ISSN No:-2456-2165

A Cross-Sectional Descriptive Study on the Prevalence of Depression amongst Controlled and Uncontrolled Hypertension patients in Legazpi

Olayemi Olaoluwa Achiever Temitope, Lingineni Divya, Mattaparthi Viddhyasagar, Jennappagari Harini, Metta Sai Monica, Shaik Mohammed Ashraf Basha, Shabeeh Zehra, Verma Kavita, Suddula Uday, Regoti Manisha, Biranwar Nilesh Radheshyam,
Professor: Leoncio Carmina MD
{Group 2 of Medicine 2B, Bicol Christian College of Medicine (BCCM), 2019/2020SY}
Legazpi City, Albay Philippines

Abstract:- Mental and physical health of a human is related in diverse ways. Depression which is a deviation from the normal mental state is associated with different diseases.

The aim of the study was to determine the prevalence of depression amongst Controlled and Uncontrolled Hypertension patients in Legazpi, Albay Municipal, Philippines. Sixty (60) controlled and uncontrolled hypertension patients using a confidence interval of 90%, were selected to complete the Hospital and Anxiety Depression Scale and the Beck Depression Inventory which had different scoring for depression symptoms. Out of the 60participants, 20 (33.3%) were males while 40 (66.7%) were females. The age of the oldest participant was 70 while the age of the youngest participant was 21. From this study, prevalence of depression for the total population (60)according to HADS was 29 (48.3%) while according to Beck Depression Inventory the prevalence of depression was 35 (58.3%) which was similar to the result gotten from a previous study carried out in Andkhoy, Afghanistan [Hamrahet al,2018]. Prevalence of depression among controlled hypertension population (32), was 37.4% of this population and prevalence for uncontrolled hypertension (28) was 82.2% of the uncontrolled hypertension patients. Multiple variables were used for this analysis and factors shown to be associated with depression from this study include female gender, little or lack of exercise and history of previous myocardial infarction. This study showed that depression is highly prevalent among uncontrolled hypertension patients, although it could also occur in controlled hypertension patient. More studies are needed nationwide and worldwide to be able to aid the increase in strategies that could help in prevention and control of depression and other mental illnesses in the Philippines and in other parts of the world.

A Cross-Sectional Descriptive Study on the Prevalence of Depression amongst Controlled and Uncontrolled Hypertension patients

Keywords:- Depression, Hypertension, Controlled and Uncontrolled Hypertension, Prevalence, Cross-Sectional, Controlled Hypertension, Uncontrolled Hypertension, Legazpi, Bicol Christian College of Medicine (BCCM)

I. INTRODUCTION

Hypertension is simply known as high blood pressure (Felmanet.al, 2019), it is confirmed by two or more separate readings at different periods of time with values above 130mmHg for systolic pressure and above 80mmHg for diastolic pressure. While controlled hypertension isconfirmed by two or more occasions at different periods of time with values below or equal to 140mmHg for systolic pressure and below or equal 90mmHg for diastolic pressure (AHA, 2016). Uncontrolled hypertension at different times will provide a reading of more than 140mmHg for Systolic and greater than 90mmHg for diastolic blood pressure.

Inadequate knowledge about hypertension and blood pressure maintenance on the part of some of the populace has been associated with different complications, diseases and health problems (Kilic. M., et al, 2016).

Depression, anxiety, and other related symptoms are seen both in the general population and in patients who have controlled or uncontrolled hypertension, although the prevalence differs depending on assessment method (Prathibha et al., 2017).

Depression is the main cause of disability worldwide and it has the most significant impact on the universal burden of disease as confirmed by World Health Organization (WHO) in 2018 (Jezard,2018). At detrimental points, depression may result to suicidal tendencies and statistically, over 300 million people worldwide suffer from depression. According to statistics in a report published in August 2019, about 3.3million Filipinos suffer from depression, which is about 1.1% of the total number ofpeople that suffer from this disorder worldwide (Punay, 2019).

According to statistics provided by WHO (2019), about 1.13 billion (14.5%) people out of a total of 7.8billion (worldometers,2019) across the globe have hypertension (WHO,2019).

From the previous study carried out by “Prathibha M.Tet.al, in 2017”,the prevalence rate for depression was 33.3%, as this was used for the calculation of the sample size for this study. Depression could be associated with hypertension but this study describes to what extent is its prevalence in both controlled and uncontrolled hypertension patients.

ISSN No:-2456-2165

The statement of the problem before commencement of the study was;

What is the prevalence of depression amongst Controlled and Uncontrolled Hypertension patients?

The significance shows the benefits of this study as but not limited to the following;

Early detection of depression in controlled and uncontrolled hypertension patients.

Proper management of Controlled and Uncontrolled Hypertension patients with regards to their mental health.

Reduction of the rate of depression in controlled and uncontrolled hypertension patients.

For the objectives of this study; this study evaluated depression of controlled and uncontrolled hypertension patients and it was conducted to determine the prevalence of depression amongst controlled and uncontrolled hypertension patients inLegazpi, Albay Municipal, Philippines.

II. METHODS

This study as a cross-sectional study was conducted at City Health; which is in charge of all community primary health centres and saddled with the responsibility of health maintenance at community level in Legazpi, Albay, Philippines. Data collection was done from December 26 – 31, 2019. The study was conducted using questionnaires which had socio demographics and clinical variables including age, sex, marital status/cohabitation, employment, highest level of education attained, smoking habits, exercise habits, hypertension, body mass index, family history of Coronary heart disease (CHD), previous CHD and previous Acute Myocardial Infarction with standardized depression scales and tools (Hospital Anxiety and Depression Scale (HADS) and Beck Depression Inventory). These standardized tools have been used for different studies in different countries of the world. For HADS, it has 14question for anxiety and depression; 7questions for each. We used the 7questions for depression on it for this study and the Beck depression Inventory which has 21questions.

We used cross-sectional study design and the different participants were given code numbers from CHT1 to CHT60. The total number of participants for this study were 60, as this value was calculated from the prevalence rate of a previous study and purposive sampling method was used for sampling.

In this study, depression is the dependent variable while controlled and uncontrolled hypertension are the independent variables.

Replacement protocols are part of the control procedures we put in place during this research work to make up for those forms and questionnaires cancelled due to mistakes and withdrawal from the study.

Participant were made to read and sign up the informed consent form before proceeding to fill up the questionnaires and they were appreciated for participating in the study after they finished.

III. RESULTS

Out of the total 60 study participants, 20 (33.3%) were males and 40 (66.7%) were females. The male-to-female ratio among patients was 0.50, while that in a previous study was 0.53 [Hamrahet al,2018]. More than half of the patients were between ages18 – 44. The socio demographic and clinical characteristics of all participants in this study are fully explained separately, described in different table with different suitable charts and graphs, and summarized in table 13.

Tables 14 to 29 gives analysis of depression results gotten; both from HADS and Beck Depression Inventory. Table 31 and 32 gives information about the association between depression and controlled and uncontrolled hypertension in these participants.

Tables:

AGE (Years)	FREQUENCY	PERCENTAGE (%)	RANK
Below 18	0	0	
18-44	33	55.00	1
45-55	10	16.60%	3
56-65	11	18.30%	2
>65	6	10%	4
TOTAL	60	100%	

Table 1: Frequency distribution of ages of participants across different age range

Table 1 shows the different age distribution among the participant in this study. About 55% of the participant were between ages 18 – 44 while 10%were above 65years. Individually, the least age was 21years while the highest age was 70years.

ISSN No:-2456-2165

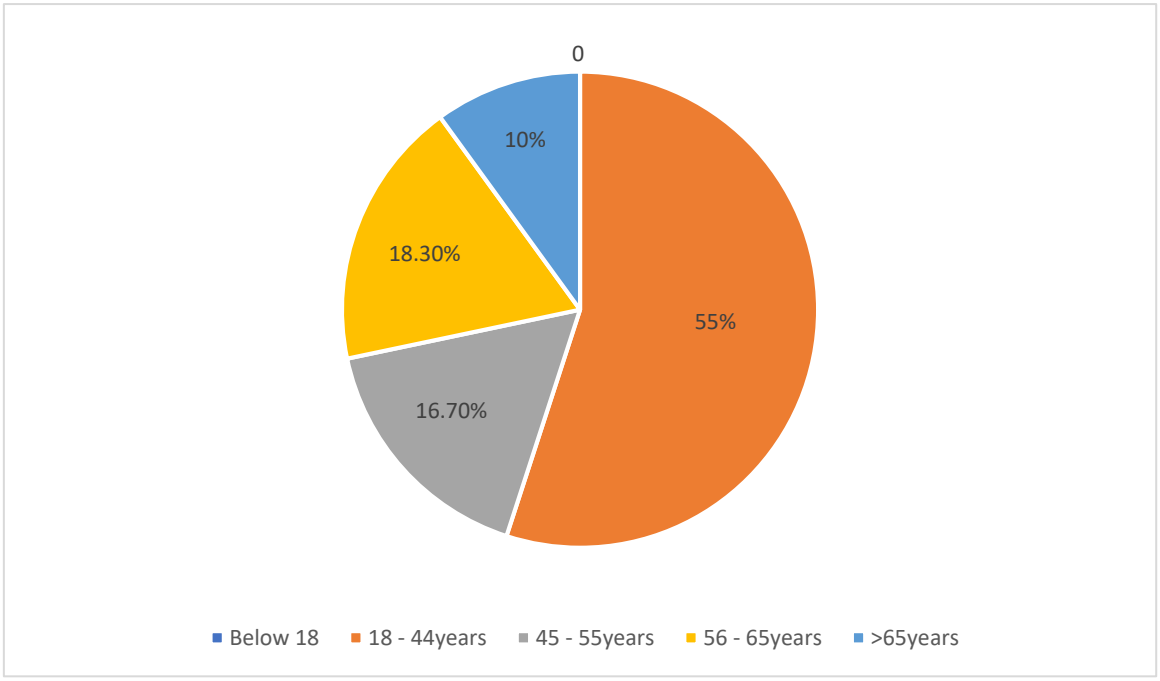

Fig. 1: Age Range with different percentages

SEX	FREQUENCY	PERCENTAGE	RANK
MALE	20	33.30%	2
FEMALE	40	66.70%	1
TOTAL	60	100%	

Table 2: Frequency distribution of sex

Table 2 shows the gender of different participants of this study, 66.7% were women and their population was twice the number of male participants (33.3%) in this study.

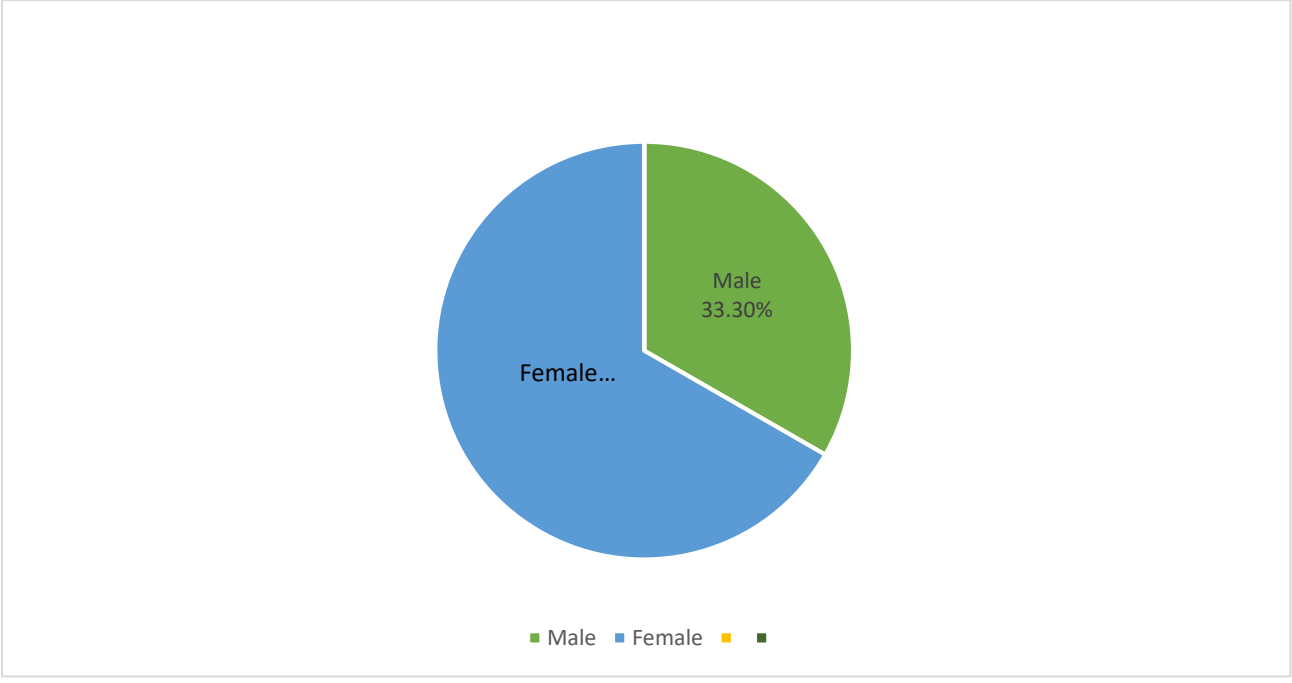

Fig. 2: Percentage of different gender involved in this study

ISSN No:-2456-2165

CIVIL STATUS	FREQUENCY			PERCENTAGE	RANK
	MALE	FEMALE	TOTAL		
SINGLE	7	9	16	26.60%	2
MARRIED	11	26	37	61.60%	1
WIDOWED	1	2	3	5%	4
DIVORCED	0	0	0	0	
NOT FILLED	1	3	4	6.60%	3
TOTAL	20	40	60	100%	

Table 3: Frequency Table of Civil Status

Table 3 shows different civil status of participants in this study, the highest were those that were married (61.6%) while about 6.6% were indifferent as they did not provide information of their civil status.

