European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 7, Issue 11, 2020

Treatment Compliance among Hypertensive Patients in the Selected Municipalities in the First District of Ilocos Su

Joussie Bajet- Bermio[1],Geraldine Arellano- Palomares[2], Lowie Lynette Quibol- Basconcillo[3]

[1,2,3] College of Health Sciences, University of Northern Philippines, Tamag, Vigan City

E-mail: joussiebermiochs@unp.edu.ph

Abstract: The study dealt with the hypertensive patients' treatment compliance in the selected municipalities in the First District of Ilocos Sur for the Calendar Year 2020. It described the respondents' treatment compliance on hypertensive medication, follow-up check-up, and lifestyle modification. It also identified the perceived barriers in taking the medication. Lastly, it looked into the significant relationship between the respondents' treatment compliance and their profile, perceived causes, and knowledge of hypertension.

The study used the descriptive-correlational method. All the 209 hypertensive patients who sought consultation at the Municipal Health Offies (MHOs) of Caoayan, Vigan , and Sto. Domingo for July and August 2020 served as the respondents. The data were collected using a questionnaire-checklist formulated by the researchers and content validated by a pool of experts. Data were treated through frequency and percentage, mean, and simple linear correlation analysis.

A great majority of the respondents are married and with a family history of hypertension. The majority are females and have no family history of cardiovascular disease. A significant percentage are 55-59 years old, high school graduates, unskilled workers, earn monthly of Php 5,000 and below, and have Stage 2 hypertension. Eating of high cholesterol foods was perceived as the number one cause of hypertension. Almost all of the respondents know that hypertension is preventable, curable, fatal, and can lead to a heart attack or stroke complications that are preventable. A person on treatment cannot stop medication after normalizing blood pressure. The respondents' overall treatment compliance is "Very High," and they "Moderately Agree" on the cost, symptom experience, work-related, availability/ accessibility, family-related, and personal-related matters as barriers in taking the hypertensive medications. The family monthly income, cardiovascular disease presence, perceived causes, and knowledge of hypertension are significantly related to treatment compliance.

Keywords: medication, follow up check-up, lifestyle modification, causes, and knowledge.

1. INTRODUCTION

Hypertension is one of the most common risk factors that predispose an individual to be cardiovascular/cerebrovascular disease such as stroke. Often, it is undiagnosed, that makes the individual unaware of his condition. It is one of the top killers affecting all individuals regardless of age.

Dr. Castillo, a member of the Executive Council of the International Society of Hypertension (ISH) based in the United Kingdom and Chair, Communications Committee, said that most hypertensive patients have no symptoms. The known symptoms of hypertension like headache, dizziness, nape pain, and blurring of vision are non-specific and

could be due to other causes. The best way to find out is to have one's blood pressure taken (Orillo, 2019).

Still, from the above source, high blood pressure is the number one contributing factor for global death, causing strokes, heart attacks, and other cardiovascular complications, with 10 million people dying each year from conditions related to hypertension. In the Philippines, based on the Department of Health's national survey in 2017, the total number of hypertensive Filipinos is now more than 12 million. More than half of them are unaware of their condition (Orillo, 2019).

According to the records filed at the Provincial Health Office in Ilocos Sur as of 2019, there are 7,138 cases of hypertension among adults aged 20 years old and above (FHSIS, 2019). The top five municipalities in the First District of Ilocos Sur in terms of hypertension cases reported are Caoayan, Vigan City, and Sto. Domingo, San Juan, and Bantay with 1, 453, 543, 382, 332, and 236.

There are several measures in controlling one's blood pressure, and hypertensive medications are one. Antihypertensive drugs effectively lower blood pressure (BP), prevent target organ damage, averting cardiovascular disease, and reducing mortality (Yoon, Fryar, and Carroll, as cited in Abas (2020).

Patients' nonadherence to medication was mainly related to the following factors: Marital status, age, believing in the effectiveness of the therapy regimen, all with different effects on adherence level. Old age and marital status are significantly related to nonadherence to medication in hypertensive patients (Abas, 2020).

Only 23% of the patients were fully compliant with healthy lifestyle behaviors. Gender, physician counseling on a healthy lifestyle, patients' beliefs about hypertension management, and their knowledge of hypertension and its leadership have an independent effect on compliance with lifestyle recommendations (Alefan, Huwari, Alshogan, Jarrah, 2019).

Shah et al. (2018) found out in their study that factors positively associated with compliance were gender and illiteracy. Patients living in rural areas had significantly higher nonadherence/noncompliance (Zhang et al. 2017). However, in a study by Amira and Okubadejo (2019), gender, age, educational level, and presence of co-morbidities did not affect compliance. There was a significant correlation between age group, family function, and social support with adherence; however, there was no significant correlation between gender and marital status (Ofoli, Dankyau, Sule, & Lass, 2017).

