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Original Article

Clinical Study of Prevalence and Incidence of Obesity and its Complications

Authors
Dr M.N. Shamala. MD.[1], Dr S.Senthilnathan. M.D.[2*]
[1]Assistant Professor, Department of Medicine, Annapoorna Medical, College and Hospital, Salem, 637014, Tamil Nadu, India
[2]Associate Professor, Dept. of Medicine, AMC & H, Salem, 637014, Tamil Nadu, India
*Corresponding Author
Dr S.Senthilnathan. M.D.
Associate Professor, Dept. of Medicine, AMC & H, Salem, 637014, Tamil Nadu, India

Abstract

Background: *In recent years, there has been a marked change in life-style of south Asian countries caused by economic growth, affluence, urbanization and dietary westernization. Few studies on the prevalence of obesity and its complications in Indian population have been reported. However, there has been scarce literature on study of its prevalence in India with criteria suggested by World Health Organization (WHO) for Asians. Informations on such public Health issues.*

Introduction: *Obesity, refers to excess body fat, has become an important public health problem. Its prevalence continues to increased worldwide. As the prevalence of obesity increases the burden of its associated co-morbidities. Body fat distribution and its effect on mortality and morbidity is current research topic of interest. Obesity occurs in population groups throughout the world. In recent years there has been a marked changes in life-style of south Asian countries caused by economic growth, affluence, urbanization and dietary westernization. Few studies on the prevalence of obesity, hypertension and diabetes in the Indian population have been reported. However there has been scarce literature on the study of prevalence of Type 2 diabetes and hypertension in over weight and obese in India with criteria suggested by World Health Organization (WHO) for Asians. However, there have been no adequate data regarding obesity and to know the incidence of major complications and comparing with incidence in non-obese patients, complications in India.*

Aim Of The Study: *1.To study the cases of obesity in wards and out-patient of Annapoorna Medical College and Hospital, Salem, TamilNadu, India. 2.To study the prevalence and incidence of complications in selected cases of the obesity. 3.To know the incidences of major complications & minor complications among different types of obesity and non-obesity.*

Material and Methods: *About 200 randomly selected cases of obesity, obesity with complication and non-obese with major complications selected. Cases are analyzed as per the criteria given by WHO for Indian Standard. Data collected analyzed. Cases for study selected from out-patients and in-patients who are coming to hospital for treatment in AMC&H, Salem. It is a tertiary hospital situated in a Siragapadi, Salem Dt, TamilNadu, India. Data collected analyzed using statistical method.*

Results: *Out of 200 cases studied, 100 cases were obesity with gradings and selection were based on criteria from WHO and clinical history and physical findings of disease. According to sex, females 71,71.0% were more than males29,29%. Among 100 cases 54,54.0% were overweight,40,40%. patients were obese with complications. patients had diabetes 6,6.0% as major complication. 17,17.0%,complication hypertension, about4,4.0% both, 6,6.0%, 21,21.0% had other associated complications like cor-pulmonale, osteoarthrosis. ---53.53.0%patients had associated minor complication like Herina, intertrigo, Varicose vein, hypercholesteromia. According to religion*

Hindus were predominant, based on dietetic habit more among non vegetarians. Among 100 cases of non obese Females 54,54.0%,Males-29,29.05%, According to age group the incidence of major complications Diabetes mellitus, Hypertension was 5th to 6th decade. Females were predominant, but males were predominant when compared to obese in non-obese. complications- 49,49.0%.were DM. 61,61.0%. were HT. In obese DM 23,23%. HT 36, 36%. DM+HT14,14%. Most of them were maturity onset obesity, all had history of weight gain in females after early menopause and after delivery and LSCS. Remaining with other major and minor complications. 11,11.0% were obese without complications. Among non –obese.49,49% were DM.61,61.0% were HT. Here HT was more than in obese and DM is also more than in Obese.