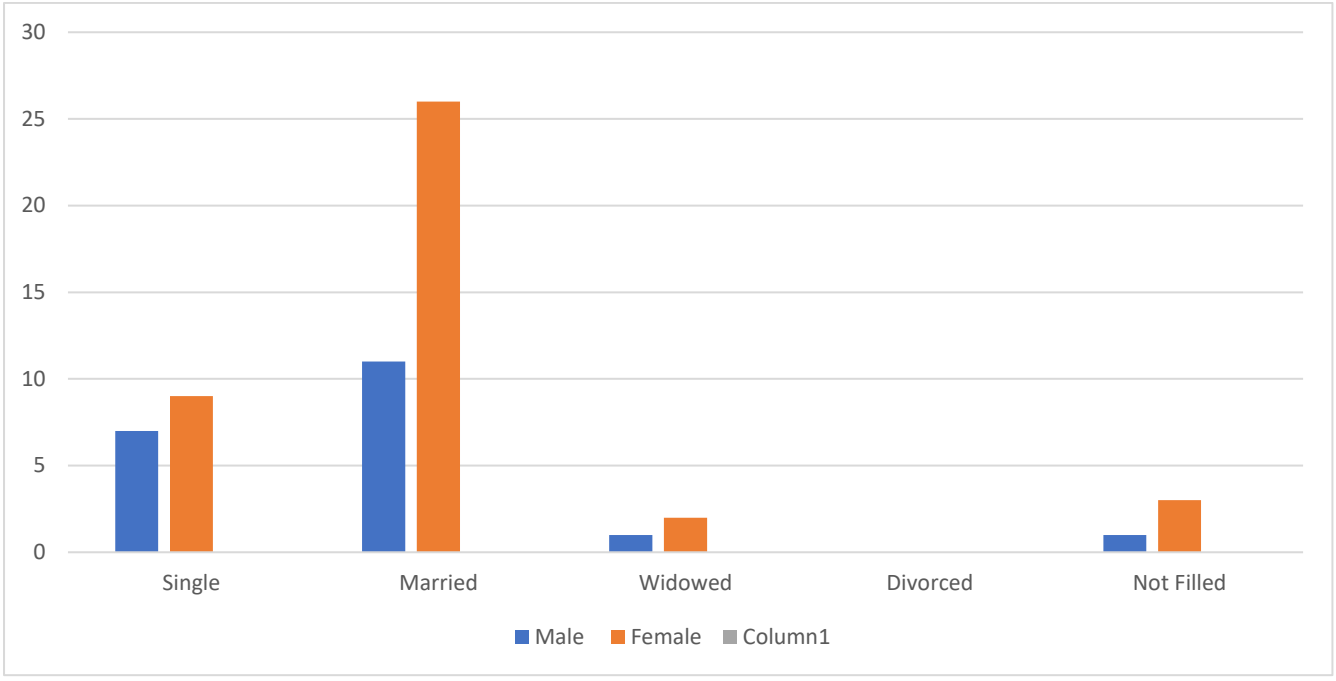

Fig. 3: Histogram of Civil status of Controlled and Uncontrolled Hypertension patients in Legazpi for this study

NONE	**3**	**5%**	**3**
PRIMARY	3	5%	3
HIGH SCHOOL	22	36.60%	2
COLLEGE/UNIVERSITY	27	45%	1
NOT FILLED	5	8.3%	3

Table 4: Frequency of Level of Education

Table 4 shows different level of education of participants in this study, 45% of the participants of this study are college or University graduates while 8.3% did not provide information about their level of education.

ISSN No:-2456-2165

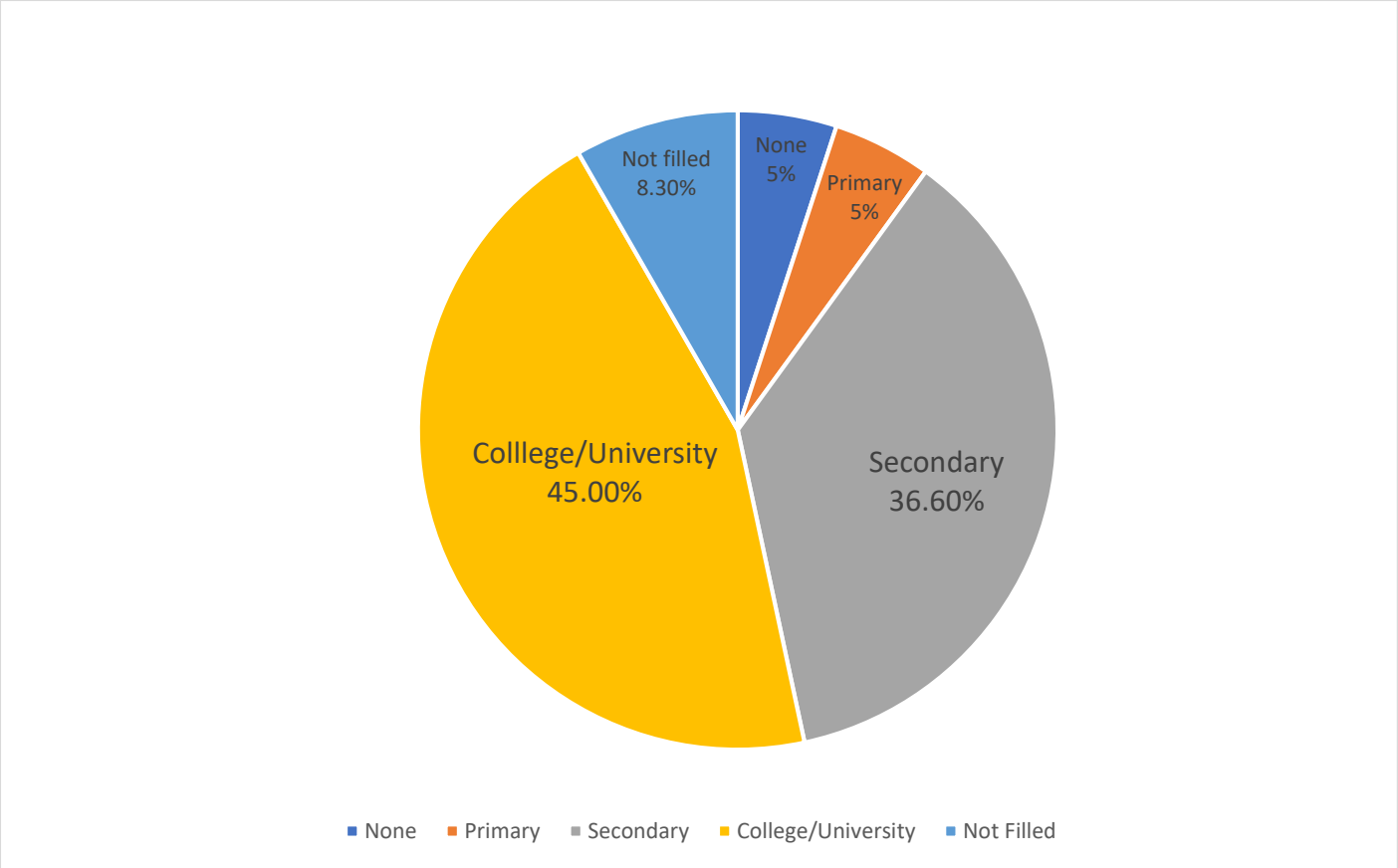

Fig. 4: Percentages for level of education of participants in this sudy

EMPLOYMENT	FREQUENCY	PERCENTAGE (%)	RANK
FULL TIME	19	31.7	1
PART-TIME	19	31.7	1
NOT WORKING	19	31.7	1
NOT FILLED	3	5	4
TOTAL	60	100%	

Table 5: Frequency of Employment Status

Table 5 shows different employment statusof education of participants in this study, which showed that there was an equality of participant who either full-time, part-time or not working as each registered 31.7%, although 5% did not provide information of their employment status.

ISSN No:-2456-2165

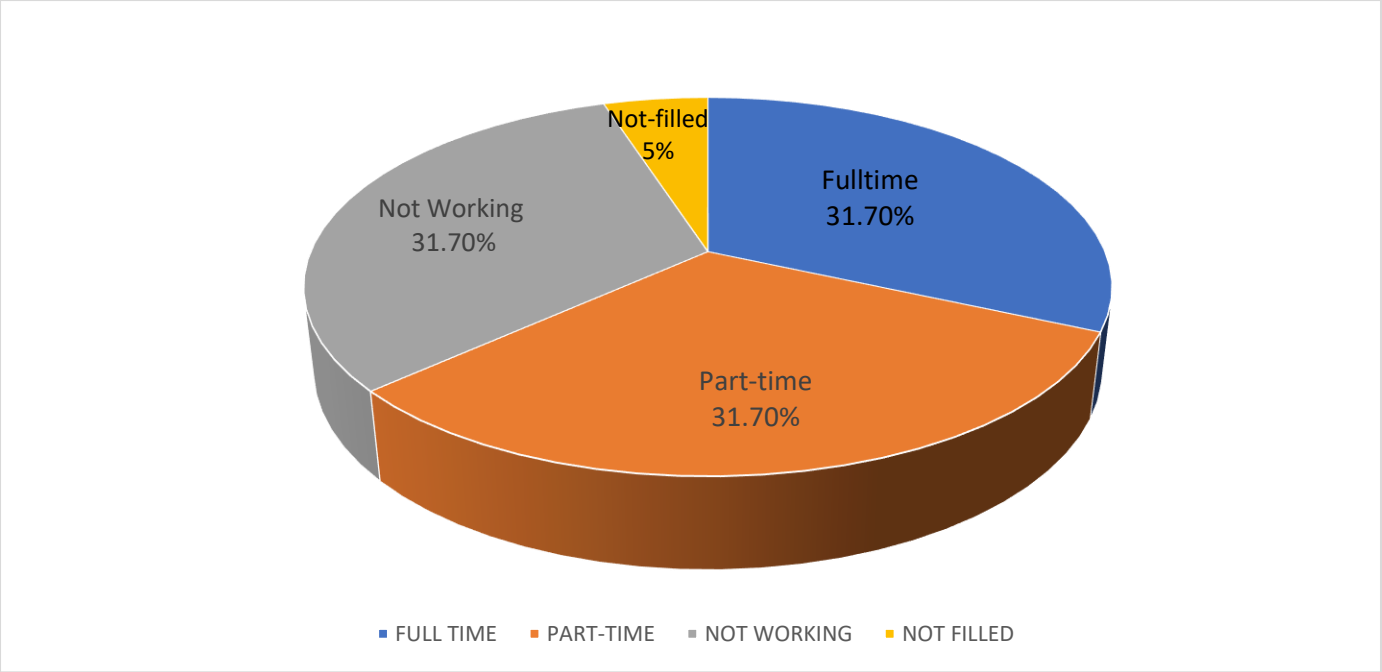

Fig. 5: Percentages for Employent status in this study

EXERCISE HABITS	FREQUENCY			PERCENTAGE (%)	RANK
	MALE	FEMALE	TOTAL		
NOT EXERCISING	7	14	21	35.0	1
ONCE WEEKLY	9	11	20	33.3	2
2-3TIMES WEEKLY	3	12	15	25.0	3
4-5 WEEKLY	1	3	4	6.67	4
NOT FILLED	0	1	1	1.67	5
TOTAL	20	40	60	100	

Table 6: Frequency of Exercise Habits

Table 6 shows frequency of exercise habit of participants in this study, gives that 35% do not exercise at all, a larger part of these participants (68.3%) exercise only once a week or do not exercise at all while only 6.67% exercise 4 – 5 times a week.