In a study conducted by Choy et al. (2018), respondents with a family history of hypertension or cardiovascular diseases were associated with good adherence to hypertension treatment. Respondents with a family member with hypertension had no significant correlation with commitment (Ofoli, Dankyau, Sule, & Lass, 2017). Zhang (2017) found out that the severity of the disease, community management, and patients with diabetes had a statistically significant negative association with nonadherence ($P<0.05$). The nonadherence rate of patients with diabetes was 0.656 times lower than that of patients without diabetes.

Common reasons for frequently skipping the dose were forgetfulness (41.2%) and discontinued the medication when feeling well (30.3%). Various factors related to patients' attitudes and beliefs frequently contribute to adherence to treatment (Amira and Okubadejo, 2019). Family and social support were significant predictors of good medication adherence (Ofoli, Dankyau, Sule, and Lass, 2017).

Hypertension is one of the most important modifiable risk factors for cardiovascular disease, and treatment compliance could reduce the individual's cardiovascular risk. Therefore access to treatment with hypertensive medication is the critical factor in the control of hypertension. Adherence to antihypertensive therapy reduces the risk of complications.

Low adherence to hypertension (HT) management is a significant contributor to insufficient blood pressure (BP) control. Approximately 40%–60% of patients with HT do not follow the prescribed treatment.

(Jankowa-Polansaka et al., 2016). Medical noncompliance has been identified as a significant public health problem in treating hypertension (Gascon et al., 2004).

The health workers, particularly nurses and midwives, play a significant role in educating hypertensive people to adhere to their treatment regimen. Moreover, it is also their responsibility to assist people and implement measures to alleviate their suffering.

The researchers fully believe that it is essential to understand the factors affecting patients' compliance so that successful treatment is not jeopardized. Besides that, knowing patients' priorities regarding the most critical aspects of care that have a high potential for low compliance may improve the quality of care of hypertensive patients.

The results would help the Department of Health (DOH) to intensify health strategies/ programs to help the people diagnosed with hypertension. The findings would also enable the nurses and midwives to formulate prompt, appropriate, and clinically sound interventions to help them manage their health condition. For the academe, the College of Health Sciences and the College of Nursing intensify the discussions on hypertensive disorders. For the student health workers, specifically the nursing and midwifery students, the study's result would serve as a basis for them in conducting health teachings to the community people. For the respondents, the development of the study may create awareness of the concepts of hypertension. Lastly, the researchers should plan what they can do to help hypertensive people cope with their present health situation.

The study looked into the factors that are significantly related to hypertensive patients' treatment compliance in selected municipalities in the First District of Ilocos Sur for July and August 2020.

Specifically, it determined the a) socio-demograhic profile of the respondents in terms of age, sex, civil status, educational attainment, occupation, and monthly family income; b) family history of hypertension and cardiovascular disease; and stage of hypertension. It also looked into the respondents' perceived causes and knowledge of hypertension, their extent of treatment compliance along hypertensive medication, follow up check-up, and lifestyle modification, and the barriers in taking antihypertensive medication. Lastly, it dogged into the significant relationship between the extent of treatment compliance of the respondents and their profile, perceived causes, and knowledge of hypertension.

2. Methodology:

Research Design. The research employed a descriptive-correlational design. It described the extent of treatment compliance of the respondents. It also described the relationship between the respondents' extent of treatment compliance with their profile, perceived causes, and knowledge of hypertension. Documentary analysis of the records filed at the different Municipal Health Officers (MHOs) was used to elicit the respondents' health-related and hypertension stages.

Population and Sample. The respondents of the study were all the hypertensive patients diagnosed and reported for the Calendar Years 2014-2017 who sought consultation at the MHOs, for the period July and August 2020 in the municipalities of Caoayan, Vigan, and Sto. Domingo. The inclusion criteria in selecting the respondents were the following: (a) adults aged over 25 years old, (b) newly diagnosed and reported hypertensive for the Calendar Years 2014-2017. The only exclusion criteria will be the refusal to participate.

Below is the distribution of the respondents.

Table 1
Distribution of the respondents

Municipality	**N**
Caoayan	65
Vigan City	61
Sto. Domingo	83
Total	**209**

Data Gathering Instrument. The study utilized a questionnaire- checklist as the primary data gathering tool. It was formulated by the researchers and was content validated by a pool of experts.

The questionnaire- checklist for the respondents consisted of the following parts:

Part I described the sociodemographic, family history, and hypertension stages of the respondents.

