

Adverse effects of psychosocial work factors on blood pressure: review of studies on demand–control–support and effort–reward imbalance models ¹

by Mahée Gilbert-Ouimet, ² Xavier Trudel, Chantal Brisson, Alain Milot, Michel Vézina

¹ Supplementary tables A–C

² Corresponding author: Population health research unit, St-Sacrement hospital, 1050, Chemin Ste-Foy, Quebec City, Quebec, Canada G1S 4L8. [E-mail: mahee.g.ouimet@gmail.com]

Table A. Cross sectional and case-control studies on the demand-control-support (DCS) model according to types of blood pressure (BP) measures (office or ambulatory) [BMI=body mass index; Diast=diastolic; ERI=effort reward imbalance; JCQ=Job content questionnaire; OC=over-commitment; NS=not significant; Syst=systolic]

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age, Population type ^a , Country	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
						Results for men	Results for women
Office BP measures							
Winnubst, 1982 (1)	1,246 participants (1,167 men and 79 women) PR: 80%	34-75 years old (Mean 45), workers of 3 different industrial organizations, Netherlands Workers on medication for hypertension not excluded	Organizational Stress Questionnaire	Office mean BP	Crude results	Both Gender Crude difference in mean BP S superior: Syst. BP: +0.05 mm Hg (NS) Diast. BP: +0.04 mm Hg (NS) S coworker: Syst. BP: +0.05 mm Hg (NS) Diast. BP : +0.06 (0.05<p<0.10)	

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age, Population type ^a , Country	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
						Results for men	Results for women
Netterstrom, 1991 (2)	1,504 participants (748 men and 756 women) PR: 75%	30, 40, 50, and 60 years old (selected on this basis) Living in 11 municipalities Copenhagen, Denmark Workers on medication for hypertension not excluded	A questionnaire was used (but not JCQ), Dichotomous	Office mean BP Office hypertension (160/95 mm Hg or medication)	Age, gender, weight, height, smoking, social network, physical activity	Both Genders Adjusted differences in mean BP: Job strain: Syst. BP: +1.7 mm Hg Diast. BP: -0.4 mm Hg. No significant results	
Albright, 1992 (3)	1,396 participants, PR:77%	20-65 years old (mean: 42), Bus drivers, USA Workers on medication for hypertension not excluded	JCQ, English version Quadrant	Office hypertension (140/90 mm Hg or medication)	Age, gender, race, education, income, marital status, years employed, BMI, family history of heart disease, alcohol intake, caffeine and physical activity	Both Genders Adjusted odds ratios D: 0.95 (0.84–1.03) C: 0.92 (0.81–1.04) Job strain: 0.98 (0.86–1.13)	
Light, 1992 (4)	129 participants (65 men and 64 women) PR: Not mentioned	18-47 years old, healthy working men and women (mean age 32.9 in men and 31.3 in women), USA Hypertensive workers	JCQ, English version Dichotomous	Office mean BP	No adjustment	Differences in mean BP Job strain	

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age, Population type ^a , Country	D C S indicator, assessment ^b and prevalence	Outcome ^{c,d}	Covariates ^e	Main results / Comments	
						Results for men	Results for women
						Syst. BP: + 6mmHg. P<0.05 Diast. BP: +4mmHg , p <0.05	Syst. BP:-1 mmHg (ns) Diast. BP:-2.2mmHg (ns)
Fox, 1993 (5)	136 women, PR: 76%	21-60 years old. nurses, USA Workers on medication for hypertension excluded	D: 45-item questionnaire by Motowidlo et al. C: with a 22-item questionnaire by Dwyer and Ganster Also measured objectively (by the head nurse), Continuous	Office mean BP	Age, weight, caffeine consumption	Both Genders Differences in systolic mean BP: Work load and low C: positively relate to systolic BP at work and at home (results shown in Figures 3, 4, 5 no data shown. No results for diastolic BP at work)	
Curtis, 1997 (6)	726 participants (273 men and 453 women) PR: not mentioned at baseline and 85% participation at follow-up	25-50 years old (mean 38.5 (men) and 38.9 years old (women), African-American working men and women, USA Workers on medication for hypertension	JCQ, English version Dichotomous	Office hypertension (≥160/95 mm Hg or medication)	Age, BMI, occupation, education, marital status, perceived stress, smoking, alcohol, physical activity, level of physical exertion at work	Adjusted odds ratios	
						Job strain: 1.3 (0.50–3.29) D (80th percentile): 0.9 (0.51–1.56) C (80th percentile): 0.46 (0.22–0.96)	Job strain: 1.1 (0.58–2.22) D (80th percentile): 1.2 (0.69–2.14) C (80th percentile): 1.0 (0.58–1.73)

