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A PERSPECTIVE STUDY ON PREVALENCE OF LIFE STYLE DISEASE AMONG RURAL POPULATION

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ABSTRACT

Lifestyle diseases are ailments that are primarily based on the day to day habits of people. The main cause identified was substantial changes in people's diet along with the lack of physical activity. A Prospective cross-sectional study was carried out in Eraviperoor Grama Panchayath of Pathanamthitta district in Kerala, Indiaby collecting information on demographic parameters, prevalence of lifestyle disease, risk factors, and co-morbidities, impact of social habits.

Unemployed, Geriatric patients with in the age group 61-70, females and those with less physical activity accounted for higher lifestyle disease. Social history of alcohol, smoking and tobacco were the most prominent risk factors associated for development of lifestyle disease. Hypertension was the most prevalent lifestyle disease in geriatrics followed by diabetes mellitus, Dyslipidemia and osteoporosis.Patients with diabetes were more prone to hypertension and the hypertension, dyslipidemiacombinedly was associated with the development of coronary artery disease.

KEYWORDS: Lifestyle diseases, Geriatrics, Diabetes Mellitus, cardiovascular disease, Hypertension.

INTRODUCTION

Lifestyle disease are also referred to as disease of longevity as they tend to appear more in industrialized countries and linked to way people live their life. The increased incidence is not related to age, but diet and lifestyle are major factors to influence susceptibility to many lifestyle diseases.[1] Problems like metabolic diseases, joint and skeletal problems, cardio-vascular diseases, hypertension and overweight can result dye to unhealthy lifestyle and thus bond between lifestyle and health requires monitoring. As with time a culture drift is observed in India, these diseases are knocking at an alarming proportion in past few years.[2]

According to Indian Council of Medical Research (ICMR), State-Level Disease Burden Study report "India: Health of the Nation's States", estimated all deaths due to Non-Communicable Diseases (NCDs) has amplified from 37.09% in 1990 to 61.8% in 2016.[3] Indian Council for Medical Science and Technology (2010) revealed that the percentage of diabetes, hypertension, overweight and cholesterol among the population of Kerala are 16.2%, 32.7%, 30.8% and 56.8% respectively.[4] The state of Kerala has the highest prevalence of coronary artery disease (CAD) among all Indian States with a rural prevalence of 7.5% and urban prevalence of 12%.

According to the WHO, more than 7 million people die each year due to the use of tobacco and the fatality rate is projected to increase markedly in the years to come. Excessive use of sodium, alcohol abuse and lack of physical activityconstitutetowards 4.1, 1.65, and 1.6 million deaths per year respectively.[1]

METHODOLOGY

The study was designed to identify the most prevalent lifestyle disease by age group and gender more prone to lifestyle disease, risk factor and co morbidity associated with lifestyle disease, impact of lack of physical activity and social habits in inducing lifestyle disease, carried out in 500 patients by using a predesigned data collection form that contains various questions to meet the objectives

Location of the study

The study was carried out in Eraviperoor Grama Panchayath of Pathanamthitta district in Kerala on the topic prevalence of lifestyle diseases in geriatrics.

Duration of study: Six months

Sample size: Sample size is of 500 patients calculated by using the statistical formula

$$\frac{Z^2*P(1-P)}{e^2}$$

$$1+\left(\frac{Z2*P(1-P)}{e^2N}\right.$$

Where,
P = standard deviation
N= population size
E= margin of error
Z= 95% confidence interval of Z

Inclusion criteria

- Age between 60-100 years.
- Patients with lifestyle disease.

Exclusion criteria

- Patients not willing to take part in studies.

Data collection

Data collection was done by using a predesigned data collection form with various questions to attain the objective, after getting a prior permission the evaluators visited the residence of patients and first obtained a written consent form, followed by the patients were asked to fill in the questionnaire, if any assistance was required by them it was provided by evaluators and thus completed the survey.

RESULTS

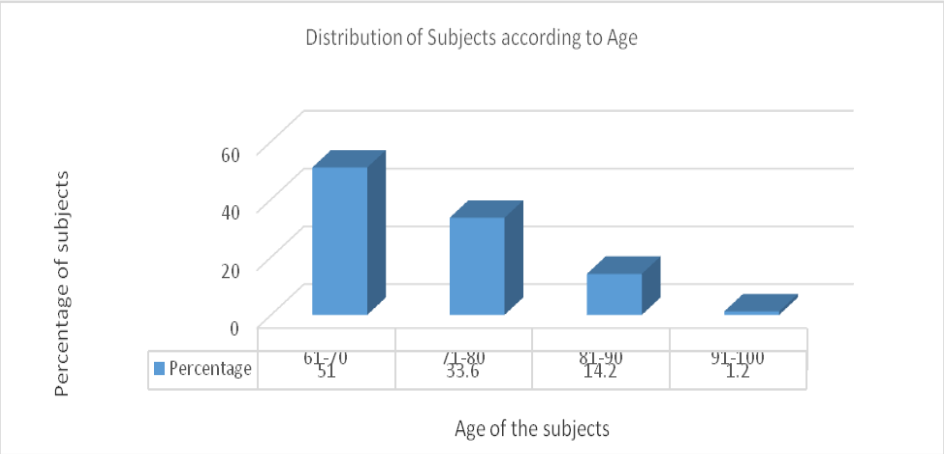

Figure 1: Age of the subjects.

The above bar graph shows that, of total sample size the majority 51% are from the age group of 61-70 followed by 71-80 (33.6%) then 81-90(14.2%) and 91-100(1.2%).

