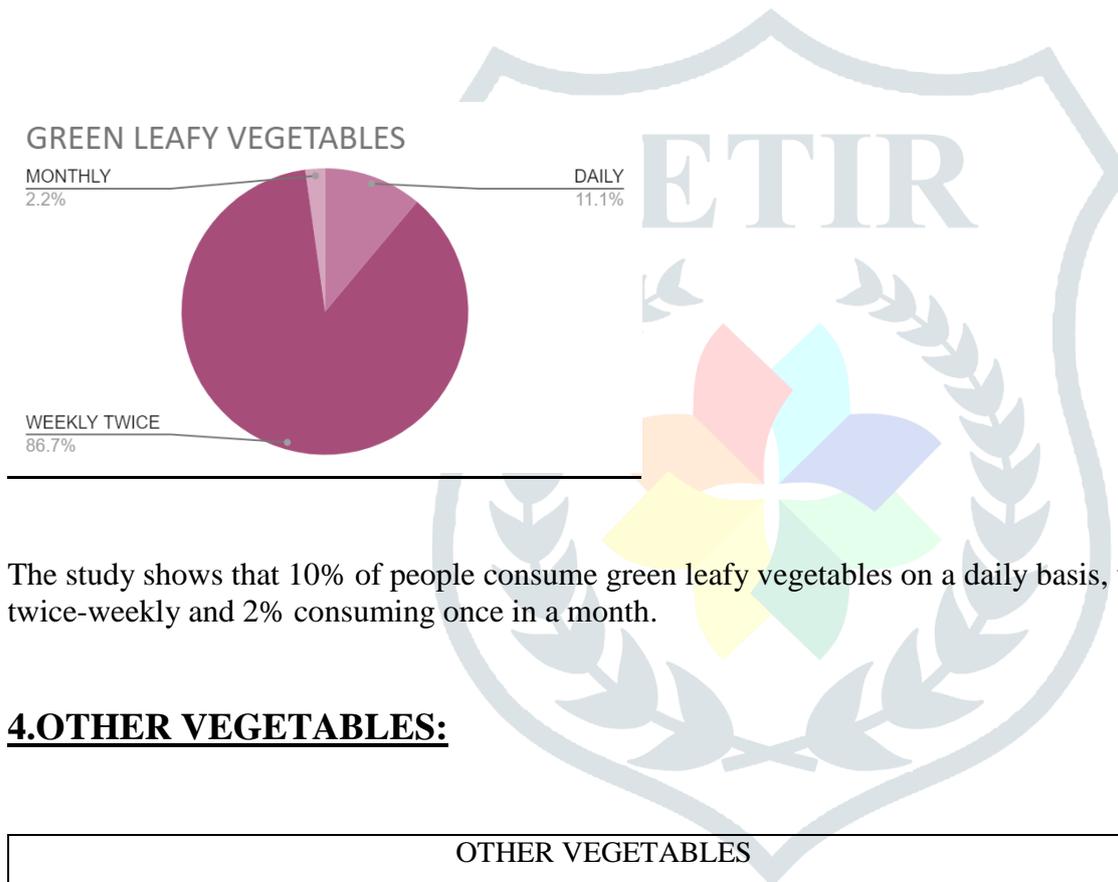


PULSES

The pulse consumption according to the study shows that each black gram dal and green gram dal is consumed by 10% of the people on a daily basis, and about 80% of the people consume red gram dal on a weekly basis.

### **3.GREEN LEAFY VEGETABLES:**

GREEN LEAFY VEGETABLES	
DAILY	10%
WEEKLY TWICE	78%
MONTHLY	2%

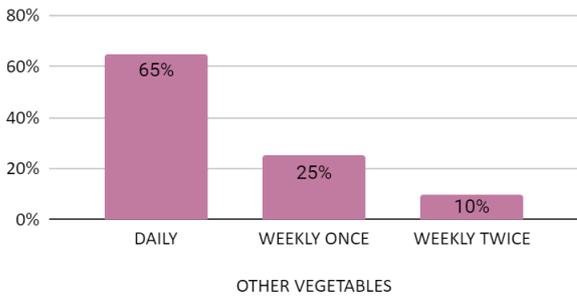


The study shows that 10% of people consume green leafy vegetables on a daily basis, while about 78% consume twice-weekly and 2% consuming once in a month.

