

**The Use of Herbal Medicines and Traditional Medicine Formulations (TMFs) for Hypertension at Traditional Medicine Hospital, Yangon**

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This study was done to determine the use of herbal medicines and Traditional Medicine Formulations (TMFs) for treating hypertension at Outpatients' Department (OPD) of Traditional Medicine Hospital, Yangon. This study was a cross-sectional, descriptive study in 140 hypertensive patients attending the OPD of that hospital. Data were collected from the hypertensive patients by reviewing the prescriptions and records as well as by interviewing the patients and traditional medicine practitioners (in-charge) of the OPD with preformed questionnaires. The data collected were used to evaluate the number and type of herbal drug therapy, the most commonly prescribed herbal drugs and dosage schedules for treatment of hypertension. In overall patients, it was observed that there were male (35%) and female hypertensive patients (65%) with the mean age of 57.74±10.04 years and mean blood pressure of 148.71/93.93 (±12.34/6.65) mm/Hg. The most commonly prescribed herbal drug for hypertension was TMF-17 (ဆီဆီပု) (63.57%) followed by TMF-23 (ဆီယုလိပ်) (57.86%), TMF-27 (ယင်္ဂါပု) (42.86%), TMF-12(B) (ပုဂံ-2) (38.57%) and TMF-33 (တပျော့ပု) (31.43%). Single drug therapy was used in 4.29% of hypertensive patients and combination drug therapy was used in 95.71% of the patients. The most commonly used two-drug combination therapy was TMF-17+TMF-23 (22.73%). The most commonly used three-drug combination and four-drug combination therapies were TMF-23+TMF-17+TMF-12B (16.95%) and TMF-17+TMF-33+TMF-27+TMF-23 (22.73%), respectively. In conclusion, it was found that the different types of combination drug therapy were used more than single drug therapy in the treatment of hypertensive patients. This study showed the first research findings for the use of herbal medicines and TMFs for treating hypertension at the OPD of Traditional Medicine Hospital, Yangon and the findings may be beneficial for future research on efficacy and safety of these herbal medicines in hypertensive patients.

**INTRODUCTION**

Hypertension is an important public health problem both in developing and developed countries. It has been reported that estimated total number of adult hypertension in the year 2000 was 972 millions worldwide. The number of adult hypertension in 2025 was predicted to increase

about 60%, a total of 1.56 billion worldwide.<sup>1</sup> Hypertension is a common cause of death in cardiovascular diseases.<sup>2</sup> Management of hypertension becomes a challenge to the medical profession. There has been a continuous search for a remedy which produces least side effects and cost effectiveness. Nowadays, people commonly use medicinal plants for treating diseases

because of lower cost and fewer side effects. In Myanmar, traditional medicine and Indian system of medicine, there are many medicinal plants which have been known to have antihypertensive activity.<sup>3</sup>

In Myanmar Traditional Medicine Formulary (1989), some Myanmar Traditional Medicines Formulations (TMFs) have been recommended for the treatment of hypertension. In Traditional Medicine Hospital, Yangon, traditional medicine practitioners widely use herbal preparations and TMFs for the treatment of hypertension.<sup>4</sup>

Drug utilization studies are important for optimization of rational drug therapy and have received a great attention in recent years. Most of the information on drug use patterns has been derived from studies on modern western medicines. In China, there are some studies on drug utilization pattern of Chinese herbal medicines for diseases.<sup>5, 6, 7</sup>

However, there were very few studies on drug use pattern of Myanmar herbal medicines. Moreover, there is no scientific report of drug use pattern of herbal medicines for treating hypertension in patients at Traditional Medicine Hospital, Yangon. The present study was conducted to investigate the use of herbal medicines and TMFs for treatment of hypertension at the Traditional Medicine Hospital, Yangon.

## **MATERIALS AND METHODS**

### *Study design*

Hospital-based, cross-sectional descriptive study

### *Site of study*

Outpatients' Department of Traditional Medicine Hospital, Yangon

### *Study population*

Hypertensive patients attending the OPD of the Traditional Medicine Hospital, Yangon, (From January 2011 to June 2012)

### *Sample size determination*

The required sample size was calculated by using the following formula.

$$n = pq (Z_{\alpha/d})^2$$

The required sample size was 140: 70 new hypertensive patients (first-visit patient) and 70 old hypertensive patients (follow-up patients).

### *Ethical consideration*

Ethical approval for this study was obtained from Institutional Ethical Review Committee of Department of Medical Research (Lower Myanmar).