Part II identified the perceived causes of hypertension of the respondents.

Part III looked into the respondents' knowledge about hypertension.

Part IV measured the extent of treatment compliance of the respondents.

Part V covered the perceived barriers in taking hypertensive medications.

The following norms of interpretation were used to measure the extent of treatment compliance

A. **Along with Lifestyle Modification, Follow up Check-up, and Medication Norm**

Mean Scale:	**Item DR**	**Overall DR**
4.21-5.00	Always (A)	Very High (VH)
3.41-4.20	Often (O)	High (H)
2.61-3.40	Sometimes (So)	Average (A)
1.81-2.60	Seldom (Se)	Low (L)
1.00-1.80	Never (N)	Very Low (VL)

B. **On the Perceived Barriers of Taking Hypertensive Medication of the Respondents**

Mean Scale	**DR (Per Area)**	**Overall DR**
4.20 – 5.00	Very Much Agree (VMA)	Very High (VH)
3.40 – 4.19	Moderately Agree (MA	High (H)
2.60 – 3.39	Undecided (U)	Average (A)
1.80 – 2.59	Disagree (D)	Low (L)
1.00 – 1.79	Strongly Disagree (SD)	Very Low (VL)

Data Gathering Procedure. The researchers asked for the municipalities in the First District of Ilocos Sur with the highest incidence of hypertension at the Provincial Health Office. The researchers chose the three nearest municipalities among the top five towns: Caoayan, Vigan City, and Sto, Domingo. Upon knowing the locale of the study, the researchers coordinated with the Municipal Health Officers. Due to the Covid 19 pandemic, data gathering was done at the MHO during the respondents' check-up. Total enumeration of all the respondents who sought consultation during July and August was employed for the patients who met the criteria.

Ethical Considerations. Ethical considerations are observed before the conduct of the study. This study is subjected to review by the Ethics Committee of the University of Northern Philippines to protect the respondents' rights and privileges.

Statistical Treatment of Data. The data gathered in the study were treated and analyzed using the following statistical tools.

1. Frequency and percentage to describe the profile of the respondents.
2. Mean to describe the extent of treatment compliance.
3. Simple linear correlation analysis to determine the relationship between the extent of treatment compliance of the respondents and their profile, perceived causes, and knowledge on hypertension.

3. Results and Discussion

On the sociodemographic, family history, and hypertension stage of the respondents.

Table 2
Distribution of the Respondents in terms of Socio-demographic Factor

Sociodemographic Factors	**Frequency**	**Percentage**
Age		
80 years old and above	3	1.44
75-79 years old	3	1.44
70-74 years old	30	14.35
65-69 years old	30	14.35
60-64 years old	31	14.83
55-59 years old	32	15.31
50-54 years old	23	11.00
45-49 years old	24	11.48
40-44 years old	13	6.22
35-39 years old	11	5.26
30-34 years old	8	3.83
below 30 years old	1	.48
Total	**209**	**100.00**
Sex		
Male	87	41.63
Female	122	58.37
Total	**209**	**100.00**
Civil Status		
Single	20	9.57
Married	161	77.03
Widowed	28	13.40
Total	**209**	**100.00**
Educational Attainment		
Doctoral Degree Graduate	1	0.48
Masters Graduate	1	0.48
Masteral Undergraduate	1	0.48
College Graduate w/ MA units	1	0.48
College Graduate	56	26.79
College Undergraduate	36	17.22
High School Graduate	61	29.19

High School Undergraduate	13	6.22
Elementary Graduate	33	15.79
Elementary Undergraduate'	6	2.87
Total	**209**	**100.00**
Occupation		
Professional	21	10.05
Skilled	45	21.53
Unskilled	59	28.23
Pensioner	38	18.18
None	46	22.01
Total	**209**	**100.00**
Monthly Family Income		
Php 25,001 and above	13	6.22
Php 20,001-Php25,000	7	3.35
Php 15,001 -Php20,000	12	5.74
Php10,001-Php15,000	35	16.75
Php5,001 -Php10,000	43	20.57
Php5,000 and below	99	47.37
Total	**209**	**100.00**
Place of Residence		
Barangay	188	89.95
Poblacion	21	10.05
Total	**209**	**100.00**

It is reflected on the table that a great majority are married (161 or 77.03%), the majority are females (122 or 58.37%), and a great percentage (32 or 15.31%) of the respondents are 55-59 years old, are high school graduates (61 or 29.19%), are unskilled workers (59 or 28.23%), and earn Php 5,000 and below (99 0r 47.37%).

