

# Hypertension in a Residential Home for the Elderly in Penang, Malaysia

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## SUMMARY

A study of residents at the Silver Jubilee Home for the Aged was conducted to determine the prevalence, awareness and control of hypertension in this elderly community in Penang, Malaysia. Prevalence of hypertension was 36%, with 81% of patients being initially aware of this diagnosis. This relatively low hypertension prevalence rate may be because residents have a fairly sheltered lifestyle with less social stress and a daily routine that incorporates adequate exercise. Similarly, the high hypertension awareness rate compared to reported figures in the community may be because residents are more regularly monitored by the attending medical care-givers. At the beginning of the study, only 34% of hypertensive patients were well controlled with a blood pressure less than 140/90 mm Hg. This proportion rose to 53% at the end of study period. Compliance is better at a residential home because medication is served by their care-givers and cost is absorbed in this charitable organization. Our study suggests that hypertension awareness and control can be reasonable for the elderly in a residential home.

## KEY WORDS:

*Hypertension, Elderly, Residential home*

## INTRODUCTION

The prevalence of hypertension in the adult population of Malaysia ranges from 14% in the rural areas to 41% in a national survey<sup>1,2</sup>. Hypertension leads to a huge strain on healthcare resources, being present in 72% of patients with stroke, 80% of patients with intra-cerebral hemorrhage, 61% of patients with end-stage renal disease, 19% of patients with heart failure and 79% of patients undergoing coronary bypass surgery<sup>3-7</sup>. Since hypertension prevalence increases with age, it is important to identify factors that can improve the diagnosis and control of hypertension amongst the elderly<sup>8</sup>. We studied an elderly residential home in Penang, seeking data on the prevalence, awareness and control rate of hypertension for this population.

## MATERIALS AND METHODS

The Silver Jubilee Home for the Aged (SJHA) is a residential home for financially disadvantaged people aged 60 years and above who are single or have no children living in Penang. SJHA was set up in 1935, in commemoration of the 50th

anniversary of the reign of King George V, and presently has 205 residents. The aim of this study, conducted over 6 months, was to find:

- i) the total prevalence of hypertension
- ii) the awareness of hypertension and the incidence of undetected hypertension
- iii) the appropriateness of control of hypertensive patients in this elderly residential community in Penang, Malaysia.

Blood pressure (BP) was measured in the sitting position using the mercury sphygmomanometer after resting for 5 minutes; diastolic BP was identified by the disappearance of phase V Korotkoff sound. Recorded BP for each sitting was the average of two readings taken 2 minutes apart. Hypertension was defined as measured BP equal to or above 140/90 mm Hg, or having a history of being on anti-hypertensive medication. The prevalence, incidence and awareness of hypertension were thus determined.

Therapy was started for the newly diagnosed hypertensive patients, and modified for those whose BP was not controlled, at the discretion of the visiting medical officer. Patients were reviewed every two weeks and BP levels noted till the end of the study.

## RESULTS

Baseline characteristics of residents are shown in Table I. The age of the 205 residents ranged from 62 to 98 years.

The overall prevalence of hypertension in the home is shown in Table II. In this population of 205 elderly patients, there are 74 hypertensive patients resulting in an overall prevalence of 36%. The prevalence of hypertension was highest in those aged 71-80 years (45%), compared to those aged 60-70 (21%) and above aged 81 (32%).

The awareness rates of hypertension in our population are shown in Table III. There were 60 known hypertensive patients with 14 undetected (new) cases discovered from our study. Thus the incidence of hypertension was 6.8% (14 out of the total home population of 205), and the awareness rate for hypertension in our study was 81% (60 out of the total hypertension population of 74).

