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PREVALENCE AND IMPACT OF CHRONIC DISEASES ON COMMUNITY

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ABSTRACT

In early 70's and 80's, chronic diseases like hypertension and diabetes were reported in the age group above 60 years. But these days they became very common in late 30's and early 40's. This is all due to a number of reasons such as change in lifestyle, eating habits, lack of physical exercise, etc. Due to this the people has to spare time for exercise but in olden days the exercise was a part of daily routine. Our study includes a survey on prevalence and impact of chronic diseases such as diabetes and hypertension. The main aim of this survey is to pick people in the age 35 of to 50 years suffering from chronic diseases from a particular area and find of the effect of diseases.[1] This survey is conducted in the CHARKAM village, which is located in ANAKAPALLI district. This survey aims to gather information about the people in Charkam village suffering from diabetes, hypertension and both. It also aims to know about the disease condition, its severity, therapy and dose of the people participating in survey.[2] It also aims to identify the prevalent diseases and their effects on the people, ensuring the preventive measures taken by the villagers to cure the chronic diseases.[1,2] This survey is about the useage of drugs and treatment taken by the people with respect to the severity of the diseases. With this survey we learn that the people are well aware about the diseases, their complications, difference between self medication and prescribed medication. The people in this village visit doctors frequently based on the severity of the disease, and use the prescribed medicines from a registered practitioner.[2] In olden days, traditional medicine was practiced more precisely, but now a days useage of allopathy medicine had increased leaving evidence to develop treatment and diagnostic tools to cure a disease. The people in this village have knowledge to use allopathic medicine. They were aware about the difference between the usage traditional and allopathic medicine.[2,3]

KEYWORDS: Chronic diseases, morbidity, mortality, prevalence, Disease surveillance, health inequalities, Disease prevention, healthcare management.

INTRODUCTION

Diabetes

It is a metabolic disorder characterized by hyperglycemia, glycosuria, hyperlipidaemia and sometimes ketonaemia. A widespread pathological change in thickening of capillary basement membrane, increase in vessel wall matrix and cellular proliferation resulting in vascular complications like lumen narrowing, early antherosclerosis, sclerosis of glomerular capillaries and peripheral vascular insufficiency.[1,3]

TYPE 1 DIABETES

Type 1 diabetes is also known as Insulin dependent diabetes mellitus. There is beta cell destruction in pancreatic islets majority of cases are autoimmuno (type 1) antibodies that destroy beta cells are detectable blood, but some are idiopathic (type1B)- beta cell antibody is found. In all type1 can circulating insulin levels are low or very low and patients are more prone to ketosis. This type is less common and has a low degree of genetic predisposition.[4]

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TYPE 2 DIABETES

Type 2 diabetes is also known as noninsulin dependent diabetes mellitus (NIDDM) / maturity onset diabetes mellitus. There is no loss or only moderate reductivity in beta cell mass; insulin in circulation is low or normal or even high, no anti beta cell antibody is demonstrable; as a high degree of genetic pre deposition; generally has a late onset (past middle aged).[3,4]

HYPERTENSION

Hypertension(HT) also known as high blood pressure. Hypertension is a very common disorder, particularly past middle age. It is not a disease in itself, but is an important risk factor for cardiovascular mortality and morbidity. The cutoff manometric reading between normotensives and hypertensives is arbitrary.[4] For practical purposes 'hypertension' could be that level of BP at or above which long-term antihypertensive treatment will reduce cardiovascular mortality.[5] Almost all HT management guidelines including NICE (2011), JNC8 (2014), WHO-ISH (2003), European Society of Hypertension (2007, 2013) define the cut-off level to be 140 mm Hg systolic and 90 mm Hg diastolic. However, the JNC8 have raised the defining level to 150/90 mm Hg for individuals above 60 years of age. Epidemiological studies have confirmed that higher the pressure (systolic or diastolic or both) greater is the risk of cardiovascular disease.[4,5]

Majority of cases are of essential (primary) hypertension, i.e. the cause is not known. Sympathetic and renin-angiotensin systems (RAS) may or may not be overactive, but they do contribute to the tone of blood vessels and c.o. in hypertensives, as they do in normotensives. Many antihypertensive drugs interfere with these regulatory systems at one level or the other Antihypertensive drugs, by chronically lowering BP, may reset the barostat to function at a lower level of BP.[5]