### *Study procedure*

Firstly, treatment guidelines for hypertension with herbal medicines and TMFs as well as checklist of herbal medicines used for hypertension were taken from Medical Superintendent of the Traditional Medicine Hospital, Yangon.

### *Patient selection*

Patients who met with the inclusion criteria were selected from the OPD of Traditional Medicine Hospital.

### Inclusion criteria

- Known hypertensive patients with all stages of hypertension (i.e., blood pressure was 140/90 mmHg and above), applying JNC7 blood pressure classification, 2003
- Adult patients (Age - 18 years and above) of both sexes
- Patients who gave consents after explaining the written information about research work

### Exclusion criteria

- Patients who did not fulfill the above criteria
- Patients who were taking other medicines for co-morbidities such as cancer, tuberculosis and HIV infection

### *Data collection*

Data, regarding use of traditional medicines were collected from hypertensive patients attending the OPD of Traditional Medicine

Hospital, Yangon by reviewing prescription books and records of the patients, by interviewing the patients with preformed questionnaires (client exit interview). The data were recorded by using Proforma. The data collected were evaluated by using some of the drug use indicators described in WHO (1993).<sup>8</sup>

- Average number of herbal medicines prescribed per patient encounter
- The dose and dosage regimen
- Percent of patients prescribed with single drug therapy and combination drug therapy
- Most commonly prescribed herbs and TMFs for treatment of hypertension
- Other co-prescribed herbal drugs along with antihypertensive medications
- Percent of patients with associated use of western antihypertensive drugs

Data were also collected from 3 traditional medicine practitioners (in-charge) at the OPD of Traditional Medicine Hospital by interviewing with preformed questionnaires to get the following information.

- Stages of hypertension used by the traditional medicine practitioners for herbal drug therapy for hypertension
- Types of herbal medicines and TMFs used for various stages of hypertension
- Types of therapy used for hypertension at the OPD of that hospital
- Commonly prescribed herbs and TMFs for treatment of hypertension

#### Data management and analysis

The data processing and analysis were done by using Microsoft Office Excel, 2007 software. The data were shown in mean  $\pm$  standard deviation (SD) and percentage.

## RESULTS

A total of 140 hypertensive patients (70 newly visited patients and 70 follow-up patients) with mean age (mean  $\pm$  SD) of 57.74  $\pm$  10.04 years were included in this study. In overall patients, duration of hypertension of the patients ranged from 1 month to

20 years. Thirty-five percent of patients were males and 65% of patients were females. Mean systolic blood pressure and mean diastolic blood pressure were found to be 148.71  $\pm$  12.34 mmHg and 93.93  $\pm$  6.65 mmHg, respectively. The results are shown in Table 1 & 2.

Table 1. Demographic characteristics of hypertensive patients attending OPD of Traditional Medicine Hospital, Yangon

Characteristic	Patients (n=70)				Total (n=140)	
	Newly visited		Follow-up		No.	%
	No.	%	No.	%		
<b>Sex</b>						
Male	29	41.43	20	28.57	49	35
Female	41	58.57	50	71.43	91	65
<b>Age (year)</b>						
Mean $\pm$ SD	57.37 $\pm$ 9.59		58.1 $\pm$ 10.53		57.74 $\pm$ 10.04	
Range	40-78		37-78		37-78	
<b>Education</b>						
Primary	16	22.86	24	34.29	40	28.57
Middle	17	24.29	17	24.29	34	24.29
High	23	32.86	22	31.43	45	32.14
University	14	20	7	10	21	15
<b>Occupation</b>						
Own Job	14	20	26	37.14	40	28.57
Employee	9	12.86	5	7.14	14	10
House wife	7	10	5	7.14	12	8.57
Dependent	24	34.29	18	25.71	42	30
Retired	16	22.86	16	22.86	32	22.86
<b>Co-morbidities</b>						
Diabetes mellitus	10	14.29	15	21.43	25	17.86
Arthralgia/arthritis	21	30	23	32.86	44	31.43
History of stroke	9	12.86	10	14.29	19	13.57
Gastritis	2	2.86	1	1.43	3	2.14

Table 2. Blood pressure at the day of survey, stages of hypertension and associated use of western anti-hypertensive drugs