Table 3

Distribution of the Respondents in terms of Family History of the Respondents

Family History	Frequency	Percentage
Hypertension		
No	31.0	14.8
Yes	178.0	85.2
Total	**209.0**	**100.0**
Cardiovascular Diseases		
No	118.0	56.5
Yes	91.0	43.5
Total	**209.0**	**100.0**

It is seen on the table that a great majority (178 or 85.2%) of the respondents are with a family history of hypertension. In comparison, the majority (118 or 56.5%) have no family history of cardiovascular disease.

Table 4
Distribution of the Respondents in terms of Hypertension Stage

Hypertension Stage	Frequency	Percentage
a. elevated 120-129/ less than 80	40	19.14
b. stage 1 130-139/ 80 to 89	80	38.28
c. stage 2 above 140/ above 90	89	42.58
Total	**209**	**100.00**

It is gleaned on the table that a great percentage (89 or 42.58%) belong to stage 2 hypertension.

On the perceived causes of hypertension among the respondents.

Table 5
Item Mean Ratings Showing the Perceived Causes of Hypertension Among the Respondents

Perceived Causes	Frequency	Percent	Rank
a. Being Worried	64	30.62	4th
b. Tired	127	60.77	2nd
c. Inherited	79	37.80	3rd
d. Illness-related (Asthma, Cancer, Diabetes)	21	10.05	5th
e. Lifestyle-related	186	89.0	1st
Smoking	33	15.79	*3rd*
Drinking of Alcohol	71	33.97	*2nd*
Eating of High Cholesterol Foods	129	61.72	*1st*
Eating Salty Foods	79	37.80	*2nd*
Lack of Exercise	127	60.77	*1st*

*Multiple Responses

It is reflected on the table that "eating of high cholesterol foods" was perceived as the number one (129 or 61.72%) cause of hypertension by the respondents," lack of exercise " and " being tired" are the second (127 or 60.77) cause of hypertension. In contrast, " eating salty foods" and " inheritance" are the third cause of hypertension.

The findings above imply that the respondents are very much oriented on the real causes of hypertension.

On the Knowledge of the Respondents on Hypertension

Table 6
Distribution of the Respondents on their Knowledge on Hypertension

Beliefs	Frequency	Percentage
1. Hypertension is preventable.		
Yes	208	99.52
No	1	0.48
Total	**209**	**100.00**
2.Hypertension is curable.		
Yes	207	99.04
No	2	0.96
Total	**209**	**100.00**
3. Hypertension is fatal.		

Yes	208	99.52
No	1	0.48
Total	**209**	**100.00**
4. Hypertension can lead to complications like a heart attack or stroke.		
Yes	207	99.04
No	2	0.96
Total	**209**	**100.00**
5. hypertension-related complications are preventable.		
Yes	206	98.56
No	3	1.44
Total	**209**	**100.00**
6. A person on treatment cannot just stop medication after blood pressure normalizes.		
Yes	204	97.61
No	5	2.39
Total	**209**	**100.00**

It is seen on the table that almost all of the respondents know that hypertension is preventable (208 or 99.52%), that hypertension is curable (207 or 99.04%), that hypertension is fatal (208 or 99.52%), that hypertension can lead to complication like a heart attack or stroke (207 or 99.04%), that hypertension-related complication is preventable (206 or 98.56%), and a person on treatment cannot just stop medication after blood pressure normalizes (204 or 97.61%).
The above findings mean that the respondents are fully aware of the nature of hypertension.

On the Extent of Treatment Compliance of the Respondents Along with Lifestyle, Follow up Check-up, and Hypertensive Medication

Table 7
Mean Ratings Showing the Extent of Treatment Compliance of the Respondents

Treatment Compliance	Mean	DR
A. Hypertensive Medications		
1. I take my hypertensive medications at the specified time.	4.59	A
2. I take my hypertensive medication with the correct dosage.	4.79	A
3. I take the required dose prescribed by the doctor.	4.80	A
4. I take my hypertensive medication for the prescribed duration.	4.71	A
5. I continue taking the hypertensive medication even when I feel well.	4.58	A
Submean	**4.69**	**Very High**
B. Follow-Up Check-Up		
1. I go and visit my doctor regularly and as advised	4.34	A
2. I see my doctor when symptoms occur or worsen.	4.59	A
Submean	**4.46**	**Very High**

C. Lifestyle Modification		
1. I eat foods low in fat and cholesterol.	3.93	O
2. I include vegetables in my diet.	4.69	A
3. I limit my intake of coffee.	3.68	O
4. I limit the intake of salty foods.	3.89	O
5. I exercise (walk/jog/run/swim/bike) three times a week for 30-60 minutes.	3.33	S
6. I abstain from smoking.	2.28	R
7. I deviate my urge to smoke to candy or any activity.	3.64	O
8. I regulate my alcohol intake.	3.69	O
9. I sleep early.	4.11	O
10. I eat in moderation	4.39	A
Submean	**3.76**	**High**
Overall Mean	**4.31**	**Very High**