Conclusion: *Present study concluded that the obesity leads to life threatening hazards like DM, HT, Heart diseases, Strokes and others. Complications if not controlled majority of patients with moderate to severe degree of obesity with long standing history are more prone to develop such complications if not controlled in early stages. Therefore prevention of obesity is most important. Various statergies to prevention of obesity are as follows 1.Education about dangers and problems of over eating and strong selection of food. 2.Physical exercise and activity need to be promised. 3.More of smaller meals than fewer larger meals of similar energy values may be effective. 4.Obese patient should be given help and counselling for the management of underlying mechanism and cause. Obesity is the malady of entire person. To treat it otherwise limits the usefulness of even the most vigorous programs. Along with nutritional both pscychological and behavioral science, technology, along with sound nutrition principles should be directed to prevent as well as control the complete problems of obesity.*

Keywords: *Obesity, non-obesity, BMI, WHR, Complications, Diabetes-mellitus, Hypertension, CAHD, OA, Hernia, Arthralgia, Varicose-vein, intertrigo, flat foot.*

Introduction

The greatest problem of preventive medicine today is obesity. It is a metabolic disorder of excess weight is closely associated with cardio vascular and renal diseases, diabetes, degenerative arthritis, gout, hypoventilation and gall bladder disease, risk for the patients who needs surgical treatment. The complications and hazards of pregnancy and hazards during child birth are multiplied. Thus the overweight is a physical handicap as well as primary health hazards.

Classification of Body Weight in Adults

The current most widely used criteria for classifying obesity is the BODY MASS IMDEX (BMI: Body weight in kilograms, Divided by height in meters sqare, Table 1), which ranges from under weight or wasting (<18.5 Kg/m^2) to severe or morbid obesity (<=40 Kg/m^2). In both clinical and research settings, waist circumference, a measure of abdominal adiposity, has become an increasingly important and discriminating measure of over-weight/obesity.

Abdominal adiposity is thought to be a primarily visceral, metabolically active fat surrounding the organs, and is associated with metabolic dysregulation, predisposing individuals to cardiovascular disease and related conditions. Asper internationally used guidelines of metabolic syndrome- a cluster of dis-metabolic conditions that predispose individuals to cardiovascular disease of which abdominal adiposity is one component- a waist circumference resulting in increase cardiovascular risk is defined as >-94cm in men and >-80cms in women, with different cut points recommended in order reduce an ethnicities (e.g.,>-90 and >-80cm in men and women) respectively in South Asia.

Material and Method

Cases for present study were selected from the medical wards and out patients of AMC&H, Salem during the year 2019 January to 2019 August. The selection of cases was purely selective and criteria for the selection were based on the clinical history and physical findings of disease.

Design of Study: Prospective, Ethical clearance: Certified.

Consent: An informed consent obtained.

Material & Selection of Subjects: An inclusion and exclusion criteria.

Inclusion Criteria: PT with H/O obesity, HT and other associated complications selected. Newly diagnosed after routine blood tests, RBS report for Diabetics on Treatment, Routine B.P for known

HT is selected. 100 non-obese cases with hypertension, DM complication selected as control cases.

Age > 20 years of age.

1. Weight > 20% of ideal weight or BMI > 23 Kg/m^2 or waist > 90 cm in men and > 80 cm in women.

Criteria for Overweight and Obesity

1. *Weight > 20% of ideal bodyweight is overweight and > 30% is obese.*
2. BMI > 23-24.9 is overweight and > 25 is obese.
3. Waist circumference: Men > 90 cm, women > 80 cm.
4. **Diagnosis of DM :**Diabetes was diagnosed using criteria(WHO)Fasting plasma glucose >=126 mg/dL (7.0 mmol/L)

a. 2 h plasma glucose >= 200 mg/dL (11.1 mmol/L) during an oral glucose tolerance test using a glucose load of equivalent to 75 g anhydrous glucose in water

b. Symptoms of diabetes plus random plasma glucose >= 200 mg/dL (11.1 mmol/L).