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age, Population type ^a , Country	D C S indicator, assessment ^b and prevalence	Outcome ^{c,d}	Covariates ^e	Main results / Comments	
						Results for men	Results for women
		not excluded					
Kawakami, 1998 (7)	2,876 men PR: 92%	38.1 years old ± 9.4 and 38.4 years old ± 8.5 in daytime (mean age) (N=1,703) and rotating-shift (N=1,173) workers, workers in a large electrical company, Japan Workers on medication for hypertension not excluded	JCQ, Japanese version Quadrant	Office hypertension ($\geq 160/90$ mm Hg or medication) Office mean BP	Age, education, obesity, physical activity, and alcohol consumption	Daytime workers Differences in mean BP: Job strain: Syst. BP: +2 mm Hg ($p=0.005$), Diast. BP: +2 mm Hg ($p=0.008$) D: higher diastolic BP ($p=0.003$), data not given C, S and iso-strain: no significant effect (not shown) Hypertension odds ratio: Job strain: 1.28 (0.73-2.23) Rotating-shift workers Differences in mean BP: Job strain: Syst. BP: -1.0 mm Hg, Diast. BP: 0.0 mm Hg Hypertension odds ratio: 0.88 (0.47-1.62) D, C, S and iso-strain:	None

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age, Population type ^a , Country	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
						Results for men	Results for women
						no significant effect (not given)	
Niedhammer, 1998 (8)	12,221 participants (9,001 men and 3,220 women) PR: 45%	40-50 years old (men) and 35-50 years old (women), employed by a French electricity company, France Workers on medication for hypertension not excluded	JCQ, French version	Office hypertension (criteria not mentioned)	Age, education, occupation marital status, number of children, physical activity, smoking, alcohol consumption	Adjusted odds ratios	
						C (low): 1.21 (1.05–1.39) D (high): 1.00 (0.87–1.15) S 1.12 (0.98–1.28)	C (low): 0.89 (0.68–1.16) D (high): 1.25 (0.95–1.64) S 1.10 (0.85–1.42)
Tsutsumi, 1998 (9)	304 participants (138 men and 166 women) PR: 20%	Age 40-69 Resident of Akaike, Japan Workers on medication for hypertension not excluded	JCQ, Japanese version, DemandControl interaction	Office mean BP	Age, BMI, education, marital status, menopause, white versus blue collar workers, employment status, coffee and greasy foods intake, smoking, alcohol consumption, working hours, physical activity, social support	Adjusted beta coefficient D C	
						Syst. BP: NS, Diast. BP: 0.23 p=0.042	No significant results

Su, 2001 (10)	526 men PR: 77%	Age 18-65, white collar workers in private insurance companies, Taiwan Workers on medication for hypertension excluded	Job strain JCQ Taiwanese version, ratio (demand/contr ol)	Office mean BP	Age, education, smoking, alcohol consumption	Adjusted differences in mean BP:	
						Job strain: Syst. BP: +10.21 mmHg p<0.05. Diast. BP: +17.97 mmHg p<0.05	None
Tsutsumi, 2001 (11)	6,587 participants (3,187 men and 3,400 women) PR : 65.4%	Age 30-69 years old (mean: 50.8), working men and women, Japan Workers on medication for hypertension not excluded but analyzed separately	JCQ Japanese version, ratio (demand/contr ol)	Office hypertension (160/90 mmHg or medication)	Age, job managerial, work hours, marital status, education, family history of hypertension, smoking, alcohol consumption, BMI, physical activity	Adjusted prevalence ratios Job strain (D/C) Multiple linear regression with syst. and diast. BP: not any significant association in men and women	
						1.18 (1.05–1.32).	1.01 (0.90–1.13).
Alfredsson, 2002 (12)	10,382 participants (7,146 men and 3,236 women), PR : 82%	15-64 years old, 36 occupational health service, Stockholm Workers on medication for hypertension not excluded	JCQ Swedish modified version , Dichotomous	Office hypertension (140/ 90 mm Hg or medication)	Age, socioeconomic status, smoking, physical activity, fat consumption, and BMI	Both Genders Adjusted prevalence ratio: D: 0.9 (0.8–1.0) C: 1.1 (1.0–1.2) Job strain vs others: 1.0 (0.9–1.1) Job strain vs relaxed: 1.0 (0.8–1.1)	

