Research Article

Antihypertensive Medications Adherence and Its Relationship to Blood Pressure Control Among Healthcare Workers in Jose R. Reyes Memorial Medical Center (JRRMMC): A Retrospective Analytic Study

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Background: Workers, including those in the healthcare industry, are exposed to occupational hazards that interfere with the health-disease process, negatively impacting their physical,[1] mental, and social health. [2] High blood pressure (HBP) is an important risk factor for cardiovascular disease and mortality of people in full productive capacity.[3]

It is possible to assume that hypertensive patients who work in hospitals are more aware of the causes and complications related to hypertension, as well as about ways of prevention and treatment. Despite this assumption, there is a scarcity of studies looking at the level of adherence of Filipino healthcare workers in taking their antihypertensive medication

Objective: The study assessed antihypertensive treatment adherence and associated factors in healthcare workers from Jose R. Reyes Memorial Medical Center.

Methods: This is a retrospective analytic study design, consisting of 250 workers who self-reported as being hypertensive. Associations between sociodemographic, work, and health variables were assessed regarding adherence. The Morisky Medication Adherence Scale-8 (MMAS-8) was chosen for the study.

Results: Sixty % of participants were classified as controlled hypertensive patients, with 60% taking ARBs and 55.20% taking CCBs; from these, 84.80% of workers adhered to medication treatment. Adherence to pharmacological treatment has no significant association with BP control (p >.05).

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"Missing medical appointments" presented a statistically significant association with non-adherence to treatment. There was a greater chance (OR=5.85; p=0.005) of professionals who missed medical appointments not adhering to treatment, compared to those who reported not missing them. Conclusions: The main factors for non-adherence to treatment by workers were the presence of antihypertensive treatment disruption and missing medical appointments. Since hypertension and other cardiovascular diseases are asymptomatic diseases that require continuous treatment, hypertensive patients have difficulties understanding the importance of adhering to treatment.

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Background

High blood pressure (HBP) is an important risk factor for cardiovascular disease and mortality of people in full productive capacity. Workers are exposed to hazards that interfere with the health-disease process, negatively impacting their physical, mental, and social health. Despite its high prevalence, treatment remains inadequate in the majority of patients.[1][2][3][4][5] Hypertension is the leading cause of mortality in South-East Asia, but the prevalence of hypertension in this region has been reported to be about 35%. In addition, awareness and control of hypertension are also low, both being below 50%, according to World Health Organization statistics.[6]

Cardiovascular and cerebrovascular diseases are among the top 10 causes of death in the Philippines. High blood pressure (HBP) is also a serious health problem among workers. In the US, almost 125,000 deaths occur among employed persons each year because of HBP-related cardiovascular disease.[7][8] Hypertension ranked as number 2 out of the top 5 Occupational Diseases among the Philippine Workforce. The topmost work-related disease suffered by workers was back pain with 31.3%. Other most prevalent occupational diseases experienced were essential hypertension and neck-shoulder pains.

The number of deaths from hypertension-related cardiovascular disease is more than 10 times greater than that from industrial accidents. Controlling hypertension is directly related to treatment adherence. Levels of adherence to hypertension treatment are low and vary from 8.7% to 59.6%, depending on the population studied.[9][10][11][12][13][14] Successful control of blood pressure is of paramount importance in the reduction of morbidity and mortality rates and many studies have demonstrated the impact of

antihypertensive agents on improving clinical outcomes. [15][16][17] However, the effectiveness of antihypertensive agents must be achieved by optimal adherence to prescribed medications according to healthcare providers' instructions. [18]

Barriers to drug adherence include complex medication regimens, dosing frequency, behavioral factors, and side effects. The most typical barriers are under the patient's control, including knowledge and attitudes toward medications. A study in Brazil found that 79.6% of hypertensive patients did not adhere to the antihypertensive treatment.[19][20] There is a scarcity of studies evaluating the adherence levels of antihypertensive pharmacotherapies among the Philippine population, especially healthcare workers in the hospital setting. Self-reported measures are a relatively simple and inexpensive method, and they could also include information on social, situational, and behavioral factors that affect adherence.[21][22][23][24][25][26][27][28]

There is a scarcity of studies looking at the level of adherence of Filipino healthcare workers in taking their antihypertensive medications. This study hopes to address the gap in knowledge regarding this subject matter, as well as how best to prevent and treat hypertension in the Philippines.