ISSN No:-2456-2165

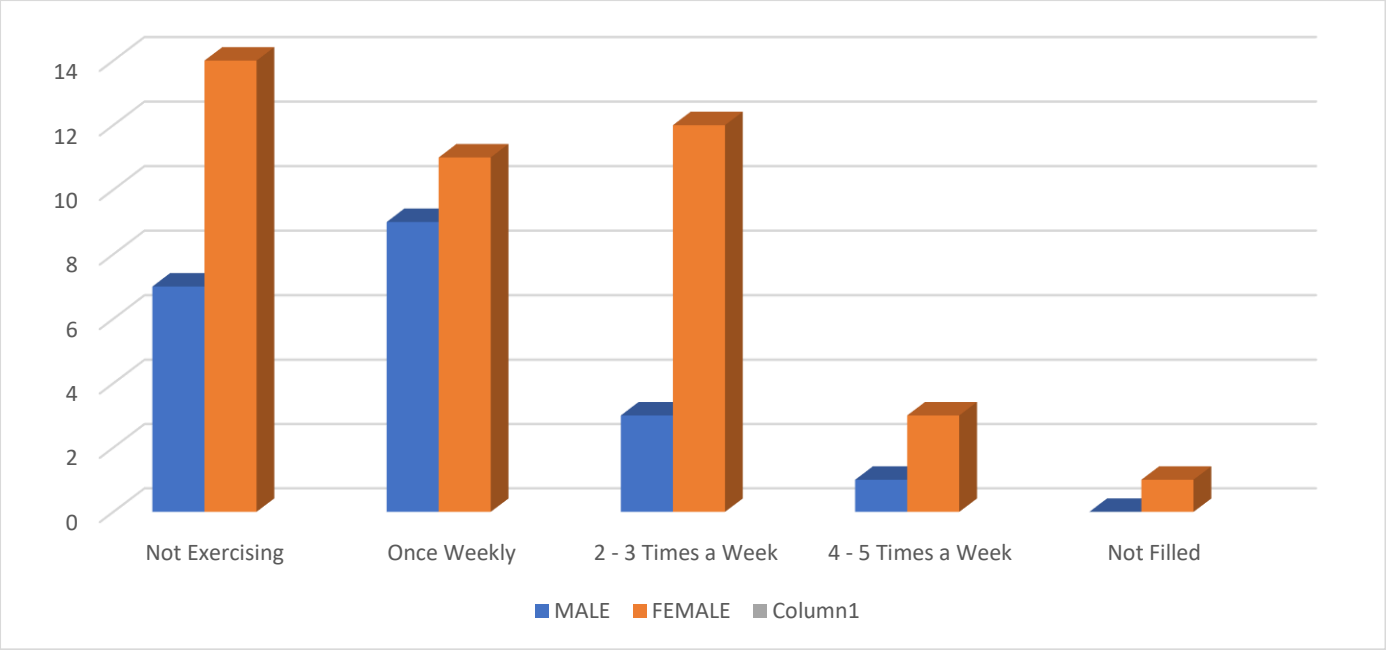

Fig. 6: Graph for Exercise habit of this study population (Legazpi Controlled and Uncontrolled Hypertension Patient)

SMOKING HABIT	FREQUENCY	PERCENTAGE (%)	RANK
DAILY	14	23.3	2
NEVER SMOKED	31	51.7	1
EX SMOKERS	15	25.0	3
	60	100	

Table 7: Frequency of smoking habits

Table 7 shows that 51.7% never smoked which reflects the award given to Legazpi City previously on reduce smoking even in public places. 23.3% are daily smokers while 25.0% are ex-smokers.

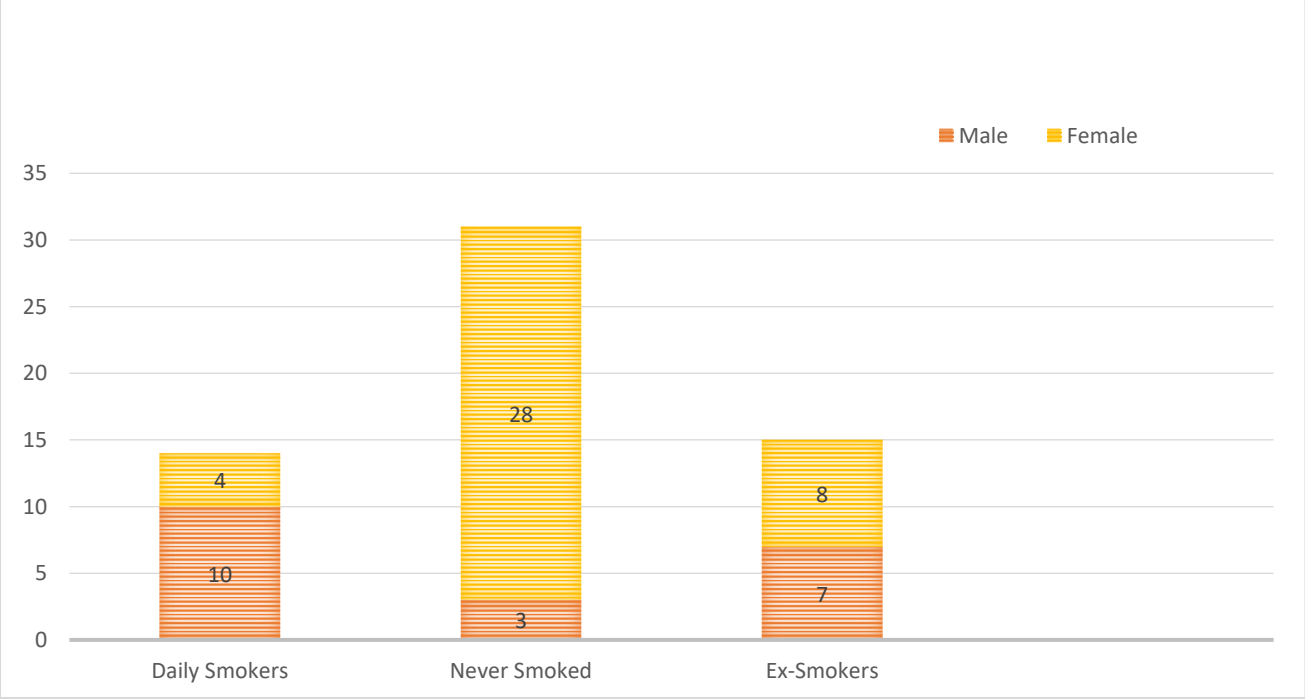

Fig. 7: Graph for Exercise habit of this study population (Legazpi Controlled and Uncontrolled Hypertension Patient)

ISSN No:-2456-2165

PREVIOUS CHD	FREQUENCY	PERCENTAGE	RANK
PREVIOUS	13	21.6%	2
NO CHD	47	78.3%	1
TOTAL	60	100%	

Table 8: Frequency of Previous Coronary Heart Disease

Only 21.6% had previous Coronary heart disease while 78.3 have not.

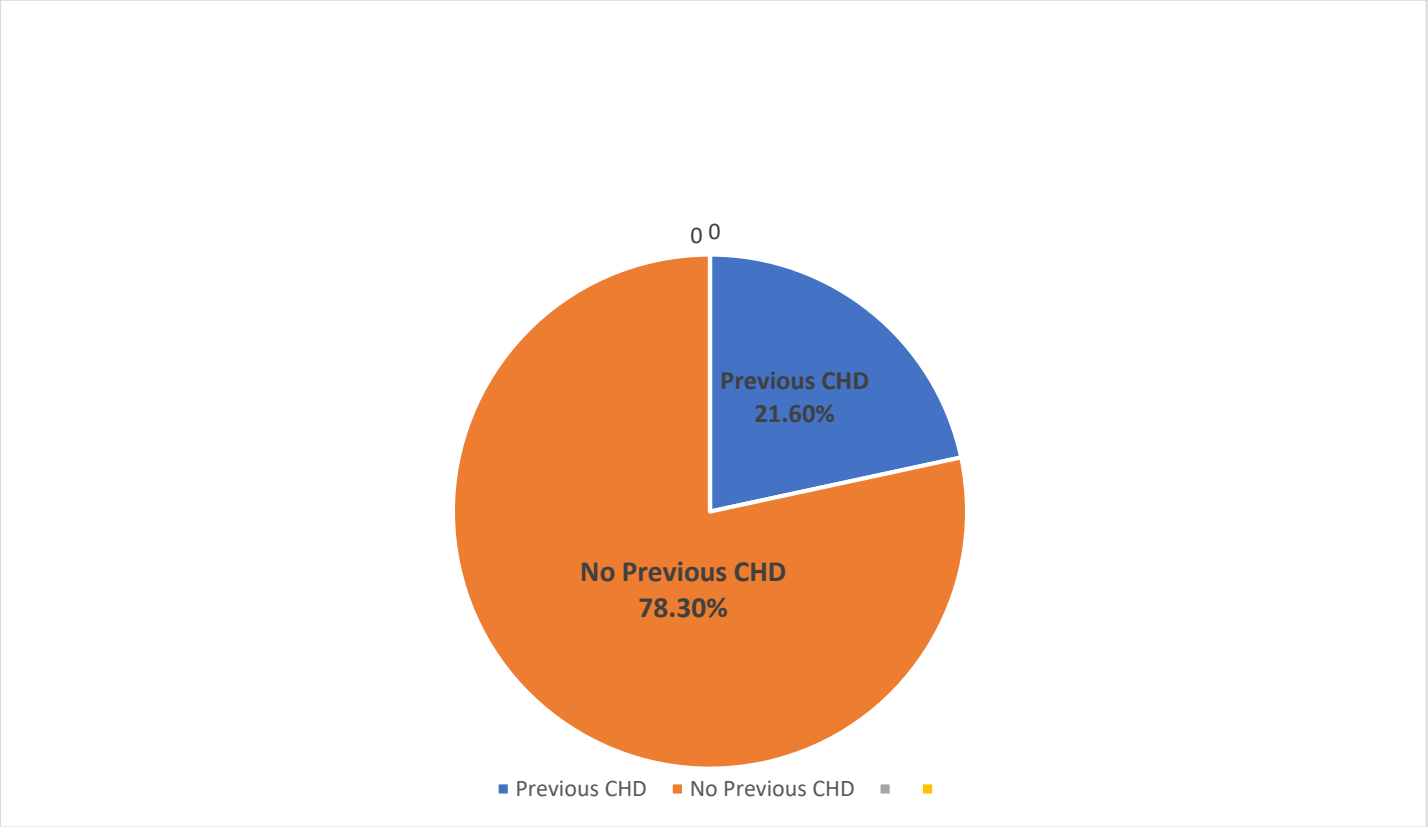

Fig. 8: Percentages of the information on Previous Coronary heart disease amongthis study population (Legazpi Controlled and Uncontrolled Hypertension Patient)

PREVIOUS MI	FREQUENCY	PERCENTAGE	RANK
PREVIOUS	35	58.3	1
NO PREVIOUS MI	25	41.6	2
TOTAL	60	100	

Table 9: Frequency of Previous Myocardial Infarction

Table 9 shows that 58.3% have had previous myocardial infarction while 41.6% have not.