Pelfrene, 2002 (13)	21,419 participants (16,329 men and 5,090 women), PR: 48%	35-59 years-old, workers of 25 large companies, Belgium Workers on medication for hypertension not excluded	JCQ French version	Office mean BP Office hypertension (160/95 mm Hg or medication)	Age, education	Adjusted differences in mean BP alpha < 0.01 and 99% CI. D: Syst. BP +1.16 mm Hg (0.35-1.97), Diast BP: +0.95 mm Hg (0.41-1.50) C: Syst. BP -0.17 mm Hg (-0.96-0.62), Diast. BP+ 0.03 mm Hg (-0.50-0.56) S: Syst. BP -0.34 mm Hg (-1.16-0.48), Diast. BP -0.37 mm Hg (-0.92-0.18) Odds ratio of hypertension D: 1.11 (0.97-1.26) C: 0.90 (0.79-1.03) (p<0.05) S: 0.94 (0.82-1.07) Mean BP and odds ratios were also calculated for iso-strain but nothing was significant (Tables 4a and 4b)	Adjusted differences in mean BP alpha < 0.01 and 99% CI. D: Syst. BP +0.87 mm Hg (-0.57-2.42), Diast. BP+0.97 mm Hg (-0.01-1.95) (p<0.05) C: Syst. BP: +0.63 mm Hg (-0.86-2.11), Diast BP: +0.75 mm Hg (-0.23-1.73) (p<0.05) S: Syst. BP: + 0.44 mm Hg (-1.08-1.97), Diast BP: -0.11 mm Hg (-1.11-0.89) Odds ratio of hypertension D: 1.43 (1.08-1.84) C: 0.97 (0.74-1.27) S: 1.02 (0.78-1.34) Mean BP and odds ratios were also calculated for iso-strain but nothing was significant (Tables 4a and 4b)
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Cesana, 2003 (14)	2,809 participants (1,799 men and 1,010 women), PR: between 66.6 and 72.5 for men and women of the four studies included in analyses	25-54 years old means of 39.9 in men (SD 8.28) and 37.1 (SD 7.77) in women, employed workers from 4 population surveys, Italy Workers on medication for hypertension excluded	JCQ short version Italian version, Quadrant	Office mean BP	Age, BMI, alcohol consumption, smoking, education, physical activity, and year of survey	Adjusted mean BP Job strain : Syst. BP: +3.3 mm Hg (p=0.02) D (highest tertile): Syst. BP: -0.4 mm Hg, not significant C (highest tertile): Syst. BP: + 2.9 mm Hg, (p<0.01) No significant differences for diastolic BP (not shown).	Adjusted mean BP Job strain : Syst. BP: - 1.0 mm Hg, not significant D (highest tertile): Syst. BP: -2.1 mm Hg, not significant C (highest tertile): Syst. BP: -0.2 mm Hg, not significant No significant differences for diastolic BP (not shown).
Kang, 2004 (15)	169 men, PR: not mentioned	≥40 years old, employed in a shipbuilding industry, Korea Workers on medication for hypertension not excluded	JCQ Korean version, Dichotomous	Office mean BP	BMI, waist-hip ratio, hypertension, hyperlipidemia, homocystinuria, glucose, blood coagulation VII, VIII	Adjusted difference in mean BP:	
						Job strain : Syst. BP: +3.6 mm Hg (p=0.15) Diast. BP: +3.0 mm Hg (p=0.06)	None
Thomas, 2004 (16)	122 participants (65 men and 57 women) PR: not mentioned	Age 25-52 General working population, USA Workers on medication for hypertension not excluded (after verifying that their inclusion did not change the results)	Job strain JCQ English version, Dichotomous	Office mean BP	No adjustment	Both Genders Crude differences in mean BP Job strain : Syst. BP: +4.4 mm Hg. (ns) Diast. BP: +1.2 mm Hg(ns)	

Chikani, 2005 (17)	1,500 women, PR: not mentioned	25-71 years old (mean 47.6 years in farm residents and 47 in nonfarm residents), farm and nonfarm women, USA Workers on medication for hypertension not excluded but controlled for	JCQ English version, Quadrant	Office elevated BP (Syst. BP: ≥140 mmHg Diast. BP: ≥90 mm Hg)	Age, having ever smoked, education, farm/nonfarm resident, BMI, current use of blood pressure medication, diabetes medication, estrogen medication	None	Adjusted odds ratios D: Syst. BP: 0.49 (0.3– 0.7) Diast. BP: 1.09 (0.7– 1.7) C (high): Syst. BP: 0.61 (0.4–0.9) Diast. BP: 0.77 (0.5– 1.1) Job strain: Syst. BP: 0.63 (0.4–0.9) Diast. BP: 1.33 (0.8– 2.1)
Kang, 2005 (18)	152 men (substudy: we invited 160 male workers (40 people each subgroup of job strain)). PR: 95%	20-57 years old, (mean 35.1±7.0), workers in 20 companies, Korea Workers on medication for hypertension not excluded	JCQ Korean version, Quadrant	Office mean BP	Age, BMI, smoking, and social support at workplace	Adjusted difference in mean BP Job strain: Syst. BP: -1.85 mm Hg (p=0.51) Diast. BP: -3.25 mm Hg (p=0.35) Regression coefficients D: Syst. BP: -1.97 Diast. BP: -0.57 C: Syst. BP: -0.17 Diast. BP: 0.12 Job strain: Syst. BP: -4.06 Diast. BP: -1.72 D/C: Syst. BP: -18.15 Diast. BP: -3.75 p<0.05	None