Objectives

This study was designed to determine the antihypertensive medications adherence of the employees at Jose R. Reyes Memorial Medical Center (JRRMMC) with the following objectives:

General objectives

1. To evaluate the level of adherence to antihypertensive treatment among health care workers of Jose R. Reyes Memorial Medical Center (JRRMMC) using a validated scale designed to estimate the risk of medication non-adherence.

Specific Objectives

1. To describe the sociodemographic, professional, worker's health status, and hypertension-related profile of hypertensive employees of Jose R. Reyes Memorial Medical Center.
2. To determine the medication adherence level and its associated factors among hypertensive health care workers of Jose R. Reyes Memorial Medical Center, as stipulated below:
    1. sociodemographic factors

2. work-related factors

3. employee's health status factor

4. hypertension-related factor

Methods

The study was conducted in a DOH Retained Government Tertiary Hospital, the Jose R. Reyes Memorial Medical Center in Manila. This institution is recognized as one of the apex cancer centers of the Department of Health. Clinically diagnosed hypertensive healthcare workers were invited to participate in answering an online survey.

The study included 250 hypertensive healthcare workers at Jose R. Reyes Memorial Medical Center (JRRMMC) who had been diagnosed with hypertension for at least a month and were either taking or prescribed maintenance medications for hypertension. Participants were divided into 3 divisions which included the medical and paramedical divisions, the nursing division, and the hospital operation personnel support service and finance division. The Institutional Review Board (IRB) committee issued permission to proceed with the study and an approved letter by the research author requesting the instruments used. The investigator sent a letter to the Medical and Research Training Office (MTO) and the targeted departments for their information and consent before conducting the study. The study populations were selected by using the non-probability purposive sampling technique. An online Google form sent a survey questionnaire link to the assigned departments. Informed consent was obtained from the participants before proceeding with the survey. Only the principal investigator and authorized personnel assigned were allowed to access the respondents' data, protecting participants' privacy and confidentiality to the fullest extent.

The questionnaire included 5 sections: the socio-demographic profile, professional profile, employee's health characteristics profile, hypertension-Related profile, and the Morisky Medication Adherence Scale-8 (MMAS-8). The self-reported questionnaires were administered to hospital workers and blood pressure was measured with the aid of an automatically validated device, at least two consecutive times. The dependent variable of the study was treatment adherence, evaluated by an indirect assessment instrument. Morisky Medication Adherence Scale-8 (MMAS-8).[29][30][31][32][33][34] The Morisky Medication Adherence Scale-8 (MMAS-8) was able to identify medication nonadherence and help control blood pressure. It was recommended to serve as a screening tool for validated conditions in the clinic setting. A local study done by Encabo, et. al (2017) study used an 11-item questionnaire patterned from the

8-item Morisky and other questionnaires about medication adherence.[35][36] The Cronbach alpha of the 8-item questionnaire is 0.932, which is considered acceptable reliability. Although no studies have conducted its translation and cross-cultural adaptation, considering all stages of the process, several authors evaluated its properties and did not invalidate its use for this purpose. [37][38]

250 hypertensive JRRMMC health workers participated in the study. The sample size for this study was calculated using Slovin's formula. Based on the formula, a minimum sample size of 180 hypertensive participants randomly was selected from a total of 328 hypertensive employees. Descriptive analysis of data was carried out by absolute and relative frequencies as well as measures of central tendency (mean)

Data were typed in Excel and analyzed using the Statistical Package for the Social Sciences (SPSS) version 17.0 for Windows. For statistical significance, a descriptive level of 5% ($p<0.05$) was adopted. The values of the odds ratio (OR) and their 95% confidence intervals (CI 95%) were extracted from univariate and multiple logistic regression models.

