Hypertension Study among Attendants at the Board of Investment Fair 2000

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To study the prevalence of hypertension, blood pressure (BP) controlled and cardiovascular risk factors in people who attended the Board of Investment 2002 Fair (BOI Fair). Altogether 1,774 participants aged more than 15 years old voluntarily participated in BP check-ups during the 3rd-17th February 2000 at the BOI Fair. Three hundred and fifty participants (19.7%) were known cases of hypertension (HT) and 340 participants (19.2%) were newly diagnosed hypertension cases (NHT). Of the HT group, 216 cases were under current treatment (61.7%) and only 69 cases (31.9%) had adequate BP control. Of the NHT group, cardiovascular risk factors were found more frequently than in normotensive participants. This study indicates the necessity of building up awareness in the population, improving in clinical detection, effectively controlling of the risk factors and the normalization of BP. This might prevent hypertension and reduce the cardiovascular disease.

Keywords: *Hypertension, Prevalence, Board of Investment Fair*

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Hypertension is a major global public health problem, where a prevalence rate of hypertension (WHO 1999 criteria) of 10% or higher is common[1]. Low rate awareness, detection, and a lack of blood pressure (BP) control rate is responsible for stroke deaths (more than 50%) and more than 25% of coronary heart disease (CHD) death in Asia[2]. By the year 2020, the prevalence of cardiovascular death that is related to hypertension (HT) is predicted to increase to 77%[3]. The presence of the atherogenic risk factors is known to precede the development of HT and increase the risk of cardiovascular events[4]. Therefore, recognition of avoidable cardiovascular risks might help physicians to plan in order to deliver proper health care to the community.

Objective

To study the prevalence of HT, cardiovascular risks, and the adequacy of BP control in volunteers who attended the Board of Investment (BOI) Fair.

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Material and Method

Volunteers, aged 15 years or more, were invited to participate in the study by displaying advertisement posters in front of their display-booths or directly asking questions. Our staff were trained to fill-in the carefully designed questionnaires correctly, and perform proper BP measurements. There were 1,774 volunteers, mostly business personnel and their relatives who attended the BOI Fair, Muangthongthani, Pathumthani, during the 3rd-17th February 2000, who voluntarily participated in the study. After personal data and BP measurements were taken, height and weight were carefully measured by using DETECTO model 3P7044 (Webb City, MO, USA) and body mass index (BMI) was calculated. They were asked to sit on a chair with armrests and a back for more than 5 minutes. While resting, they were asked to answer the questionnaires that were read and recorded by our staff. Data collection by questionnaires consisted of lifestyle modification including restriction of salt intake, regular exercise (for

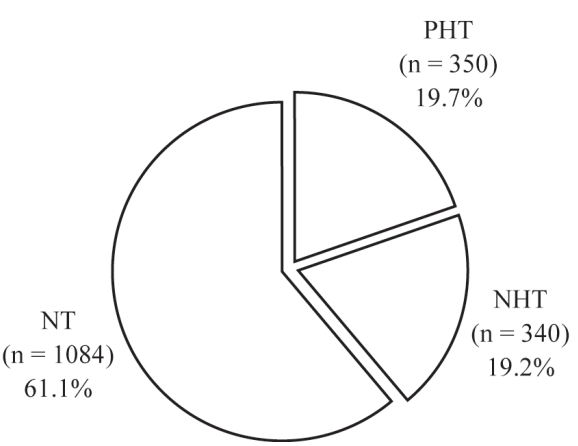
at least 20 minutes/day, every other day or more), alcoholic consumption and cigarette smoking which were used to assess cardiovascular risk. After completing the questionnaires, their BP's were taken by using a validated automated BP measurement device, Omron HEM-705CP (OMRON corporation, Minato-ku, Tokyo, Japan), approved by the Association for the Advancement of Medical Instruments (AAMI) and the British Hypertension Society (BHS)[5], two times, one minute apart then averaged. The method of BP measurements complied with the guidelines recommended by the European Society and International Society of Hypertension[6]. BP measurement $\geq 140/\geq 90$ mm Hg was defined as both systolic and diastolic hypertension (BHT); BP $< 140/\geq 90$ mm Hg as diastolic hypertension (DHT) and BP $\geq 140/< 90$ mm Hg as isolated systolic hypertension (ISH), these were carefully evaluated and graded according to the 1999 World Health Organization & International Society of Hypertension Guidelines (the 1999 WHO-ISH Guidelines)[7]. BP measurement $< 140/< 90$ mm Hg was defined as normotension (NT). Participants, without a documented history of hypertension but having an average BP reading > 140/90 mm Hg were defined as newly diagnosed hypertension (NHT). Adequacy of BP control was determined when a target SBP/DBP < 140/90 mm Hg was achieved. Moreover, target BP in diabetic patients was also taken into accounts i.e. SBP/DBP < 130/80 mm Hg.