Kobayashi, 2005 (19)	1,401 women, PR: 50%	35-63 years old, workers of a retail business in Miyagi Prefecture, Japan Workers on medication for hypertension not excluded	JCQ Japanese version, ratio (demand/control)	Office hypertension (140/90 mm Hg)	Age, smoking, alcohol consumption, physical activity, occupation education, marital status, medication, pregnancy history, weight	None	Adjusted odds ratios Job strain: Syst. hypertension: 1.12 (0.71–1.77) Diast. hypertension: 1.02 (0.64–1.64) Coworkers S: Syst. hypertension: 0.96 (0.59–1.57) Diast. hypertension: 0.98 (0.60–1.62) Supervisor S: Syst. hypertension: 1.37 (0.88–2.13) Diast. hypertension: 1.16 (0.72–1.87)
Nomura, 2005 (20)	396 men PR: 99.6%	Median age 30 years old, information service company, Japan Workers on medication for hypertension not excluded	Japanese version of JCQ, Dichotomous	Office median BP	Unadjusted	Crude differences in mean BP Job strain: Syst. BP: +8 mm Hg, Diast. BP + 9 mm Hg No statistical test (descriptive only)	None

Radi, 2005 (Cross-sectional nested case-control study) (21)	609 participants (426 men and 183 women) PR: not mentioned	Mean (men 41.8 years old, women 43.5 years old), General working population, France Workers on medication for hypertension not excluded	JCQ, French version, Quadrant	Office mean BP office hypertension (140/90mmHg or medication)	Age, education, stressful life events, social support outside work (for women only)	Adjusted odds ratios	
						Job strain: 2.60 (1.15–5.85) S (low): 1.31 (0.80–2.12)	
Ducher, 2006 (22)	903 participants (regrouped from 2 prospective studies) (701 men and 202 women), PR: not mentioned	Mean age 41 ± 6, Physicians and full-time workers in a chemical company, France Workers on medication for hypertension excluded	JCQ French version, Quadrant	Office mean blood pressure among hypertensive (≥140/90 mm Hg) and normotensive subjects	Age, BMI, alcohol consumption Crude results presented	Both genders Adjusted difference mean BP Job strain - In systolic hypertensive: Syst BP: -1.0 mm Hg (not significant) Diast. BP: 0.0 mm Hg (not significant) - In systolic normotensive: Syst BP: +1.0 mm Hg (not significant) Diast. BP: +1.0 mm Hg (not significant) - In diastolic hypertensive: Syst BP: -2.0 mm Hg (not significant) Diast. BP: 0.0 mm Hg (not significant) - In diastolic normotensive: Syst BP: +2.0 mm Hg (not significant) Diast. BP: +1.0 mm Hg (not significant)	
Fornari, 2007	5,695	25-54 years old,	JCQ Italian	Office mean	Age, education,	Adjusted differences in mean BP	

(23)	participants (1,909 men and 3,786 women), PR: not mentioned	workers Municipality of Milan, Italy Workers on medication for hypertension not excluded but separate analyses performed for untreated workers	version, Quadrant	blood pressure	smoking, BMI, total and high-density lipoprotein (HDL) cholesterol	D: Syst. BP: -0.73 mm Hg Diast. BP: -0.67 mm Hg C : Syst. BP: -2.48 mm Hg Diast. BP: -0.67 mm Hg Job strain Syst. BP: -2.25 mm Hg Diast. BP: -0.45 mm Hg	D: Syst. BP: -0.67 mm Hg Diast. BP: -0.71 mm Hg C : Syst. BP: -1.81 mm Hg Diast. BP: -1.98 mm Hg Job strain: Syst. BP: -2.23 mm Hg Diast. BP: -2.2 mm Hg
De Mello Alves, 2009 (24)	1,716 women, PR: 78%	Age not mentioned (three categories mentioned: <35, 35-44 and ≥45), technical-managerial workers from a university, Brazil Workers on medication for hypertension not excluded	JCQ Portuguese version, Quadrant	Office hypertension (≥140/90 mm Hg or medication)	Age, ethnic group, education, income, marital status, number of children, occupational status, length of time in job	None	Adjusted odds ratios Job strain: 0.93 (0.72–1.20)