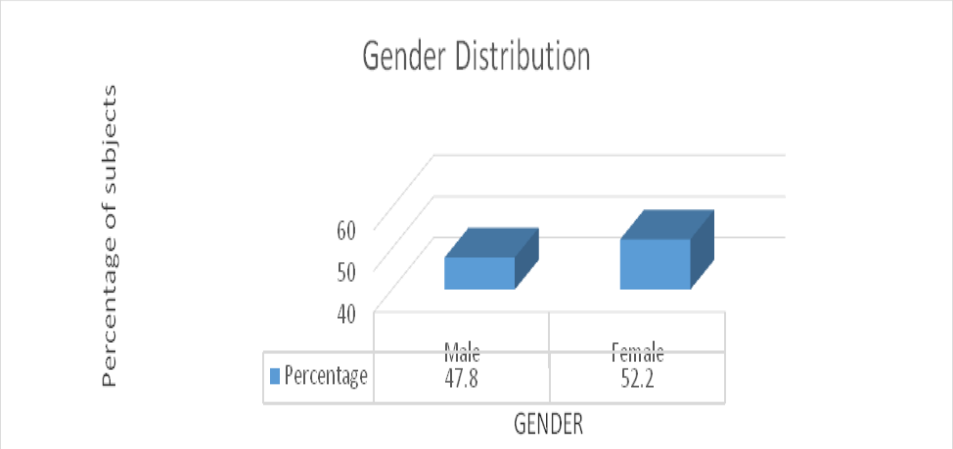

Figure 2: Gender of the subjects.

The above histogram demonstrates that lifestyle diseases are more common in female (52.2%) when compared to males (47.8%).

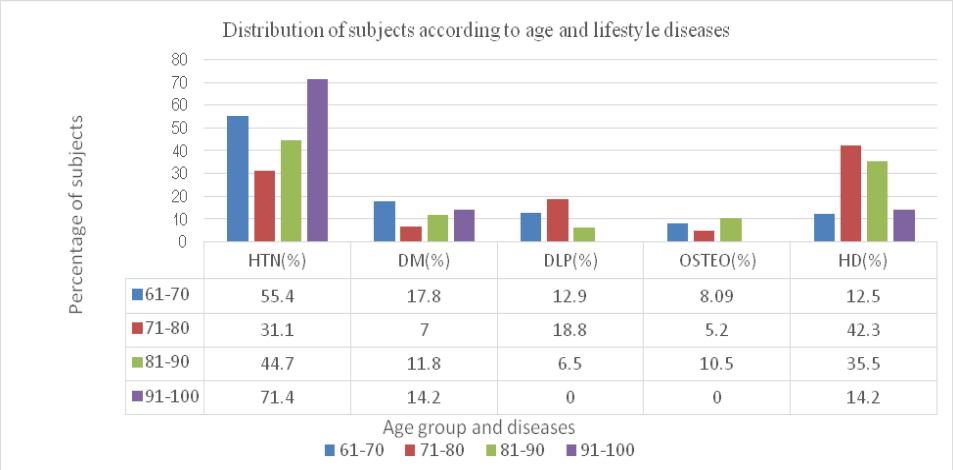

Figure 3: Distribution of subjects according to age and lifestyle diseases.

The above histogram illustrates the correlation of age group and lifestyle disease and it can be concluded that hypertension was the most prevalent lifestyle disease in the age group 61-70 followed by diabetes mellitus, Dyslipidemia and osteoporosis.

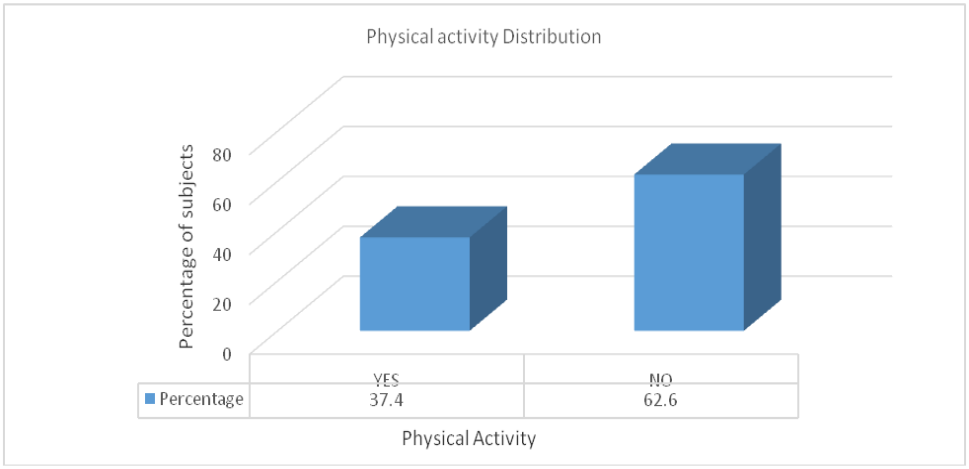

Figure 4: Distribution of subjects according to their Physical activity.

The present histogram supports the above employment graph because out of 500 patients, majority of them are not doing any physical activity (62.6%) and only (37.4%) are having some physical activity which increases the risk for lifestyle diseases.