OBESITY

Obesity can increase the risk of hypertension because the heart has to work harder to pump blood to all body cells. Excess fat can also damage kidneys, which help regulate blood pressure.[6] Insulin resistance associated with obesity can contribute to the development of type2 diabetes. Diabetes can also damage the kidneys, which can lead to salt and water retention and raised blood pressure.[7] The combination of hypertension and diabetes increase the risk of cardiovascular diseases, including coronary heart disease, congestive heart failure and stroke.[6,7]

MATERIALS AND METHODS

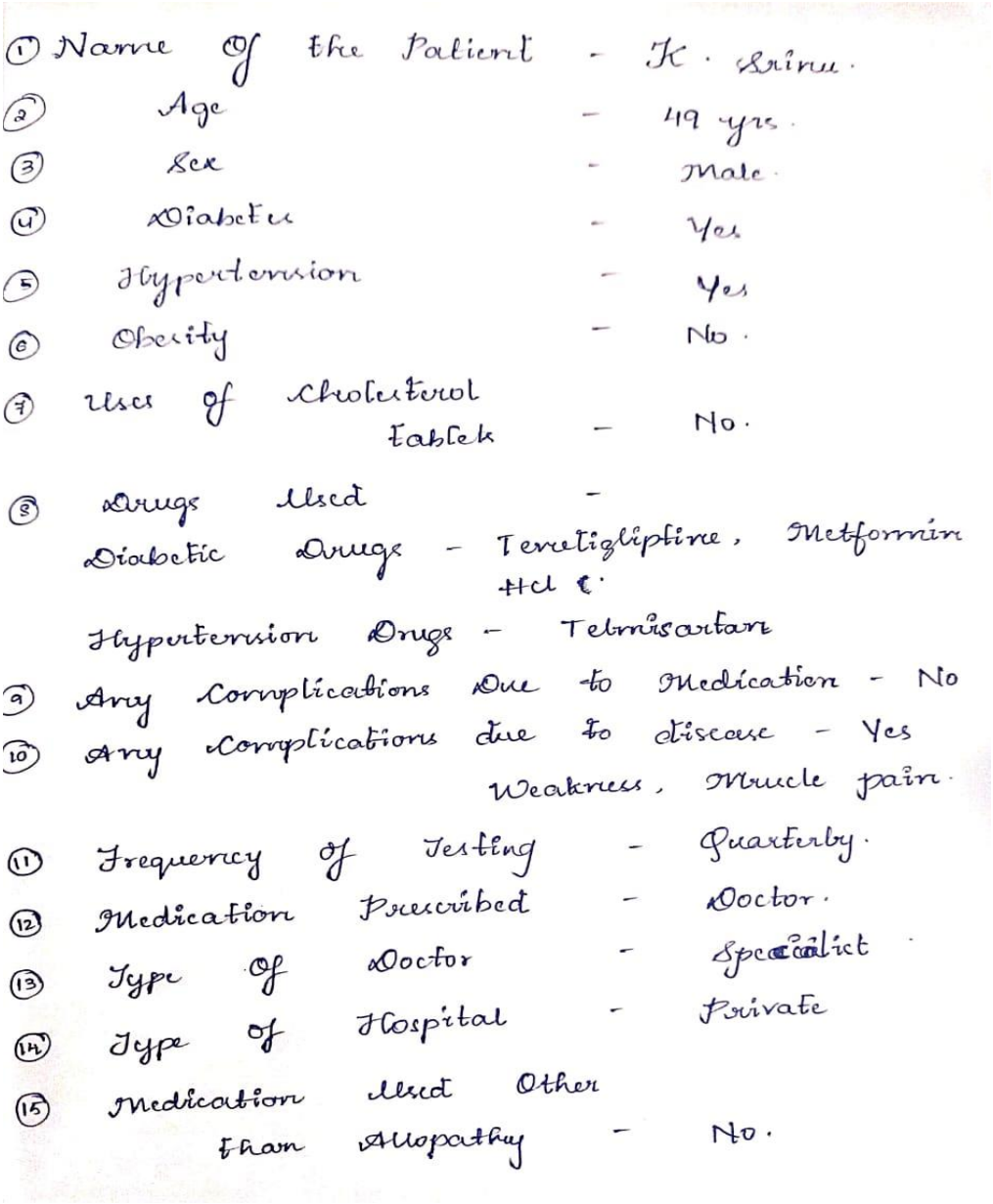
We set out to study the patient effected age between 35 to 50. In this females and males by checking there prescriptions. Our study wants to evaluate, based on specific questionnaire, answers of patients from charkam village, about hypertension and diabetes. The questionnaire was developed to gather information about drugs, doses of drugs used by diabetes and hypertension patients.[6,7]