Thomas, 2010 (25)	7,916 participants (4,132 men and 3,784 women) PR:78%	Age 45 years old (age cohort) Workers born in 1956, London Workers on medication for hypertension not excluded but controlled for	Job strain JCQ English version	Office mean BP	Gender, time of day In an additional multivariate regression model: mutually adjusted workplace factors, (>48h/week), night work, low control, low demands.	Both Genders Adjusted differences in mean BP C (high): Syst. BP: +1.00 mm Hg (ns). Diast. BP: +0.5 mm Hg (ns) D (high): Syst. BP: -0.4 mm Hg (p=0.016). Diast. BP: +0.2 mm Hg (ns) Multivariate regression Nothing significant after adjustment for listed covariates	
Trudel, 2010 (26)	2,357 participants: (910 men and 1,447 women) PR:80%	Mean age: 44 years old, White-collar workers, Canada Workers on medication for hypertension not excluded	JCQ French version, Quadrant	Masked hypertension Defined as Office BP < 140/90 and Ambulatory BP at least 135/85 mmHg	Age, education (controlled but not retained: smoking, BMI alcohol consumption, family history of CVD)	Both Genders Adjusted odds ratio Job strain Men and women: no significant results (not shown)	
Mezuk, 2011 (27)	3,561 (with valid BP values) participants Health and Retirement Study PR not mentioned	≥50 years- old (mean age 61.6) Currently employed full time, part-time or partially retired) USA Workers on medication for hypertension not excluded	Psychosocial Leave-Behind 15 items derived from Karasek's job strain, Dichotomous	Office hypertension (140/90 mmHg or medication)	Age, gender, race, marital status, education, labor force status, type of work, smoking, alcohol consumption, BMI	Adjusted odds ratio Job strain : 0.75, (0.63–0.89)	
						0.61, (0.47–0.79)	ns (not shown)

Ambulatory BP measures							
Schnall, 1992 (cross-sectional nested case-control study) (28)	264 men PR: 75%	30-60 years old (mean: 44.3, SD: 8.7), general working population, USA Workers on medication for hypertension not excluded	Job Content Questionnaire (JCQ), Dichotomous	Ambulatory hypertension (140/90 mm Hg or medication) and Ambulatory mean BP	Age, race, BMI, work site, education, type-A behavior, physical activity, 24-h urine sodium, smoking	Adjusted differences in mean BP: Job strain: Syst. BP: + 6.8 mmHg (p=0.002), Diast. BP : + 2.6 mm Hg (p=0.03) Hypertension odds ratio: 2.7 (p<0.05)	None
Landsbergis, 1994 (29)	262 men, PR: not mentioned	Mean of 44.3 (8.6) years-old, workers from eight New-York worksites, USA Workers had to stop taking their medication three weeks before BP measurements	JCQ English version, Dichotomous	Ambulatory mean BP	Age, race, education, BMI, smoking, alcohol consumption, physical activity, urine sodium, type A behavior, and worksite	Job strain, Syst. BP: +6.mmHg (p<0.05), Diast. BP: +2.7mmHg (p<0.05). Odds ratio of hypertension increased. 2.9 (1.3–6.6) All formulations of job strain exhibited significant associations with systolic blood pressure at work and home. Not with DBP.	None

Blumenthal, 1995 (30)	99 participants (61 men and 38 women), PR: not mentioned	29-59 years old, mild hypertensive patients (syst. BP: ≥ 140 and ≤ 180 mm Hg, diast. BP ≥ 90 and ≤ 105 mm Hg), USA Workers on medication for hypertension excluded	JCQ English version, Dichotomous	Ambulatory mean blood pressure	Age (controlled but not retained: BMI and posture)	Adjusted mean BP estimated from a figure: Syst. BP: -4 mm Hg Diast. BP: not shown no statistical test	Adjusted mean BP estimated from a figure Syst. BP: + 6 mmHg Diast. BP: not shown no statistical test
Cesana, 1996 (31)	527 men, PR: 69.5%	25-64 years old, employed normotensive or mild hypertensive ($< 165/100$ mm Hg) residents of the city of Monza, Italy Workers on medication for hypertension excluded	JCQ short version Italian version, Quadrant	Ambulatory mean blood pressure	Age, education, overweight, BMI and a work physical-activity (controlled but not retained: occupational level)	Job strain - 24h monitoring: Syst. BP: +1.8 mm Hg Diast. BP: +0.2 - Working hour monitoring: Syst. BP: +2.1 Diast. BP: +0.4 None of these results were significant.	None
Kamarck, 1998 (32)	120 participants (46 men and 64 women, PR: 92%)	23-50 years old (mean 35), full-time workers, married, USA Workers on medication for hypertension excluded	Diary of Ambulatory Behavioral States (DABS) questionnaire	Ambulatory mean BP	Posture, physical activity, caffeine, meal, alcohol, meal, talk, cold, hot	Both genders Correlation coefficients: D: not significantly associated with blood pressure (not shown) C: lower DBP, $b = -.39$, $t(119) = -3.15$, $p < .01$, and marginally associated with smaller SBP readings as well, $b = -.29$, $t(119) = -1.88$, $p = .06$.	