Statistical analysis

Results were demonstrated as mean $\pm$ standard deviation (SD) or percent (%) where appropriate. Statistical analyses were performed using Statistical Packages for Social Sciences version 9.0 (SPSS 9.0). A Student's t-test was used to compare the continuous data. A Chi-square test was used to compare categorical data between the newly diagnosed hypertensive and the normotensive groups. A Fisher Exact test was considered when the expected cell count of the comparative category was less than five. Pearson's correlation was used to determine association between SBP, DBP, age, and BMI in the NT groups. In order to identify the risk independently associated with hypertension and inadequacy of BP control, multiple logistic regression analyses were performed to adjust the confounding effects of other factors. Comparative analyses of the differences between the prevalence rate from this study and the previous studies were also performed. A p-value < 0.05 was considered statistically significant. The degree of association between SBP, DBP, BMI and age were determined by odds ratio (OR).

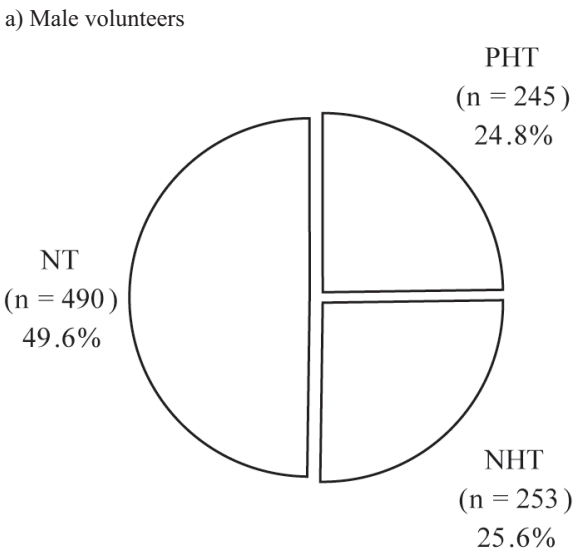
Results

BP measurements were performed in 1,774 volunteers, 988 males, and 786 females, aged from 15 to 81 years. Three hundred and fifty cases (19.7%) of previously diagnosed or treated hypertensive (PHT) patients, of which 216 cases (61.7%) were under current treatment. Another 340 cases (19.2%) were just found to be hypertensive (NHT); and the rest 1,084 cases (61.1%) were normotensive (NT) (Fig. 1). Therefore, the prevalence of hypertension (HT + NHT) in this study was 38.9% (50.4% in males and 24.5% in females) (Fig. 2). Of those NHT-patients, there were 142 cases (41.8%) of ISH, and 154 cases (45.3%) of BHT and 44 cases (12.9%) of DHT (Fig. 3). Among NHT-participants, there were 250 cases (73.5%) of mild HT, 56 cases (16.5%) of moderate HT, and 34 cases (10.0%) of severe HT (Fig. 3). When we compared the NHT group with the NT group, there were no significant differences in the rate of stroke, CHD, hyperlipidemia, family history of stroke, family history of CHD, family history of DM, family history of HT or cases without restriction of salt intake between the NHT and the NT groups. However, older age, BMI, proportion of males, smoking, alcoholic ingestion, and diabetes mellitus (DM) were found at a significantly higher rate in the NHT group when compared with the NT group ($p \leq 0.001$ to 0.002 where appropriate). By contrast, a sedentary life style was found at a lower rate in the NHT than the NT group ($p = 0.002$) (Table 1). Multiple logistic regression analyses showed that elderly ($p < 0.001$, OR = 3.3, 95%CI =