Legend

4.20 – 5.00	Always	(A)	Very High
3.40 – 4.19	Often	(O)	High
2.60 – 3.39	Sometimes	(S)	Fair
1.80 – 2.59	Rarely	(R)	Low
1.00– 1.79	Never	(N)	Very Low

The table reflects that the respondents' extent of treatment compliance is "Very High" ($\overline{x}$= 4.31). The findings imply that the respondents strictly adhere to the treatment regimen for hypertension.

When taken singly, along with hypertensive medication, the respondents have a " Very High" extent of compliance" ($\overline{x}$ = 4.69). The respondents "Always" take the required dose prescribed by the doctor" ($\overline{x}$= 4.80) and "take the hypertensive medication with the correct dosage" ($\overline{x}$= 4.79).

Along with following up check-up, the respondents have a " Very High" extent of compliance" ($\overline{x}$= 4.46). They "Always"" visit the doctor when symptoms occur or worsen" ($\overline{x}$= 4.59).

Lastly, along with lifestyle modification, the respondents have a "High" extent of compliance" ($\overline{x}$= 3.76). The respondents "Always" "include vegetables in the diet" ($\overline{x}$= 4.69) and "eat in moderation" ($\overline{x}$= 4.39).

According to Weber et al., Siervo et al., and Mungal-Singh, as cited in Alefan, Huwari, Alshogan, and Jarrah (2019), lifestyle changes can be used as an adjunct to medications in persons already on drug therapy. Lifestyle changes include adopting the dietary approach to stop hypertension eating plan, dietary sodium restriction, moderate alcohol consumption, regular aerobic physical activity, and smoking cessation.

On the Perceived Barriers in Taking Hypertensive Medication of the Respondents

Table 8
Mean Ratings Showing the Perceived Barriers in Taking Hypertensive Medication of the Respondents

Items	Mean	DR
A. Cost		
1. My income is not enough to cover all my antihypertensive medications.	4.35	VMA
2. Senior citizen discount benefits are not always available at different pharmacies.	4.23	VMA
Submean	4.29	Very High
B. Symptom Experience		
1. I do not take my antihypertensive medication if I feel well.	1.92	D
2. I cannot perform my activities of daily living without taking antihypertensive medication.	2.29	D
Submean	2.21	Low
C. Work-Related Factors		
1. I am usually preoccupied with work, so I miss my antihypertensive medications.	3.36	U
2. I forget to bring my medications to my workplace.	3.28	U
Submean	3.32	Fair
D. Availability/Accessibility of the Hypertensive Medication at the MHO		
1. Antihypertensive medications are not accessible because the MHO is not easily reached.	3.54	MA
2. Antihypertensive drugs are sometimes not available at the MHO.	3.99	MA
Submean	3.77	High
E. Family-related Factors		
1. My family fails to remind me to take my antihypertensive medication.	3.52	MA
2. My family is unable to give me financial assistance for my antihypertensive medications	3.79	MA
Submean	3.66	High
F. Personal- related Factors		
1. I do not have a strong interest in taking my antihypertensive drugs.	2.66	U
2. I am afraid of the side-effects of antihypertensive medication.	4.01	MA
Submean	3.33	Fair
Overall Mean	**3.43**	**High**

Legend:

Mean Scale	**DR (Per Area)**	**DR (Overall)**
4.20 – 5.00	Very Much Agree (VMA)	Very High
3.40 – 4.19	Moderately Agree (MA	High
2.60 – 3.39	Undecided (U)	Fair
1.80 – 2.59	Disagree (D)	Low
– 1.79	Strongly Disagree (SD)	Very Low

As a whole, the respondents "Moderately Agree" on the cost, symptom experience, work-related, availability/ accessibility, family-related, and personal-related matters as reasons for

the irregularity of taking the hypertensive medications($\overline{x}$= 3.43). The study results mean that their compliance with hypertensive medications is somewhat affected by the factors mentioned above.

The result of the study is contraindicated by the findings of the survey of Shim, Heo, and Kim (2010), who found out that Koreans have relatively low adherence to dietary guidelines for hypertension prevention and treatment, only 79.7% (110/138) and 77.5% (107/138) reported they were limiting dietary sodium intake and having a healthy diet, respectively. Meanwhile, Kyngas and Lahdenpera, as cited in Shim, Heo, and Kim (2010), also discovered that people with hypertension know that they are supposed to reduce their sodium intake but often do not follow this dietary guideline. The majority of them knew the necessity of lifestyle modification (91.8%) and understood that diet modification would improve BP control (97.0%) but did not respond to managing their diets.