Table IV shows the control rate of hypertension in our population. The proportion of hypertensive patients whose

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**Table I: Characteristics of residents in SJHA Residents by Age and Sex**

Age (yr)	Male		Female		Total	
	n	(%)	n	(%)	n	(%)
60-69	29	(14)	14	(7)	43	(21)
70-79	51	(25)	54	(26)	105	(51)
80 and above	20	(10)	37	(18)	57	(28)
Total	100	(49)	105	(51)	205	(100)

SJHA: Silver Jubilee Home for the Aged

**Table II: Prevalence of Hypertension by Age and Sex at SJHA**

Age (yr)	Male		Female		Total	
	n	(%)	n	(%)	n	(%)
60-69	5	(17)	4	(29)	9	(21)
70-79	26	(51)	21	(39)	47	(45)
80 and above	5	(25)	13	(35)	18	(32)
Total	36	(36)	38	(36)	74	(36)

Percentage for prevalence is calculated using the population in each age/sex group as denominator

SJHA: Silver Jubilee Home for the Aged

**Table III: Awareness of Hypertension at SJHA**

	Male		Female		Total	
	n	(%)	n	(%)	n	(%)
Aware	33	(92)	27	(71)	60	(81)
Unaware	3	(8)	11	(29)	14	(19)

Percentage for awareness is calculated using the number of hypertensive patients in each group as denominator

SJHA: Silver Jubilee Home for the Aged

**Table IV: Rate of Control of Hypertension at SJHA**

	Baseline		Study End	
	n	(%)	n	(%)
Controlled	25	(34)	39	(53)
Uncontrolled	49	(66)	35	(47)

Percentage is expressed using the total hypertension population of 74 as denominator.

SJOFH: Silver Jubilee Home for the Aged

blood pressure was controlled (less than 140/90 mm Hg) rose from 34% at the beginning to 53% by the end of the 6-month study period. All the 14 newly diagnosed hypertensive patients had their blood pressure normalized by study end.

## DISCUSSION

Hypertension rates in adults aged above 30 years in Malaysia increased from 33% in 1996 to 41% in 2004<sup>2,9</sup>. The prevalence of hypertension rises with age; the JNC 7 report estimates that a normotensive individual at age 55 years has a 90% lifetime risk of developing hypertension<sup>10</sup>. The prevalence of hypertension in the elderly urban population in Malaysia is 62% while the rate in the rural elderly has been reported to be about 26%<sup>11,12</sup>. Although the SJHA is in an urban community, our hypertension prevalence rate of 36% is thus lower than expected for the urban elderly, but higher than that of the rural elderly<sup>12</sup>. This may be because of the sheltered environment in a residential home. The SJHA has been in existence for nearly 75 years, and it has always been a well run charity home funded by public donations. The criteria for admission to the home are strict and the waiting list is long, but once admitted residents are protected from the stress and challenges of urban modern living. Effort is

taken to ensure that they have adequate physical activity and a healthy diet. Comprehensive lifestyle modification has been shown to reduce blood pressure levels while impatience and hostility elevates it<sup>13,14</sup>. It is thus not surprising that our residents who are sheltered from the pressures of modern urban living have a lower than expected prevalence of hypertension.

Our awareness rate of hypertension at 81% is much higher than the reported Malaysian hypertension awareness rate of 35%<sup>2</sup>. Awareness rates of hypertension worldwide vary from 30% in rural China, 45% in urban China, 46% in Portugal to 78% in the United States<sup>15-18</sup>. Again we feel that the reason for the high awareness is because of the environment of our study population. There is a high ratio of care-giver to resident in the home, and the elderly who are regularly supervised are more likely to have their disease picked up.

At the beginning of the study, 34% of hypertensive patients were well controlled. Control rate for hypertension was 1% in rural China, 8% in urban China, 11% in Portugal and 44% in the United States<sup>15-18</sup>. In Malaysia, a 2004 survey suggested a hypertension control rate of 9%<sup>2</sup>. Since medication was served and costs absorbed at the home, compliance rate would be much better than in the outside community. Our hypertension control rate improved to 53% at the end of the study period showing that closer medical attention plays an important part in achieving better outcomes. Hypertension management strategy in Malaysia is similar to that worldwide<sup>19</sup>. Our study demonstrates that if resources are appropriately channeled and patients given adequate medical supervision in the developing world, we can achieve hypertension control rates equivalent to those in the developed world.