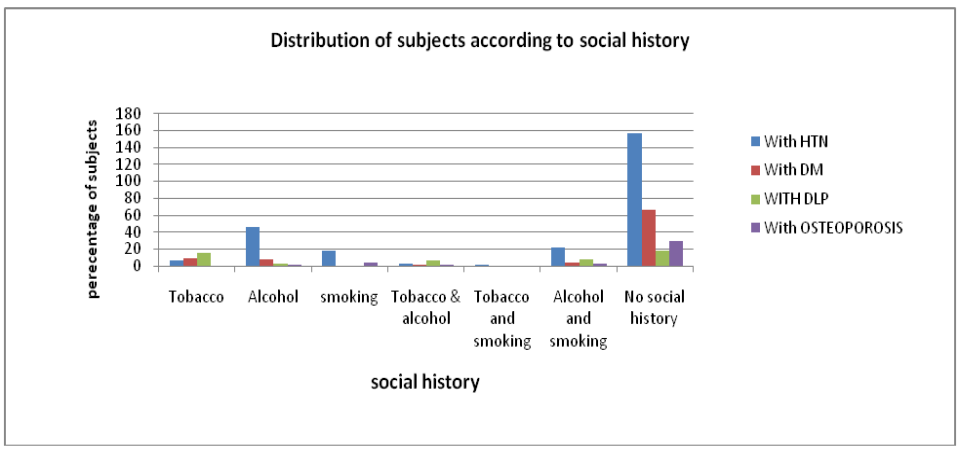

Figure 5: Distribution of subjects according to their Social history.

The above graph illustrates the correlation of social history with the lifestyle disease and it was observed that alcohol (46) and smoking (17) were the most prominent risk factors associated with hypertension and tobacco was associated with the progression of Dyslipidemia. From the graph we can conclude that social history is not alone a cause for lifestyle disease because only a small part of the population is having social habits.

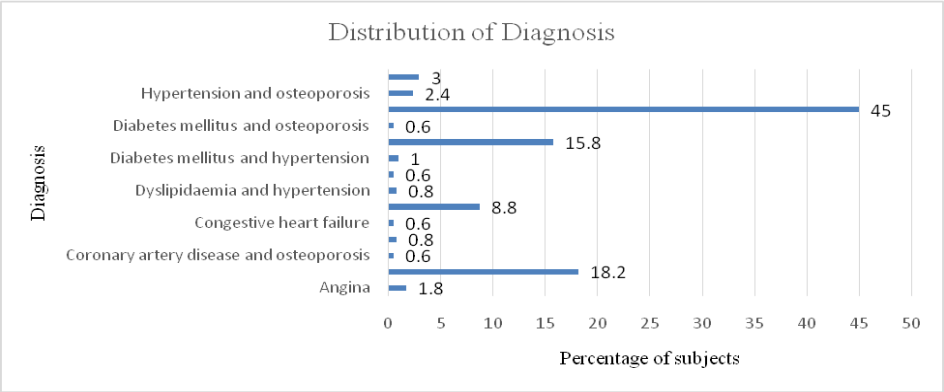

Figure 6: Distribution of subjects according to their diagnosis.

The histogram depicts that out of 500 people selected for the study, with respect to current diagnosis the most prevalent lifestyle disease is hypertension 45%, followed by coronary artery disease 18.2%. Diabetes mellitus holds 15.8% trailed by Dyslipidemia 8.8%. Osteoporosis accounts for 3%, angina 1.8% and congestive heart failure 0.6%. A combination of these diagnoses was also observed in majority of the patients with hypertension and osteoporosis the most 2.4%. The diagnosis of the patients included that disease which they attained after the age of 60 years.

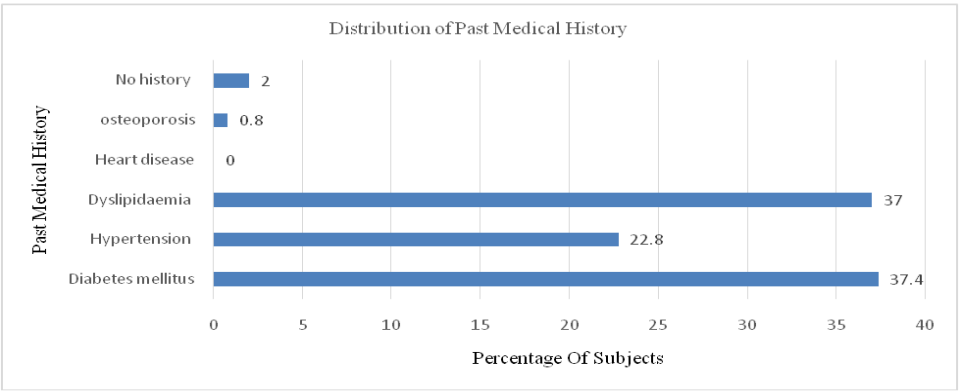

Figure 7: Distribution of subjects according to their past medical history.

The survey included 500 patients, out of them 490 were having past medical histories, with diabetes as a more prominent medical history 37.4% followed by dyslipidemia 37% and hypertension 22.8%. None of them had a past history of heart disease while osteoporosis was seen among few 0.8%. A 2% of them had no prevalence of disease.

Table 1: Distribution of subjects by correlating their past medical history with lifestyle disease.

S. No	Current diagnosis	Past medical history			
		DM	HT	Dyslipidaemia	Osteoporosis
1	Angina	5	10	11	0
2	CAD	56	75	91	0
3	CAD + Osteoporosis	2	3	3	0
4	CAD + Hypertension	4	0	4	0
5	Congestive Heart Failure	0	2	3	0
6	Dyslipidaemia	17	2	**455**	0
7	Dyslipidaemia + Osteoporosis	0	1	3	0
8	Dyslipidaemia + Hypertension	0	0	2	0
9	Diabetes Mellitus	**175**	11	77	1
10	Diabetes mellitus + Osteoporosis	0	0	3	0

11	Diabetes mellitus + Hypertension	0	0	5	0
12	Hypertension	85	**106**	225	3
13	Hypertension + Osteoporosis	5	1	12	0
14	Osteoporosis	1	1	16	**4**

The table exhibits the correlation of past medical history with present lifestyle disease and the results concluded that patients with diabetes as a past history were more prone to hypertension (85). Hypertension was significantly associated with the development of coronary artery disease (75), Dyslipidemia also showed as a risk factor in the progression of coronary artery disease (91) and hypertension (225).