When taken singly, along with cost, the respondents “Very Much Agree” on the reason, " income is not enough to cover all my antihypertensive medications"($\bar{x}$= 4.35). The present study's result is similar to Amira and Okubadejo's (2007) study, wherein a lack of finances is one reason for noncompliance. Likewise, Amira and Okubadejo (2019) found out that lack of finances is the single most self -reported sense.

Along with symptom experience, the respondents "Moderately Agree" on taking the antihypertensive medication even if they feel well ($\overline{x}$= 4.08)". The present study's result conforms to the one conducted by Amira and Okubadejo (2007), wherein the effects of medications also accounted for 23.8% noncompliance to the treatment plan. Similarly, the study of Shah AJ et al. (2018) revealed that the respondents discontinued the medication when already feeling well.

Along with the availability/accessibility of the hypertensive medication at the MHO, "antihypertensive medications are sometimes not available at the MHO” ($\overline{x}$= 3.99). Jin, Sklar, and Li (2008) cited that the main factor identified relating to healthcare systems include availability and accessibility. Lack of accessibility to healthcare (Ponnusankar et al. 2004), long contributed to poor compliance.

Lastly, on family-related factors, “ the family cannot give financial assistance for the antihypertensive medications" ($\overline{x}$= 3.79). In a study conducted by Shah, Sing, and Doshi (2018), 12.1% of the respondents skipped the hypertensive medication due to its expenses.

Lastly, on personal-related factors, the respondents are “Undecided” on the item“ afraid of the side-effects of the antihypertensive medication” ($\bar{x}$= 4.01).

A complex web of factors was identified that influenced noncompliance. The perceived side effects of medications account for 16.2% of non-compliances (Amira and Okubadejo, 2019). Patients had fears and negative images of antihypertensive drugs (Gascon et al., 2004). According to O’Donoghue (2004), side effects threaten the patient's compliance. Also, (Dusing et al. 1998) found out that the second most common reason for noncompliance with antihypertensive therapy was the adverse effects. Lastly, Christensen (1978) explained that side effects on compliance might be explained in terms of physical discomfort, skepticism about the medication's efficacy, and decreasing trust in physicians (Jin, Sklar, and Li, 2008).

Moreover, along with personal-related factors, the respondents are “usually preoccupied with work, so they miss the antihypertensive medications" $\bar{x}$= 3.36). The result of the study contradicts the findings of the survey of Shah, Sing, and Doshi (2018), wherein it was found out that forgetfulness was the primary reason why patients were predominantly noncompliant to lifestyle modifications such smoking, alcohol, and antihypertensive medication due to reasons such as forgetfulness.

On the Significant Relationship Between the Extent of Treatment Compliance of the Respondents and the Perceived Causes and Beliefs on Hypertension

Table 9

Significant Relationship Between the Extent of Treatment Compliance of the Respondents and the Perceived Causes and the Knowledge on Hypertension

	Hypertensive Medication	**Follow-up Check-up**	**Lifestyle Modification**	**Overall Extent of Treatment Compliance**
I.**Profile of the Respondents**				
A. Sociodemographic Factors				
Age	-.092	.098	.105	.061
Sex	-.010	.012	-.130	-.055
Civil Status	-.032	.011	.045	.013
Educational Attainment	.037	.036	-.025	.022
Occupation	.031	.055	.070	.071
Monthly Family Income	.090	**.156***	.084	**.153***
Place of Residence	.081	**.157***	.033	.127
B. Family History				
Family History on Hypertension	.125	.080	.008	.094
Presence of Cardiovascular Diseases	**.153***	**.141***	.058	**.158***
C.Hypertension Stage	.029	.059	-.084	.005
II.Perceived Causes				
a. Being Worried	-.102	.039	-.038	-.036
b. Being Tired	**.204****	**.301****	-.045	**.216****
c. Inherited	-.009	.038	-.021	.007
d. Lifestyle	.055	-.007	-.085	-.019
Smoking	-.046	-.122	.127	-.025
Drinking of alcohol	-.090	-.006	.132	.019
Eating of High Cholesterol Foods	**.159***	.122	**-.165***	.054
Eating of Salty foods	.027	-.036	-.094	-.049
Lack of exercise	.116	**.254****	.088	**.215****
Others *(Asthma, Cancer, Diabetes)*	.012	**.157***	.123	**.139***
III. Knowledge on Hypertension				
1. Hypertension is preventable	**.212****	**.138***	.063	**.182****
2. Hypertension is curable.	**.176***	.095	.010	.123
3. Hypertension is fatal.	**.212****	**.138***	.063	**.182****
4. Hypertension can lead to complications like heart	**.283****	**.263****	**.145***	**.309****

attack or stroke.				
5. Hypertension-related complications are preventable	**.398****	**.322****	**.194****	**.407****
6. A person on treatment cannot just stop medication after blood pressure normalizes	**.151***	**.141***	.122	**.185****

