Title

Job Control and Ambulatory Blood Pressure

Abstract

Objective The effect of work on blood pressure (BP) in a general population with appropriate adjustment for confounders is not well defined. High job control has been found to be associated with lower BP and with nocturnal BP dipping. However, with older workers this may be compromised and has not been studied extensively.

Methods A cross-sectional study was carried out on a primary care-based sample (*n*= 2047) aged 50-69 years. Data were collected on socio-demographic factors, medication, clinic and ambulatory blood pressure (ABPM). Of those with ABPM data, *n*=555 were workers with *n*=267 of them wearing the device on a work day. Job control was measured using two scales from the Copenhagen Psychosocial Questionnaire (COPSOQ) (possibility for development and influence at work). Nocturnal systolic blood pressure (SBP) dipping was the reduction in SBP from day to night-time using ambulatory systolic BP readings.

Results In general, blood pressure increased by age, male gender, and higher body mass index. Adjusted analysis showed workers with high influence at work and high possibility for development were more likely to have high asleep SBP [OR 2.13 (95% CI 1.05-4.34) *p*=0.04], [OR 2.27 (95% CI 1.11-4.66) *p*=0.03] respectively. Workers with high as opposed to low influence at work were more likely to have high awake BP. No association was seen between job control and nocturnal SBP dipping.

Conclusion Older workers with high job control may be more at risk of cardiovascular disease resulting from high daytime and night-time blood pressure with no evidence of nocturnal dipping.

Introduction

Work stress has been found to account for a proportion of coronary heart disease (CHD) events in workers (1). Hypertension, although perhaps not the principal pathway between job strain (high job demands and low job control) and CHD, is a preventable risk factor (2) and chronic stress has been acknowledged as a credible cause of high blood pressure (3). Some recent meta-analyses have concluded that job strain is a risk factor for hypertension (4-6) but others fail to find an association (7) . Additionally, the reduction in blood pressure from day to night-time is of importance. However, further investigations into job strain and nocturnal blood pressure dipping and potential modifiers of this effect are required (4).

High job control has been reported as a relevant positive factor in blood pressure presentation. Workers with low job control have been found to have higher blood pressure than those with high job control (6, 8). However, inconsistent associations have been found between this exposure and outcome. For instance, only half of the relevant studies reviewed by Gilbert-Ouimet et al (2014) showed a significant protective effect for high job control (6). Furthermore, job control is beneficial to nocturnal SBP dipping (9) an important physiological function (10, 11) as night-time blood pressure is a compelling predictor of cardiovascular mortality (12). Nocturnal SBP dipping is in line with contemporary stress theory, specifically the allostatic model. This model hypothesises that the body copes with the stresses put on it by the activation of bodily systems and recovers when the stresses cease (13, 14). Stressors at work can increase allostatic load particularly when the demand on the individual carries on for some time. For example, blood pressure may elevate at work in response to activation (stressor). However, for the body to recover there should be a corresponding reduction of blood pressure at rest.

Researchers have found that hypertensive men with low job control had higher sleep SBP and lower SBP dipping compared to men with high job control (9). Various associations have been reported for job control and diastolic blood pressure (DBP). High job control has been found to be associated with high DBP for females using casual BP readings (15), whereas other researchers using ABPM readings found low job control to be associated with high DBP (8, 16).

Job control as defined by the demand-control model typically comprises of two components - skill discretion (use/develop skills) and decision authority (autonomy/authority over work) (17). Some scholars have found associations to vary for these components (18). This highlights the need to distinguish between the job control dimensions which are commonly collectively seen as beneficial. New job characteristic questionnaires specifically discriminate between the dimension of possibility for development and influence at work (Copenhagen Psychosocial Questionnaire) (19). To date no investigation of these aspects of the COPSOQ and hypertension has been undertaken.

Research has found older workers to be more vulnerable to adverse work characteristics particularly with regard to physical health (20, 21). Workers over 50 years who had a cardiac event were found to be more likely to have low job control whereas no association was found for younger workers (21). Although BP usually increases with age, older workers are thought to adapt to their work environment where control over their work has been developed with time (13), but this may vary by social class. Little work has been done investigating job control (specifically) and blood pressure in a sample of older workers. This study investigates the association of different components of job control with blood pressure and blood pressure dipping in a middle-aged Irish primary care-based sample using clinic and 24-hour ambulatory blood pressure measurements. The objectives of this study are, firstly, to examine the blood pressure levels of the complete sample including workers and non-workers. Secondly, to explore the relationship of the job control dimensions with BP and nocturnal SBP dipping in workers while taking socio-demographics and lifestyle factors into account. We are hypothesising that nocturnal SBP dipping is more pronounced in those with high job control, i.e. high influence at work and high possibility for development.