Characteristics	Patients (n=70)				Total (n=140)	
	Newly visited		Follow-up		No.	%
	No.	%	No.	%		
<b>Systolic BP (mmHg) Mean <math>\pm</math> SD</b>						
	146.57 $\pm$ 11.41		150.86 $\pm$ 12.94		148.71 $\pm$ 12.34	
Range	140-180		140-180		140-180	
<b>Diastolic BP (mmHg) Mean <math>\pm</math> SD</b>						
	94.14 $\pm$ 6.7		93.71 $\pm$ 6.63		93.93 $\pm$ 6.65	
Range	90-110		90-110		90-110	
	No.	%	No.	%	No.	%
<b>JNC7(2003) Blood pressure classification</b>						
Stage I	60	85.71	47	67.14	107	76.43
Stage II	10	14.29	23	32.86	33	23.57
<b>Associated use of western antihypertensive drug</b>						
Yes	41	58.57	38	54.29	79	56.43
No	29	41.43	32	45.71	61	43.57

Regarding the prescribed drugs, in overall patients, the average number of traditional

medicines prescribed per patient encounter was found to be  $3.36 \pm 1.07$  (ranged: 2-6). It was observed that the patients receiving single drug therapy was 6(4.29%) and patients receiving combination drug therapy for treatment of hypertension was 134 (95.71%). Combined herbal preparation for treatment of hypertension was used in 9(6.43%) of the patients. The results are shown in Table 3.

Table 3. Use of herbal preparations and Traditional Medicine Formulations (TMFs) as well as types of herbal drug therapy for treatment of hypertension during survey

Characteristics	Patients (n=70)				Total (n=140)	
	Newly visited		Follow-up		No.	%
	No.	%	No.	%		
<i>TMFs for hypertension</i>						
TMF-17 aō cāq ; eD D	43	61.43	46	65.71	89	63.57
TMF-23 aō ; yk ul v nyf	43	61.43	38	54.29	81	57.86
TMF-27 jyn f k s fo m	30	42.86	30	42.86	60	42.86
TMF-12(B) pu qy - 2aq ;	27	38.57	27	38.57	54	38.57
TMF-33 praju av yk kvāq ;	21	30	23	32.86	44	31.43
TMF-21 q āq ; jzL	10	14.29	12	17.14	22	15.71
TMF-15 t y k b n fācaq ;	7	10	8	11.43	15	10.71
TMF-16 t y j l d fāo āq ;	5	7.14	4	5.71	9	6.43
TMF-43 t u i f 10 y g a q ; (r b f ā)	1	1.43	2	2.86	3	2.14
TMF-35 Znwd O āq ;	-	-	1	1.43	1	0.71
<i>Type of therapy for hypertension</i>						
Single drug therapy	4	5.71	2	2.86	6	4.29
Combination drug therapy	66	94.29	68	97.14	134	95.71
<i>Combined herbal medicine preparation</i>						
Yes	3	4.29	6	8.57	9	6.43
No	67	95.71	64	91.43	131	93.57
<i>Types of herbal medicine used</i>						
Lime juice	-	-	3	4.29	3	2.14
Citric juice	1	1.43	2	2.86	3	2.14
Hydrocotyle asiatica leave decoction (Myin-khwa)	2	2.86	1	1.43	3	2.14
Average number of drugs prescribed per patient encounter (Mean±SD) (range)	3.47±1 (2-6)		3.26 ±1.14 (2-6)		3.36±1.07 (2-6)	

Details of commonly used TMFs for drug therapy for hypertension as well as types

of co-prescribed drugs used along with antihypertensive medication at the day of survey are shown in Table 4 & 5.

Table 4. Details of commonly used TMFs for single drug therapy and combination drug therapy for hypertension