### **4.OTHER VEGETABLES:**

OTHER VEGETABLES	
DAILY	65%
WEEKLY ONCE	25%
WEEKLY TWICE	10%

**OTHER VEGETABLES**

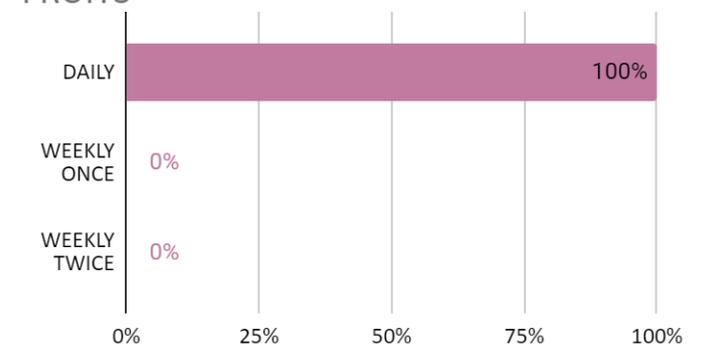


According to the study, the daily consumption of other vegetables is by 65% adults, while 25% consume weekly once and 10% consume twice a week.

**5.FRUIT:**

FRUITS	
DAILY	100%
WEEKLY ONCE	0%
WEEKLY TWICE	0%

**FRUITS**

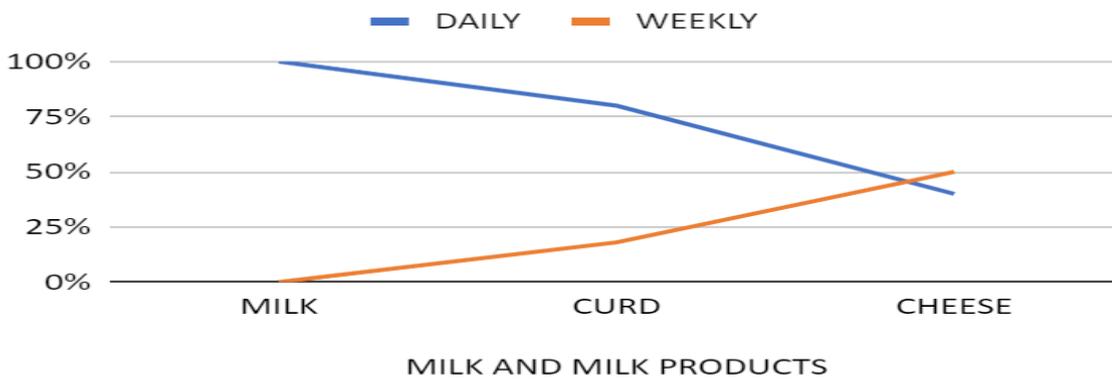


The study shows, 100% of adults eat at least one or more fruits daily.

**6.MILK & MILK PRODUCTS:**

<u>MILK AND MILK PRODUCTS</u>	<u>MILK</u>	<u>CURD</u>	<u>CHEESE</u>
<u>DAILY</u>	<u>100%</u>	<u>80%</u>	<u>40%</u>
<u>WEEKLY</u>	<u>0%</u>	<u>18%</u>	<u>50%</u>

### MILK AND MILK PRODUCTS

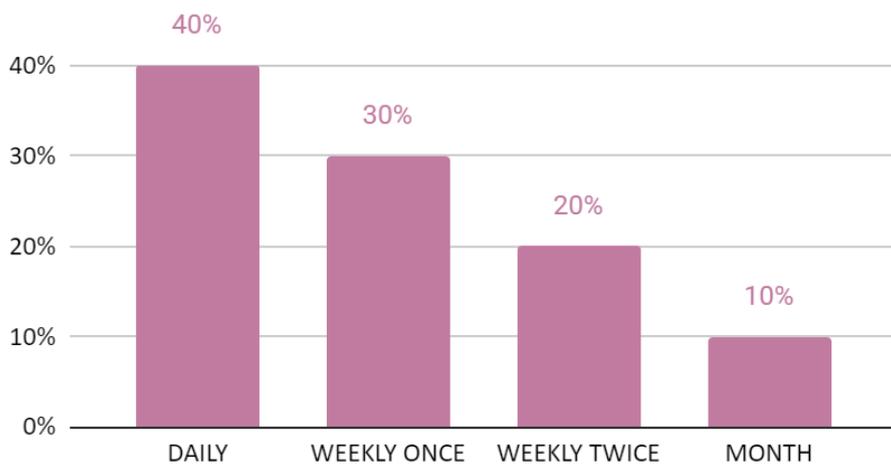


The study shows that 100% of adults consume Milk or Milk products like curd, buttermilk, paneer, etc on a daily basis.