ISSN No:-2456-2165

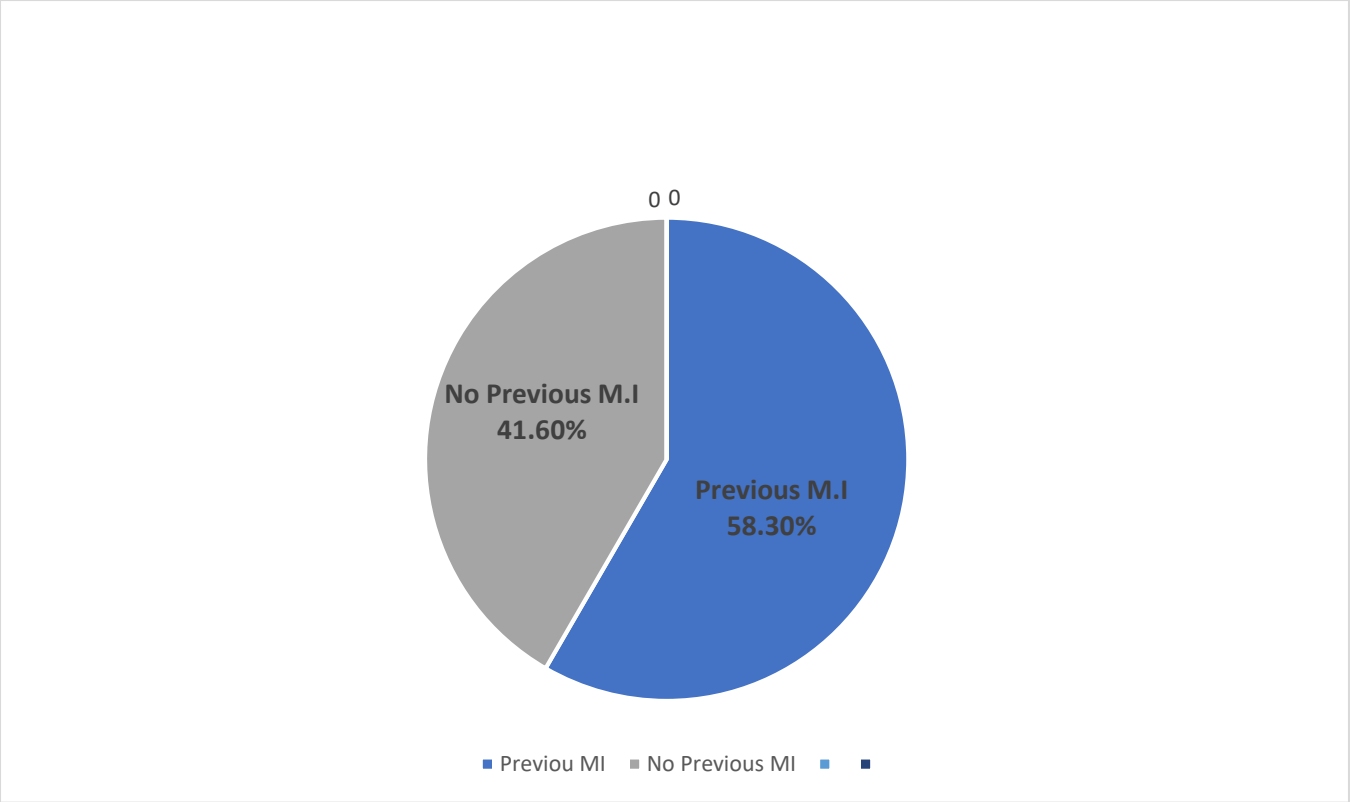

Fig. 9: Percentages of the information on Previous Myocardial Infartion among this study population (Legazpi Controlled and Uncontrolled Hypertension Patient)

FAMILY HISTORY OF CHD	FREQUENCY	PERCENTAGE	RANK
PRESENT	26	43.3%	2
NO FAMILY HISTORY OF CHD	34	56.6%	1
TOTAL	60	100%	

Table 10: Frequency of Family History ofCoronary Heart Disease

Table 10 shows that 56.6% have family history of Coronary heart disease while 43.3% have family history of CHD.

ISSN No:-2456-2165

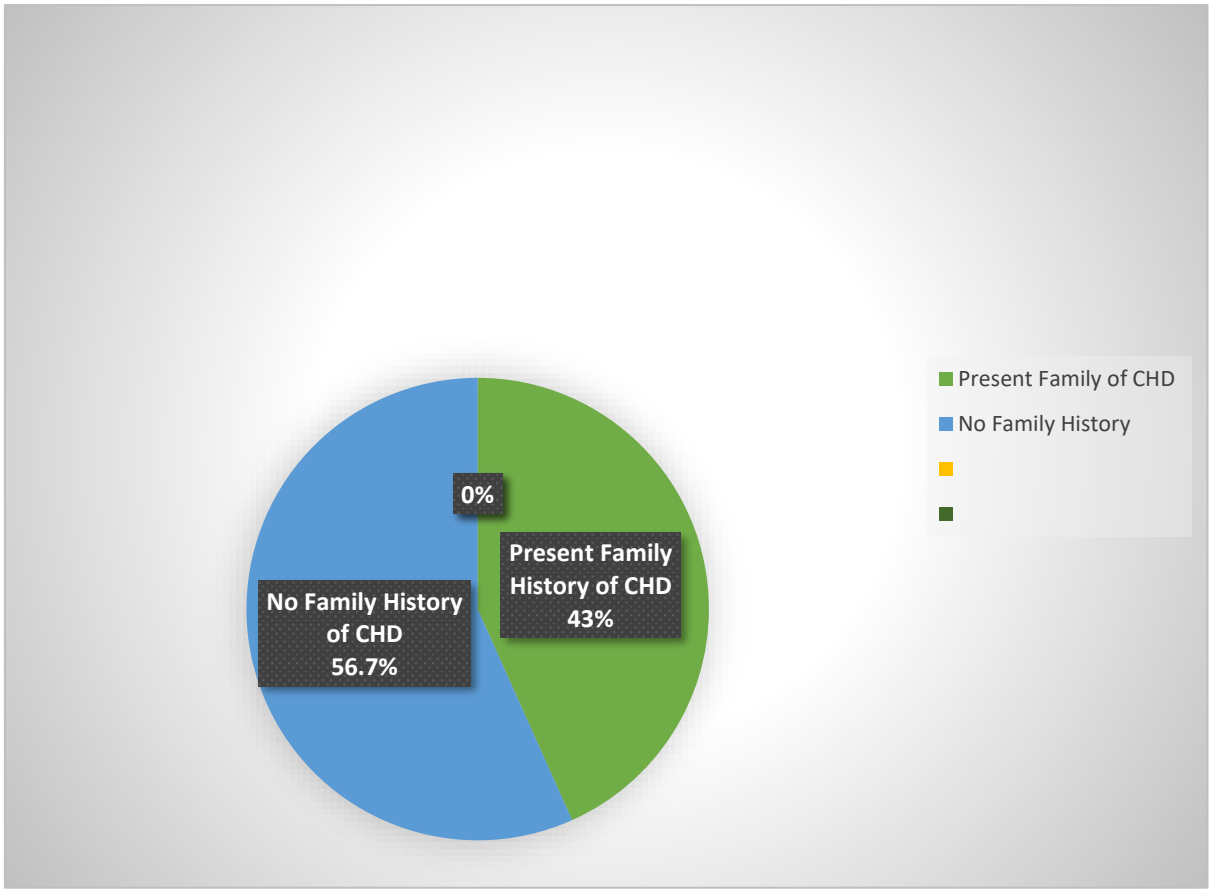

Fig. 10: Percentages of the information on Family history of CHD among this study population (Legazpi Controlled and Uncontrolled Hypertension Patients)

HYPERTENSION	FREQUENCY			PERCENTAGE	RANK
	MALE	FEMALE	TOTAL	(%)	
UNCONTROLLED	9	20	29	48.3	2
CONTROLLED	11	20	31	51.6	1
TOTAL	20	40	60	100	

Table 11: Frequency of Hypertension

Table 11 shows 51.6% have controlled hypertension while 48.3% have uncontrolled hypertension.

ISSN No:-2456-2165

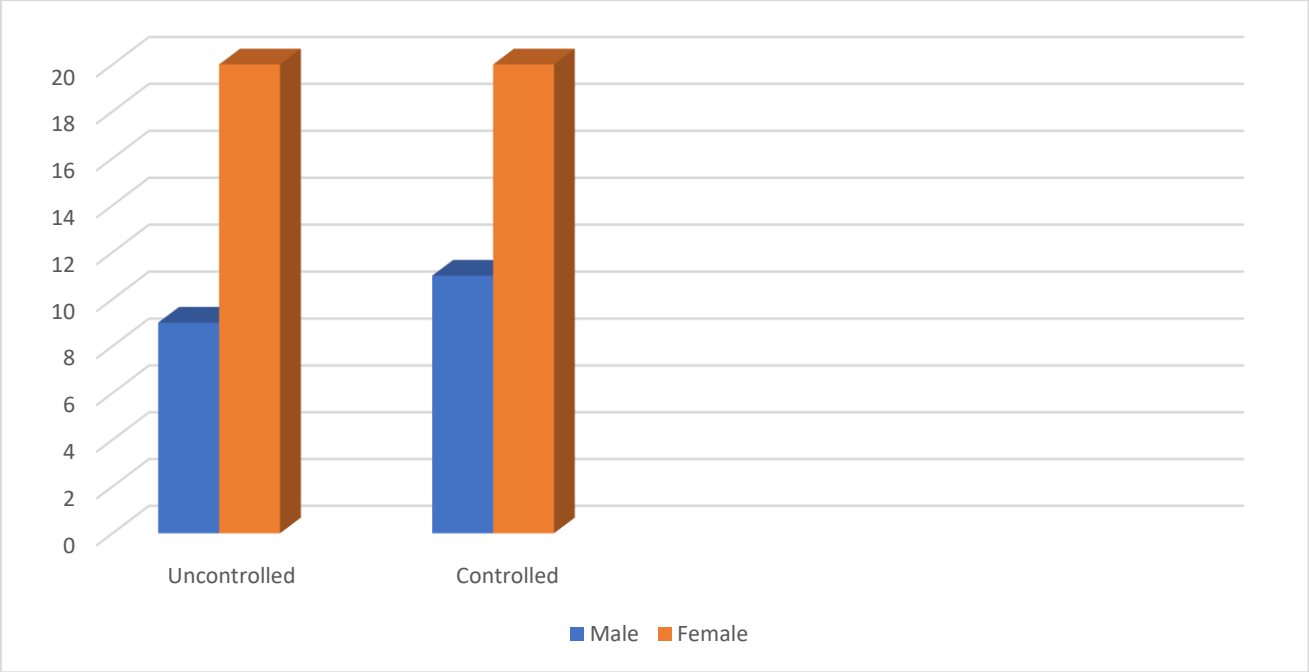

Fig. 11: Frequency distribution of Colled and Uncontrolled Hypertension patients in Legazpi for this study

BODY MASS INDEX (BMI)	FREQUENCY	PERCENTAGE (%)	RANK
UNDERWEIGHT	15	25.0	2
NORMAL	34	56.6	1
OVERWEIGHT	10	16.7	3
OBESE CLASS 1	1	1.7	4
TOTAL	60	100%	

Table 12: Frequency of Body Mass Index (BMI)

Table 12 shows 56.6% have normal BMI, 25.0% are underweight, 16.7% are overweight and 1.7% obese class 1