A cross-sectional study was carried out in village, in selected people having diabetes or hypertension or both on basis of an anonymous questionnaire asked to patients who agreed to answer the proposed questionnaire. The questionnaire was brief and easy to answer questions for adults (Table 1). Patients from the age 35 to 50 were selected. questionnaires were selected. Practically, every question had at least one answer. The large number of questionnaires proposed in the study has been established in order to draw some relevant conclusions.[7]

Table 1: Questionnaire to patient.

Questions	Answers
1. Name of the patient	
2. Age	
3. Sex	Male Female
4. Diabetics	Yes No
5. Hypertension	Yes No
6. Obesity	Yes No
7. Usage of cholesterol tablets?	Yes No
8. Any complications due to medication?	Yes No
9. Any complications due to disease?	Yes No
10. Frequency of testing?	Quarterly Half yearly
11. Medication prescribed?	Self Doctor
12. Type of doctor?	Specialist General
13. Type of hospital?	Government Private
14. Medication used other than allopathy?	Yes No
15. Doing physical exercise at home?	Yes No

The questionnaire was piloted on patients for clarity, relevance, acceptability and time to completion. Data collection took place over a 1month during normal day in village. All questionnaire were analyzed regardless on their completeness. The questionnaire is reliable under terms of the study and may be used for research, medical education and other purposes.



① Name of the Patient - K. Srinu.
② Age - 49 yrs.
③ Sex - Male.
④ Diabetes - Yes
⑤ Hypertension - Yes
⑥ Obesity - No.
⑦ Uses of Cholesterol Tablets - No.
⑧ Drugs Used -
Diabetic Drugs - Teneligliptine, Metformin Hcl ℮.
Hypertension Drugs - Telmisartan
⑨ Any Complications Due to Medication - No
⑩ Any Complications due to disease - Yes
Weakness, Muscle pain.
⑪ Frequency of Testing - Quarterly.
⑫ Medication Prescribed - Doctor.
⑬ Type of Doctor - Specialist
⑭ Type of Hospital - Private
⑮ Medication Used Other Than Allopathy - No.

1. Name of the Patient - A. Lakshman Rao
2. Age - 43
3. Sex - Male
4. Diabetes - Yes
5. Hypertension - No.
6. Obesity - Yes.
7. Usage of Cholesterol Tablets - No
8. Drugs used :-

   Diabetic Drugs : Voglibose, Glimeperide, and Metformin Hcl tablets dose: (0.2 mg, 2mg, 500mg)
9. Complications Due to Medication - No.
10. Complications Due to disease - Yes.

    Cognitive impairment
11. Frequency of Testing - Quarterly
12. Medication Prescribed - Doctor.
13. Type of Doctor - General
14. Type of Hospital - Private Hospital
15. Medication used other than Allopathy - No.

RESULTS AND DISCUSSION

The analysis of the main components of the evaluations of the survey revealed three satisfaction factors: awareness, the tablet use and frequency of treatments. The sex category had to be checked and the questions were usually with a single answer. Patients have answered the questionnaire each patient were assigned to an sex group (Figure 1). Patients who completed the questionnaire were men (56%), women(44 %).

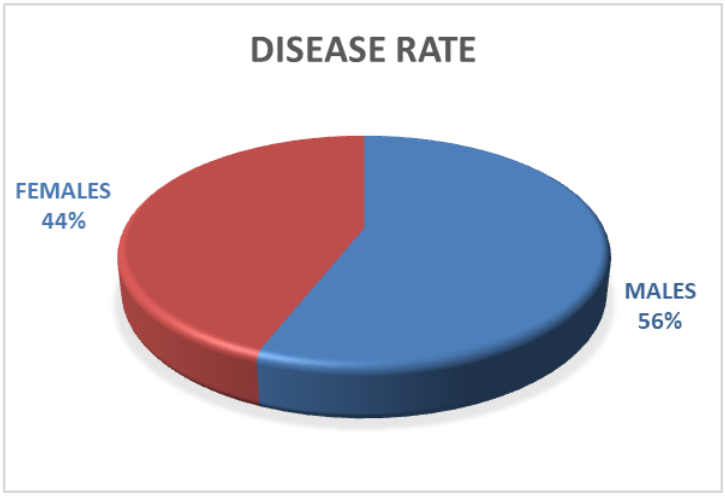


Figure 1: Disease rate based on gender.