Table 2: Co morbidities of DM.

SI.NO:	COMORBIDITIES	FREQUENCY
1	Retinopathy	61
2	Cardiovascular disease	5
3	DM,HTN and Nephropathy	2
4	DM,HTN,Nephropathy and Neuropathy	1
5	DM,HTN,Nephropathy and Cardiovascular disease	1
6	DM,Nephropathy,Neuropathy and Cardiovascular disease	2
7	DM,Nephropathy and Cardiovascular disease	1
8	Stroke and Retinopathy	2
9	Gout and Retinopathy	1
10	Nephropathy and Retinopathy	10
11	Nephropathy, Retinopathy and Neuropathy	1
12	Asthma, Nephropathy and Retinopathy	1
13	Nephropathy and Retinopathy	2
14	Retinopathy and Neuropathy	11
15	Retinopathy and Cardiovascular disease	5

The table elucidates the total 87diabetic patients in which the most common individual co- morbidity was retinopathy (61), simultaneously nephropathy also occur as individual co- morbidity and the most shared multiple co-morbidity identified was retinopathy and neuropathy (11).

Table 3: Co morbidities of Hypertension.

Si.No	Comorbidities	Frequency
1	Diabetes Mellitus	1
2	Stroke	16
3	Retinopathy	41
4	Cardiovascular disease	33
5	Osteoporosis	1
6	HTN,DLP,Retinopathy, Cardiovascular disease	1
7	DLP,Cardiovascular disease	1
8	Asthma and Cardiovascular disease	1
9	Stroke and Retinopathy	1
10	Stroke, Retinopathy and Neuropathy	1
11	Stroke, Retinopathy and Cardiovascular disease	9
12	Stroke and Cardiovascular disease	41
13	Neuropathy and Retinopathy	8
14	HTN and Retinopathy	7
15	HTN,DLP and Retinopathy	1
16	DLP and Retinopathy	2
17	Asthma and Retinopathy	1
18	Retinopathy and Neuropathy	3
19	Retinopathy, Neuropathy and Cardiovascular disease	1
20	Retinopathy and Cardiovascular disease	17

The above table illustrates, out of the sample of 250 hypertensive patients in which the most common individual co-morbidity observed was retinopathy (41) followed by cardiovascular disease (33) and the most common multiple morbidity was stroke and cardiovascular disease (41).

Table 4: Co morbidities of DLP.

Si.No:	Comorbidities	Frequency
1	Stroke	2
2	Retinopathy	2
3	Cardiovascular Disease	35
4	HTN and DM	1
5	Stroke, Retinopathy and Cardiovascular disease	1
6	Stroke and Cardiovascular disease	7
7	HTN and Retinopathy	1
8	Retinopathy and Cardiovascular disease	4

The above results showed that out of 51 patients with Dyslipidemia, 35 of them had cardiovascular disease as the most shared individual co-morbidity, 7 of them had stroke and cardiovascular as the common multiple co-morbidities.

Among the heart diseases the most common individual co- morbidity identified was stroke, in the case of hypertension retinopathy was the common while Dyslipidemia had cardiovascular disease.

Table 5: Risk factors of Diabetes Mellitus.

Si.No:	Risk Factors	Frequency
1	Age	3
2	Family history	2
3	Age and Diabetes	6
4	Age and Family history	34
5	Age, Family history and Diabetes	4
6	Age and High blood pressure	2
7	Age, High blood pressure and Insomnia	1
8	Age and Insomnia	1
9	Age and DLP	1
10	Age,DLP and Diabetes	2
11	Family history and High blood pressure	4
12	Family history, High blood pressure and DLP	2

The above table elucidates the risk factors of 87 patients who were diagnosed with diabetes and the major individual risk factor leading to diabetes is age (3), concurrently it occur as a multiple risk factor, followed by family history which also act as the main individual and multiple risk factors for diabetes mellitus.

Table 6: Risk factors of Osteoporosis.

Si.No:	Risk Factors	Frequency
1	Age	2
2	Menopause	6
3	Hyperthyroidism	10
4	Age,Family history and High blood pressure	1
5	Age,Family history,High blood pressure and DLP	1
6	Age,High blood pressure and DLP	1
7	Age,High blood pressure,DLP and Diabetes	1
8	Age and Menopause	10
9	Ageand DLP	1
10	Age and Obesity	1
11	Gender,Family history,High blood pressure and Diabetes	1
12	Gender,High blood pressure,DLP and Diabetes	2
13	Family history,High blood pressure and Diabetes	2
14	Family history,High blood pressure and DLP	1
15	Family history,High blood pressure,DLP and Diabetes	5
16	Family history,High blood pressure and Obesity	3
17	Family history,DLP and Obesity	1
18	Family history, Obesity and Diabetes	5
19	Menopause and Hyperthyroidism	1

The table interprets the risk factors of total 36 patients were diagnosed with osteoporosis and the major individual risk factor that cause osteoporosis was found to be hyperthyroidism 10 followed by menopause and the multiple risk factor that cause osteoporosis was found to be age and menopause 10.

Table 7: Risk factors of Hypertension.