Data Analysis

Table 1 shows the sociodemographic profile of 250 workers who self-reported as being hypertensive. Most were female (58.4%), with an average age of 40-49 years old (31.20%), and married (64.80%).

Characteristics	*Category*	*n*	*(%)*
Sex	**Female**	146	58.40
	Male	104	41.60
Age	**19-29 years old**	33	13.20
	30-39 years old	50	20.00
	40-49 years old	78	31.20
	50-59 years old	64	25.60
	60-65 years old	24	9.60
Marital status	**Married**	162	64.80
	Single	78	31.20
	Others	10	4.00

Table 1. Sociodemographic Profile of Health Workers, Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Regarding the work-related characteristics of JRRMMC employees as shown in Table 2, the nursing staff was the most prevalent occupational category in the sample (42.00%). For the years of service parameter, the largest number of employees in the sample was in the 1-9 years category (35.60%), followed by those who were in service for 20-29 years (24.00%). Most individuals (68.40%) worked for 8 hours a day, with 27.60% working for 8-12 hours daily. Most took a vacation every year (83.60%), used the vacation to rest (82.40%), had no other professional activities (67.20%), did not work on weekends (50.80%), and were very satisfied with their professional life (57.60%). As for the relationship with co-workers, 47.20% classified it as good or very good (36.40%).

Characteristics	*Category*	*n*	*(%)*
Occupation	**Nursing**	105	42.00
	HOPSD	65	26.00
	Paramedical	46	18.40
	Finance	19	7.60
	Medical	15	6.00
	Others	0	0.00
Years of Service	**1-9 years**	89	35.60
	10-19 years	43	17.20
	20-29 years	60	24.00
	30-39 years	53	21.20
	40-49 years	5	2.00
Hours worked/day	**8 hours**	171	68.40
	8 to 12	69	27.60
	> 12	10	4.00
Takes a vacation every year?	**Yes**	209	83.60
	No	41	16.40
Use vacations to rest?	**Yes**	206	82.40
	No	44	17.60
Other professional activities	**No**	**168**	**67.20**
	Yes	82	32.80
Work weekends?	**No**	127	50.80
	Yes	123	49.20
Feeling regarding professional life	**Very satisfied**	144	57.60
	Could improve	91	36.40
	Not satisfied	5	2.00

Characteristics	*Category*	*n*	*(%)*
	Completely dissatisfied	10	4.00
Relationship with co-workers	**Poor**	3	1.20
	Average	38	15.20
	Good	118	47.20
	Very good	91	36.40

Table 2. Frequency-Percentage Distribution of Work-Related Characteristics of Health Workers, Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Table 3 showed that 54.80% of professionals considered their health as good and 72 individuals considered it average (28.80%). Among the usual health problems, the most frequent was back pain (48.00%) followed by neck and shoulder pain (27.20%), and cough/ colds (19.60%). In this sample, 87.9% were taking some sort of medication. Among those who are taking some form of medication, 74.00% of the workers answered in the affirmative.

Characteristics	*Category*	*n*	*(%)*
Usual Health Problems	**Back pain**	120	48.00
	Neck and shoulder pain	68	27.20
	Cough and colds	49	19.60
	Urinary Tract Infection	13	5.20
	Others	12	4.80
	Throat pain	10	4.00
	Diarrhea	7	2.80
Take some medication	**Yes**	185	74.00
	No	65	26.00
Self-assessment of health	**Good**	137	54.80
	Average	72	28.80
	Great	33	13.20
	Poor	8	3.20