Methods

Participants

The Mitchelstown Study is a cross-sectional study on middle-aged (50-69 year-olds) Irish men and women sampled from a large primary health care centre in North Cork, Ireland (22). In total, 2047 participants were recruited to the study with a 67% response rate. Written informed consent was obtained from all participants prior to the study. Ethical approval for the study was granted by the Clinical Research Ethics Committee of the Cork Teaching Hospitals, Cork, Ireland.

Study variables

Work status and job characteristics

The work status of each participant was established by asking them to indicate whether they were currently working (*n*=1025), retired (*n*=605), in unpaid labour (*n*=234) or unemployed (*n*=183). Retired, unpaid labour and unemployed were classified as non-workers for the purpose of this paper.

Job characteristics were ascertained using the Copenhagen Psychosocial Questionnaire (COPSOQ) (19). Each working participant completed this based on the job they had done for the longest period of time. Two scales from the COPSOQ questionnaire were used – possibility for development and influence at work. Each scale was a composite of four items and had a theoretical range of 0-100. The average score for each scale was then calculated only if at least half of the items were complete. A high score was indicative of high possibility for development and high influence at work. Cronbach α for the individual scales were; possibility for development α=0.82 (males α=0.78, females α=0.83) and influence at work α=0.83 (males α=0.84, females α=0.81). Both scales were dichotomised at the median.

Blood pressure

Clinic blood pressure readings were taken using an oscillometry device (Omron™ M7). Hypertensive status was established for stratification of analysis. Hypertension was defined as average systolic ≥140mmHg or average diastolic ≥90mmHg on clinic BP readings (23) and/or self-reported anti-hypertensive treatment.

All participants were offered ABPM which some declined. The BP was recorded every 30 minutes, day and night, for 24 hours using Meditech ABPM-05. These data were then read using dabl® software (24). Bedtime and rising times were recorded by each participant and this was used to calculate average daytime and night-time SBP and DBP only if there were at least 10 valid daytime and 5 valid night-time readings (25) and work/non-work status was known. For the purpose of this paper those classified with a high reading had a daytime ABPM SBP≥135, DBP ≥85mmHg and night-time ABPM SBP ≥120, DBP ≥70mmHg. SBP dipping status was then calculated using the following formula (1-asleep SBP/awake SBP)*100 and categorised as dippers or non-dippers. Dippers were those who had an average SBP reduction during the night-time ≥10% of mean daytime SBP. Non-dippers were those who had a reduction of <10% in nocturnal SBP from daytime recordings (10).

Covariates:

Treatment for hypertension was established by asking the participant *Has your doctor given you a prescription for blood pressure tablets?*

Alcohol intake was assessed by asking *How often do you have a drink containing alcohol, and During the past 7 days how many standard drinks of any alcoholic beverage did you have each day?* Moderate and not-moderate drinkers were established from the first question (26). The weekly units consumed were calculated from the second question.

Physical activity was measured using the IPAQ-short form questionnaire (International Physical Activity Questionnaire) (27). Participants were categorised as having low, moderate or high physical activity. Smoking status was established by asking if they were current smokers – *Do you now smoke* and if they had *smoked at least 100 cigarettes* in their life. Smokers were categorised into current smokers and non-smokers/ex-smokers.

Other variables used in this analysis included age, gender, BMI, education, and ABPM worn on a work day. Age was used categorically, 50-59 or 60-69 years of age and continuously in the regression models. The standard formula for BMI calculation was used from weight and height measurements (22). Educational level was established by enquiring what the highest level of schooling achieved was (primary, secondary, tertiary). Self-reports of whether the ABPM was worn on a work or leisure day were recorded when the device was returned by the participant.

Descriptive analysis was carried out on the demographic characteristics and clinic blood pressure of all participants (*n*=2042) using independent sample *t*-test. This analysis was then carried out for those who had an ABPM done (*n*=1112), investigating specifically awake and asleep SBP, DBP and nocturnal SBP dipping. Logistic regression analysis was then performed to investigate the association between job control for workers (*n*=555) and clinic BP, awake and asleep BP from ABPM readings and finally nocturnal SBP dipping. These models were adjusted for socio-demographic factors. Data were analysed using PASW 18.