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**REFERENCES**

1. Mafauzy M, Mokhtar N, Wan Mohamad WB. Hypertension and associated cardiovascular risk factors in Kelantan. *Med J Malaysia* 2003; 58: 556-64.
2. Rampal L, Rampal S, Azhar MZ, Rahman AR. Prevalence, awareness, treatment and control of hypertension in Malaysia: a national study of 16,440 subjects. *Public Health* 2008; 122: 11-8.
3. Ong TZ, Raymond AA. Risk factors for stroke and predictors of one month mortality. *Singapore Med J* 2002; 43: 517-21.
4. Sia SF, Tan KS, Waran V. Primary intracerebral haemorrhage in Malaysia: in-hospital mortality and outcome in patients from a hospital based registry. *Med J Malaysia* 2007; 62: 308-12.
5. Shaza AM, Rozina G, Izham MI, Azhar SS. Dialysis for end stage renal disease: a descriptive study in Penang Hospital. *Med J Malaysia* 2005; 60: 320-7.
6. Chong AY, Rajaratnam R, Hussein NR, Lip GY. Heart failure in a multi-ethnic population in Kuala Lumpur, Malaysia. *Eur Heart Fail* 2003; 5: 569-74.
7. Chiam P, Abdullah F, Chow HK, Adeeb SM, Yousafzai MS. The ethnic characteristics and prevalence of diabetes mellitus, hypertension and hyperlipidemia in patients who underwent coronary artery bypass grafting in Hospital Universiti Kebangsaan Malaysia. *Med J Malaysia* 2002; 57: 460-6.
8. Whelton PK, He J, Muntner P. Prevalence, awareness, treatment and control of hypertension in North America, North Africa and Asia. *J Hum Hypertens* 2004; 18: 545-51.
9. Lim TO, Zaki M, for the Hypertension Study Group. Prevalence, awareness, treatment and control of hypertension in the Malaysian adult population: Results from the National Health and Morbidity Survey 1996. *Singapore Med J* 2004; 45: 20-7.
10. Chobanian AV, Bakris GL, Black HR *et al* for the National High Blood Pressure Education Program Coordinating Committee. The Seventh Report of the Joint National Committee on Prevention, Detection, evaluation, and Treatment of High Blood pressure. The JNC 7 Report. *JAMA* 2003; 289: 2560-72.
11. Guidelines Committee. Clinical Practice Guidelines: Management of hypertension (3rd Edition). Putrajaya: Ministry of Health, Academy of Medicine, Society of Hypertension, Malaysia; 2008.
12. Srinivas P, Wong KS, Chia YC, Poi PJ, Ebrahim S. A profile of hypertension among rural elderly Malaysians. *Southeast Asian J Trop Med Public Health* 1998; 29: 821-6.
13. Writing Group of the PREMIER Collaborative Research Group. Effects of comprehensive lifestyle modification on blood pressure control. Main results of the PREMIER Clinical Trial. *JAMA* 200; 289: 2083-93.
14. Yan LL, Liu K, Matthews KA, Davidlus ML, Ferguson TF, Kiefe CI. Psychosocial factors and risk of hypertension. The coronary artery risk development in young adults (CARDIA) Study. *JAMA* 2003; 290: 2138-48.
15. Sun Z, Zheng L, Wei Y *et al*. The prevalence of prehypertension and hypertension among rural adults in Liaoning province of China. *Clin Cardiol* 2007; 30: 183-7.
16. Gu D, Reynolds K, Wu X *et al* for the InterASIA Collaborative Group. The International Collaborative Study of Cardiovascular Disease in Asia. Prevalence, awareness, treatment and control of hypertension in China. *Hypertension* 2002; 40: 920-7.
17. Macedo ME, Lima MJ, Silva AO, Alcantara P, Ramalhinho V, Carmona J. Prevalence, awareness, treatment and control of hypertension in Portugal: the PAP study. *J Hypertens* 2005; 23: 1661-6.
18. Ostchega Y, Yoon SS, Hughes J, Loius T. Hypertension awareness, treatment and control- continued disparities in adults: United States, 2005-2006. *NCHS Data Brief* 2008; 3: 1-8.
19. Ong HT, Rozina R. Selecting antihypertensive medication in patients with essential hypertension in Malaysia. *Med J Malaysia* 2009; 64: 3-11.