100% of all people have responded to frequency of testing of diabetes and hypertension that is monthly, 2 months, 3 months. This explains that everyone is testing regularly (figure 2).

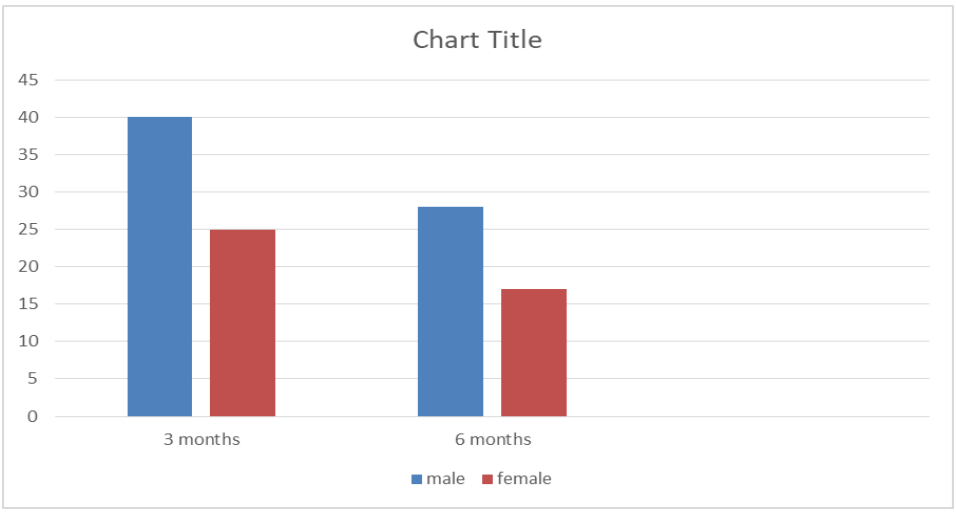


Figure 2: Frequency of testing based on gender.

Taking into account that patients with chronic illness from patients, 52% people are having hypertension (males and females), 44% people are having diabetes (males and females) and 4% people are having both diabetes and hypertension (males and females).

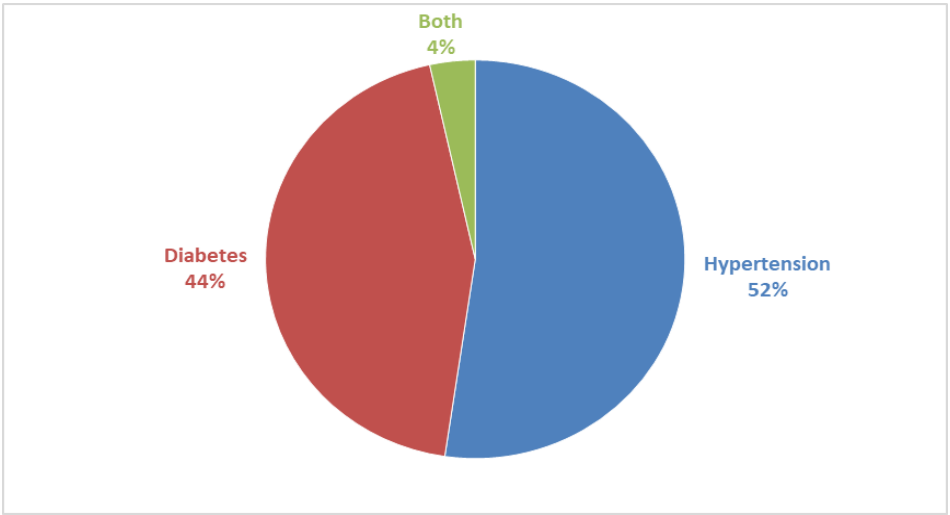


Figure 3: Number of people with chronic disease.