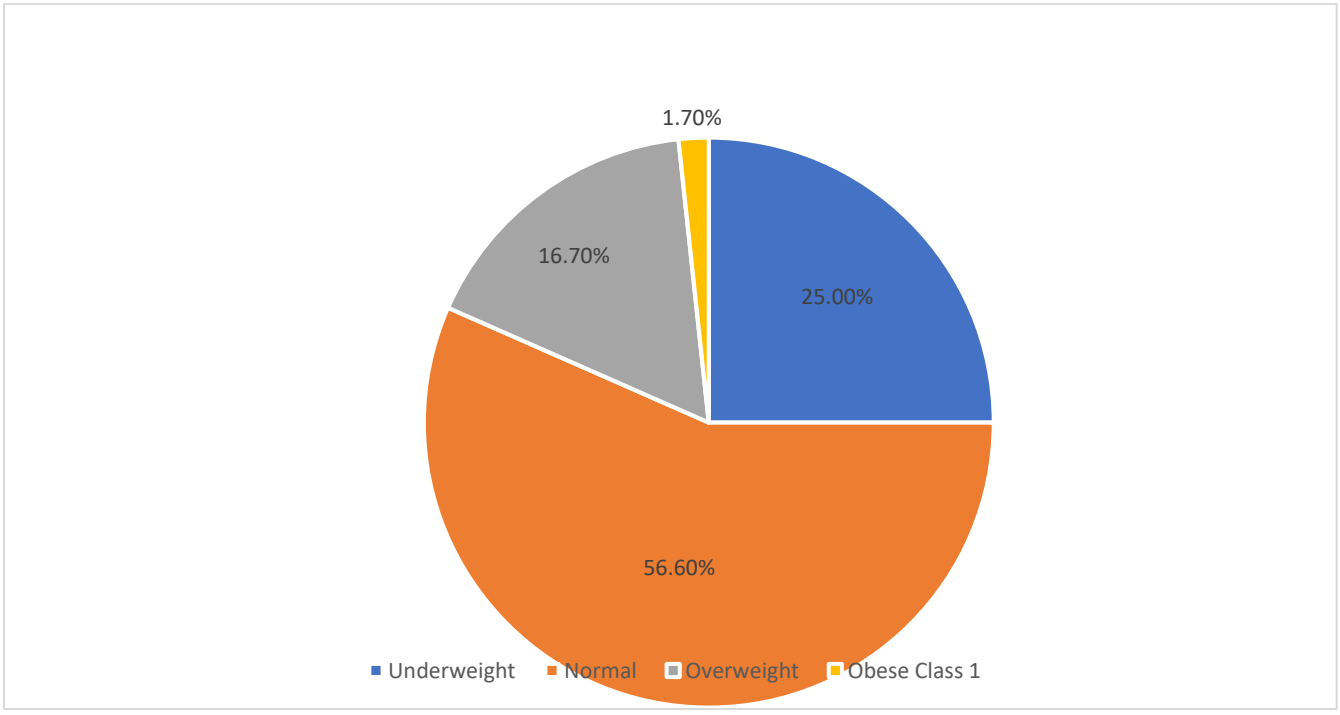

Fig. 12: Frequency of Body Mass Index of Legazpi Controlled and Uncontrolled Hypertension Patients

ISSN No:-2456-2165

Demographic characteristics	Value			
	Raw data	N	n/N	(%)
Age (years)				
Below 18	0	0	0	0
18 – 44	33	33	0.550	55.0
45 – 55	10	10	0.167	16.7
56 – 65	11	11	0.183	18.3
>65	6	6	0.100	10.0
Men	20	20	0.333	33.3
Women	40	40	0.667	66.7
Civil Status				
Single	16	16	0.266	26.6
Married	37	37	0.616	61.6
Widowed	3	3	0.500	5.0
Divorced	0	0	0.000	0
Not revealed	4	4	0.660	6.6
Employment,				
Full time	19	19	0.317	31.7
Part time	19	19	0.317	31.7
Not working	19	19	0.317	31.7
Not filled	3	3	0.500	5.0
Highest level of education				
None	3	3	0.500	5.0
Primary school	3	3	0.500	5.0
High school	22	22	0.366	36.6
College/University	27	27	0.450	45.0
Not filled	5	5	0.830	8.3
Exercise habits,				
Not exercising	21	21	0.350	35.0
Once weekly	20	20	0.333	33.3
2–3 times weekly	15	15	0.250	25.0
At least 4 times weekly	4	4	0.670	6.7
Not filled	1	1	0.170	1.7
Smoking habits				
Daily smokers	14	14	0.233	23.3
Never smoked	31	31	0.517	51.7
Ex-smokers	15	15	0.250	25.0
Clinical characteristics				
Previous Coronary Heart Disease (CHD)	13	13	0.216	21.6
Previous Myocardial Infarction	35	35	0.583	58.3
Family history of CHD	26	26	0.433	43.3
Hypertension				
Controlled	29	29	0.483	48.3
Uncontrolled	31	31	0.517	51.7
Body mass index in kg/m2,				
Underweight	15	15	0.250	25.0
Normal	34	34	0.566	56.6
Overweight	10	10	0.167	16.7
Obese Class 1	1	1	0.170	1.7

Table 13: Demographic and clinical characteristics of post Controlled and UncontrolledHypertension patients from Albay Municipal, Philippines (N=60)

In Table 13, multiple variables are shown to be associated with depression from this study such as females (66.7%), little or lack of exercise (68.3%) and history of previous myocardial infarction (58.3%).

ISSN No:-2456-2165

HADS ANALYSIS	TOTAL	PERCENTAGE	RANK
NORMAL	15	25.0%	3
BORDERLINE	16	26.70%	2
ABNORMAL	29	48.3%	1
TOTAL	60	100%	

Table 14: Level of Depression among Controlled and Uncontrolled Hypertension patients for Hospitals Anxiety and Depression Scale

Table 14: Level of Depression among Controlled and Uncontrolled Hypertension patients for Hospitals Anxiety and Depression Scale HADS analysis showed that 48.3% of the participants of this study suffer from depression, 26.7% are borderline cases while 25.0% are normal.

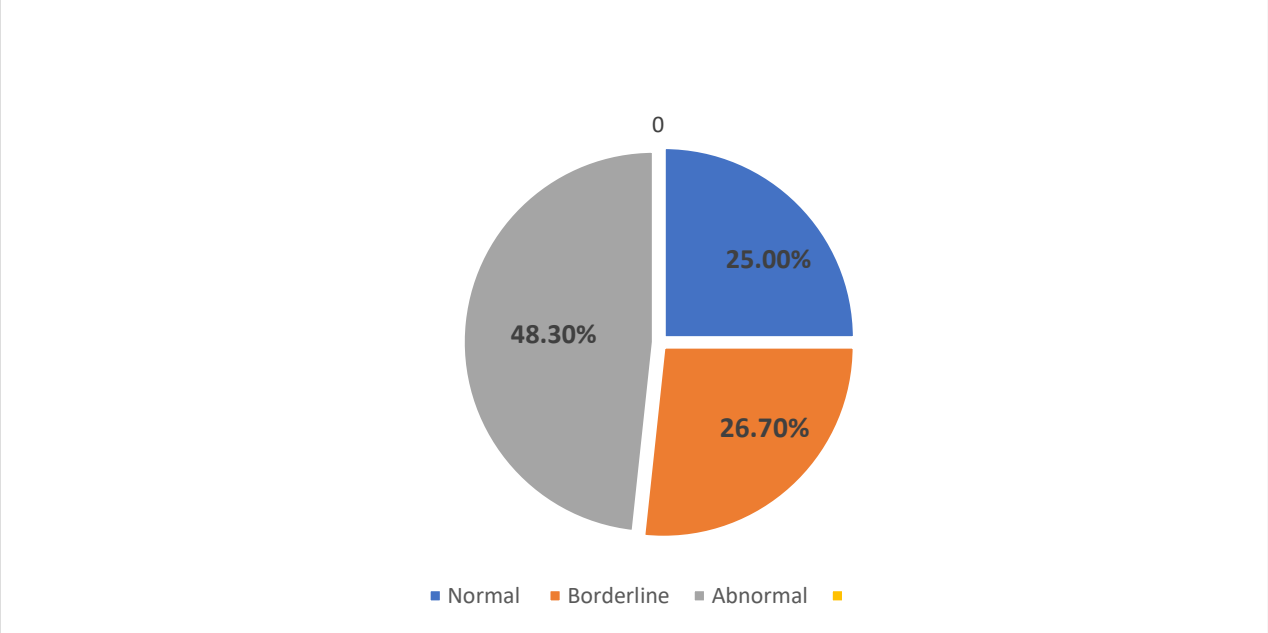

Fig. 13: HADS Depression Analysis of Controlled and Uncontrolled Hypertension patients in Legazpi

HADS ANALYSIS	TOTAL	PERCENTAGE	RANK
NORMAL AND BORDERLINE (NO DEPRESSION)	31	51.7%	1
ABNORMAL (DEPRESSION)	29	48.3%	
TOTAL	60	100%	2

Table 15: HADS Summarized Analysis of Depression among Controlled and Uncontrolled Hypertension Patients in Legazpi

Table 15 shows that 48.3% suffer from depression while 51.7% are not depressed according to HADS

ISSN No:-2456-2165

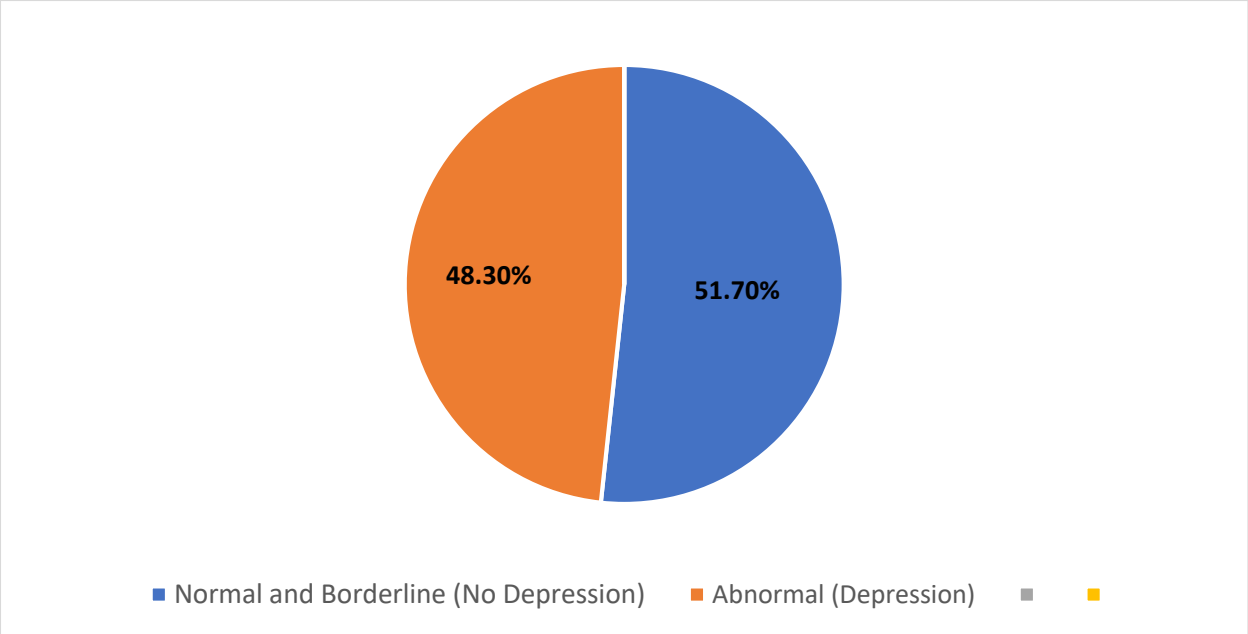

Fig. 14: HADS Percentage Analysis of Depression among Controlled and Uncontrolled Hypertension Patients in Legazpi

HADS ANALYSIS	FREQUENCY			PERCENTAGE	RANK
	MALE	FEMALE	TOTAL		
NORMAL	7	8	15	25.0%	3
BORDERLINE	6	10	16	26.70%	2
ABNORMAL	7	22	29	48.3%	1
TOTAL	20	40	60	100%	

Table 16: HADS Analysis for the frequency, Percentage and Rank of depression among male and femaleControlled and Uncontrolled Hypertension patients in Legazpi

HADS ANALYSIS	FREQUENCY	
	MALE	FEMALE
NORMAL	7	8
BORDERLINE	6	10
ABNORMAL	7	22
TOTAL	20	40

Table 17: HADS Analysis for the frequency of depression among male and femaleControlled and Uncontrolled Hypertension patients in Legazpi