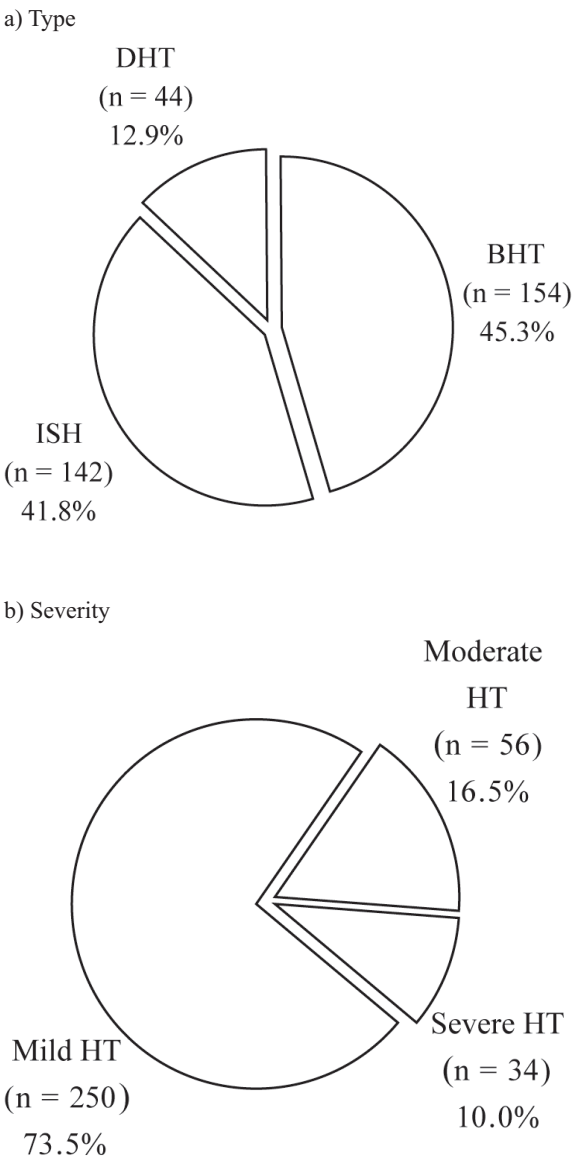
PHT = Previously diagnosed hypertensive volunteers
NHT = Newly diagnosed hypertensive volunteers
NT = Normotensive volunteers

Fig. 1 BP classification among 1,774 volunteers



PHT = Previously diagnosed hypertensive volunteers
NHT = Newly diagnosed hypertensive volunteers
NT = Normotensive volunteers

Fig. 2 BP classification among 988 male and 786 female volunteers



DHT = Diastolic hypertension
BHT = Both systolic and diastolic hypertension
ISH = Isolated systolic hypertension
HT = Hypertension

Fig. 3 Type and severity of BP classification among 340 newly diagnosed hypertensive volunteers

2.1-5.2), overweight ($p < 0.001$, OR = 2.5, 95%CI = 1.8-3.5), male ($p < 0.001$, OR = 3.4, 95%CI = 2.3-5.0), and DM ($p = 0.021$, OR = 2.1, 95%CI = 1.1-3.8), were independent factors associated with the increased prevalence of HT (Table 2). There were positive relationships between BP levels and BMI as well as BP levels and age in both genders (Table 3). Higher BP levels (Table 4) and, higher rates of NHT (Table 5) were found among overweight-volunteers compared to those with normal-BMI, when considered as a whole or by sex. A higher prevalence

Table 1. Comparative data of participants between NHT and NT

	All (n = 1774)	NHT (n = 340)	NT (n = 1084)	p-value[3]
Age (years old)	43.4 ± 13.7	48.1 ± 13.0	38.9 ± 12.7	<0.001*
Elderly[1] (%)	11.3	16.8	5.4	<0.001*
Male (%)	55.7	74.4	45.2	<0.001*
BMI (kg/m^2)	23.8 ± 3.8	25.3 ± 3.8	22.7 + 3.4	<0.001*
Overweight[2] (%)	34.4	47.4	23.2	<0.001*
Systolic BP (mmHg)	128.8 ± 22.1	150.7 ± 15.3	116.3 ± 12.5	<0.001*
Diastolic BP (mmHg)	80.5 ± 12.8	92.1 ± 10.6	73.8 ± 7.8	<0.001*
History of smoking (%)	19.1	25.0	15.3	<0.001*
Unrestricted salt intake (%)	65.9	69.1	68.6	0.87
Alcohol ingestion (%)	35.8	43.2	33.2	0.001*
Sedentary life style (%)	67.0	62.1	71.4	0.001*
DM (%)	9.3	10.5	4.5	0.001*
Stoke (%)	1.1	1.5	0.5	0.07
Coronary heart disease (CHD) (%)	3.9	1.5	3.3	0.08
Hyperlipidemia (%)	35.8	36.6	31.0	0.16
Family history of CHD (%)	13.8	15.9	12.8	0.15
Family history of DM (%)	31.9	32.0	31.6	0.89
Family history of HT (%)	39.4	33.1	37.1	0.20
Family history of stroke (%)	8.5	9.1	7.7	0.42