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

On the Socio-demographic Profile of the Respondents

As a whole, the respondents' monthly family income (r= .153) is significantly related to the extent of treatment compliance of the respondents. The findings imply that respondents with higher monthly family income tend to have a greater extent of compliance. The result of the study conforms to the findings of the study of Zhang YJ et al. (2017) also claimed that those with low annual household income were statistically associated with nonadherence (P<0.05). Those with household income <48,000 yuan had significantly higher nonadherence rates than those who earn 48,000–68,399 yuan. Lastly, Kim and Kong (2015), Elbur (2015), Uzon et al. (2009), as cited in Alefan, Huwari, Alshogran, Jarrah, (2019), found out in their studies that the level of monthly income affected the adherence to healthy lifestyle behaviors. On the contrary, the findings of the survey are contraindicated by the outcome of the investigation of Alefan, Huwari, Alshogran, and Jarrah (2019) that there was no statistically significant association between compliance with lifestyle recommendations and the level of monthly income in this study (p>0.05).

When taken singly, residence (r=.157) is also significantly related to the extent of treatment compliance. The study results mean that the respondents who reside in Poblacion areas tend to have a greater extent of treatment compliance and follow-up check-up than those living in barangays. This may be because health facilities are located in Poblacion areas.

On the Family History of the Respondents

The presence of cardiovascular diseases (r= .158) is significantly related to the overall extent of treatment compliance. The study's outcome means that those with cardiovascular diseases are likely to have greater extent of compliance.

On the Perceived Causes of Hypertension

As a whole, being tired (r= .216), lack of exercise (r= .215), and having asthma, cancer, and diabetes (r= .139) as a perceived cause of hypertension is significantly related to the overall extent of treatment compliance of the respondents. The study results mean that the respondents who perceive tiredness, lack of exercise, and having asthma, cancer, and diabetes as a predisposing factor to hypertension are more motivated to strictly adhere to the treatment regimen. The study's result may be because they experience the perceived reasons they believed are the causes of their current disease situation.

When taken singly, eating high cholesterol foods(r= .159) is significantly related to the extent of treatment compliance along with hypertensive medication. This outcome suggests that respondents who perceived “eating of high cholesterol foods” are more compliant in hypertensive medicines. This study's result maybe because this practice always reminds the respondents to comply/adhere to the prescribed medication.

Conversely, eating high cholesterol food (r= - **.**165) is inversely related to the extent of treatment compliance along with lifestyle modification. The findings may imply that respondents who perceived “eating of high cholesterol foods" as the reason for having

hypertension seemed not to be so strict in following the lifestyle modification. This outcome may be because their avoidance of high cholesterol foods can be a substitute measure for lifestyle modification.

On the Knowledge on Hypertension

The awareness that hypertension is preventable (r=.182) that is fatal (r= .182) that can lead to complications like a heart attack or stroke (r= .309), that hypertension-related complications are preventable (r=.407), and that person on treatment cannot just stop medication after blood pressure normalizes (r=.185) are significantly related to the overall extent of treatment compliance. The study's outcome means that the respondents' knowledge of hypertension positively pushes them to abide by the routine treatment of hypertension.

Patients' knowledge of the causes and meaning of illness was strongly related to their compliance with healthcare. The primary reasons for noncompliance were various factors (60%) related to patient ignorance (Amira and Okubadejo, 2019).

Sklar and Li (2008) have cited the findings of various authors on the knowledge on the causes and meaning of illness: a) Vincze et al. (2004) claimed that patients' knowledge about the causes and meaning of disease was strongly related to their compliance, b) Spikmans et al. (2003) said that obedience was better when the patient knows that patients might be susceptible to the complication, c) Loffler et al. (2003) stated that the illness or its complications could pose severe consequences for his health, and d) Seo and Min (2005)concluded that the therapy would be useful or there are perceived benefits from the treatment.