A single drug is usually used in the treatment for hypertension. However, monotherapy is for patients with mild hypertension or isolated systollic hypertension. The European society of hypertension (ESH) guidelines recommend the use of four major classes of anti-hypertensive agents in clinical practice:

1. Renin - angiotension - aldosterone system (RAAS)blockers, including angiotensin receptor blockers (ARB) or angiotensin- converting enzyme inhibitors (ACEi)
2. Calcium channel blockers (CCB)
3. Thiazide and Thiazide like diuretics (DIU)
4. Beta blockers.[7,8]

Many international guidelines recommend initiation of antihypertensive treatment with a SPC containing RAAS blocker (ARB or ACEi) and dihydropyrine CCB or a thiazide/ thiazide like diuretic for most patient. Monotherapy should be reserved for patient with low atherosclerotic CVD risk and BP<150/95 mm Hg or normal BP and very high CV risk or advanced age.[8] The inclusion of beta blockers (particularly those exhibiting beta 1 selectivity and additional direct vasodilation property) as a part of major anti-hypertensive drug classes to start in the 2023 ESH guidelines as received sum criticisms because these drugs less effective in preventing stroke and cardiovascular mortality. However the task force of ESH guidelines considered that beta blockers should be at initiation of treatment in patients with specific clinical conditions such as heart failure with reduced ejection fraction , chronic coronary syndromes, post myocardial infraction, and arterial fibrillation requiring heart rate control moreover , with lower risks hypertensive patients with elevated resting heart rate> 80bpm and younger hypertensive women planning pregnancy or already pregnant may be used in mono therapy or combination. These reasons justify the position of beta blockers as one of the major anti-hypertensive drug classes.[7,8]

These recommendations are supported by robust evidence that combination therapy produces greater BP reductions than mono therapy, reduce side effects of individual components, improves therapeutic adherence and long term persistence on treatment and achieves earlier BP control.[8]

Among hypertension patients, 52.7% were taking monotherapy and 47.2% were taking combination therapy (Figure 4). The most common monotherapy was atenolol or telmisartan and the most common combination therapy was amlodipine and atenolol.[8]

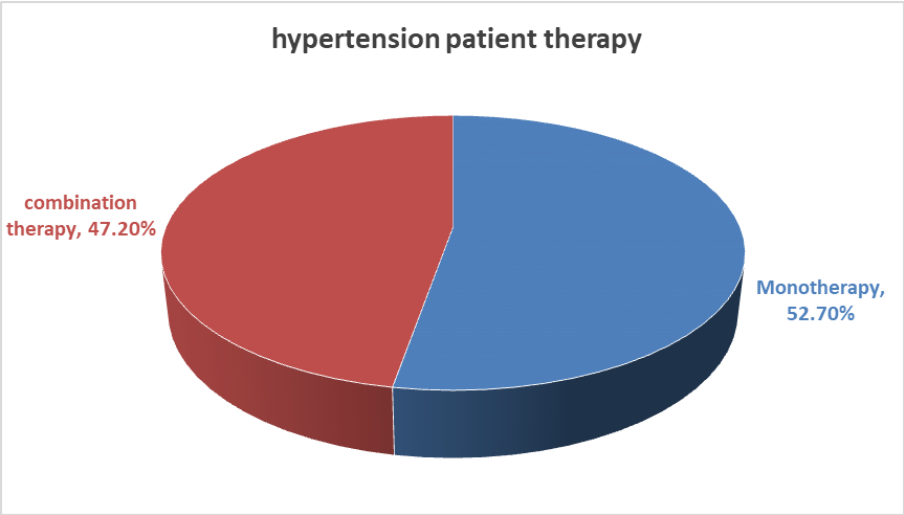


Figure 4: Hypertension patient therapy.