Table 3. Frequency-Percentage Distribution of Health Status-Related Characteristics of Health Workers, Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Table 4 below showed that all 250 participants in the study were physician-diagnosed as hypertensives. The average time of diagnosis of hypertensive workers was 6 months to 5 years (49.60%), followed by > 5 years at 26.80%, and 1 month-5 month and 29 days at 23.60%. Concerning the self-reported blood pressure measurement, most hypertensive workers had their blood pressure controlled (70.40%) and presented values lower than 140/90 mmHg. Regarding the number of antihypertensive medications taken, more than half (55.60%) of the participants were taking 1 type of medicine, followed by those who are taking 2 types of medicines at 36.00%, while the remaining 8.00% were not taking any antihypertensive medications in a day. For the types of antihypertensive medications taken, 61.60% of the participants were taking ARBs, 55.20% were consuming CCBs, and the remaining 7.2% were taking other medications. It was found that almost two-thirds (63.20%) of the participants had other co-morbid

conditions alongside hypertension. For the co-morbidities, 43.60% of the participants reported having a high cholesterol level, 24.40% have Diabetes Mellitus type 2, and 10.40% of the employees have heart disease. Among the medications used, 36.40% of the workers used lipid-lowering agents, 24.40% were maintaining anti-diabetic drugs, and 9.20% were taking anti-anginal medications.

Regarding treatment interruption, 68.40% have interrupted and the main reason was forgetfulness (30.80%), 20.00% had no particular reason, and not feeling any symptoms at 15.60%. As for the missing medical appointments, 68.40% answered “yes”, the most frequent reason being none at 24.00%, followed by not wanting to miss work at 22.40%, and forgetfulness at 20.80%.

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Characteristics	*Category*	*n*	*(%)*
Hypertensive	**Yes**	250	100.00
	No	0	0.00
Years since the first diagnosis of Hypertension	**6 months- 5 years**	124	49.60
	> 5 years	67	26.80
	1 month- 5 months and 29 days	59	23.60
Present BP measurement *(at least two consecutive times)*	**< 140x90**	176	70.40
	≥ 140x90	74	29.60
Number of types of antihypertensive medications	**1 type**	139	55.60
	2 types	90	36.00
	None	20	8.00
	> 2 types	1	0.40
Types of antihypertensive medications taken	**ARB's**	154	61.60
	Calcium Channel blockers	138	55.20
	ACE inhibitors	11	4.40
	Beta blockers	8	3.20
	Diuretics	6	2.40
	Others	1	0.40
Presence of co-morbidity	**Yes**	158	63.20
	No	92	36.80
Co-morbidities	**High Cholesterol Level**	109	43.60
	Diabetes Mellitus Type 2	61	24.40
	Heart Disease	26	10.40
	Bronchial Asthma	11	4.40
	Others	9	3.60
	Cancer	2	0.80

Characteristics	*Category*	*n*	*(%)*
	Pulmonary Tuberculosis	0	0.00
Other Medications Aside from Antihypertensive Drugs	**Lipid-lowering agents**	91	36.40
	Anti-diabetic drugs	61	24.40
	Anti-anginal drugs	23	9.20
	Others	11	4.40
	Anti- Asthma medications	10	4.00
	Blood thinners	7	2.80
	Anti-PTB drugs	0	0.00
Have you ever interrupted your blood pressure treatment?	**Yes**	166	66.40
	No	84	33.60
Reasons for interrupting/ Stopping treatment	**Forgetfulness**	77	30.80
	None	50	20.00
	Not feeling any symptoms	39	15.60
	Feels that hypertension is under control	36	14.40
	Feeling of inconvenience	25	10.00
	Cost consideration	22	8.80
	Others	1	0.40
Have you ever missed an appointment with your physician?	**Yes**	171	68.40
	No	79	31.60
Reasons for missing medical appointments	**None**	60	24.00
	Not wanting to miss work	56	22.40
	Forgetfulness	52	20.80
	Feeling of inconvenience	40	16.00
	Cost consideration	38	15.20
	Others	4	1.60

Characteristics	*Category*	*n*	*(%)*
Total		250	100.00

Table 4. Frequency-Percentage Distribution of Hypertension-Related Characteristics of Health Workers, Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Table 5 evidence that, according to the Morisky Medication Adherence Scale-8 (MMAS-8) instrument, 84.80% of workers adhered to medication treatment while only 15.20% did not comply. 60.40% had already forgotten to take the medication, and 70.00% were careless about the medication timetable.