Repeat test was carried out to confirm the diagnosis of DM.

Diagnosis of Hypertension

The diagnosis of hypertension was made on the basis of Joint National Committee VII (JNC VII) criteria. Blood pressure record was performed in two sittings after 2 min interval and blood pressure >= 140/90 mm of Hg was taken as hypertensive.

The following parameters were recorded 1.Personal details, which included name, age, sex, address, economic state and occupation.2.History of any relevant previous illness such as diabetes, hypertension. 3.Anthropometry- Height, weight, waist circumference, hip circumference. BMI and waist: Hip ratio was calculated from the parameters measured. 1.Resting blood pressure in the right arm – sitting position. 3.Electrocardiography – Resting if indicated. 4.Biochemical investigations.

Blood sugar profile assessment, which includes fasting (8 h of fasting) blood sugar, 2 h post-prandial blood sugar or glucose tolerance test if indicated. Repeat test for confirmation of diagnosis of DM.

Lipid profile (8 h of fasting) including total cholestral, triglycerides, low density lipoproteins, high density lipoprotein and very low density lipoprotein. Serum uric acid if indicated. Ultrasonography Abdomen if indicated.

Statistical Analysis

Descriptive statistical analysis has been carried out in the present study and results on categorical measurements are presented in a number (%). Chi-square

test has been used to find the significance of study parameters on categorical scale between two or more groups.

Exclusion Criteria: Patients who are very sick. Patients who are not willing for examination.

Data Collection & Methods: Data collected from OP & IP IN AMC&H-Salem.

Sample Size: 200 cases.

Method of Collection of Data: 1.All subjects in study groups were selected without any bias for sex, age, severity of control of obesity and complication. 2.Data will be collected during the pre- tested proforma meeting the objectives of the study. 3.Purpose of study will be explained to subject and informed consent obtained. 4.Subject who will fulfill the inclusion criteria are examined. 5.A detailed H/O obesity, DM, HT taking, BP recording. 6.Height, weight & BMI calculated using standard formulas.

Analysis: Data collected analyzed for the type of obesity associated complications like DM/ HTN and others by using statistical package.

Period of Study: Six months.

Results

Among 200 cases studied, 100 cases was obese .Among them 92,92.0% case was obese with complication. Remaining 10,10.0% was no-complication. Remaining 100cases were non-obese with major complication like T2DM,

hypertension and others. Females were majority (71, 71.O%) and Males were (29, 29%.), Among non-obese also females were majority(54, 54.0%) and males were (46,46.0%). According to age group in obese was5th and 6th (37,37.0.0%) decade, in non-obese in same age group (38,38.0%).

Table I.

Gives the distribution of 100 cases studied according to the age and sex. The youngest subject was 22 years and oldest 80 Years of age. The majority of cases were from fifth to sixth decade of life, forming (37,37.0%) and (38,38.0%) non-obese of total number of cases studied. There were (71,71.0%) Females and (29, 29.0%) males in obese and in non-obese, females were (54,54.0%),and males (46,46.0%)

Females were Predominant in both groups.

Group = Obese

Sex[a]

		Frequency	Percent
Valid	FEMALE	71	71.0
	MALE	29	29.0
	Total	100	100.0

a. Group = Obese

Group = Non-Obese

Sex[a]

a. GROUP = NON-OBESE		Frequency	Percent
Valid	FEMALE	54	54.0
	MALE	46	46.0
	Total	100	100.0

a. Group = Non-Obese

Table II. Distribution of Cases According to the Age

Table II gives the distribution of 200 cases of obese and non-obese cases Studied according to the age and sex. The majority of cases from the 5th and 6th Decade of life, forming 75,75.0% of the total of 100 cases of obese and same in non-obese forming 73,73.0% ,total of 100 cases,

Group = Obese

Age Group[a]