A single drug may be given to diabetic patient when it's the most appropriate treatment for their clinical situation such as: patient response, HbA1c levels. In some cases, a doctor may recommend a single pill with combination of drugs to reduced the number of pills patient need to take.[8,9]

Due to the complicated pathological progress of diabetes particularly in the case of T2D, the normal function of beta cells will gradually decline with the prolongation of disease course. in this case monotherapy will not achieve the desired effect of blood glucose in some specific patients and demonstrated by the UKPDS study, the proportion of

patients maintaining glycated haemoglobin A1c levels < 7% by monotherapy has been decreasing year by year during the follow up period, suggesting that the monotherapy may not be able effectively control hyperglycemia in the long term. Therefore an increasing number of clinicians are embracing drug combination therapy.[8,9] Drug combination therapy is the medical strategy that involves the simultaneous administration of two more drugs, with the aim of achieving a more pronounced therapeutic effect than using a single drug alone. The mechanism of action in drug combination therapy is multifaceted, and encompassing synergistic effect, complimentary effects and more this comprehensive approach contribute to the effectiveness of the treatment. from these we systematically assessed the effectively and safety of drug combination therapy for diabetes and the associated complications based on existing studies so as to provide insights and guidance for clinical to choose drug combination for effective treatment in clinical practice. Based on exciting clinical study, with primarily focus on the seven classes of antidiabetic medications.[9] (Table 2)

Table 1: Commonly used pharmacological classes.

Pharmacological class	Mode of action
Biguanides	AMPK activation
Sulphonylureas	K(ATP) channel blocking
SGLT2 inhibitors	SGLT2 inhibition
DPP -4 inhibitors	DPP -4 inhibition
GLP- 1 receptor agonist	Incretin effect
Alpha glucosidase imhibitors	Alpha glucosidase inhibition
Thiazolibinediones	PPAR gamma activation

Analysing, their potential combinations for treatment of diabetes and its complications. Despite the growing interest potential in multi drug approaches, their translation into clinical practice necessitates further exploration and validation through well designed clinical trails.[9]

Among diabetic patients, 13% were taking monotherapy and 87% were taking combination therapy (Figure 5). The most common monotherapy drug is metformin and the most common combination therapy drug is metformin and vidagliptin.[9,10]

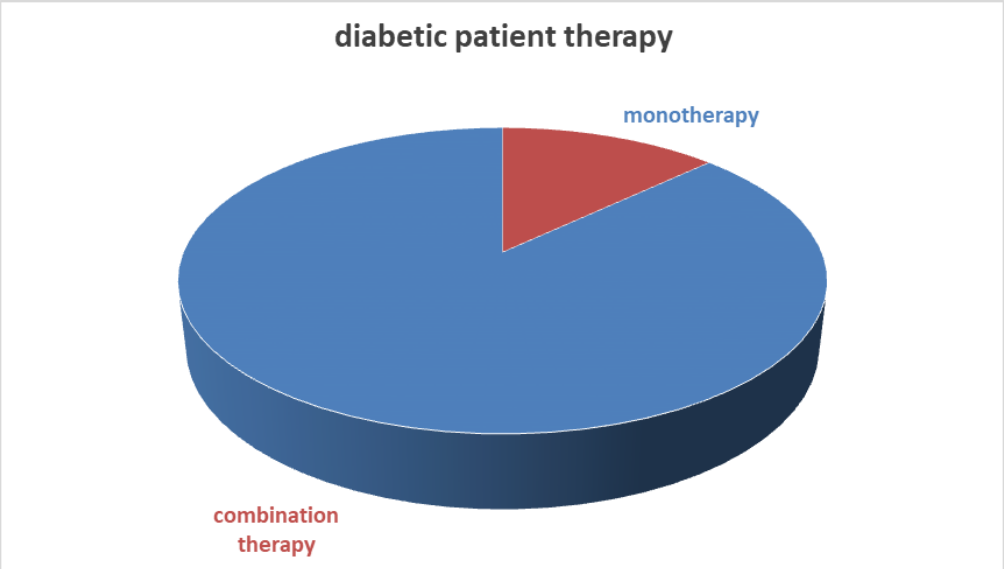


Figure 5: Diabetic patient therapy.

The study exhibited that hypertension was the most common co-morbid disease. The pathophysiology behind the development hypertension in diabetic patient is the vascular remodeling with the progression of disease that lead to vascular resistance and increasing blood pressure. Beside this, increasing in vascular fluid volume due to insulin resistance associated hyperinsulinemia in type 2 diabetes is the another reason.[10]

Complications due to diabetes include Hypoglycemia, obesity, thirst, frequent urinatiion, cognitive impairment, pain in hands and feet etc. Complications due to hypertension headache, nosebleeds, fatigue, sleep distrubances, anxiety and stress, mild cognitive impairment, blurred vision.