NHT = Newly diagnosed hypertensive volunteers
NT = Normotensive volunteers
[1] Age > 60 years
[2] BMI > 25 kg/m^2
[3] p-value between NHT and NT groups
* p-value was significant at < 0.05

Table 2. Multiple logistic regression analyses of NHT found in the BOI Fair study by gender (excluding PHT)

	All			Male			Female		
	p-value	OR	95%CI	p-value	OR	95%CI	p-value	OR	95%CI
Elderly[1]	<0.001*	3.3	2.1-5.2	<0.001*	3.3	1.8 – 6.0	0.001*	3.3	1.6-6.9
Male	<0.001*	3.4	2.3-5.0						
Overweight[2]	<0.001*	2.5	1.8-3.5	<0.001*	2.2	1.5 – 3.3	<0.001*	3.4	1.9-6.0
History of smoking	0.108	1.4	0.9-2.2	0.181	1.4	0.9 – 2.1	0.341	2.9	0.3-24.6
Alcoholic ingestion	0.289	0.8	0.6-1.2	0.810	1.0	0.6 – 1.4	0.07	0.3	0.1-1.1
Sedentary life style	0.224	0.8	0.6-1.1	0.242	0.8	0.5 – 1.2	0.80	0.9	0.5-1.7
Diabetes mellitus	0.021*	2.1	1.1-3.8	0.151	2.9	1.3 – 6.5	0.044*	2.7	1.0-7.3

PHT = Previously diagnosed hypertensive volunteers (n = 350 cases)
NHT = Newly diagnosed hypertensive volunteers (n = 340 cases)
[1] Age > 60 years
[2] BMI ≥ 25 kg/m^2
* p-value was significant at < 0.05

rate of NHT and ISH was also found among the elderly compared to the non-elderly, except for the prevalence rate of ISH in females where no difference was found between the two groups (Table 6).

To demonstrate awareness of cardiovascular risk factors among participants, questionnaires included "unknown" in the answers. Out of the 1424 cases (NHT + NT), there were 371 cases (26.1%) who were not aware

Table 3. Pearson's Correlation Analyses of SBP, DBP, BMI, and age among volunteers (NHT + NT) by gender (excluding PHT)

Variables	BP	All p-value	All r-value	Male p-value	Male r-value	Female p-value	Female r-value
Age	SBP	<0.001*	0.378	<0.001*	0.315	<0.001*	0.442
	DBP	<0.001*	0.302	<0.001*	0.259	<0.001*	0.331
BMI	SBP	<0.001*	0.367	<0.001*	0.245	<0.001*	0.385
	DBP	<0.001*	0.393	<0.001*	0.297	<0.001*	0.408

PHT = Previously diagnosed hypertensive volunteers (n = 350 cases)
NHT = Newly diagnosed hypertensive volunteers (n = 340 cases)
NT = Normotensive volunteers (n = 1,084 cases)
* p-value was significant at < 0.05

Table 4. Comparison of the mean SBP, DBP, between normal weight and overweight volunteers in the BOI Fair study by gender (excluding PHT)

	BP	Normal weight group[1]	Overweight group[2]	p-value
All (1424 cases)		N = 1012 cases	N = 412 cases	
	SBP (mm Hg)	121.2 ± 18.5	132.8 ± 20.2	<0.001*
	DBP (mm Hg)	76.1 ± 10.9	83.4 ± 11.5	<0.001*
Male (743 cases)		N = 490 cases	N = 253 cases	
	SBP (mm Hg)	129.2 ± 17.6	136.2 ± 18.6	<0.001*
	DBP (mm Hg)	80.0 ± 11.0	85.0 ± 11.4	<0.001*
Female (681 cases)		N = 522 cases	N = 159 cases	
	SBP (mm Hg)	113.6 ± 16.0	127.5 ± 21.5	<0.001*
	DBP (mm Hg)	72.3 ± 9.5	80.7 ± 11.3	<0.001*