ISSN No:-2456-2165

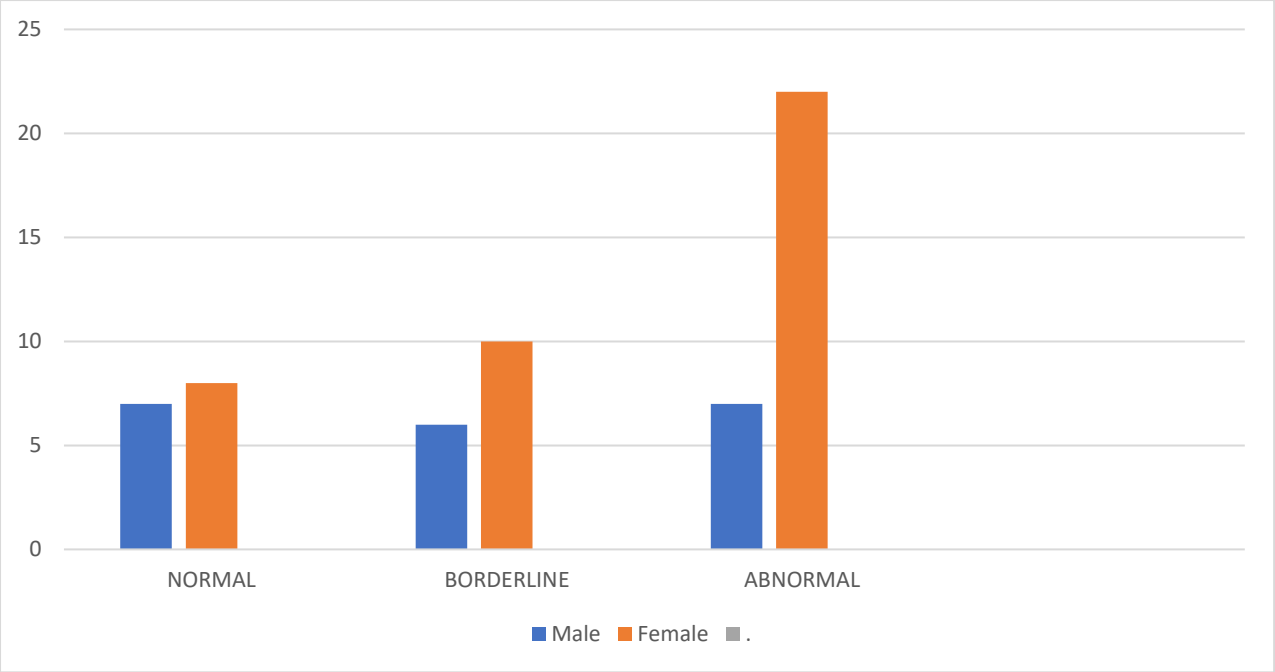

Fig. 15: HADS depression analysis among male and female Controlled and Uncontrolled Hypertension patients in Legazpi

HADS ANALYSIS	FREQUENCY					
	Male	Percentage of Total for Male (%)	Female	Percentage of Total for Female (%)	Grand Total	Percentage (%)
NORMAL	7	35.0	8	20.0	15	25.0
BORDERLINE	6	30.0	10	25.0	16	26.7
ABNORMAL	7	35.0	22	55.0	29	48.3
TOTAL	20	100	40	100	60	100

Table 18: Percentage analysis of the frequencyfor HADS result for male and Female Controlled and Uncontrolled Hypertension Patients in Legazpi

Table 18 shows that 35% of male are depressed, 30% are borderline cases while 35% are normal. 48.3% of females are depressed, 26.7% are borderline cases and 25% are normal.

HADS ANALYSIS	FREQUENCY	
	Controlled	Uncontrolled
NORMAL	12	3
BORDERLINE	8	8
ABNORMAL	12	17
TOTAL	32	28

Table 19: HADS Analysis for the frequency of depression among Controlled and Uncontrolled Hypertension in Legazpi

ISSN No:-2456-2165

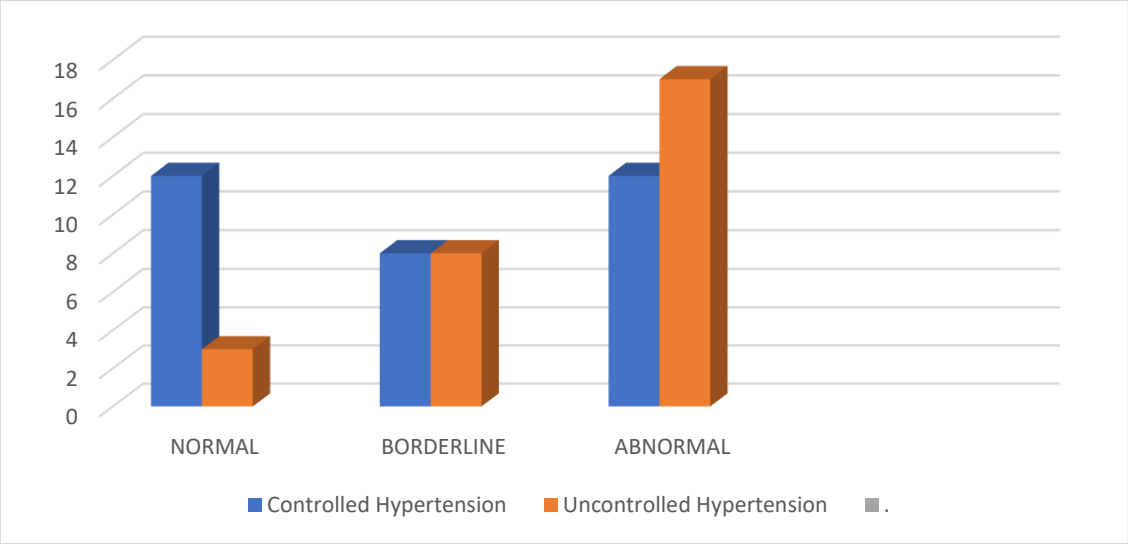

Fig. 16: HADS depression analysis among Controlled and Uncontrolled Hypertension patients in Legazpi

HADS ANALYSIS	FREQUENCY					
	Controlled	Percentage of Total Controlled (%)	Uncontrolled	Percentage of Total Uncontrolled (%)	Total	Percentage (%)
NORMAL	12	37.5	3	10.7	15	25.0
BORDERLINE	8	25.0	8	28.6	16	26.7
ABNORMAL	12	37.5	17	60.7	29	48.3
TOTAL	32	100	28	100	60	100

Table 20: Percentage analysis for the frequency of HADS depression result among Controlled and Uncontrolled Hypertension in Legazpi

Table 20 shows that 37.5% are controlled hypertension patients with depression, 25.0% are controlled hypertension patients with borderline cases, and 37.5% are normal of the total number of controlled hypertension patient. While 60.7% are uncontrolled hypertension patient with depression, 28.6% are uncontrolled hypertension are borderline cases and 10.7% are normal of the total uncontrolled hypertension patients.

HADS ANALYSIS	FREQUENCY					PERCENTAGE	RANK
	MALE		FEMALE		TOTAL		
	Controlled	Uncontrolled	Controlled	Uncontrolled			
NORMAL	6	1	6	2	15	25.0%	3
BORDERLINE	3	3	5	5	16	26.70%	2
ABNORMAL	2	5	10	12	29	48.3%	1
TOTAL	11	9	21	19	60	100%	

Table 21: HADS Analysis for the frequency, Percentage and Rank of depression among Controlled and Uncontrolled Hypertension in Legazpi

ISSN No:-2456-2165

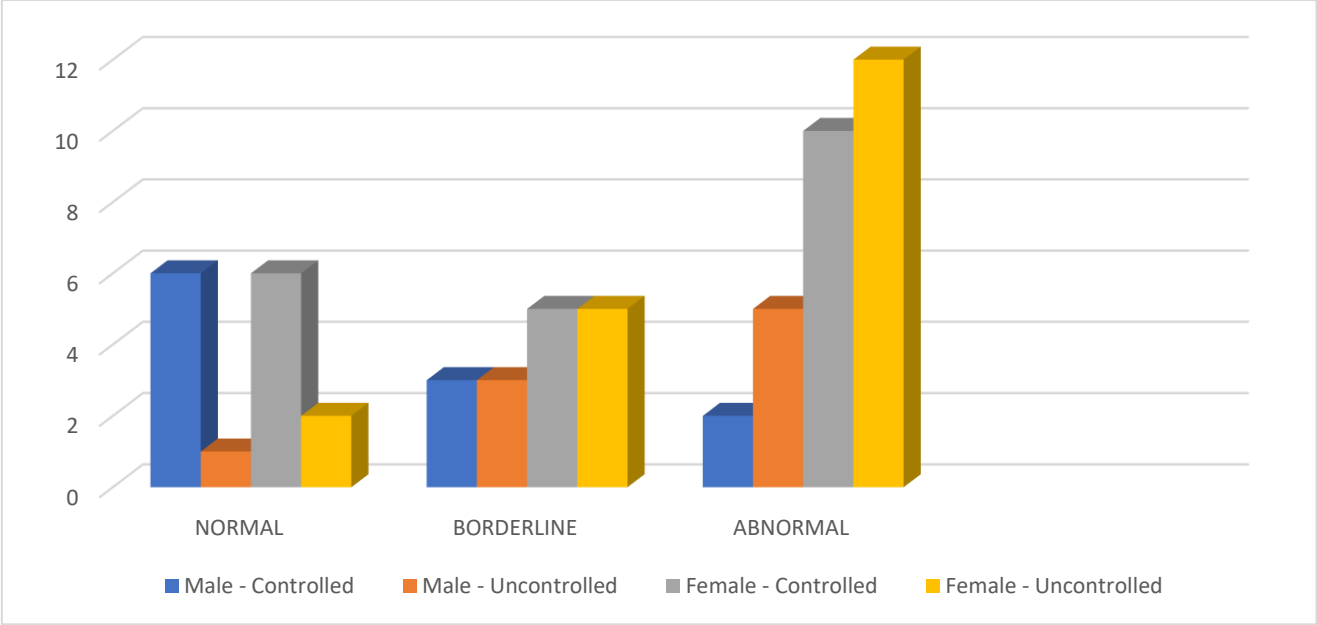

Fig. 17: Extensive HADS Analysis of Depression for Controlled and Uncontrolled Hypertension Patient in Legazpi

BECK DEPRESSION INVENTORY	TOTAL	PERCENTAGE (%)
NORMAL	13	21.7
MILD MOOD DISTURBANCE (MMD)	8	13.3
BORDERLINE	4	6.7
MODERATE DEPRESSION	15	25.0
SEVERE DEPRESSION	8	13.3
EXTREME DEPRESSION	12	20.0
TOTAL	60	100%

Table 22: Level of Depression among male and female with Controlled and Uncontrolled Hypertension for Beck's Depression Inventory in Legazpi

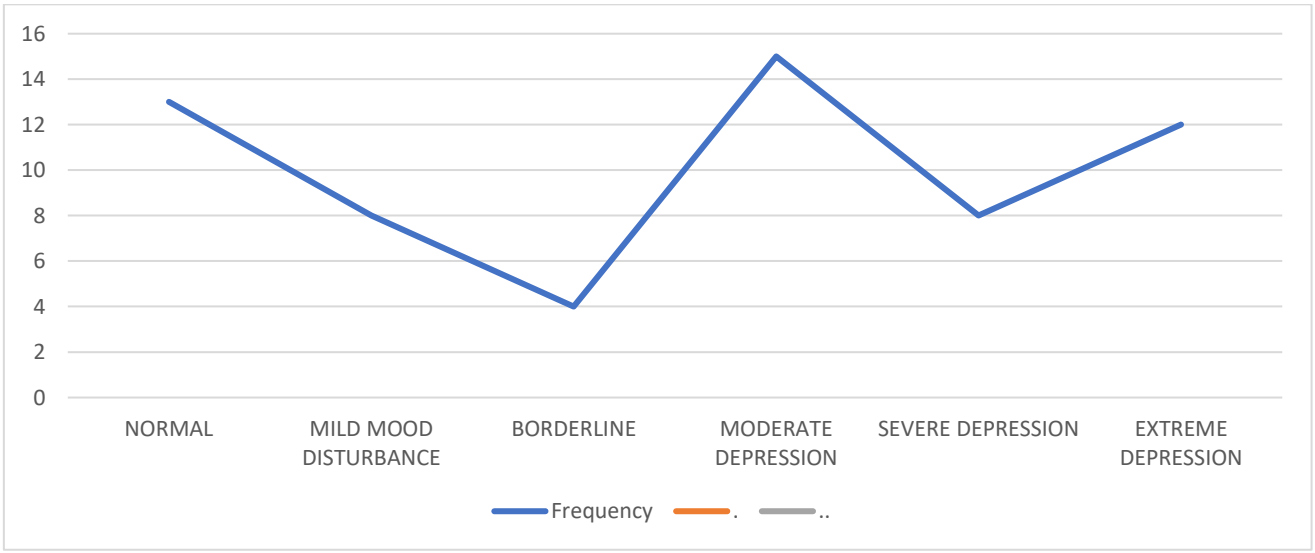

Fig. 18: Beck's Depression Analysis of Controlled and Uncontrolled Hypertension patients in Legazpi