Results

Table 1 shows the clinic BP readings by socio-demographic, lifestyle-related factors and work characteristics. Systolic blood pressure significantly increased by age, male gender, in the overweight/obese category, drinking level, taking anti-hypertensive medication, non-work status, and reported low physical activity levels in the entire sample of workers and non-workers. Systolic blood pressure also increased significantly with level of influence at work in workers.

<Insert Table 1 here>

SBP measurements from ABPM showed similar results to those from clinic measurements across most socio-demographic and lifestyle-related factors, whereas DBP measurements varied (Table 2). However, workers had significantly lower SBP in the clinic reading than non-workers (Table 1) where no significant association was found with awake ABPM SBP (Table 2). The reverse was true for DBP with workers having significantly higher awake ABPM DBP levels (Table 2) with no significance difference in clinic DBP (Table 1). The components of job control were more consistently positively associated with awake SBP, than clinic SBP. Within ABPM results, similar patterns can be seen between awake and asleep SBP and DBP by socio-demographic factors except for education, work status and job control. Workers with high possibility for development had higher average nocturnal SBP dipping than those with low possibility for development.

<Insert Table 2 here>

The association between influence at work and possibility for development with clinic and ABPM BP, in addition to nocturnal SBP dipping can be seen in Table 3 for all workers who were not on anti-hypertensive medication (*n*=401). High influence at work was associated with high clinic DBP, high awake and asleep SBP and DBP with ORs of 2.06-2.44. High possibility for development was associated with high asleep SBP [OR 2.27 (95% CI 1.11-4.66) *p*=0.03]. No association was seen for the job control dimensions and clinic SBP nor SBP dipping.

<Insert Table 3 here>

Discussion

This study set out to examine blood pressure in relation to socio-demographic factors for a primary health care-based sample (objective 1). Furthermore, we investigated the association between job control and blood pressure for a subset of that sample who were current workers and specifically examined whether workers with high job control were more likely to reduce blood pressure during sleep (objective 2). The null hypothesis was accepted as no evidence of a pronounced reduction in SBP at night was found in those with high job control. Although there was evidence of activation during the day (albeit inconsistent) with higher SBP for those with higher control at work, there was no clear evidence of SBP recovery at night. Incomplete recovery from the stresses of the day has been discussed as a principal component in the hypothetical causal pathway between an acute stressor and chronic ill-health (28). Our study showed workers with high job control had awake SBP levels of up to 3mmHg higher than those with low job control. The clinical significance of this difference is evident from previous work where a 2mmHg reduction in usual SBP for middle aged people resulted in a 10% reduction in stroke mortality and approximately a 7% reduction in mortality from ischaemic heart disease (29).

Systematic reviews and meta-analyses done on this area typically focus on job strain as a combination of high work demands and low control (4-7), but this present paper specifically examines job control. No conclusive association between job control and BP levels has been found (6). However, ambulatory blood pressure monitoring has not always been used. As discussed by Schnall et al (30) ambulatory blood pressure readings are preferable to casual readings in research. Additionally ABPM results are also recommended for the diagnosis of hypertension (31). Ambulatory blood pressure monitoring gives a more reliable measurement yielding a valid average blood pressure with no observer bias. Recent work has highlighted the importance of examining both dipping status and absolute blood pressure levels (32). Our study failed to find an association between job control and SBP dipping, resulting in odds ratios in the opposite direction to that hypothesised. Workers with high job control were more likely to have high asleep SBP. However, high influence at work or skill discretion was consistently associated with high blood pressure. This could result in increased cardiovascular risk (32-34). Possibility for development did not show the same significant associations. This reinforces the importance of examining job control components separately. The use of clinic BP readings would not allow identification of such a risk, however it is informative for blood pressure researchers to compare clinic and ABPM results as we have done in this paper.

Job control can be seen as a proxy measure for social class implying that those with high job control had higher occupational status and were generally in a higher socio-economic group with better life resources and healthier life styles (35). However, contrary to our expectations, high job control in our sample was associated with high blood pressure, unlike earlier research (8, 36). Scholars have previously found a significant association between low job control, hypertension and SBP dipping when using the job control dimensions collectively (6, 9, 16). Our study examined these dimensions separately owing to recent findings of differing associations for these components (18). Some of the variables we adjusted for may have resulted in an over-adjustment, such as alcohol intake. High alcohol consumption has been found to increase blood pressure (37, 38) and is a valid confounding factor in the association between job control and hypertension. Nevertheless, not all researchers adjust for this variable (8, 16, 36) perhaps owing to alcohol being a causal factor for hypertension.