[1] BMI < 25.0 kg/m^2,
[2] BMI ≥ 25.0 kg/m^2
* p-value was significant at < 0.05
PHT = Previously diagnosed hypertensive volunteers (n = 350 cases)

Table 5. Comparison of the prevalence of hypertension, between normal weight, and overweight participants of the BOI Fair study by gender (excluded PHT)

	Normal weight group[1] (%)	Overweight group[2] (%)	p-value
All (1424 cases)	N = 1012	N = 412	
- Prevalence of NHT	17.7	39.1	<0.001*
Male (743 cases)	N = 490	N = 253	
- Prevalence of NHT	28.2	45.5	<0.001*
Female (681 cases)	N = 522	N = 159	
- Prevalence of NHT	7.9	28.9	<0.001*

[1] BMI < 25.0 kg/m^2
[2] BMI > 25.0 kg/m^2
* p-value was significant at <0.05
PHT = Previously diagnosed hypertensive volunteers (n = 350 cases)
NHT = Newly diagnosed hypertensive volunteers (n = 340 cases)

Table 6. Comparison of the prevalence of hypertension and ISH, between elderly and non-elderly groups in the BOI Fair study by gender (excluding PHT)

	Non-elderly[1] group (%)	Elderly[2] group (%)	p-value
All (1424 cases)	N = 1309	N = 115	
- Prevalence of NHT	21.6	49.6	<0.001*
- Prevalence of ISH	36.6	58.3	0.002*
Male (743 cases)	N = 679	N = 64	
- Prevalence of NHT	30.9	62.5	<0.001*
- Prevalence of ISH	35.2	62.5	0.001*
Female (681 cases)	N = 630	N = 51	
- Prevalence of NHT	11.0	39.2	<0.001*
- Prevalence of ISH	40.6	50.0	0.45

PHT = Previously diagnosed hypertensive volunteers (n = 350 cases)
NHT = Newly diagnosed hypertensive volunteers (n = 340 cases)
ISH = Isolated systolic hypertension (n = 142 cases)
[1] Non-elderly, age < 60 years
[2] Elderly, age ≥ 60 years
* p-value was significant at < 0.05

Table 7. Comparative data of participants between ABPC and IBPC in pharmacologically given 216 PHT

	ABPC (69 cases)	IBPC (147cases)	p-value
Age (years)	50.4 ± 10.0	55.0 ± 9.6	0.002*
Elderly[1] (%)	13.0	31.3	0.004*
Male (%)	53.6	75.5	0.001*
BMI (kg/m^2)	25.1 ± 3.7	26.0 ± 3.4	0.08
Overweight[2] (%)	55.1	61.2	0.39
History of smoking (%)	21.7	26.5	0.45
Unrestricted salt intake (%)	55.1	51.0	0.58
Alcohol ingestion (%)	29.0	34.0	0.46
Sedentary life style (%)	60.9	57.1	0.60
DM (%)	8.6	25.8	0.007*
Stroke (%)	1.4	4.1	0.29
Coronary heart disease (CHD) (%)	13.0	10.2	0.54
Hyperlipidemia (%)	50.0	38.1	0.15

ABPC = Adequate BP controlled volunteers
IBPC = Inadequate BP controlled volunteers
PHT = Previously diagnosed hypertensive volunteers
[1] Elderly, age ≥ 60 years
[2] BMI ≥ 25.0 kg/m^2
* p-value was significant at < 0.05

of hypertension i.e. those who did not have their BP's measured before, 816 cases (57.3%) of hyperlipidemia, and 566 cases (39.7%) of DM.

Of the 216 PHT who were under current treatment, normalized BP levels were detected in 69 cases (31.9%) only. The rate of inadequate BP control was found at a significantly higher rate in elderly, males and those with DM compared to those with adequate BP control (Table 7). This was also the trend among those with a higher BMI (p = 0.08) (Table 7). Multiple logistic regression analyses showed that only DM and male gender were independently associated with a significantly higher rate of inadequate BP control (p = 0.018 and 0.006, respectively) (Table 8).