ISSN No:-2456-2165

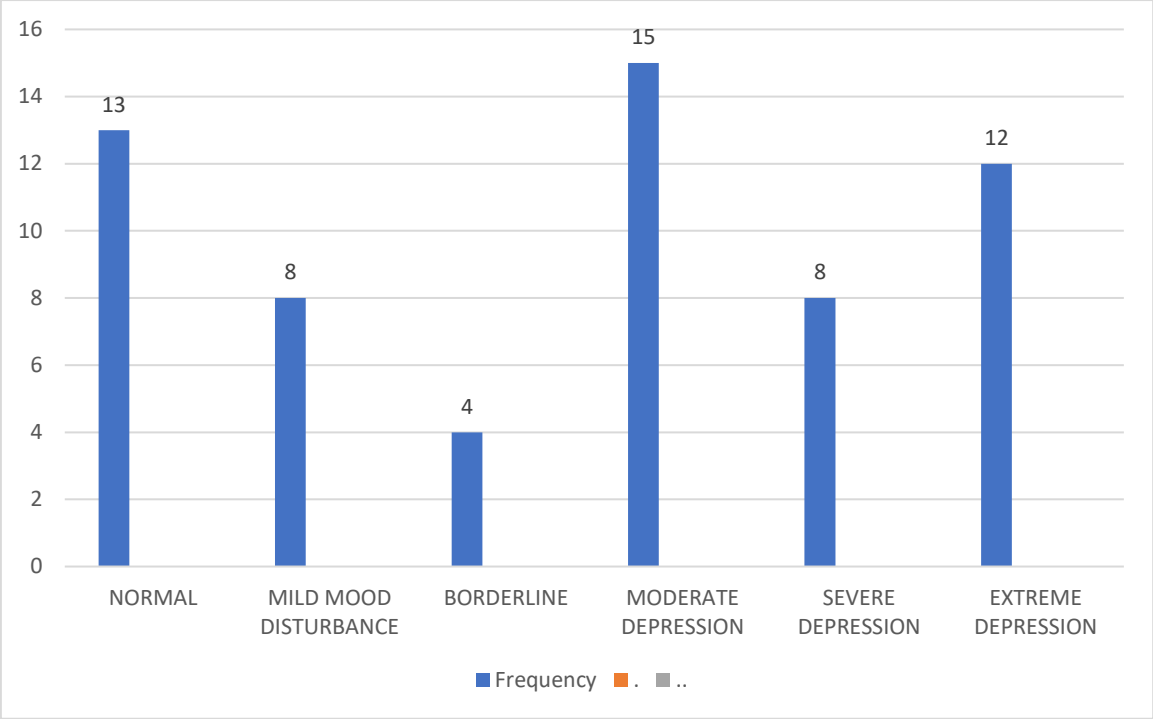

Fig. 19: Beck's Depression Analysis of Controlled and Uncontrolled Hypertension patients in Legazpi, Albay

BECK DEPRESSION INVENTORY	FREQUENCY			PERCENTAGE (%)	RANK
	MALE	FEMALE	TOTAL		
NORMAL	4	9	13	21.7	2
MILD MOOD DISTURBANCE (MMD)	2	6	8	13.3	1
BORDERLINE	1	3	4	6.7	4
MODERATE DEPRESSION	4	11	15	25.0	
SEVERE DEPRESSION	4	4	8	13.3	3
EXTREME DEPRESSION	5	7	12	20.0	
TOTAL	20	40	60	100%	

Table 23: Level of Depression among male and female with Controlled and Uncontrolled Hypertension for Beck's Depression Inventory in Legazpi, Albay

BECK DEPRESSION INVENTORY	FREQUENCY	
	MALE	FEMALE
NORMAL	4	9
MILD MOOD DISTURBANCE (MMD)	2	6
BORDERLINE	1	3
MODERATE DEPRESSION	4	11
SEVERE DEPRESSION	4	4
EXTREME DEPRESSION	5	7
TOTAL	20	40

Table 24: Beck's Analysis for the frequency of depression among male and female Controlled and Uncontrolled Hypertension patients in Legazpi

ISSN No:-2456-2165

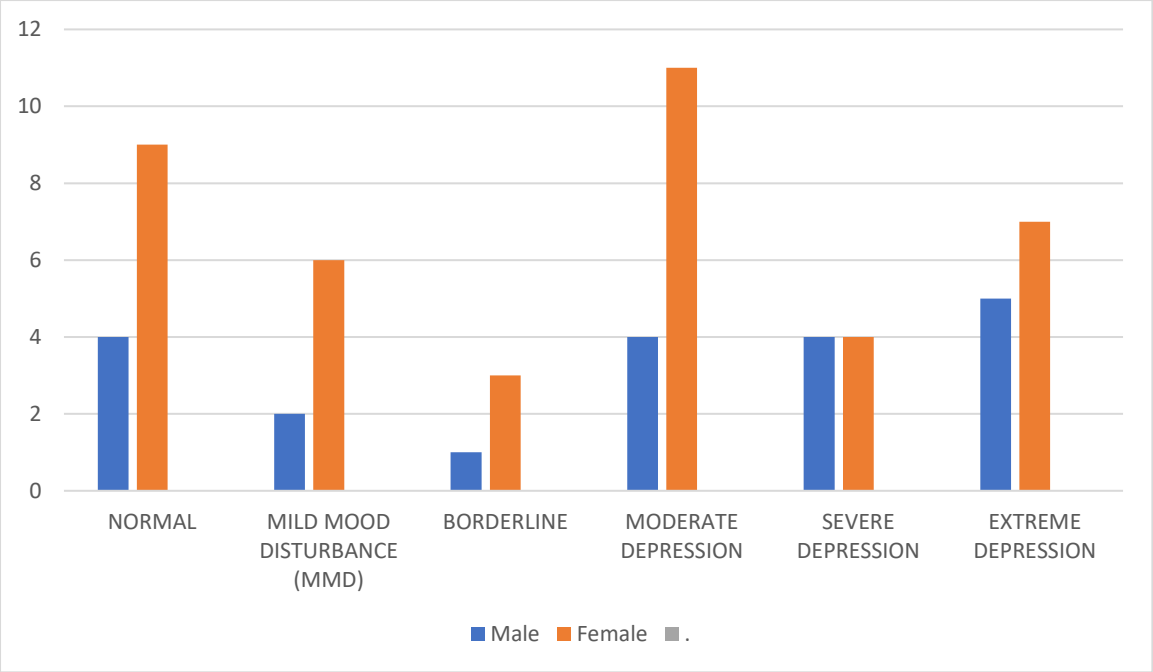

Fig. 20: Beck's depression analysis among male and female Controlled and Uncontrolled Hypertension patients in Legazpi

BECK'S DEPRESSION INVENTORY	FREQUENCY					
	MALE	Percentage of Total for Male (%)	FEMALE	Percentage of Total for Female (%)	Grand Total	Percentage (%)
NORMAL	4	20.0	9	22.5	13	21.7
MILD MOOD DISTURBANCE (MMD)	2	10.0	6	15.0	8	13.3
BORDERLINE	1	5.0	3	7.5	4	6.67
MODERATE DEPRESSION	4	20.0	11	27.5	15	25.0
SEVERE DEPRESSION	4	20.0	4	10.0	8	13.3
EXTREME DEPRESSION	5	25.0	7	17.5	12	20.0
TOTAL	20	100	40	100	60	100

Table 25: Percentage analysis of the frequency according to sex for Beck's result for male and Female Controlled and Uncontrolled Hypertension Patients in Legazpi

BECKS ANALYSIS	TOTAL	PERCENTAGE	RANK
NORMAL, MILD MOOD DISTURBANCE AND BORDERLINE (NO DEPRESSION)	25	41.7%	2
MODERATE, SEVERE AND EXTREME (DEPRESSION)	35	58.3%	1
TOTAL	60	100%	

Table 26: Beck's Summarized Analysis of Depression among Controlled and Uncontrolled Hypertension Patients in Legazpi

ISSN No:-2456-2165

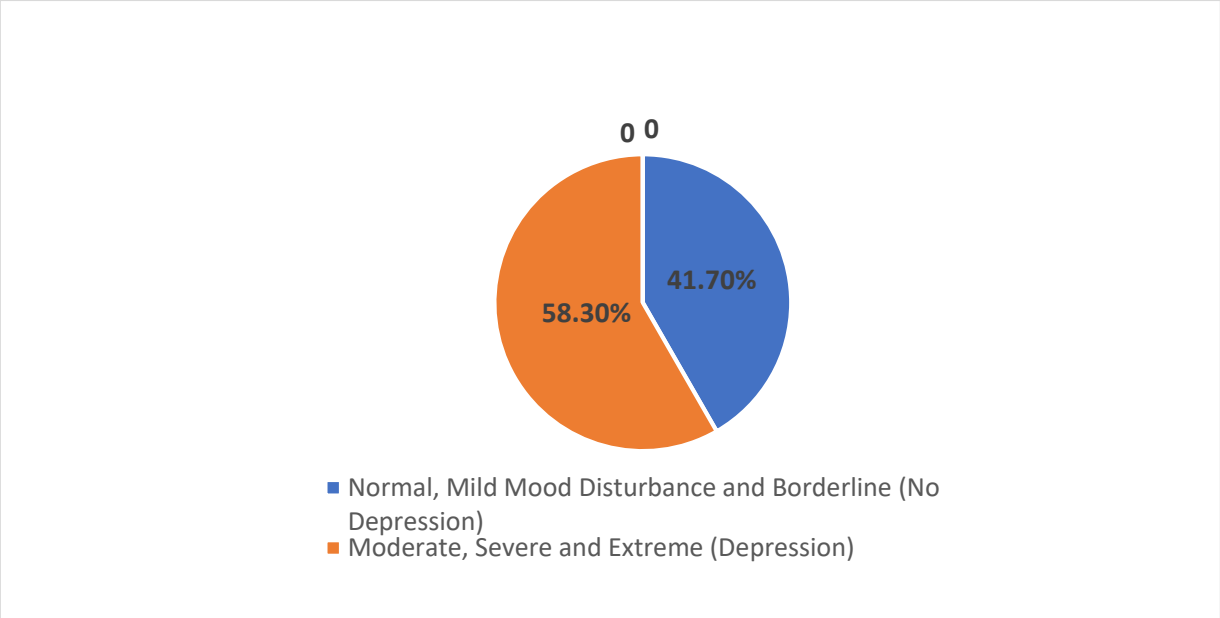

Fig. 21: Beck's Percentage Analysis of Depression among Controlled and Uncontrolled Hypertension Patients in Legazpi

BECK DEPRESSION INVENTORY	FREQUENCY					PERCENTAGE (%)	RANK
	MALE		FEMALE		TOTAL		
	Controlled	Uncontrolled	Controlled	Uncontrolled			
NORMAL	4	-	8	1	13	21.7	2
MILD MOOD DISTURBANCE (MMD)	2	-	4	2	8	13.3	4
BORDERLINE	1		1	2	4	6.7	5
MODERATE DEPRESSION	3	1	5	6	15	25.0	1
SEVERE DEPRESSION	1	3	2	2	8	13.3	4
EXTREME DEPRESSION	-	5	1	6	12	20.0	3
TOTAL	11	10	21	18	60	100%	

Table 27: Beck's Analysis for the frequency, Percentage and Rank of depression among Controlled and Uncontrolled Hypertension in Legazpi

BECK DEPRESSION INVENTORY	FREQUENCY			
	MALE		FEMALE	
	Controlled	Uncontrolled	Controlled	Uncontrolled
NORMAL	4	-	8	1
MILD MOOD DISTURBANCE (MMD)	2	-	4	2
BORDERLINE	1		1	2
MODERATE DEPRESSION	3	1	5	6
SEVERE DEPRESSION	1	3	2	2
EXTREME DEPRESSION	-	5	1	6
TOTAL	11	10	21	18

Table 28: Beck's Analysis for the frequency of depression among Controlled and Uncontrolled Hypertension in Legazpi