Variables	*Category*	*n*	*(%)*
Adherence to Morisky Medication Adherence Scale-8 (MMAS-8)	**Adherence**	212	84.80
	Non-adherence	38	15.20
Do you sometimes forget to take your antihypertensive medications?	**Yes**	151	60.40
	No	99	39.60
People sometimes miss taking their antihypertensive medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your antihypertensive medications?	**Yes**	175	70.00
	No	75	30.00
Have you ever cut back or stopped taking your antihypertensive medications without telling your doctor, because you felt worse when you took them?	**Yes**	**185**	**74.00**
	No	65	26.00
When you travel or leave home, do you sometimes forget to bring along your antihypertensive medications?	**Yes**	183	73.20
	No	67	26.80
Did you take your antihypertensive medications yesterday?	**Yes**	139	55.60
	No	111	44.40
When you feel like your health condition is under control, do you sometimes stop taking your antihypertensive medications?	**Yes**	183	73.20
	No	67	26.80
Taking antihypertensive medications every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	**Yes**	181	72.40
	No	69	27.60
How often do you have difficulty remembering to take all your antihypertensive medications?	**Sometimes 2**	68	27.20
	Once in a while 3	67	26.80
	All the time 0	61	24.40
	Usually, 1	44	17.60
	Never/rarely 4	10	4.00

Variables	*Category*	*n*	*(%)*
Total		250	100.00

Table 5. Frequency-Percentage Distribution of Health Worker's Antihypertensive Medication Adherence, according to Morisky Medication Adherence Scale-8 (MMAS-8), Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

As presented in tables 6 and 7 below, adherence to pharmacological treatment has no significant association with BP control, ($p > .05$).

Variable	**Morisky Medication Adherence Scale-8 (MMAS-8)**	**Blood Pressure (mmHg)**				
		< 140		**≥ 140**		**p***
		n	**(%)**	**n**	**(%)**	
	Adherence	150	60.00	62	24.80	0.566
	Non-adherence	25	10.00	13	5.20	
Total		175	70.00	75	30.00	

Table 6. Association of the Level of Antihypertensive Medical Adherence versus Systolic Blood Pressure Control Among Health Professionals, Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Note: **Not significant, Fisher's Exact Test*

Variable	Morisky Medication Adherence Scale-8 (MMAS-8)	Blood Pressure (mmHg)				
		< 90		≥ 90		p*
		n	(%)	n	(%)	
	Adherence	146	58.40	66	26.40	0.193
	Non-adherence	22	8.80	16	6.40	
Total		168	67.20	82	32.80	

Table 7. Association of the Level of Antihypertensive Medical Adherence versus Diastolic Blood Pressure Control Among Health Professionals, Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Note: **Not significant, Fisher's Exact Test*

The variables "treatment interruption" and "missing medical appointments" presented a statistically significant association with non-adherence to treatment. For the variable interruption, there was a greater chance (OR=3.92; p=0.003) of professionals who interrupted treatment not adhering when compared to those who did not interrupt it. Likewise, professionals who missed medical appointments were more likely to not adhere to treatment when compared to professionals who did not miss them (OR=6.52; p<0.001).