Laflamme, 1998 (33)	210 women, PR : 76%	18 to 64 years old employed as white-collar workers, Quebec, Canada Workers on medication for hypertension excluded	JCQ French version Current and cumulative with past exposure, Dichotomous	Ambulatory mean BP	Age, smoking, use of oral contraceptive	None	Differences in mean BP: Job strain at both times: Syst. BP: + 2 mm Hg, Diast. +1.7 mm Hg, not significant. There was a modifying effect of education. High education Syst. BP: + 8.2mmHg (p=0.004) Low education Syst. BP: -0.6mmHg (p=0.72) Diast. BP not shown.
Stephoe, 1998 (34)	162 participants (60 men and 102 women) PR: 87.1%	22 to 58 years old, teachers, London No hypertensive workers included (did not mention hypertension definition)	Questionnaire adapted from Karasek, Dichotomous	Ambulatory mean BP	Age, BMI, baseline blood pressure	Both genders Adjusted difference in mean syst. BP from day to evening Low job strain : -3.72 mmHg High job strain :-0.64 mmHg Mean blood pressure Low job strain : -4.24 mmHg High job strain :-1.85 mmHg	

Rau, 2000 (35)	149 men PR :88%	35 to 55 years old Stockholm BP screening program selected on borderline hypertension status (DBP 85 to 94 mmHg), Sweden No hypertensive workers included based on the BP values provided in a screening program	D 2 items C 12 items S 4 items Not JCQ	Ambulatory mean BP	Age, BMI, physical activity	Adjusted beta coefficients: No psychosocial variable (D, C, S) associated with syst. and diast. BP at work (not shown)	None
Fauvel, 2001 (36)	303 participants (235 men and 68 women), PR: 78%	18-55 years old, normotensive (<140/90 mm Hg) workers in a chemical company, France Workers on medication for hypertension excluded	JCQ French version, Dichotomous	Ambulatory mean blood pressure	Crude results presented (Controlled for but not retained: age, gender, alcohol consumption, salt intake, BMI, and occupation)	Both genders Job strain: during working hours, SBP was slightly higher in the high strain (HS) group whereas DBP was significantly higher (Figure, exact numbers not given). During the remaining hours, BP was similar between groups (Figure exact numbers not given). Only N=14 high strain in BP analysis.	

Steptoe, 2001 (37)	122 school teachers W: 77 M: 45 PR: at baseline: non relevant since participants were selection from a larger sample on basis of job strain status. At follow-up: 84.6%	High control mean age 38.5 Low control mean age 39.7, teachers, London Workers on medication for hypertension not excluded	Control JCQ	Ambulatory mean BP	No adjustment. Potential effect modifier tested: age, gender, work grade, social support	Both genders Crude difference in mean BP: C: Main effect not significant (not shown).	
Kamarck, 2002 (38)	340 participants, PR: not mentioned	50-70 years old, older adults (and menopausal status for women), USA Workers on medication for hypertension excluded	Diary of Ambulatory Behavioral States (DABS) questionnaire	Ambulatory mean BP ^r	Age, gender, education, race, posture, physical activity, temperature, recent meal, snack, caffeine, or alcohol consumption within past 45 min, use of antihistamine or decongestant within past 4 h, talking during the cuff inflation, cigarette smoking within past 5 min, and number of cigarettes within past 45 min	None	Adjusted correlation coefficients: D: Syst. BP: 0.11 Diast. BP: 0.04 C: Syst. BP: -0.11 Diast. BP: -0.11 p<0.05

Bishop, 2003 (39)	108 men, PR: not mentioned	19-50 years old (mean 26.85±5.15), Patrol officers, Singapore Workers on medication for hypertension not excluded (but the consumption of medication was taken into account)	Questionnaire (not JCQ), Demand Control interaction	Ambulatory mean blood pressure	BMI, physical activity, posture, feeling too hot, talking, smoking, having eaten a meal, taking medication	Beta coefficients (standard-error) and t values D: Syst. BP: 0.16 (0.37), t value 0.44, NS Diast. BP: 0.38 (0.31), t value 1.22, NS C: Syst. BP: -0.32 (0.25), t value -1.26, NS Diast. BP: -0.55 (0.21), t value -2.66 (p<0.01) DC: Syst. BP: -0.30 (0.19), t value -1.63, NS Diast. BP: -0.21 (0.15), t value -1.34, NS	None
Landsbergis, 2003 (40)	213 men. PR: not mentioned	30-60 years-old (mean 43.1), white-collar and blue-collar workers, New York Workers on medication for hypertension excluded	JCQ English version Cumulative exposure, Dichotomous	Ambulatory mean BP	Age, education, race, BMI, ambulatory BP during winter months, proportion of reading in standing position, work sites	Adjusted differences in mean BP: Job strain: WORK SBP +4.8mmHg DBP +3.8 mmhg HOME SBP +5.7mmHg DBP +3.9mmHg p<0.05.	None