Table 8. Multiple Logistic Regression Analyses of IBPC in pharmacologically given 216 PHT

	p-value	OR	95%CI
Elderly[1]	0.06	2.2	0.97-5.2
Diabetes mellitus	0.018*	3.4	1.2-9.5
Male	0.006*	2.6	1.3-5.1
Overweight[2]	0.89	1.1	0.5-2.1

IBPC = Inadequate BP controlled volunteers
PHT = Previously diagnosed hypertensive volunteers
[1] Elderly, age $\geq$ 60 years
[2] BMI $\geq$ 25.0 kg/m^2
* p-value was significant at < 0.05

Discussion

The prevalence of hypertension in this study was high which is similar to that of the previous findings among people with few economic problems as reported by Jitapankul and co-workers in 1996-1997 (38.9 vs 36.6%, p = 0.16)[8]. When gender was separately considered, the prevalence in male participants (50.4%) was higher than that of the reports from the European/American studies such as USA (23%)[9], Finland (45%)[10], and the other European countries (44%)[11] (p < 0.01 in all groups). Most reports from Asian countries were also lower than our results such as India (30%)[13], Egypt (26%)[14], and China (14%)[15] (p < 0.01 in all groups). This is because the majority of attendants in the BOI Fair were businessmen, their friends, and families. They are a select group of people. These findings cannot apply to the general population. However, a comparable prevalence was observed in the study from Japan (50%)[12]. The prevalence of hypertension in the female volunteers (24.5%) in our study was also higher than those reported from the USA (18%)[9] and China (13%)[15]. By contrast, the prevalence of hypertension in our female participants was lower than that of the European reports such as Finland (32%)[10] and other European countries (32.2%)[11]. Those reported from other Asian countries such as India (33%)[13], Egypt (27%)[14], and Japan (43%)[12] were also higher compared to that in our study (p < 0.01 in all groups). As expected, male preponderance of being hypertensive was the usual finding among the epidemiological studies of hypertension. This can be explained by the major role of males in working to earn money for a living and to support their families while a lot of females are housewives. Although more females can work like men nowadays, high rank jobs are usually occupied by men.

The rate of hypertension awareness in this study was 79.1%, which is very high. This can be explained by the participants being educated people, the receipt of annual health check ups provided by the companies they worked for or by health insurance conditions. For those who were previously diagnosed hypertensive, only 61.7% (60.4% in males vs 64.8% in females, p = 0.44) (data not shown) received treatment from a qualified physician, and only 31.9% of them were under adequate control (Table 7). The percentage of hypertensive patients who were treated was higher than that reported by Achananuparp and associates in a central rural community study (61.7 vs 30.1%, p < 0.01)[16]. Furthermore, there was no significant difference in treatment rate between both genders (data not shown). Regarding hypertension detection, 350 out of 690 hypertensive participants, comprising 50.7% of all cases, had been previously detected as hypertensive. The detection rate in our study was comparable to that of the National Survey done in 1996-1997 (50.7% vs 50.8%, p = 0.96)[8], and was concordant with those of previous studies in Thai people, which varied from 45.0-58.8%[17-18]. These figures agree with the findings reported from other countries, which indicated that about half of the people with elevated blood pressure were not known to any of the medical profession and were unaware of their own conditions[19]. Nevertheless, the awareness of the disease entity and the acceptability of hypertensive participants to receive treatment were better than expected by "the rule of halves"[20]. Moreover, the adequacy of BP control among known hypertensive participants and the attempt to seek medical care are better than those of the previous studies[16]. This might be due to the higher educational background, urbanization, and the higher socioeconomic status of participants that brought about a better recognition and control of hypertension.

To stratify the prevalence of hypertension and the unmodified cardiovascular risk factors, the known cases of hypertension were excluded. Concerning the severity of hypertension in our study (mild; 73.5%, moderate; 16.5, severe; 10.0%), the proportion of mild hypertension was found to be higher than that of a previous report by Suriyawongpaisal and colleagues in Bangkok slums (73.5% vs 45.8%, $p < 0.01$)[21]. This could be due to the difference in the socioeconomic status between the two studied groups.

Clustering of the risk factors in newly hypertensive participants is clearly demonstrated. However, being elderly, overweight, male, smoking, and DM cause a risk of being associated with newly diagnosed hypertension. The positive influences of age on SBP and DBP in both men and women are consistent with the significant increases in mean SBP and DBP in elderly. The association between hypertension and overweight conformed to that of previous studies[22]. Within the same gender, overweight volunteers had significantly higher mean SBP and DBP than those with normal weight (Table 4), which led to the higher prevalence of hypertension (Table 5). The higher degree of the positive influence of age over the BMI of participants on the SBP in both genders was consistent with the fact that the prevalence rates of isolated systolic hypertension continue to mount in the seventh decade of life and beyond[23]. However, the stability of the prevalence rates of classical (diastolic) hypertension from middle age on could explain the lower degree of the positive influence of age over BMI on the DBP in both genders.