Variables	Morisky Medication Adherence Scale-8 (MMAS-8)					
	Adherence	Non-adherence	p (X^2)	OR*	$CI_{95\%}$	p
	n (%)	n (%)				
Have you ever interrupted your blood pressure treatment?						
Yes	133, (53.2%)	33, (13.2%)	8.39	1.00	1.47-10.46	0.003
No	79, (31.6%)	5, (20.0%)		3.92		
Have you ever missed an appointment with your physician?						
Yes	136, (54.4%)	35, (14.0%	11.65	1.00	1.94-21.91	<0.001
No	76, (30.4%)	3, (1.2%)		6.52		

Table 8. Association analysis by Chi-square and univariate binary logistic regression, according to treatment interruption missing medical appointments, Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Note: **The group < 140x90 will be used as a reference category.*

In the multiple regression analysis, the independent factor for non-adherence was missing medical appointments. Regarding missing medical appointments, there was a greater chance (OR=5.85; p=0.005) of professionals who missed them not adhering to treatment, compared to those who reported not missing them. Hypercholesterolemia is not a significant factor for nonadherence, the p-value is greater than 0.05.

Variable	Category	adjusted	$CI_{95\%}$	p
Hypercholesterolemia				
	No	1		
	Yes	1.35	0.65-2.80	0.419
Have you ever missed an appointment with your physician?				
	No	1		
	Yes	5.85	1.69-20.23	0.005

Table 9. Multiple binary logistic regression analysis for the dependent variable Morisky Medication Adherence Scale-8 (MMAS-8), Jose R. Reyes Memorial Medical Center, Manila, Philippines, 2022

Note: *$*OR_{adjusted}$ by the variables "take a vacation every year" and "hours worked/day". Hosmer and Lemeshow test p = 0.762*

Discussion

This sample presents a higher number of hypertensive individuals in the 40-49 years old age group (31.20%) as compared to studies that evaluated hypertension in the general population in which it was predominantly found in the 50-59 years old category (30.00%) [39], as was expected, as this study was carried out with hospital workers in which there is a predominance of workers belonging in the younger age groups. The prevalence of hypertension in low and middle-income countries has been seen to be steadily rising, but in the Philippines, the latest National Nutrition Survey (NNS) conducted by the Food and Nutrition Research Institute (FNRI) in 2018 showed a downward trend in hypertension prevalence for the age group 20-59 years old, from a previous of 23.9% in 2013 to 19.2% in 2018. The prevalence though for older persons aged 60 years old and above, while also decreasing, is still 35% in 2018 from 41.2% in 2015. The prevalence of the female sex is also a common characteristic in hospitals, by the large contingent of historically female professions, such as nursing [40] and hospital operations and patient support services. Similarly, in other areas of health, the female sex also prevails, including in some areas

of the allied medical profession (e.g., physical therapy, respiratory therapy)[41]. Back pain, neck and shoulder pain, cough/ colds, hypercholesterolemia, and diabetes mellitus type 2 were the most cited. The study was also able to verify that more than half the sample classified their health as either good (54.80%) or average (28.8%).[42][43]

Excessive work can also be an obstacle to the adoption of healthy practices, such as physical activity, leisure, and healthy eating habits, encouraging the emergence of risk factors for cardiovascular diseases such as hypertension and dyslipidemia. Most individuals in the study worked for 8 hours a day, although a significant rate of professionals worked more than 8 hours (27.60%) on weekends. Vacations are a disruption of the daily routine and present a greater chance of non-adherence to treatment, according to studies. Studies show that many patients find it inconvenient to take medication out of their homes and the vacation trips are a disruption of their daily routine.[44][45]*

The rate of hypertensive individuals found in this study among nursing professionals was 42.00%, followed by hospital operations and patient support services, and paramedical personnel. This rate of high blood pressure found among nursing professionals is higher than that observed in the literature[46] The rate of adherence varies widely and can be as low as 10% or as high as 92%. In developed countries, adherence to therapies averages 50%, with around half the time being intentional.[47]

The average time for diagnosis of hypertension among hospital workers in Jose R. Reyes Memorial Medical Center was 6 months to 5 years (49.60%). This finding may indicate that hospital workers have a favorable condition regarding their training in the area of health and/or familiarity with health care, which can be a favorable factor in blood pressure control.[48] A study conducted by the American Journal of Hypertension has found that 84.80% of workers were considered compliant with their medication intake, but 15.20% did not adhere to the intake of antihypertensive medications. 60.40% forgot to take medication and 70.00% were careless about the timetable.[49][50][51]