Gallo, 2004 (41)	108 women, PR: not mentioned	Mean age 41.7±9.2, women working at least 35 hours/week and married, USA Workers on medication for hypertension excluded	JCQ English version	Ambulatory mean BP	Age, posture (sitting vs. lying down and standing, respectively), physical activity, temperature comfort, talking at the time of cuff inflation, psychical activity and consumption of substances (caffeine, food, drugs) between readings, smoking status, BMI, menopausal status, use of birth control pill, and use of HRT, alcohol consumption	None	Beta coefficients D : Syst. BP: 3.14 Diast BP: 0.07 C : Syst. BP: -1.98 Diast BP: -0.41 S : Syst. BP: 2.19 Diast BP: 0.35 p<0.01
Stephoe, 2004 (42)	227 participants (121 men and 106 women) PR: not mentioned	Aged 47– 59 years, white collar workers, London Hypertensive workers were excluded on the basis of the BP value and medication	Job strain, D, C JCQ, Dichotomous	Ambulatory mean BP	Age, gender, employment grade, BMI, smoking and physical activity.	Both genders Adjusted differences in mean BP: Job strain : Syst. BP: +1.5mmHg. Diast. BP: +0.4mmHg C : Syst. BP: + 3.3mmHg (p<0.05). Diast. BP: + 2.9mmHg (p<0.05) D : Syst. BP: +2.1mmHg (ns), Diast. BP: - 1.5mmHg (ns)	

Tobe, 2005 (43)	248 participants (113 men and 135 women) PR: 97.6%	40-65 years old (mean 50.8 years, 6.6, SD), employed full time, Toronto, Canada Workers on medication for hypertension excluded	JCQ English version, Dichotomous	Ambulatory mean BP	Age, gender, BMI, ethnicity, family history CVD, smoking, alcohol, education, physical activity, family income	Both genders Adjusted beta coefficients Job strain: Syst. BP: 24h Beta=4.53 p=0.0007 Syst. BP: At work Beta=4.11 p=0.025	
Brown, 2006 (44)	147 women (92 teachers and 55 nurses), PR: not mentioned	35.4 ± 6.6 years old nurses and 46.3 ± 7.5 teachers, Hawaii (USA) Workers on medication for hypertension excluded	JCQ, English version	Ambulatory mean BP	Age, race, BMI, menopausal status, and smoking	None	Spearman correlation coefficient D: Syst. BP at work: -0.31 Syst. BP at home: 0.27 Syst. BP during sleep: -0.42 Diast. BP at work: -0.40 Diast. BP at home: -0.61 Diast BP during sleep: -1.08 C: Syst. BP at work: -0.71 Syst. BP at home: -0.14 Syst. BP during sleep: -0.47 Diast. BP at work: 0.05 Diast. BP at home: -0.27 Diast BP during sleep: -0.47 None of these results were significant.

Clays, 2007 (45)	178 participants, (109 men and 69 women) PR: 65.6%	Mean age 51.9±4.3 in high JS group and 50.9±5 in the no JS group, 4 companies or public administrations, Belgium (sub-study of the BELSTRESS study) Workers on medication for hypertension excluded	JCQ French version, Dichotomous	Ambulatory mean BP	Age, gender, BMI, smoking, high physical demands of the job, high stress outside work, physical activity prior to BP measurements	Both genders Adjusted mean BP differences Job strain: Syst. BP at work: +5.9 mm Hg Syst. BP at home: +3.8 mm Hg Syst. BP during sleep: +4.5 mm Hg Diast. BP at work: +3 mm Hg Diast. BP at home: +2.1 mm Hg Diast BP during sleep: +3.9 D: Syst. BP at work: +6.5 mm Hg Diast. BP at work: +4.2 mm Hg C (low): Syst. BP at work: +11.7 mm Hg Diast. BP at work: +6.7 mm Hg p< 0.05	
Song, 2010 (46)	177 men, PR: not mentioned	Mean age 43.2 years old (25 to 61), white collar workers, Korea Hypertensive workers were excluded on the basis of the BP value and medication	Job demand only Not original instrument	Automated mean BP taken during 8 stages of an exercise session	Age, physical activity, smoking, BMI	Adjusted differences in mean BP: D (high): Syst. BP significant only in the last two stages (the 7th and 8th): +6.2 and +7.3 mm Hg, p<0.05 Diast. BP significant only for the 6th stage: +3.9 mm Hg, p<0.05.	None