		Frequency	Percent
Valid	21-30	3	3.0
	31-40	13	13.0
	41-50	22	22.0
	51-60	37	37.0
	61-70	22	22.0
	7.00	1	1.0
	33.00	2	2.0
	Total	100	100.0

a. Group = Obese

Group = Non-Obese

Age Group[a]

		Frequency	Percent
Valid	21-30	1	1.0
	31-40	10	10.0
	41-50	24	24.0
	51-60	38	38.0
	61-70	20	20.0
	7.00	6	6.0
	44.00	1	1.0
	Total	100	100.0

a. Group = Non-Obese

Table III Distribution of Cases According to the Percentage of Obesity

Group = Obese

Table III. Above shows the distribution of Obesities according to the percentage of BMI (Basal metabolic index) and WHR (Waist to Hip ratio).The percentage of overweight calculated allowing 20% excess to the ideal weight. All cases were classified into three groups of obesity. According to BMI no .of overweight were (54,54.0%), total 60,60.0%., Mild obesity were 21,21.0%-total 81, 18.0%. Moderate obesity were 11,11.0%, total 91,91.0%.severe or gross obesity was 8,8.0%,total of 100%.

Frequency Table

BMI Group[a]

		Frequency	Percent
Valid	UNDER WEIGHT	1	1.0
	NORMAL WEIGHT	5	5.0
	OVER WEIGHT	54	54.0
	MILD OBESITY	21	21.0
	MODERATE OBESITY	11	11.0
	SEVERE OBESITY	8	8.0
	Total	100	100.0

a. GROUP = OBESE

According to WHR Classification in our study normal 38, 38.0%. Obese 62, 62.0%, total 100%

WHR Classification[a]

		Frequency	Percent
Valid	NORMAL	38	38.0
	OBESE	62	62.0
	Total	100	100.0

a. Group = Obese

Group = Non-Obese

Frequency Table

According to BMI in non-obese cases of under-weight were 5,5.0%, Normal weight 87,87.0%. Over weight

BMI Group[a]

		Frequency	Percent
Valid	UNDER WEIGHT	5	5.0
	NORMAL WEIGHT	87	87.0
	OVER WEIGHT	8	8.0
	Total	100	1000000
			7.0
Total		100	100.0

a. Group = Non-Obese

Table IV: Shows the percentage of incidence of obesity in different religious

Groups in different religious groups.

Among 100 cases 96,96.0%. were Hindus, 2,2.0% were Christians, and 2,2.0% Muslims. Hindus were predominant.

Group = Obese

Religion[a]

		Frequency	Percent
Valid	Christian	2	2.0
	HINDU	96	96.0
	Muslim	2	2.0
	Total	100	100.0

a. Group = Obese

Group = Non-Obese

In non-obese group Hindus 95.95.0%, Followed By Christians 4,4.0% and

Muslims 1,1.0%. total of 100%

Religion[a]

Religion		Frequency	Percent
Valid	Christian	4	4.0
	HINDU	95	95.0
	Muslim	1	1.0
	Total	100	100.0

a. Group = Non-Obese

Table V GROUP* MENstual HIS Cross tabulation

			MENUHIS		Total
			Irregular	Regular	
GROUP	OBESE	Count	71	29	100
		% within GROUP	71.0%	29.0%	100.0%
	NON-OBESE	Count	15	85	100
		% within GROUP	15.0%	85.0%	100.0%
Total		Count	86	114	200
		% within GROUP	43.0%	57.0%	100.0%

Table. V shows about 86, 43.0.0%, females, out of 200 cases h/o irregular periods with early and maturity onset of obesity. and 114,57.0%. out of 200 gave h/o regular menstrual cycle. In obese 71, 71.0 % and 15,15.0% h/o irregular periods, obese were predominant. in non-obese85,85.0% regular period, here non-obese were predominant.

Chi-Square Tests

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 43.00.

b. Computed only for a 2x2 table

Hindus were predominant. Followed by Christians and Muslims. HINDUS

Are majority in areas Surrounding siragapadI salem DT.

