A Cross-national Comparison of Hypertension among Elderly in Japan and Singapore

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Abstract

Differences in life expectancies at birth between Japan and Singapore are much smaller than the differences between Japan and the US. Yet, life expectancies at age 65 in Singapore is similar to those in the US. In order to find out a reason for the differences in life expectancies at age 65 between Japan and Singapore, we compare the differences in prevalence of hypertension between two countries. The prevalence of hypertension is high among elderly in Japan (69%) and Singapore (79%). In both countries, about 1 in every 5 hypertensives is unaware of their condition. Among those who are aware, the vast majority are taking anti-hypertension medication. However, the control of blood pressure is suboptimal for more than half of them. Contrary to our expectation that the prevalence of hypertension is significantly different between Japan and Singapore, the differences in the prevalence were not large.

Introduction

Both in Japan and Singapore--two of the fastest aging population in Asia--the elderly population is growing. Life expectancies at birth for both countries are also very high, in 2007, 86 for females and 79 for males in Japan, and 83 for females and 78 for males in Singapore. Differences in life expectancies at birth between Japan and Singapore are much smaller than the differences between Japan and the US (80 for females and 75 for males). Yet, life expectancies at age 65 in Singapore is similar to those in the US in the same year, 21 and 20 for females, and 17 and 17 for males.

Persistent hypertension is a risk factor for a number of life-threatening diseases and conditions (e.g. stroke, myocardial infarction, heart failure, arterial aneurysm, chronic kidney failure). It is also associated with higher mortality risks. It is known that

hypertension is prevalent among older adults. In order to find out a reason for the differences in life expectancies at age 65 between Japan and Singapore, we compare the differences in prevalence of hypertension between two countries.

Therefore, objective of the study is to examine and compare hypertension among elderly in Japan and Singapore using survey data collected in 2009. Population-based measurements of blood pressures and self-reports were used to ascertain, prevalence of hypertension, awareness of one's own hypertension, treatment of hypertension, and control of hypertension. Based on standard criteria formulated by the World Health Organisation-International Society of Hypertension (WHO-ISH) terms are defined as follows:

Prevalence: Either Systolic Blood Pressure (SBP: the blood pressure in vessels during a heart beat)≥140mmHg or Diastolic Blood Pressure (DBP: the blood pressure between heartbeats)≥90mmHg or currently taking anti-hypertension medication

Awareness: Subjects' report of a prior diagnosis of hypertension

Treatment: Current use of prescription medication for lowering elevated blood pressure among hypertensive subjects

Control: Pharmacological treatment associated with a SBP<140mmHg and a DBP<90mmHg among hypertensive subjects

Data
Japan: We used the 5th wave of Nihon University Japanese Longitudinal Study of Aging (NUJLSOA). NUJLSOA is a nationally representative survey of community-dwelling Japanese aged 65 and over at baseline conducted in 1999. The 5th wave was conducted in 2009 and blood pressure was measured during the interview. Singapore: We used the Social Isolation, Health and Lifestyles Survey (SIHLS) conducted in 2009, commissioned by the Ministry of Community Development, Youth and Sports. SIHLS is also nationally representative of Singaporeans aged 60+ (N=5,000). Only those aged 70 and over are used for the analyses in order to be comparable with Japanese data.

Analytic sample size, age 70+

	Japan	Singapore
Total	2570	2956
Men	1144	1295
Women	1426	1661
blood pressure measures obtained*	1813 (71%)	2584 (87%)

*Subjects who provided three blood pressure readings only, otherwise excluded from the sample

Note: In both Japan and Singapore, those who did not provide blood pressure measurements were more likely to be older, but were similar in gender distribution compared to the sample that provided blood pressure measurements.

Measures used

Measurements of systolic/diastolic blood pressure were taken by trained interviewers using an electronic blood pressure monitor (Omron HEM-762 both in Japan and Singapore). The same protocol was used to measure blood pressure in both countries. Three resting blood pressure measurements were taken approximately 1 minute apart. The mean of the 3 readings were used to define systolic blood pressure and diastolic blood pressure. Self-reported hypertension by subjects is based on a question asking respondents whether they have hypertension and the question was asked before physical blood pressure measurements were taken. Among those subjects who reported having hypertension were also asked whether anti-hypertension medications were taken.