It could be postulated that older workers in this study with high control and hypertension were exhibiting the *defense* reaction and those with low control the *defeat* reaction (39, 40). Older workers, though in positions of authority, may feel threatened by younger workers bringing new ideas into the workplace. Younger workers in competitive, economically unstable times may be seen as more cost effective by management than older workers resulting in high competition.

It is important to take into consideration that workers who wore the ABPM device on a work day were not engaged in work for the full quota of daytime measurements as their BP was averaged over the entire awake hours. This may result in dilution of the association between job control and blood pressure. Although this is not ideal, data on specific work hours were not available with this being a mixed-occupation sample.

There are some limitations to this paper. Not all those who were recruited into the study had ABPM. However, we are confident that this did not systematically bias the findings. Although the sample with ABPM were older ($p<0.01$) and a higher proportion of females ($p=0.01$) there were no differences in level of education, smoking or alcohol intake to those who did not have the recording. Furthermore, investigating workers only, there was no difference between workers who had or did not have an ABPM for possibility for development ($p=0.21$) or influence at work ($p=0.93$).

Although the internationally validated scales from the COPSOQ performed well in the group studied (Cronbach alphas were >0.70) the use of self-reported job control measures may have systematically biased the associations between job control and hypertension towards the null. For example, Greiner et al (41, 42) argued that some people may deny or suppress stress experiences and report lower work stressor levels. However, denial and suppression are also known personality factors that may play an important role in the aetiology of high blood pressure. By comparing self-reported with observed stressor levels the authors showed that those with high observed stressor levels but low self-reported stressor levels (so-called ‘deniers’) were at highest risk for hypertension. However, our outcome variable (ABPM) was not measured by self-report somewhat balancing the self-reported exposures and avoiding common methods variance bias which usually inflates the association between exposure and outcome simply for the fact that they are measured with the same method. This overestimation or indeed underestimation of job control could be reduced by using job analysis data by independent observers (41). However, this was not possible in the current study.

It is conceivable that a number of healthy males, who typically are poor attendees at the doctor's surgery, may have been inadvertently omitted from the sample as all participants had to be registered patients. However, samples taken from a primary care setting in Ireland have previously been found to be representative of the general population (43). The healthy worker effect may have influenced our results with healthier people staying in work or in highly stressful occupations (20). The use of a cross-sectional study design prohibits causality to be determined (44). Finally, education was used as a proxy measure for social class but this may have resulted in residual confounding. Nevertheless it was seen as preferable to classifying participants by the occupation they had held for the longest period of time, a method used previously (45, 46) which could result in an arbitrary classification (47). A more accurate approximation of social class could have been made if data were available on income levels. Although there was very little movement between jobs for this group of older workers it is necessary to acknowledge the issue of recall bias when basing job characteristics on the longest held occupation. Retrospectively participants could overestimate their control at work resulting in greater associations between job control and high blood pressure.

Nevertheless, this study included a large sample of older heterogeneous workers with ABPM data. Both activation and recovery of blood pressure was investigated in relation to reported job control for workers. Further research should aim to incorporate observer and self-reported stressor data to examine the associations between job control and hypertension using ABPM. For generalizability, it would be advantageous if this was carried out on a number of different occupations investigating specific work hours, evening and night-time blood pressure. Gender may explain some of the unexpected associations in our study and further analysis should be done. However, this goes beyond the scope of the present paper.

In conclusion, older workers with high job control may be at risk of cardiovascular disease resulting from high daytime and night-time blood pressure with no evidence of nocturnal SBP dipping. It appears that the level of influence the older worker has impacts negatively on their blood pressure. Attempts should be made, in the workplace, to support workers with high job control. This could take the form of health promotion initiatives in the workplace, in addition to enhancing, supporting and up-dating skills.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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Table 1: Means (*M*) and Standard Deviations (SD) for clinic systolic blood pressure (SBP) and clinic diastolic blood pressure (DBP) by demographic details, lifestyle and work characteristics of the complete sample

		SBP N=2047		***p*-value**	**DBP N=2047**		***p*-value**
	N [a]	***M***	**SD**		***M***	**SD**	
Age				**<0.01**			0.49
50-59	1064	127.2	15.9		80.3	9.8	
60-69	904	132.2	17.5		80.0	9.8	
Gender				**<0.01**			0.23
Male	1005	130.9	15.7		79.9	9.6	
Female	1037	128.4	17.8		80.4	9.9	
Education				0.64			0.14
Primary	536	132.7	15.8		81.3	11.0	
Secondary/Tertiary	1370	133.6	17.7		83.1	10.0	
Current smoker				0.65			0.72
Yes	292	129.2	17.1		80.3	9.8	
No	1750	129.7	16.8		80.1	9.8	
Drinker				**0.03**			0.24
Not-moderate	461	131.2	16.9		80.9	9.4	
Moderate	863	129.1	16.1		80.3	9.8	

Table 1 cont.