Si.No:	Risk Factors	Frequency
1	Age	4
2	Family history	9
3	Diabetes	2
4	Age and Diabetes	16
5	Age and Family history	62
6	Age,Family history and Diabetes	12
7	Age,Family history,High blood pressure and Insomnia	2
8	Age,Family history,High blood pressure,DLP and Diabetes	1
9	Age,Family history and Insomnia	1
10	Age,Family history,Insomnia,DLP and Diabetes	2
11	Age,Family history and DLP	8
12	Age,Family history,DLP and Diabetes	3
13	Age,Family history and Obesity	10
14	Age and High blood pressure	2
15	Age,High blood pressure and Diabetes	1
16	Age,High blood pressure and DLP	2
17	Age,Insomnia and DLP	1
18	Age,Insomnia,DLP and Diabetes	2
19	Age and Menopause	11
20	Age and DLP	1
21	Age,DLP and Diabetes	14
22	Gender,Family history and Obesity	2
23	Family history and Diabetes	8
24	Family history and Insomnia	2
25	Family history,Insomnia and DLP	1
26	Family history,Insomnia,DLP and Diabetes	4
27	Family history and DLP	16
28	Family history,DLP and Diabetes	4
29	Family history,DLP and Diabetes	4
30	Family history and Obesity	16
31	Family history,Obesity and Diabetes	1
32	High blood pressure and Diabetes	1
33	Insomnia and Diabetes	1
34	High blood pressure,Insomnia and Diabetes	1
35	Insomnia and DLP	3
36	Insomnia,DLP and Diabetes	2
37	DLP and Diabetes	6

The table infers the risk factors of, 250 patients who were diagnosed with hypertension, the most common individual risk factor leading to hypertension is family history 9, and age also occurs as a concurrent individual risk factorand the most common multiple risk factor leading to hypertension was found to be age and family history 62.

Table 8: Risk factors of Heart disease (Coronary artery disease, Angina pectoris, Congestive heart failure, Myocardial infarction).

Si.No:	Risk Factors	Frequency
1	Obesity	9
2	Age,Gender,Family history and High blood pressure	1
3	Age and Family history	1
4	Age and Diabetes	5
5	Age and High blood pressure	1
6	Age,Family history and Diabetes	3
7	Age,Family history,High blood pressure and DLP	1
8	Age,Family history,High blood pressure,DLP and Diabetes	1
9	Age,Family history,Insomnia and Diabetes	1
10	Age,Family history,DLP and Diabetes	1
11	Age and High blood pressure	3
12	Age,High blood pressure and Insomnia	1
13	Age,High blood pressure and Diabetes	6
14	Age,Family history and Insomnia	1
15	Age,High blood pressure and DLP	13
16	Age,Insomnia and DLP	1
17	Age,High blood pressure,DLP and Diabetes	12
18	Age and Menopause	3
19	Age and DLP	3
20	Age and Obesity	2
21	Gender,Family history and Obesity	5
22	Gender,Family history,Obesity and Diabetes	1
23	Family history and Diabetes	1
24	Family history and High blood pressure	1
25	Family history,High blood pressure and Diabetes	4
26	Family history,High blood pressure and Diabetes	1
27	Family history,High blood pressure,DLP and Diabetes	2
28	Family history,DLP and Diabetes	2
29	Family history,Obesity and Diabetes	2
30	Family history and Obesity	6
31	Family history,DLP,Obesity and Diabetes	1
32	High blood pressure,Obesity and Diabetes	2
33	High blood pressure,Insomnia and DLP	1
34	Highblood pressure,Insomnia,DLP and Diabetes	1
35	High blood pressure and DLP	5
36	Insomnia and Diabetes	2
37	High blood pressure,DLP and Diabetes	10

The table represents the data of, 110 patients who were diagnosed with heart disease and the major individual risk factor leading to heart disease was found to be obesity 9, simultaneously it occurs as a multiple risk factorsand the major multiple risk factor leading to heart disease was found to be age, high blood pressure and Dyslipidemia13.

Table 9: Risk factors of DLP.

Si.No:	Risk Factors	Frequency
1	Age	6
2	Family history	1
3	Age,Gender and Family history	22
4	Age,Gender,Familyhistory and Diabetes	5
5	Age,Gender,Family history and Stress	1
6	Age,Gender,Family history and Stress	2
7	Age,Gender and DLP	1
8	Age,Gender and Obesity	1
9	Age and Obesity	5
10	Age and Family history	21

11	Age,Family history and Diabetes	3
12	Age,Family history and Stress	1
13	Age,Family history and DLP	1
14	Age,Family history,DLP and Diabetes	4
15	Age,Family history,Obesity and Diabetes	4
16	Age and High blood pressure	1
17	Age,High blood pressure and DLP	4
18	Age and DLP	2
19	Age,DLP and Diabetes	1
20	Age,DLP and Obesity	1
21	Gender and Family history	2
22	Gender,Family history and DLP	3
23	Gender,Family history and Diabetes	2
24	Gender,Family history,Obesity and Diabetes	1
25	Family history and High blood pressure	2
26	Family history and Diabetes	3
27	Family history and Stress	1
28	Family history,Stress and DLP	1
29	Family history,Stress,DLP and Obesity	1
30	Family history,Insomnia and Diabetes	1
31	Family history and DLP	4
32	Family history,DLP and Diabetes	1
33	Family history,DLP and Obesity	2
34	Family history,Obesity and Diabetes	1
35	Age,Family history,DLP and Diabetes	1

The table illustrates the risk factors of total 51dyslipidaemic patients and the major individual risk factor causing Dyslipidemia was found to be age 6, followed by family history and the major multiple risk factor causing Dyslipidemia was found to be age, gender, family history 22.

Table 10: Distribution of subjects of multiple diagnoses with multiple risk factors.