The demonstrated data on the unawareness of cardiovascular risks among participants in this study remained high. The self-awareness on HT, DM, and hyperlipidemia were reported from the participants at the BOI Fair in three-quarters, two-thirds and one-half of those cases without any known history of hypertension, respectively. Since the elderly, males, overweight people and DM were demonstrated to have a 1.1 to 3.4 fold increase in the risk of being hypertensive, national policy to encourage people to seek medical check ups should be stressed.

Concomitant diseases of patients i.e. diabetes mellitus, might cause inadequate BP control, since their target BP was lower (<1 30/80 mm Hg) and more difficult to achieve[24,25]. Therefore, in diabetic volunteers, the prevalence of patients with inadequate BP control was higher than in patients with adequate BP control (25.8 vs 8.6%, $p = 0.007$). To eliminate these confounding factors, multiple logistic regression analyses were performed to determine factors that might independently influence the adequacy of blood pressure management. Many possible contributing factors were selected, such as age, male gender, obesity, and DM in particular. Male gender and DM were, therefore, found to be independent risk factors that contributed to poorly controlled BP ($p = 0.006$, OR = 2.6, 95%CI = 1.3-5.1 and $p = 0.018$, OR = 3.4, 95%CI = 1.2-9.5, respectively) (Table 8).

In conclusion, improving the clinical detection, controlling the attributable risks and the adequacy of blood pressure management might have a great impact on reducing cardiovascular disease in the future.

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การศึกษาโรคความดันโลหิตสูงในผู้เข้าชมงานนิทรรศการคณะกรรมการส่งเสริมเพื่อการลงทุน พ.ศ. 2543

พีระ บูรณะกิจเจริญ, เมธา ผู้เจริญชนะชัย, สุรชัย สราวิช

ได้ศึกษาแบบตัดขวางหาความชุกของภาวะความดันโลหิตสูง, การควบคุมระดับความดันโลหิตและปัจจัยเสี่ยงต่อโรคหัวใจและหลอดเลือดในผู้เข้าชมงานนิทรรศการคณะกรรมการส่งเสริมเพื่อการลงทุน กรมการค้ากระทรวงพาณิชย์ (Board of Investment or BOI Fair) มีอาสาสมัครจำนวน 1,774 ราย อายุตั้งแต่ 15 ปีขึ้นไปที่ได้รับการตรวจวัดความดันโลหิต ระหว่างวันที่ 3-17 กุมภาพันธ์ พ.ศ. 2543 พบว่า อาสาสมัคร 350 ราย (ร้อยละ 19.7) ได้รับการวินิจฉัยว่าเป็นโรคความดันโลหิตสูงมาก่อน และ 340 ราย (ร้อยละ 19.2) ที่ได้รับการตรวจหรือวินิจฉัยว่าเป็นโรคความดันโลหิตสูงใหม่ ในกลุ่มที่เป็นโรคความดันโลหิตสูงมาก่อนจำนวน 216 ราย (ร้อยละ 61.7) มีผู้ป่วยเพียง 69 ราย (ร้อยละ 31.9) ที่ได้รับการควบคุมระดับความดันโลหิตเป็นปรกติ ในกลุ่มอาสาสมัครที่ได้รับการวินิจฉัยว่าเป็นโรคความดันโลหิตสูงใหม่จะมีปัจจัยเสี่ยงต่อโรคหัวใจและหลอดเลือดมากกว่ากลุ่มที่มีระดับความดันโลหิตเป็นปรกติ การศึกษานี้บ่งชี้ว่ามีความจำเป็นต้องสร้างความตระหนักในหมู่ประชากร, การค้นหาผู้ป่วยที่เป็นโรคความดัน โลหิตสูง, การลดปัจจัยเสี่ยงอย่างมีประสิทธิภาพ และการควบคุมระดับความดันโลหิตให้เป็นปรกติ จะป้องกันโรค ความดันโลหิตสูงและลดการเกิดโรคหัวใจและหลอดเลือด