Table VI: Distribution of Cases According to the Diet

According to food habits, among obese 90,90.0% were non-veg (mixed

Diet.10, 10.0% were vegetarians.

Crosstabs

GROUP * Diet Cross tabulation

			Diet		Total
			MIXED	VEG	
GROUP	OBESE	Count	90	10	100
		% within GROUP	90.0%	10.0%	100.0%
	NON-OBESE	Count	72	28	100
		% within GROUP	72.0%	28.0%	100.0%
Total		Count	162	38	200
		% within GROUP	81.0%	19.0%	100.0%

Table VI shows 90,90.0% obese group were non-vegetarians, and72,72.0% non-obese, Among non-obese 38, 38.0 were vegetarians

Table VI: Shows the incidence of obesity in group with different dietetic habit.

About 81, 81.0% people are middle classes and non- vegetarian's majority of them-Growing sheeps, chickens, ducks, cows and pigs. During local village festivals mainly non-vege is main preparations.

Table V: Distribution of Cases According to Types of Obesity:

Group = Obese

GEL Obese[a]

		Frequency	Percent
Valid		15	15.0
	Early age obese	12	12.0
	Gradually obese	37	37.0
	Later age obese	36	36.0
	Total	100	100.0

a. GROUP = OBESE shows early- obese 12,12.0%,gradual- obese 37,37.0%, 37,6,36.0 late-onset

Gradual-onset obesity predominant, followed by late –onset.

Group = Non-Obese

Gel Obese[a]

	Frequency	Percent
Valid	100	100.0

a. GROUP = NON-OBESE

Table VII Frequency Table

BMI Group[a]

		Frequency	Percent
Valid	UNDER WEIGHT	1	1.0
	NORMAL WEIGHT	5	5.0
	OVER WEIGHT	54	54.0
	MILD OBESITY	21	21.0
	MODERATE OBESITY	11	11.0
	SEVERE OBESITY	8	8.0
	Total	100	100.0

a. GROUP = OBESE

Table VII. shows types of obesity .over weight-54,54.0%, Mild obesity-21,21.0%,Moderate obesity-11,11.0%, severe obesity-8,8.0%,Mild obesity more than moderate followed by severe.

Table VIII WHR Classification[a]

		Frequency	Percent
Valid	NORMAL	38	38.0
	OBESE	62	62.0
	Total	100	100.0

a. GROUP = OBESE

According to WHR (Waist to Hip Ratio 38,38.0% Normal, 62,62.0%- Obese, Obese were Predominant in our study.

Group = Non-Obese

Frequency Table

BMI Group[a]

		Frequency	Percent
Valid	UNDER WEIGHT	5	5.0
	NORMAL WEIGHT	87	87.0
	OVER WEIGHT	1	1.0
	Total	93	93.0
Missing	System	7	7.0
Total		100	100.0

a. GROUP = NON-OBESE

In non obese underweight 5, 5.0%, Normal weight-87,87.0% .

Table IX: Distribution of Cases According to Complications

Group = Obese

Frequency Table

DM[a]

		Frequency	Percent
Valid	DIABETES MELLITUS	8	8.0
	NON DM	77	77.0
	T2 DM	1	1.0
	T2DM	14	14.0
	Total	100	100.0

a. GROUP = OBESE

Table IX Shows frequency of major complications in 100 cases of obesity

Diabetes mellitus 19, 19.0%. non-DM 77.77.0%

HT[a]

		Frequency	Percent
Valid	HT	28	28.0
	NON HT	64	64.0
	SHT	8	8.0
	Total	100	100.0

Complication hypertension in 100 cases of obesity. Hypertention-28,28.0%, SHT- 8, 8.0%, Non- HT 64,64.0%

Group = Obese

Table X

COMP2[a]

DM[a]

		Frequency	Percent
Valid	DIABETES MELLITUS	35	35.0
	NON DM	51	51.0
	T2DM	14	14.0
	Total	100	100.0

a. GROUP = NON-OBESE

Frequency of DM in Non Obese 100 Cases. DM-36, 36.0%, T2DM 14,14.0%,NON-DM 51,51.0%

HT[a]

		Frequency	Percent
Valid	HT	37	37.0
	NON HT	39	39.0
	SHT	24	24.0
	Total	100	100.0

a. Group = Non-Obese

Hypertension in 100 Cases of Non Obese HT 37, 37.0%, SHT-24, 24.0%, NON-HT39.39.0%
HT cases more than SHT.