Methods

Analyses were stratified by 5-year age groups and sex and weights were applied to the data for national representation. For descriptive statistics, data were analyzed using SAS 9.13 statistical package. Ethical approval for surveys in Japan and Singapore were obtained.

RESULTS

Overview for total sample

|	Japan	Singapore
Mean age (SD)	78.5 (6.1)	77.3 (5.1)
Female	53.6%	57.7%
Prevalence of hypertension	69.0%	78.6% *
Unaware of own hypertension	22.1%	19.7%
Untreated hypertension[a]	25.7%	21.4%
Suboptimal control[b]	58.4%	54.6%

[a] Includes subjects who are unaware and aware of their own hypertension
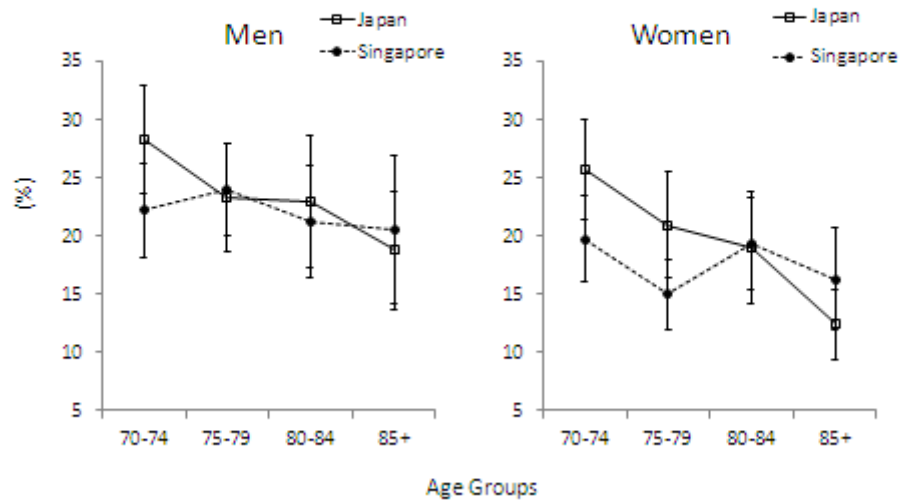
[b] Among treated hypertensives

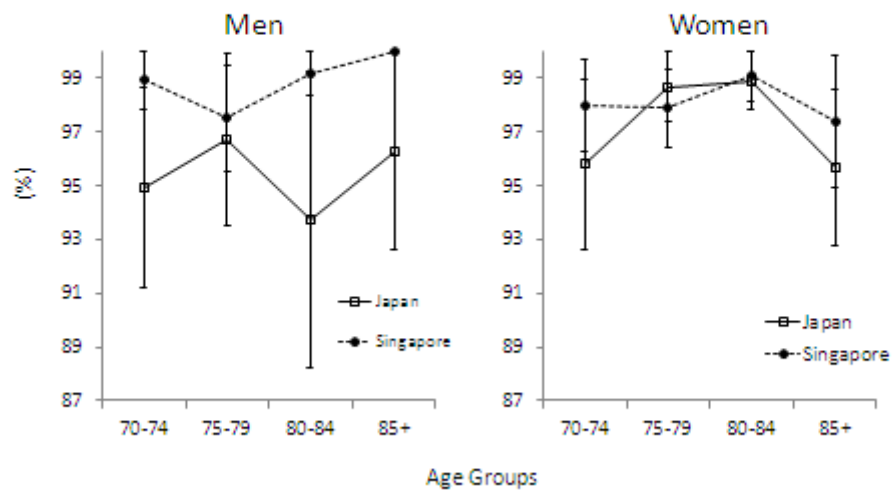* Significantly different at p<0.05 level