Type of therapy	Patients				Total	
	Newly visited		Follow-up		No.	%
	No.	%	No.	%		
<i>Single drug therapy</i>						
	(n=4)		(n=2)		(n=6)	
TMF-23	1	25	1	50	2	33.33
TMF-12(B)	1	25	1	50	2	33.33
TMF-17	1	25	-	-	1	16.67
TMF-33	1	25	-	-	1	16.67
<i>Combination drug therapy</i>						
<i>Two-drug combination therapy</i>						
	(n=22)		(n=22)		(n=44)	
TMF-17+TMF-23	10	45.45	-	-	10	22.73
TMF-17+TMF-27	2	9.1	4	18.18	6	13.64
TMF-23+TMF-27	3	13.64	2	9.1	5	11.36
<i>Three-drug combination therapy</i>						
	(n=30)		(n=29)		(n=59)	
TMF-23+TMF-27+ TMF-12(B)	5	16.67	5	17.24	10	16.95
TMF-17+TMF-23+ TMF-12(B)	4	13.33	-	-	4	6.78
TMF-17+TMF-27+ TMF-12(B)	3	10	-	-	3	5.08
<i>Four-drug combination therapy</i>						
	(n=12)		(n=10)		(n=22)	
TMF-17+TMF-33+ TMF-27+TMF-23	3	25	2	20	5	22.73
TMF-27+TMF-23+ TMF-33+TMF-12(B)	1	8.33	-	-	1	4.55
TMF-17+TMF-27+ TMF-23+TMF-12(B)	1	8.33	-	-	1	4.55
<i>Five-drug combination therapy</i>						
	(n=1)		(n=5)		(n=6)	
TMF-17+TMF-23+ TMF-27+TMF-33+ TMF-12(B)	1	100	3	60	4	66.67
TMF-17+TMF-33+ TMF-27+TMF-23+ TMF-12(B)	-	-	1	20	1	16.67
TMF-17+TMF-23+ TMF-27+TMF-33+ TMF-21	-	-	1	20	1	16.67
<i>Six-drug combination therapy</i>						
	(n=1)		(n=2)		(n=3)	
TMF-17+TMF-23+ TMF-33+TMF-21+ TMF-15+TMF-27	-	-	2	100	2	66.67
TMF-17+TMF-23+ TMF-27+TMF-33+ TMF-12(B)+TMF-21	1	100	-	-	1	33.33

Regarding the combination drug therapies in overall patients, the following results were found.

- 44(31.43%) patients received two-drug combination therapy;
- 59(42.14%) patients received three-drug combination therapy;



drug combination and four-drug combination therapies were TMF-23+TMF-17+TMF-12(B) (16.95%) and TMF-17+TMF-33+TMF-27+TMF-23 (22.73%), respectively.

So, it was observed that there were different types of combination therapy depending on severity of blood pressure and underlying causes of hypertension described in traditional medicine point of view.<sup>9</sup>

In some hypertensive patients, sugar and herbal preparations like lime juice, citric juice as well as *Hydrocotyle asiatica* Linn. leaves (Myin-khwa) decoction were combined with TMFs in order to be more effective in treatment of hypertension. Sugar was used in combination with TMFs like TMF-17, TMF-23, TMF-33 and TMF-15.

Diabetes mellitus (17.86%) and arthralgia/arthritis (31.43%) were the most frequent co-morbidities. In patients with diabetic mellitus, commonly used TMFs were TMF-17 (အေအေ; ဝေပီ) (68%), TMF-23 (အေ; ယကု J u v ဂျ) (64%) and TMF-27 (ယဂ် ဖိ ကေဖဝ် ဂျ) (44%). It was found that TMF-23 (အေ; ယကု J u v ဂျ), TMF-27 (ယဂ် ဖိ ကေဖဝ် ဂျ) and TMF-17 (အေအေ; ဝေပီ) could be used to treat both in diabetes mellitus and hypertension.

It was observed that TMFs used in treatment of hypertensive patients are in powder form except TMF-12(B) which is in tablet form. The prescribing TMFs were not expressed in strength except TMF-12(B) (300 mg tablet) but prescribed in dose and dosage regimen. Teaspoon was commonly applied for measurement of the dose for prescribing. These TMFs were prescribed in one teaspoonful dose for each time orally (one to three times per day).

TMF-12(B) was prescribed in 5 tablets single oral dose per day at bed time. The patients were advised to take TMF-17, TMF-27, TMF-23, TMF-33, TMF-28 and TMF-35 with warm water while the other TMFs were used to take with water.

Regarding the combination therapy, two to three-drug combinations were prescribed at the same time while the remaining drugs

were given in different time intervals of a day. If the TMF was used as single drug therapy, one teaspoonful dose for each time was used while in combination therapy, the patients were advised to mix the prescribed TMFs in equal amount and then to take in one teaspoonful dose for each time. If the hypertensive patients had history of taking treatment with western antihypertensive drugs, they were advised to take one hour interval from traditional medicines to prevent drug interaction. In this hospital, all the TMFs were prescribed (free of charge) to the patients. In the present study, the use of traditional medicines for treatment of hypertension was according to Standard Treatment Guidelines of Myanmar Traditional Medicines (2008).<sup>9</sup>

In conclusion, it was found that the different types of combination drug therapy were used more than single drug therapy in the treatment of hypertensive patients. This study showed the first research findings for the use of herbal medicines and TMFs for treating hypertension at the OPD of Traditional Medicine Hospital, Yangon and the findings may be beneficial for future research on efficacy and safety of these herbal medicines in hypertensive patients.

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