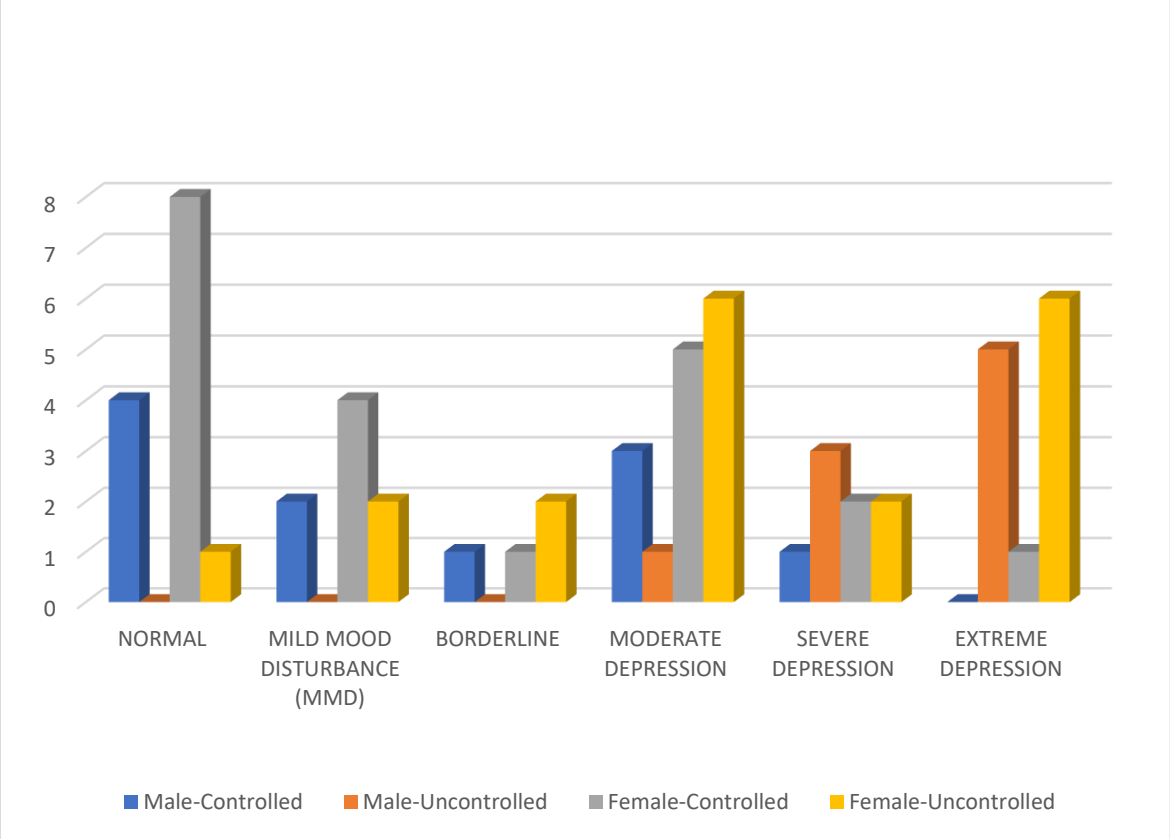

Fig. 22: Extensive Beck's Analysis of Depression for Controlled and Uncontrolled Hypertension Patient in Legazpi

BECK'S DEPRESSION INVENTORY	FREQUENCY					
	Controlled	Percentage of Total for Controlled (%)	Uncontrolled	Percentage of Total for Uncontrolled (%)	Grand Total	Percentage (%)
NORMAL	12	37.5	1	3.6	13	21.7
MILD MOOD DISTURBANCE (MMD)	6	18.8	2	7.1	8	13.3
BORDERLINE	2	6.3	2	7.1	4	6.7
MODERATE DEPRESSION	8	25.0	7	25.0	15	25.0
SEVERE DEPRESSION	3	9.3	5	17.9	8	13.3
EXTREME DEPRESSION	1	3.1	11	39.3	12	20.0
TOTAL	32	100	28	100	60	100

Table 29: Percentage analysis for the frequency of Beck's depression result among Controlled and Uncontrolled Hypertension in Legazpi

Table 30.	Depression	
Hypertension (Controlled and Uncontrolled)	**18**	**11**
	10	**20**

Table 30: 2X2 Table for Controlled and Uncontrolled Hypertension against Depression for Hospital Anxiety and Depression Scale

Odd's Ratio (OR) for HADS result = ad/bc

. a = 18, b =11, c = 10, d = 20

OR for HADS result = (18 x 20) ÷ (11 x 10)

= 360 ÷ 110

= **3.27**

$I_e = a \div (a + b)$ $I_o = c \div (c + d)$

$I_e = 18 \div (18 + 11)$ $I_o = 10 \div (10 + 20)$

$I_e = 18 \div 29$ $I_o = 10 \div 30$

$I_e =$ **0.62** $I_o =$ **0.33**

Relative Risk (RR) = $\mathbf{I_e \div I_o}$

Relative Risk for HADS Result = 0.62 ÷ 0.33

= **1.88**

Attributable Risk (AR) for HADS Result = $\mathbf{I_e - I_o}$

AR = 0.62 –0.33

= **0.29**

ISSN No:-2456-2165

Table 31	Depression	
Hypertension (Controlled and Uncontrolled)	25	4
	11	20

Table 31: 2X2 Table for Controlled and Uncontrolled Hypertension against Depression for Becks Depression Inventory

Odd's Ratio (OR) for Beck's result = ad/bc

. a = 25, b = 4, c = 11, d = 20

OR for HADS result = (25 x 20) ÷ (11 x 4)

= 500 ÷ 44

= **11.36**

I_e = a ÷ (a + b) I_o = c ÷ (c + d)

I_e = 25 ÷ (25 + 4) I_o = 11 ÷ (11 + 20)

I_e = 25 ÷ 29 I_o = 11 ÷ 30

I_e = **0.86** I_o = **0.37**

Relative Risk (RR) = $\mathbf{I_e \div I_o}$

Relative Risk for HADS Result = 0.86 ÷ 0.37

= **2.32**

Attributable Risk (AR) for HADS Result = $\mathbf{I_e - I_o}$

AR = 0.86 –0.35

= **0.49**

For the result gotten from HADS in Table 30, the Odds ratio is **3.27**, the Relative risk is **1.88** while the Attributable Risk is **0.29**

For the result gotten from Beck Depression Inventory in Table 31, the Odds ratio is **11.36**, the Relative risk is **2.32** while the Attributable Risk is **0.49**

IV. DISCUSSION

In this study, we found out the prevalence of depression among Controlled and Uncontrolled Hypertension patients in Legazpi, Albay, Philippines.

The study design was a cross-sectional design which involved the use of Hospital Anxiety and Depression Scale and Beck Depression Inventory which are standardized tools and they were translated into the local languages spoken in Legazpi (Taglog and Bicolano) to ensure unbiased analysis of the result without influence of language barrier phenomenon.

To the best our knowledge, this is first study in Legazpi, Albay, Philippines on the prevalence of depression among controlled and uncontrolled hypertension patients using the HADS and Beck's questionnaire. There are few mental health centers in the country with limited capacity a and few Psychiatrist as such insufficient number of specialists to attend to the ever-increasing mental needs of the growing populace.

Depression was found to be common among both controlled and uncontrolled hypertension patients but more in the later. From the sixty(60) controlled and uncontrolled hypertension patients in this study, according to HADS, 29 (48.3%) had depression while according to Beck Depression inventory 35 (58.3%) had depression and this figure goes in

tandem with the result of a similar previous study carried out in Afghanistan on hypertensive patients[Hamrahet al.,2018]. The findings of our study are supported by the high prevalence of depression in the Philippines as reported in August 2019 [Punay, 2019]. For HADS, borderline cases were 26.7% which shows measures must be taken to avoid depression, while for Beck's Depression Inventory borderline cases were 6.7%.

Some of the limitations in this study includes the confidence interval of ninety (90% = ± 1.64) used, the sample size which consisted of a single health facility data source. Although the City Health facility receives patient from different parts of Albay, the single health facility nature of thisstudy may affect its ability to generalize to the entire population of Philippines. However, the City Health is a referral health center inAlbay for all primary health centers and birthing centers andthe patient pool should be reasonably representative, assuming that the pattern of morbidity does not differ greatly inpractice in various parts of Philippines. The results are in agreement with other studies and should be useful for data gathering concerning this issue.

Also, the nature of this study been a cross-sectional study makes it difficult to find out the temporality between controlled and uncontrolled hypertensiondiagnosis and mental health outcomes. Finally, the sampling was purposive, therebymay limit the overall power of its representation of the entire population.

REFERENCES

[1.] American Heart Association (2016). How high blood pressure is diagnosed; https://www.heart.org/en/health-topics/high-blood-pressure/the-facts-about-high-blood-pressure/how-high-blood-pressure-is-diagnosed

[2.] Felman. A, Spriggs. B.B, (2019). Everything you need to know about hypertension. https://www.medicalnewstoday.com/articles/150109.php#management-and-treatment

[3.] GanasegeranK., RenganathanP., ManafR. A, and Al-DubaiS. A. R., "Factors associated with anxiety and depression among type 2diabetes outpatients in Malaysia: a descriptive cross-sectional single-centre study," BMJ Open, vol. 4, no. 4, Article ID e004794, 2014.

[4.] View at Publisher · View at Google Scholar · View at Scopus

[5.] HamrahM.S., Hamrah M.H, Ishii H., Suzuki S., Hamrah M.Hu., Hamrah A.E, Dahi A.E,Takeshita K., YisireyiliM.,Mohammad HH., Fotouhi A., Sakamoto J., and Murohara T.Anxiety and Depression among Hypertensive Outpatients in Afghanistan: A Cross-Sectional Study in Andkhoy City. International Journal of Hypertension, Volume 2018, Article ID 8560835. https://doi.org/10.1155/2018/8560835

[6.] Houlihan S.J, Simpson S.H., Cave M.B., Flook N.W., Hurlburt M.E., Lord C.J., Smith L.L., and Sternberg H.H. Hypertension treatment and Control rates; chart review in an academic family medicine clinic. Canadian Family Physician. *2009 Jul; 55(7): 735–741*.

[7.] http://www.med.navy.mil/sites/NMCP2/PatientServices/SleepClinicLab/Documents/Beck_Depression_Inventory.pdf

[8.] Jezard A. Depression is the no. 1 cause of ill health and disabilityworldwide -World Economic Forum (2018);https://www.weforum.org/agenda/2018/05/depression-prevents-many-of-us-from-leading-healthy-and-productive-lives-being-the-no-1-cause-of-ill-health-and-disability-worldwide/

[9.] Keenan N.L, Rosendorf K.A. Prevalence of Hypertension and Controlled Hypertension --- United States, 2005 – 2008. Morbidity and Mortality Weekly Report (MMWR). January 14, 2011 / 60(01);94-97

[10.] KilicM., UzunçakmakT., and EdeH.. "The effect of knowledge about hypertension on the control of high blood pressure." InternationalJournal of the Cardiovascular Academy, *(2016) vol. 2, no. 1, pp. 27–32*. View at Publisher · View at Google Scholar

[11.] Mahmood S., Hassan S.Z., Tabraze M., Khan M.O, Javed I.,Ahmed A., Siddiqui O.M, Narmeen M, Ahmed M.J., Tariq A., Patel M.S,and Kaneez F. Prevalence and Predictors of Depression AmongstHypertensive Individuals in Karachi, Pakistan. Cureus. *2017 Jun; 9(6): e1397*.

[12.] Prathibha M. T., Varghese S., Gokul D. V., Jincy J. Prevalence of depression among hypertensive individuals in urban Trivandrum: a cross sectional study. International Journal of Community Medicine and Public Health *(2017)Vol 4, No 6)*>***T.***DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20172194

[13.] Punay E. 3.3 million Pinoys suffer from depression. The Philstar*(2019).*

[14.] https://www.philstar.com/headlines/2019/08/29/1947360/33-million-pinoys-suffer-depression
Rubio-Guerra A.F, Rodriguez-Lopez L., Vargas-Ayala G., Huerta-Ramirez S., Serna D.C and Lozano-Nuevo J.J. Depression increases the risk for uncontrolled hypertension. Experimental and Clinical Cardiology,*(2013) Winter; 18(1): 10–12.*

[15.] WebMD – What is high blood pressure; (2019). https://www.webmd.com/hypertension-high-blood-pressure/guide/understanding-high-blood-pressure-basics#1
World Hypertension Day 2019 - WHO; http://www.who.int>cardiovascular_diseases> world-hypertension-day

[16.] World---- https://www.worldometers.info