COMP4[a]

		Frequency	Percent
Valid		68	68.0
	anaemia	1	1.0
	Anaemia	6	6.0
	APD	5	5.0
	Artralgia	1	1.0
	BA	1	1.0
	CAD	2	2.0
	CCF	1	1.0
	Chr.Bronchitis	1	1.0
	COPD	2	2.0
	DKA	1	1.0
	Hemipaeresis	1	1.0
	Hyp-lip	1	1.0
	hyp.lip	1	1.0
	Hypothy	1	1.0
	LRI	1	1.0
	OA	1	1.0
	Old.PT	1	1.0
	PT	1	1.0
	RF	2	2.0
	V.fever	1	1.0
	Total	100	100.0

Complications	obese	%	non-obese	%
1.No of cases	100	100%	100	100%
2.Diabetes	23	23.0%	18	18.0%
3.Hypertention	36	36.05%	31	31.0%
4.Diabetes + Hypertension	20	20.0%	25	25.0%
5. Osteo Arthrosis	21	21.0%	2	2.0%
6.cor-pulmonale	3	1.0%	0	
Minor complications				
a.Anaemia	11		13	
b.Hernia	1		2	
c.Intertrigo	0		3	
d.Varicose vein	1		0	
e.flat foot	0		0	
f.CAD	7		9	
g.periphe. neuropathy	6		3	
h.hypercholesterolemia	9		0	
i.neuritis	**0**		**3**	
j.copd	**1**		**2**	
k.BA	**1**		**4**	
L.gangrene	**1**		**0**	
m.depression	**2**		**0**	
n.CVA,hemiplegia	**1**		**3**	
o.APD	**11**		**11**	

Table XI: Shows the distribution of cases according to complications. Among 100 cases 8, 8.0% patients who were normal without any complications. Among the –patients 21, 21.0% were mildly obese. 11,11.0% were moderately obese.

23,23.0 % patients had Diabetes mellitus. All were moderately obese. 36,36.0% patient Were Hypertensive and 17,17.0% patients had both Diabetes and Hypertension. Other patients osteoarthrosis, 2,2.0% had cor-pulmonale and osteoarthrosis 21,21.0%and Failure, who were Grossly obese. Among the Diabetics 3,3.0% patients had intertrigo and fungal infection and they were moderately obese. Along with above major complications 5,5.0% patients had minor complications like Artharlgia, Varicose-vein, hernia and flat foot.

Crosstabs

[DataSet1]
C:\Users\USER\Desktop\OBESITY\obesity corrected data.sav

BMI GROUP * DM Cross tabulation

			DM				Total
			DIABETES MELLITUS	NON DM	T2 DM	T2DM	
BMI GROUP	LEAN	Count	5	1	0	0	6
		% within BMI GROUP	83.3%	16.7%	0.0%	0.0%	100.0%
	NORMAL WEIGHT	Count	30	48	0	14	92
		% within BMI GROUP	32.6%	52.2%	0.0%	15.2%	100.0%
	OVER WEIGHT	Count	3	40	1	11	55
		% within BMI GROUP	5.5%	72.7%	1.8%	20.0%	100.0%
	OBESE	Count	5	32	0	3	40
		% within BMI GROUP	12.5%	80.0%	0.0%	7.5%	100.0%
Total		Count	43	121	1	28	193
		% within BMI GROUP	22.3%	62.7%	0.5%	14.5%	100.0%

Table XI-5 shows Frequency of DM in Obese and Non-Obese; Lean-5 cases no DM, Normal Weight-14, 14.0%, 12,12.0%, Over Weight-3,3.0%, Obese-29,29.05, DM were More in Obese.