### 7. NON-VEG (MEAT/CHICKEN/FISH/EGG):

MEAT/CHICKEN OR FISH/EGG	
DAILY	40%
WEEKLY ONCE	30%
WEEKLY TWICE	20%
MONTH	10%

### NON VEGETARIAN- MEAT/CHICKEN/FISH/EGG



According to this study, among the non-Vegetarian adults, Consumption of non-veg in the form of Egg, Meat, Fish or Chicken is by 40% on a daily basis, 30% adults consume once in a week, about 20% consumes twice a week and 10% consumes once in a month.

## IV.SUMMARY AND CONCLUSION

According to some studies, diet does not play a primary role in causing CVD, but in this study, it is observed that a patient consuming diet rich in non-vegetarian food sources and less in fruits and vegetables are more likely to get hypertensive and diabetic disorders which can cause CVD. The consumption of foods low in sodium does play an important role by maintaining the serum Creatinine levels and TSH levels. The amount of physical activity correlates with the comorbidities during the initiation of CVD. This study can be concluded by stating that a diet rich in dairy products, plenty of green leafy vegetables, potassium-rich foods and enough amount of high biological value protein sources can prevent CVD with plenty amount of fluids.

## II. ACKNOWLEDGMENT

We express a deep sense of gratitude to Mrs.Muthyala Sujatha, Head of the institution, VLCC Institute of beauty and nutrition for providing us an opportunity of doing this project work. I am deeply indebted and grateful to Mrs. dhrupal, lecturer, Department of Nutrition for her continuous guidance, constant support and valuable suggestions all through this project work.

## REFERENCES:

1. Go AS, Mozaffarian D, Roger VL, Benjamin EJ, Berry JD, Borden WB, et al. (January 2013). "Heart disease and stroke statistics--2013 update: a report from the American Heart Association". *Circulation*. **127** (1): e6–e245. DOI:10.1161/cir.0b013e31828124ad. PMC 5408511. PMID 23239837.
2. Mendis S, Puska P, Norrving B (2011). *Global Atlas on Cardiovascular Disease Prevention and Control* (PDF). World Health Organization in collaboration with the World Heart Federation and the World Stroke Organization. pp. 3–18. ISBN 978-92-4-156437-3. Archived(PDF) from the original on 2014-08-17.
- 3.Naghavi M, Wang H, Lozano R, Davis A, Liang X, Zhou M, et al. (GBD 2013 Mortality and Causes of Death Collaborators) (January 2015). "Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013". *Lancet*. **385** (9963): 117–71. DOI:10.1016/S0140-6736(14)61682-2. PMC 4340604. PMID 25530442.
- 4.McGill HC, McMahan CA, Gidding SS (March 2008). "Preventing heart disease in the 21st century: implications of the Pathobiological Determinants of Atherosclerosis in Youth (PDAY) study". *Circulation*. **117** (9): 1216–27. DOI:10.1161/CIRCULATIONAHA.107.717033. PMID 18316498
5. O'Donnell MJ, Chin SL, Rangarajan S, Xavier D, Liu L, Zhang H, et al. (August 2016). "Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study". *Lancet*. **388** (10046): 761–75. DOI:10.1016/S0140-6736(16)30506-2. PMID 27431356.
- 6.St-Onge MP, Grandner MA, Brown D, Conroy MB, Jean-Louis G, Coons M, Bhatt DL (November 2016). "Sleep Duration and Quality: Impact on Lifestyle Behaviors and Cardiometabolic Health: A Scientific Statement From the American Heart Association". *Circulation (Review)*. **134** (18): e367–e386. doi:10.1161/CIR.0000000000000444. PMC 5567876. PMID 27647451.
7. Curry SJ, Krist AH, Owens DK, Barry MJ, Caughey AB, Davidson KW, et al. (June 2018). "Screening for Cardiovascular Disease Risk With Electrocardiography: US Preventive Services Task Force Recommendation Statement". *JAMA*. **319** (22): 2308–2314. doi:10.1001/jama.2018.6848. PMID 29896632
8. Chou R (March 2015). "Cardiac screening with electrocardiography, stress echocardiography, or myocardial perfusion imaging: advice for high-value care from the American College of Physicians". *Annals of Internal Medicine*. **162** (6): 438–47. doi:10.7326/M14-1225. PMID 25775317.