	N[a]	*M*[b]	SD[c]	SBP N=2047 *M*	SD	*p*-value	DBP N=2047 *M*	SD	*p*-value
Anti-hypertensive medication						**<0.01**			**<0.01**
Yes	934			134.9	17.3		81.9	10.3	
No	1073			127.3	16.2		79.4	9.5	
Physical activity (IPAQ)						**0.04**			**0.05**
Low	930			130.3	17.4		80.5	10.1	
Moderate/High	986			128.7	16.3		79.7	9.5	
Body Mass Index (BMI)						**<0.01**			**<0.01**
Normal	444			125.2	17.8		77.2	9.5	
Overweight/obese	1590			130.9	16.4		81.0	9.7	
Work status						**0.02**			0.60
Worker	1025			128.6	16.4		80.0	9.8	
Non-worker	948			130.5	17.2		80.2	9.7	
Workers only (n=1025)									
Possibility for development		66.1	23.4			0.27			0.07
Low	532			128.2	16.4		79.5	9.3	
High	456			129.3	16.5		80.7	10.3	
Influence at work		55.5	29.0			**0.04**			0.90
Low	534			127.6	16.3		79.9	9.3	
High	460			129.7	16.5		80.0	10.3	

[a]=number, [b]=mean of job control variables, [c]=standard deviation of job control variables

Table 2: Mean and Standard deviation for ABPM – awake, asleep systolic (SBP), diastolic (DBP) blood pressure and dipping SBP by demographic details, lifestyle and job characteristics of the complete sample

		Awake SBP N=1112			**Awake DBP N=1112**			**Asleep SBP N=1112**			**Asleep DBP N=1112**			**Dipping SBP N=1112**		
	***N*[a]**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**
Age				**<0.01**			**<0.01**			**<0.01**			**0.02**			**<0.01**
50-59	539	129.5	13.5		78.7	9.3		109.7	12.6		63.3	8.4		15.2	6.4	
60-69	544	132.8	14.6		76.0	8.5		114.5	14.7		62.1	8.1		13.7	7.2	
Gender				**<0.01**			**<0.01**			**<0.01**			**<0.01**			0.22
Male	507	133.7	13.2		79.8	9.1		114.0	13.9		65.0	9.0		14.7	7.4	
Female	597	129.0	14.6		75.1	8.4		110.5	13.9		60.8	7.2		14.2	6.5	
Education				0.21			**0.02**			**0.03**			0.20			0.09
Primary	302	132.1	14.7		76.3	9.1		113.8	14.9		62.3	8.6		13.8	7.2	
Secondary/Tertiary	749	130.9	13.9		77.7	9.1		111.6	13.7		63.0	8.3		14.6	6.9	
Current smoker				0.40			0.17			0.38			0.68			**0.03**
Yes	162	132.0	15.6		78.2	9.7		111.2	14.1		63.0	8.9		15.5	7.1	
No	942	131.0	13.9		77.1	8.9		112.3	14.0		62.7	8.2		14.2	6.9	
Drinker				0.19			0.95			0.55			0.60			0.56
Not-moderate	263	132.9	14.9		78.2	9.1		112.8	14.4		63.1	8.7		14.9	7.6	
Moderate	458	131.5	13.2		78.2	9.1		112.1	13.4		63.5	8.6		14.6	6.9	

Table 2 cont.