The combination of diabetes and hypertension can have a synergetic effect on cholestrol levels, leading to a significant increase in the risk of heart diseases and stroke. From this survey, we have known that individuals with both diabetes and hypertension are more likely to have high cholestrol levels and experience cardiovascular diseases.[10,11]

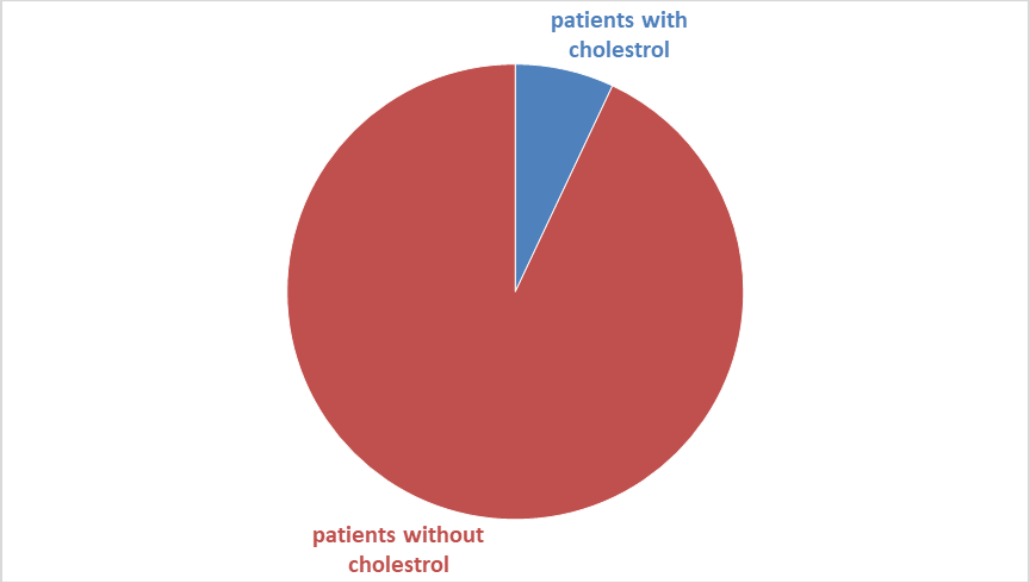


Figure 6: Number of people with cholesterol.

CONCLUSION

This survey underscores the urgent need for comprehensive healthcare strategies addressing chronic diseases such as hypertension, diabetes areas in rural areas. By addressing these challenges we can improve the quality of life for villagers living with chronic conditions.[10]

This survey is conducted in the charkam village, which reveals significant burden of chronic diseases among the rural population. This survey access the awareness, and management of chronic conditions in rural areas.[10,11]

In this survey, a total number of villagers were taken. In this survey, we have come to know that 56 % of men suffer from chronic diseases and about 44 % of women suffer from chronic diseases.[12]

Based on testing frequency, males have higher rate of testing frequently compared to females. It was known that males have high percentage of chronic diseases compared to females because they are more tend to smoke and drink alcohol much more frequently and were predisposed to a wider range of health risks.[11,12]

We have come to know that the major causes for these chronic health conditions are due to change in life styles. When we compare traditional mode of living to advanced lifestyles of the people. Olden days people are physically fit due to the work they do, hence they are less prone to chronic health conditions where as now days due to work habits, lack physical exercise and diet which leads them to the exposure of chronic diseases.[12]

Monotherapy was known to show more effect at earlier stages of disease, later on using continuously the monotherapy have gradually decreased its effect compared to monotherapy. Combinational therapy have shown greater effect even on continuous usage we have come to know that many of them visits private hospitals though they come from a village. It was known that they visit doctors and use only the medicines prescribed by the doctors.[10,12]

By conducting this survey we have come to know that the villagers from charkam village have knowledge on the diseases they are suffering. They are aware of the health conditions and symptoms of the diseases beforehand. They were taking all the preventive measures to cure the diseases they are also aware about the side effects and adverse effects of the medication they use. They do not use medications other than prescribed ones. It was known that health care camps are conducted in the village regularly to guide the villagers about different diseases and their severity. From this, camps the villagers have gained the knowledge to take preventive steps to cure the diseases without neglecting them.[12]

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