Sl no	Multiple diagnosis	Multiple risk factor	Frequency
1	Hypertension and osteoporosis	Dyslipidemia + diabetes, age+ menopause	3
		Dyslipidemia + Diabetes, age+ menopause+ family history+ insomnia	3
		age+ menopause+ family history	3
		Age + menopause	1
		Age + Dyslipidemia + menopause	1
		Family history + stress	1
2	Coronary artery disease and osteoporosis	High blood pressure + Dyslipidaemia + diabetes	3
3	Coronary artery disease and hypertension	Age + family history+ high blood pressure+ diabetes + Dyslipidaemia	3
		Age + family history+ high blood pressure+ diabetes	1
4	Dyslipidemia and osteoporosis	Age + family history+ menopause	3
		obesity + high blood pressure	1
5	Diabetes mellitus and hypertension	Age + gender+ diabetes+ hyperthyroidism	5

The table above elucidates the data of multiple diagnosis with multiple risk factors and the most common multiple diagnosis was found to be hypertension and osteoporosis and the multiple risk factor associated with it was Dyslipidemia+ diabetes, age+ menopause.

Table 11: Distribution of subjects of multiple diagnoses with multiple comorbidities.

Multiple diagnosis	Multiple comorbidities	Frequency
CAD+ osteoporosis	HTN+DLP+nephropathy+retinopathy+neuropathy	2
Dlp+ osteoporosis	Stroke+CVD	1
HTN+osteoporosis	DLP+stroke+CVD	2
CAD+HTN	DM+HTN+DLP+nephropathy+retinopathy+CVD	3
DM+HTN	HTN+nephropathy+retinopathy	3

The table reveals the data of multiple diagnoses with multiple co- morbidities and the most common multiple diagnosis was found to be coronary artery disease and hypertension and the multiple co- morbidities associated with it was diabetes mellitus+ hypertension+ Dyslipidemia+ nephropathy+ retinopathy+ cardiovascular disease.

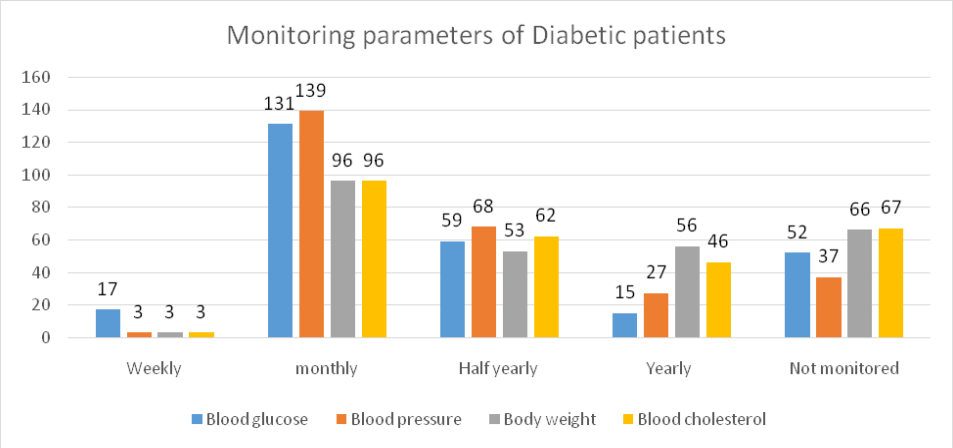

Figure 8: Monitoring parameter of Diabetes.

The above graph exemplifies the total diabetic patients (274), majority of them are monitoring their blood glucose and blood pressure level monthly, and a minute of them does not know the importance of checking monitoring parameters regularly.

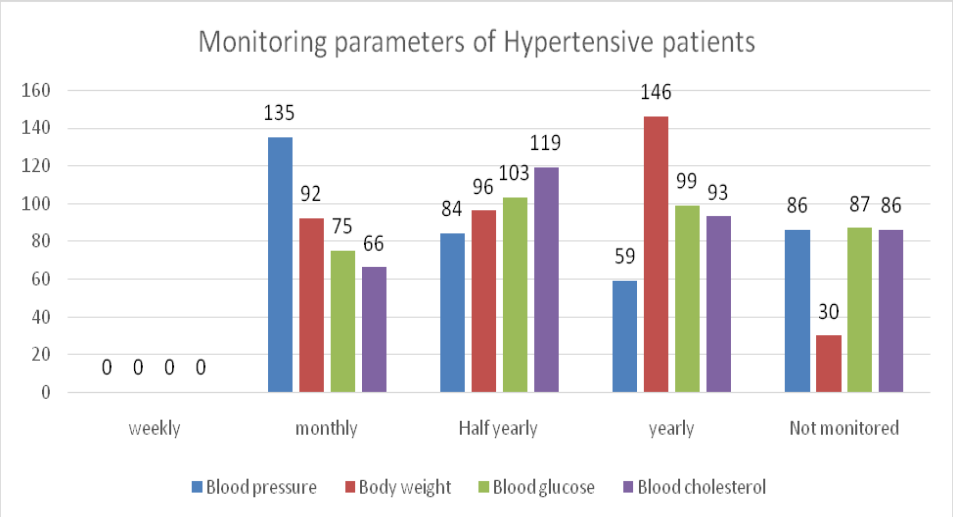

Figure 9: Monitoring parameters for hypertensive patients.

The histogram characterizes the 364 patients who were previously and presently diagnosed with hypertension, none of them were measuring their blood pressure weekly and 135 patients are measuring their blood pressure monthly. Blood glucose and blood cholesterol were checked on half yearly basis, while some of them were not monitoring their parameters.