4. Conclusions

The “Excellent" extent of treatment compliance is congruent with the findings on their correct perception of the causes and positive beliefs on hypertension. Moreover, their “Fair" level of perception on the reasons for irregularity of taking the medications is also consistent with the "Excellent" extent of treatment compliance. The respondents' economic status and the unavailability of discounts for senior citizens on the hypertensive medications in some pharmacies were perceived to be the factors that may contribute to the full compliance of the treatment regimen. It is therefore recommended that: 1) Health care workers to always incorporate patient education and counseling in routine follow-up with a focus on the regular medication regimen instruction to sustain the " Very High" extent of compliance and to anticipate non- adherence. 2. Physicians to serve as the primary counselors as they are the most reliable source of information about healthy lifestyle and self-care, hypertension management, lifestyle recommendations, accurate beliefs about managing the disease to sustain the respondents ’ “Very High” level of treatment compliance, 3. Continuous monitoring of hypertensive patients by community health care providers strengthens their standardized management and prevents complications and other adverse outcomes, and 4) The pharmacies to strictly abide by the RA 9994 to offer discounts to senior citizens.

Bibliography:

[1] Abas, Hanine et al. (2020). Factors Associated with Antihypertensive Medication Nonadherence: A Cross-Sectional Study Among Lebanese Hypertensive Adults, Retrieved on October 5, 2020, at the https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7132025/

[2] Alefan, Q., Huwari, D., Alshogran OY., Jarrah, MI. (2019). Factors affecting hypertensive patients' compliance with a healthy lifestyle, Retrieved on October 5, 2020, at the https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6497893/

[3] Amira O. and Okubadej0 N.(2007). Factors influencing noncompliance with antihypertensive drug therapy in Nigerians, Retrieved on Octoberv14, 2019, at

https://www.researchgate.net/publication/5686633_Factors_influencing_non-compliance_with_anti-hypertensive_drug_therapy_in_Nigerians

[4] Choy HY, Oh IJ, Lee JA, Lim J, Kim YS, Jeon, T H, Cheong YS (2018). Factors Affecting Adherence to Antihypertensive Medication, Retrieved on October 12, 2019, at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6250947/

[5] Gascon JJ, Sanchez-Oryuno MS, Lor B, Skidmore D, and Saturno, PJ (2004).Why hypertensive patients do not comply with the treatment: Results from a qualitative study, Retrieved on October 14, 2019, at https://academic.oup.com/fampra/article/21/2/125/509484

[6]

[7] Jankowa-Polansaka B., Chudiak A., Unchmanowicz I, Dudek K, and Mazur G. (2016). Selected factors affecting adherence in the pharmacological treatment of arterial hypertension, retrieved on October 12, 2019, at https://www.dovepress.com/selected-factors-affecting-adherence-in-the-pharmacological-treatment--peer-reviewed-fulltext-article-PPA

[8] Jin, J. Sklar, GE, and Li, SC (2008). Factors affecting therapeutic compliance: A review from the patient's perspective, Retrieved on October 4, 2020, at the https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2503662/#!po=29.6875

[9] Ofoli, JN, Dankyau, M. and Sule, JA, Lass, DB (2017). Relationship between family and social support and adherence to treatment among outpatient hypertensives in an urban hospital, Retrieved on October 5, 2020, at thehttps://www.researchgate.net/publication/314385420_Relationship_between_family_and_social_support_and_adherence_to_treatment_among_outpatient_hypertensives_in_an_urban_hospital/references

[10]

[11] Orillo, M. (2019). The Manila Times One in Four Filipinos are Hypertensive, Retrieved on October 13, 2019, at https://www.manilatimes.net/2018/04/14/business/health-industry/1-in-4-filipinos-are-hypertensive/392420/392420/

[12] Osamor PE and Owumi BE (2011). Factors Associated with Treatment Compliance in Hypertension in Southwest Nigeria, Retrieved on October 11, 2019, at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3259725/

[13] Shah AJ, Sing, V., and Doshi, KJ. (, 2018). Factors Affecting Compliance to Antihypertensive Treatment among Adults in a Tertiary Care Hospital in Mumbai, Retrieved on october12, 2019, at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5842477/

[14]

[15] Shim, JS, Heo, JE, and Kim HC (2010). Factors associated with dietary adherence to the guidelines for prevention and treatment of hypertension among Korean adults with and without hypertension, retrieved on October 4, 2020, at the https://clinicalhypertension.biomedcentral.com/articles/10.1186/s40885-020-00138-y

[16] Zhang YJ et al. (2017). Factors affecting medication adherence in community-managed patients with hypertension based on the principal component analysis: evidence from Xinjiang, China, Retrieved on October 5, 2020, at https://www.dovepress.com/factors-affecting-medication-adherence-in-community-managed-patients-w-peer-reviewed-fulltext-article-PPA