BMI GROUP * HT Cross tabulation

			HT			Total
			HT	NON HT	SHT	
BMI GROUP	LEAN	Count	2	1	3	6
		% within BMI GROUP	33.3%	16.7%	50.0%	100.0%
	NORMAL WEIGHT	Count	37	34	21	92
		% within BMI GROUP	40.2%	37.0%	22.8%	100.0%
	OVER WEIGHT	Count	15	35	5	55
		% within BMI GROUP	27.3%	63.6%	9.1%	100.0%
	OBESE	Count	11	26	3	40
		% within BMI GROUP	27.5%	65.0%	7.5%	100.0%
Total		Count	65	96	32	193
		% within BMI GROUP	33.7%	49.7%	16.6%	100.0%

In 200 Cases of Obese and Non-Obese, Frequency of Hypertension, Lean 5,5.0% HT/SHT, Normal Weight-58, 58.0%, Over Weight-55, 55.0%, Obese-95, 95%,More In Obese Pts

Discussion

This study was a prospective study, cross-sectional study of a selected cases that presented to tertiary care hospital Annapoorna Medical College and Hospital, Siragapadi, Salem Dt, Tamil Nadu, India. 200 Cases Were Selected from In-Patients and Out-Patient Attending. 200 cases selected, 100 cases were Obese and 100 cases were Non-Obese Obese Cases Were Selected as per the WHO Criteria studied for types of obesity, grading, frequency of complications, and

comparing with non-obese case by statistical analysis. In our study 200caseselected according to sex analysis, females were 71,71.0% Obese, 54,54.0% Non-obese. Females were predominant. Males in Obese were 29,29.0%, non-obese 46,46.o%.males were predominant in non-obese, According to age groups in obese youngest was 22yrs eldest were 8o yrs, and obesity were more in 5th to 6thdecade, in non-obese youngest were20 yrs and eldest were 82 yrs and major complications were more at the age groups5th to 6th decade. According to economic status in obese there were 28,28.0%, house wives. 10 were not working, drivers2, tailors 2,formers 8, coolys 35,daily wages 6.among these obesity was common in house wives, next those not working and on rest, followed by Drivers, tailors and farmers. Most of them were lower middle and poor class were few. Among non-obese 48, were house wives, 30 were coolies were11, and daily ages11, remaining others. according to %age of obesity over weight 54,54.0%, mild obesity 21,21.05 moderate obesity 11,11.0%severe obesity 8,8.0%,in non obsess Under weight-5,5.0%, normal weight 87,87.0%, over weight-8,8.0%. According to WHR (Waist hip ratio) ;normal-38,38.0%. obese 62,62.0%. According to religions in obese Hindus were 96,96.0% and were predominant, followed by christians 2,2.0%, and muslims 2,2.0%.non-obese HIndus 98,98.0%, predominant. Christians 4,4.0%, Muslims-1,.1.0%. In females obese, non-obese according to menstrual history 86 had regular and 114 irregular cycles.

Conclusion

The prevalence of type 2 DM, hypertension in the obese group of the study population were found to be 20.2%, 22.2% and in the overweight population were 21, 21.0%.5% and, 54, 54.0% over weight respectively. This indicates that the prevalence of type 2DM and hypertension increases with increasing weight of the individuals. The prevalence of type 2 DM and hypertension were relatively higher compared with other studies. as obesity Increase the articular joint mainly knee-joint affected. In our study OA 21, 21.0% in obese and2, 2.0% in non obese. Anaemia 11, 11.0% in obese and 13, 13.0% in non obese. CAD 7, 7.0 IN obese and 9,9.0% in non obese.

Conflict of Interest: Nil.
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