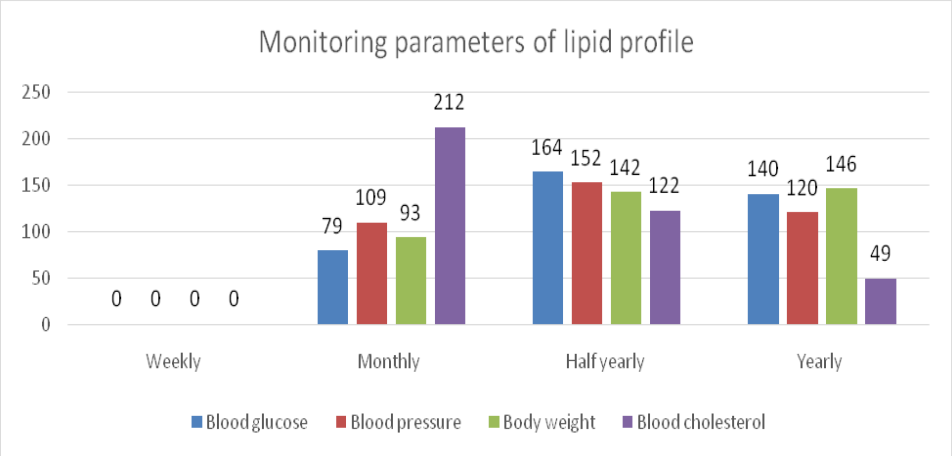

Figure 10: Distribution of frequency of monitoring parameters of lipid profile.

The above histogram represents the monitoring parameters of 236dyslipidaemic patients who were previously and presently diagnosed in which none of them had undergone a weekly check-up while most of them did it in a monthly basis. This shows that many patients are unaware about the importance of checking their cholesterol level regularly.

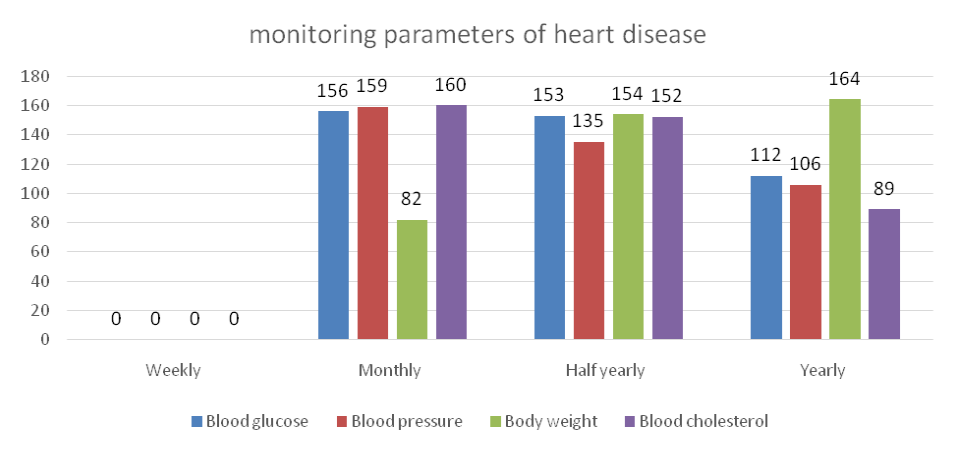

Figure 11: Distribution of frequency of monitoring parameters of heart disease.

The above grid demonstrates the data of total 110 heart disease patients, the frequency of monitoring parameters of heart disease was analyzed and it was found that most of them did their regular check-ups on blood glucose, blood pressure and blood cholesterol at monthly schedule.

Findings

The salient findings of the study were:

- Geriatric patients with in the age group 61-70 were more affected with lifestyle disease.
- Females are more affected with lifestyle disease than males.
- In the age group 61-70 hypertension was the most prevalent lifestyle disease followed by diabetes mellitus, Dyslipidemia and osteoporosis.
- With respect to the physical activity lifestyle disease were more in population with least physical activity.
- The correlation of social history with the lifestyle disease shows that alcohol and smoking were the most prominent risk factors associated with hypertension and tobacco was associated with the progression of Dyslipidemia.
- Most common incident lifestyle disease in geriatrics was hypertension followed by diabetes mellitus and Dyslipidemia.
- The correlation of past medical history with present lifestyle disease concluded that patients with diabetes were more prone to hypertension. Hypertension was significantly associated with the development of coronary artery disease, Dyslipidemia also showed as a risk factor in the progression of coronary artery disease.
- Of the total 87 diabetic patients included in the study, the most common individual co-morbidity was retinopathy and the most shared multiple co-

morbidity identified was retinopathy and neuropathy.

- The most common individual co-morbidity in hypertensive patients was retinopathy and the multiple co-morbidities were found to be stoke and cardiovascular disease.

- Most of the dyslipidemic patients were having cardiovascular disease as the individual co-morbidity and stroke and cardiovascular disease were the multiple co-morbidity.

- The leading individual risk factor for diabetes was found to be age supported by Family history.

- In the case of osteoporosis, Hyperthyroidism was the individual risk factor; age and menopause were multiple risk factors.

- Family history was found to be individual risk factors for hypertension supported by age which leads to risk factors.

- The files of 110 patients who were diagnosed with heart disease revealed that major individual risk factor leading to heart disease was found to be obesity and the major multiple risk factors leading to heart disease was found to be age, high blood pressure and Dyslipidemia.

- In Dyslipidemia, age was found to be most common individual risk factor followed by age, gender, family history contributed for the multiple risk factors.

- Considering the whole population with lifestyle disease,the most common multiple diagnosis and associated multiple risk factors were scrutinized, it was found to be hypertension and osteoporosis and the multiple risk factor associated with it was Dyslipidemia+ diabetes, age+ menopause.

- The data of multiple diagnoses with multiple co-morbidities were also evaluated and the most common multiple diagnosis was found to be coronary artery disease and hypertension and the multiple co- morbidities associated with it was diabetes mellitus+ hypertension+ Dyslipidemia+ nephropathy+ retinopathy+ cardiovascular disease.

- The monitoring parameters of each lifestyle disease were assessed and with respect to diabetes mellitus, they had monthly check up on their blood glucose levels, with respect to hypertension, they checked their blood pressure levels on a monthly basis. In the case of heart disease, they had a monthly monitoring on their blood glucose, blood pressure, blood cholesterol levels.