		Awake SBP N=1112			Awake DBP N=1112			Asleep SBP N=1112			Asleep DBP N=1112			Dipping SBP N=1112		
	N[a]	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**
Anti-hypertensive medication				**<0.01**			0.22			**<0.01**			0.11			**<0.01**
Yes	372	133.6	13.1		76.8	9.1		115.7	14.1		63.3	8.5		13.3	7.4	
No	720	129.9	14.6		77.5	9.0		110.2	13.6		62.4	8.3		15.0	6.6	
Physical activity (IPAQ)				**<0.01**			0.21			**<0.01**			0.20			0.44
Low	523	132.6	15.2		77.6	9.3		113.6	14.8		63.1	8.5		14.2	7.0	
Moderate/High	530	129.7	12.8		76.9	8.8		110.7	13.0		62.4	8.2		14.5	6.8	
Body Mass Index (BMI)				**<0.01**			**<0.01**			**<0.01**			**<0.01**			**0.046**
Normal	221	124.3	14.1		73.3	9.0		105.1	11.8		59.4	7.8		15.2	6.4	
Overweight/obese	880	132.8	13.6		78.2	8.8		113.8	13.8		63.5	8.2		14.2	7.1	
Work status				0.40			**<0.01**			**<0.01**			0.30			**<0.01**
Worker	551	130.8	13.5		78.4	9.2		110.8	12.8		63.0	8.4		15.2	6.5	
Non-worker	553	131.5	14.8		76.2	8.8		113.4	15.0		62.4	8.3		13.6	7.2	

Table 2 cont.

				Awake SBP N=1112			Awake DBP N=1112			Awake DBP N=1112			Asleep DBP N=1112			Dipping SBP N=1112		
	N [a]	***M*** [b]	***SD*** [c]	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**	***M***	**SD**	***p*-value**
Workers only (n=552)																		
Possibility for development		66.1	23.4			**0.02**			**0.02**			0.71			0.49			**0.01**
Low	293			129.6	13.1		77.6	8.9		110.6	12.3		62.8	8.2		14.5	6.4	
High	241			132.3	13.9		79.4	9.5		111.0	13.3		63.3	8.7		15.9	6.7	
Influence at work		55.5	29.0			**0.01**			0.16			0.06			0.46			0.35
Low	287			129.3	13.5		77.8	8.6		109.9	13.0		62.8	8.0		14.9	7.0	
High	245			132.6	13.4		79.0	9.9		111.9	12.4		63.3	8.9		15.4	6.1	
ABPM worn						0.27			0.24			0.96			0.90			0.18
Work day	267			131.4	13.0		78.8	8.7		110.7	12.1		62.9	8.0		15.6	6.4	
Not work day	266			130.1	13.9		77.8	9.5		110.6	13.5		62.8	8.7		14.8	6.8	

[a]=number, [b]=mean of job control variables, [c]=standard deviation of job control variables

Table 3: Odds ratios (95% Confidence Interval) for the association between influence at work / possibility for development and blood pressure

	All workers (n=401)	
	Fully adjusted[a]	
	OR	**95% CI**
	Clinic SBP [A]	
Influence at work[a]	1.37	0.78-2.39
Possibility for development[b]	0.99	0.58-1.72
	Clinic DBP [B]	
Influence at work[a]	**2.06**	**1.08-3.95**
Possibility for development[b]	1.27	0.68-2.38
	Awake SBP [C]	
Influence at work[a]	**2.44**	**1.35-4.41**
Possibility for development[b]	1.64	0.93-2.89
	Awake DBP [D]	
Influence at work[a]	**2.42**	**1.24-4.72**
Possibility for development[b]	1.21	0.64-2.28
	Asleep SBP [E]	
Influence at work[a]	**2.13**	**1.05-4.34**
Possibility for development[b]	**2.27**	**1.11-4.66**
	Asleep DBP [F]	
Influence at work[a]	**2.18**	**1.07-4.44**
Possibility for development[b]	1.36	0.68-2.71
	SBP Dipping [G]	
Influence at work[a]	0.96	0.46-2.03
Possibility for development[b]	0.94	0.45-1.94

[a]Adjusted for age, gender, education, smoking, work day, physical activity and alcohol, [a]High influence at work, reference is low influence at work, [b]High possibility for development, reference is low possibility for development. [A]High clinic SBP defined as average systolic ≥140mmHg on clinic blood pressure reading, normotensive is the reference (SBP<140mmHg), [B]High clinic DBP defined as average diastolic ≥90 mmHg on clinic blood pressure reading, normotensive is the reference (DBP<90mmHg), [C]Awake SBP high ≥135mmHg, reference <135mmHg [D]Awake DBP high ≥85mmHg, reference <85mmHg [E]Asleep SBP high ≥120mmHg, reference <120mmHg, [F]Asleep DBP high ≥70mmHg, reference <70mmHg,[G]SBP dipping reference non-dippers