Prevalence of hypertension
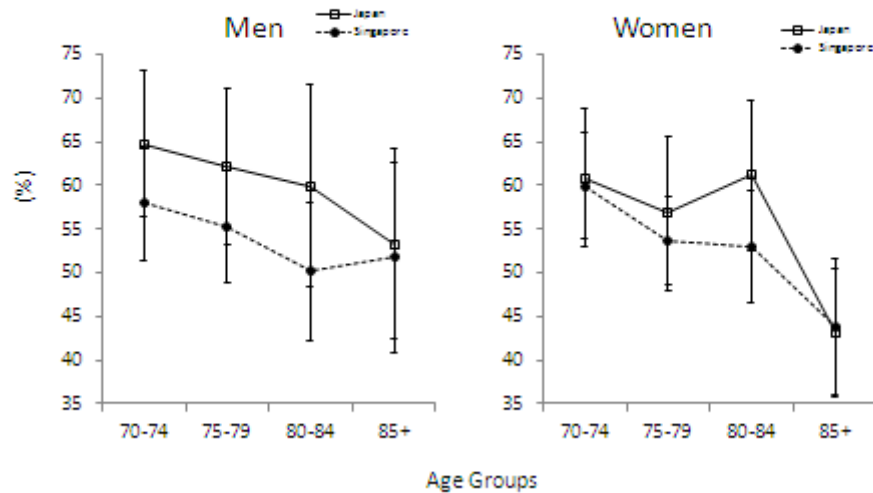(systolic BP≥140mmHg or diastolic BP≥90mmHg or currently taking BP med)
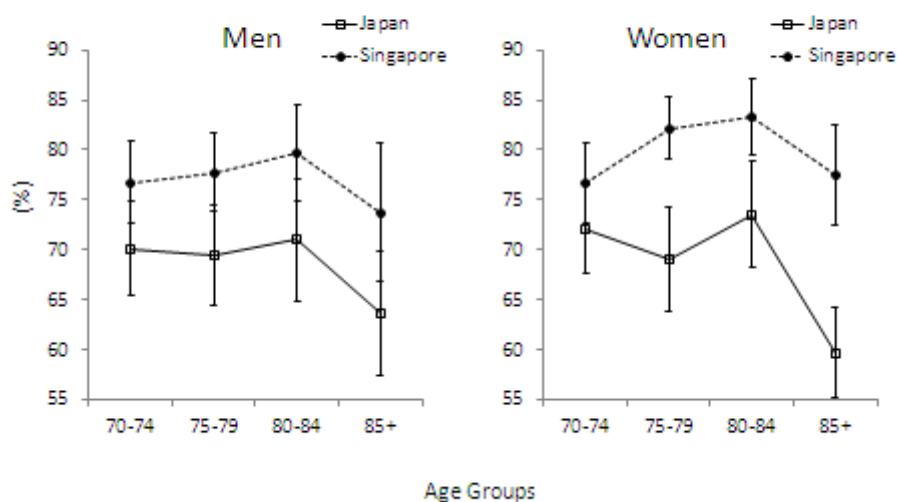
Unaware of one's own hypertension

Taking anti-hypertension medication
(among those who are aware of one's own hypertension)

Suboptimal control of hypertension
(among those taking anti-hypertensive medication)

Summary of Findings

The prevalence of hypertension is high among elderly in Japan (69%) and Singapore (79%). In both countries, about 1 in every 5 hypertensives is unaware of their condition. Among those who are aware, the vast majority (over 95%) are taking anti-hypertension medication. However, the control of blood pressure is suboptimal for more than half of them.

Strengths and Limitations of the study

Strength of the study is that population-based sample for blood pressure measurements were used and the same protocol was used to measure blood pressure in both countries. However, we also have limitations in the study. All blood pressure readings were taken during a single visit. There is a possibility of overestimating prevalence of hypertension to some extent. In addition, data on the number, type, and dose of prescribed anti-hypertension medication and patient adherence unavailable

Concluding remarks

Contrary to our expectation that the prevalence of hypertension is significantly different between Japan and Singapore, the differences in the prevalence were not large.

However, we found that the prevalence of hypertension in both countries is high. Hypertension is treatable and its optimal control can also reduce the risk of hypertension-related diseases and mortality. We also found that there is a need to increase awareness of one's own hypertension. Currently about 20% of those aged 70 and over are unaware of their own hypertension. We could improve health of the older adults in Japan and Singapore by achieving optimal control of hypertension and increasing awareness of their hypertension. Apart from medical treatment and better control, lifestyle changes (e.g. diet, physical activity, stress levels) are some preventive measures that can be taken for improve health status of the older adults.

We intend to analyze further these data by applying multivariate analyses.