DISCUSSION

- The prevalence of lifestyle disease is increasing worldwide; the state of Kerala has the highest prevalence of coronary artery disease (CAD) among all Indian States with a rural prevalence of 7.5% and urban prevalence of 12%.[4] This was a prospective observational study carried out to assess the prevalence of lifestyle disease in geriatric patients. The study was carried out in a rural area of Pathanamthitta.

- The total sample size of the population was about 500 geriatrics. Most of the patients were from the age group of 61-70. Highest prevalence of lifestyle diseases was in female population about (52.2%) this might be due to menopause.[30] This has been supported by a study conducted in Guntur district of Andhra Pradesh.[30]

- On correlating age group with lifestyle disease, cardiovascular disease is more prevalent in age group 71-80 but in the age group of 61-70 the most prevalent was hypertension, diabetes mellitus, Dyslipidemia, and osteoporosis. The prevalence of hypertension, diabetes mellitus, and Dyslipidemia is one of the risk factors for inducing cardiovascular disease because the above mentioned disease can aggravate the cardiovascular events.

- The most prevalent lifestyle disease for geriatric patients included in our study was hypertension. The reason for increase in hypertension is due to loss of texture of vascular smooth muscles as well as endothelial dysfunction and this has been contributed by diabetes mellitus as well as alcohol and smoking and increasing age which is evident from our study. Hypertensive patients were more prone to be affected by cardiovascular disease, the reason behind was due to the high blood pressure which exerts force against arteries, making them vulnerable to the narrowing and plaque associated with atherosclerosis.[31] A study conducted in Chhattisgarh observed the overall prevalence of hypertension 50% among age $\geq$ 60 years.[32]

- Family history, age, sedentary lifestyle as well as obesity has been quoted as a risk factor for diabetes due to the combined effects of increasing insulin resistance and impaired pancreatic islet function with aging in various studies.[33] Our study too supports this statement.

- Correlation of the past medical history with the present lifestyle disease and it was observed that people with diabetes mellitus had a higher incidence of evolving hypertension. The underlying reason was due to increased peripheral artery resistance caused by vascular remodelling and increased body fluid volume associated with insulin resistance.[31]

- The third most prevalent lifestyle disease in our population was dyslipidemia, the main reason recognized wereage, gender, and family history followed by diabetes due to the increase in levels of lipoproteins that occurs with age[34] followed by sedentary lifestyle, obesity, and food habits. Food habits are also an important risk factor for dyslipidemia but we were not able to monitor it. Dyslipidemia can lead to hypertension by affecting functional and structural arterial property and promote atherosclerosis that can impair blood pressure regulations.[35] Similar study conducted on the 'prevalence of dyslipidemia in geriatric rural population residing in a hilly district of uttarakhand state, India' have shown that the overall prevalence of dyslipidemia was 50.6%.[36]

- Osteoporosis was most popular in female patients of the total population involved in the study, this can be a causative factor linked to decreased oestrogen level which in turn can lead to low bone mineral density associated with menopause. A study conducted on **'**Factors associated with osteoporosis among older patients at the Geriatric Centre in Nigeria shows that the prevalence of osteoporosis was higher in old age group, Females 65.8.[37]

- Most of the geriatric patients included in the study are unemployed or those leading a retired life. These have contributed to the lack of physical activity as well as sedentary lifestyle which has become a major cause for lifestyle diseases. Another study supported our results, a study conducted on comparing Employment status and lifestyle disease concluded that women employed outside the home had a decreased risk of CHD compared to homemakers.[38] Another study conducted on sedentary behaviour and health outcomes conclude that doing regular physical activity can make you feel good about yourself and it can have a number of benefits for your health. For example, it reduces the risk of developing heart disease, stroke, high blood pressure, many cancers, type 2 diabetes and 'thinning' of the bones (osteoporosis).[39]

- Majority of the population were having social habits, in that the most prevalent social habits present in our study population was alcohol, smoking, tobacco. Alcohol plays an important role in inducing hypertension, which causes loss of relaxation due to inflammation and oxidative injury of the endothelium by angiotensin II leading to inhibition of endothelium-dependent nitric oxide production. Tobacco plays a major role in inducing diabetes; it has been linked to increased central adiposity, which contributes to insulin resistance and diabetes. It also can cause changes in lipid profile which include low level of HDL cholesterol and increased level of TG. Smoking is an important factor for osteoporosis, by reducing bone mass especially among men and postmenopausal women. A study on Impact of Lifestyle on Health In recent decades, life style as an important factor of health. Millions of people follow an unhealthy lifestyle. Hence, they encounter illness, disability and even death.[40]

- According to our study the most common comorbidity for hypertension was found to be retinopathy (41) and stroke (16) because high blood pressure can cause damage to the retina's blood vessels, limit the retina's function. When combined with cholesterol deposits in the blood vessels, the risk of heart attack and stroke increases.[41]

- The study assessed the main co morbidities of Dyslipidemia and was found to be cardiovascular disease (35), followed by a combination of stroke and cardiovascular disorders.Dyslipidemia can lead to hypertension by affecting functional and structural arterial property and promote atherosclerosis which result in cardiovascular diseases.[35]

CONCLUSION

The study concluded that Geriatric patients with in the age group 61-70 were more affected with lifestyle disease, considering gender; females are more affected with lifestyle disease than males. Hypertension was the most prevalent lifestyle diseasefollowed by diabetes mellitus, Dyslipidemia and osteoporosis. Lack of physical activity as well as sedentary lifestyle has become a major contributing factor for lifestyle disease. Social habits such as alcoholism, smoking and tobacco use has a positive impact in the development of lifestyle disease. With regards to drug therapy given, the pattern of prescribing was not according to standard guidelines.

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