There was no statistically significant association between compliant professionals and blood pressure control according to Morisky Medication Adherence Scale-8 (MMAS-8) instrument. Non-compliant professionals presented a probability of 5.20% and 6.40% respectively of having uncontrolled blood pressure (≥ 140x90 mmHg) compared to those who were compliant (24.8% and 26.4% respectively).[52] Low frequency of appointments can be related to non-adherence to treatment. Attendance to appointments provides monitoring of blood pressure, as well as access to information regarding pharmacological treatment and other treatments. Thus, obtaining optimal blood pressure control

remains the most important issue in the management of hypertension.[53] Hypercholesterolemia was not found to be a significant factor for nonadherence, the p-value is greater than 0.05. In two of the studies, it appears that the increasing number of medications led to higher adherence. The odds of being more adherent increase by 1.15 times if the patient has polypharmacy, Palileo-Villanueva et al.[54][55][56]

The Morisky Medication Adherence Scale-8 (MMAS-8) test was not used in isolation, since blood pressure was also analyzed, as it is a clinical outcome that showed a correlation with adherence. It is valid to say that the assessment of treatment adherence is quite complex and difficult to be carried out.[57][58]

The limitations of the study

As this is a retrospective analytical study among the different categories of hypertensive workers in Jose R. Reyes Memorial Medical Center, the results cannot be generalized beyond the specific object of study. Thus, limiting the applicability of the findings to other patient populations. Another limitation noted is that in this study, associations can be determined between medication adherence level and its related factors among hypertensive healthcare workers, but we cannot strongly prove causation.

In addition, the instrument used to measure treatment adherence was limited to pharmacological adherence. This study made use of a validated scale designed to estimate the risk of medication non-adherence. However, it was considered by the WHO as a subjective measure of medication adherence.

The most common drawback was that patients tend to underreport nonadherence to avoid disapproval from their healthcare providers. [39] Objective measures of medication adherence include pill counts, electronic monitoring, secondary database analysis, and biochemical measures which were thought to represent an improvement over the subjective measure. [40][41]

As such, future researchers can use objective measures to validate and correlate the subjective ones. Another aspect of the Morisky Medication Adherence Scale-8 (MMAS-8) is that this instrument was not formally translated and adapted cross-culturally to Filipinos, according to the available protocols. However, its frequent use by experts possibly validates this aspect, since its content was assessed in every new study. It is worth mentioning that this is an instrument easy to be used, with a small number of questions, and that allows one to evaluate the patient's attitude regarding taking the medication.

Conclusion and Recommendations

The main factors for non-adherence to treatment by workers were the presence of antihypertensive treatment disruption and missing medical appointments. Since hypertension and other cardiovascular diseases are asymptomatic diseases that require continuous treatment, hypertensive patients have difficulties understanding the importance of adhering to treatment. Based on the results, first, it is recommended for workers' health services to investigate adherence to pharmacological treatment of professionals with hypertension and other cardiovascular diseases to promote favorable conditions for regular monitoring in medical appointments to control diseases. In this sense, the involvement of occupational health services and managers themselves seems to be a fundamental factor for the preservation of workers' health, avoiding complications of poorly controlled diseases and consequently lower absenteeism in the health services. It is important to remember that many workers reported that one of the reasons for non-adherence to medical appointments was not missing work.

Another aspect that should be strengthened is the role of Primary Health Care, with the follow-up of teams from Employee Medical Services. Often, the opening hours of Employee Medical Services limit the possibility of access and monitoring of the service without hindering professional activities and commitments. Therefore, the hospital itself and its administrators have fundamental roles in the promotion and prevention of their workers' health, developing health education initiatives and group meetings focused on the workers' health intending to empower them to self-manage their health condition and creating conditions for them to attend medical appointments, to increase adherence to antihypertensive treatment and healthy lifestyle habits.

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Declarations

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