Clays, 2011 (47)	167 participants (100 men and 67 women), PR: 66%	40-64 years old, 4 companies or public administrations, Belgium (sub- study of the BELSTRESS study Workers on medication for hypertension excluded	JCQ French version, Dichotomous	Ambulatory nondipping BP (an inadequacy of the mechanisms regulating BP)	Gender, education and BMI	Odds ratios of non dipping syst. and diast. BP Job strain: 1.65 (1.03–2.64) S: 0.82 (0.48–1.40) Very low N in this analysis (< 10 per category)
Maina, 2011 (48)	100 participants (26 men and 74 women), PR: 30%	36.0±10.8 years old in men and 34.9±9.9 in women, volunteers from two call centers, Italy Workers on medication for hypertension excluded	JCQ Italian version, Quadrant	Ambulatory mean BP	Age, gender, BMI, cigarette smoking, marital status, educational, work schedule, and time of day	Beta coefficient: Low strain: Syst. BP: -1.5 (-6.3–3.3) Diast. BP: -1.1 (-5.1–2.8) High strain not presented because it was the reference category.
Menni, 2011 (49)	924 participants (573 men and 351 women), PR: not mentioned	25-74 years old, Caucasian workers, Italy Workers on medication for hypertension excluded	MOPSY questionnaire (short version of JCQ), Dichotomous	Ambulatory mean BP	Age, gender, total cholesterol, BMI	Differences in mean BP: Job strain Syst. BP: +1.2 mm Hg Diast BP: -0.1 mm Hg No results were statistically significant Syst. BP: -0.4 mm Hg Diast BP: -0.3 mm Hg No results were statistically significant.

- ^a For example, the population could be composed of working participants or participants from the general population.
- ^b ERI: effort-reward imbalance. OC: overcommitment. ERI and OC assessment: questionnaire used (original Siegrist's questionnaire or else), number of items used and number of times assessed.
- ^c Hypertension or mean blood pressure.
- ^d Office or ambulatory. The number of readings is mentioned.
- ^e Listing of all covariates considered for adjustment.
- ^f Office measures were also taken.

Table B. Prospective studies on the demand-control-support (DCS) model according to types of blood pressure (BP) measures (office or ambulatory) (BMI=Body Mass Index; Diast=diastolic; JCQ=Job content questionnaire; NS=not significant; Syst=systolic)

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
Office BP measures								
Reed <i>et al.</i> , 1989 (50)	7,750 men PR: not mentioned	45-68 years old, men of the general working population, Honolulu Hypertension workers at baseline not excluded	Prospective 18-year follow-up	JCQ, English version	Office mean BP	Age, BMI, oral contraceptive use	Adjusted differences un mean BP	
							D (high) Syst. BP: + 0 mm Hg Diast. BP: + 0 mmHg C (high): Syst. BP: +-2 mm Hg Diast. BP: + 0 mmHg No significant results	
Chapman <i>et</i>	2,634	Mean age 34.4 in	Prospective	Questionnaire	Office mean	Age, education, weight,	Partial regression coefficients	

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
<i>al.</i> , 1990 (51)	participants (2,100 men and 534 women), PR:57%	men and 31.9 in women, Government workers, Australia Workers on medication for hypertension at baseline were excluded	5-year follow-up	not mentioned	BP	weight change, physical activity, family history of stroke or hypertension, skinfold thickness, alcohol consumption and change in consumption	no significant association (not shown)	< 35 years old: D: Quantitative demands: Diast. BP: 0.08 (p<0.001) S: Diast. BP: 0.11(p<0.01) WOMEN ≥50 years old: C: -0.25 (p<0.01) No significant association for systolic BP (not shown)
Greenlund <i>et al.</i> , 1995 (52)	2,665 participants, PR: 57% at baseline and 90% at 7–year follow-up	18-30 years old, black and white workers, USA Hypertensive workers at baseline were not excluded	Prospective 5 and 7-year follow-ups	JCQ English version	Office mean BP	Age, education, physical activity, BMI Framingham A/B personality score, smoking and alcohol	Correlation coefficients	
							WHITE MEN D: Syst. BP: -0.019 Diast BP: -0.050 C: Syst. BP: -0.031 Diast BP: 0.022 BLACK MEN D: Syst. BP: 0.072 Diast BP: -	WHITE WOMEN D: Syst. BP: -0.093 Diast BP: -0.060 C: Syst. BP: 0.118 Diast BP: 0.100 BLACK WOMEN D: Syst. BP:

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
							0.113 C : Syst. BP: 0.067 Diast BP: 0.004	0.026 Diast BP: - 0.007 C : Syst. BP: - 0.027 Diast BP: 0.017 p value <0.05
Eaker <i>et al.</i> , 2004 (53)	3,039 participants (1,711 men and 1,328 women) PR: 75%	18-77 years-old, general working population, USA Hypertensive workers at baseline were not excluded	Prospective , 10 year follow-up	JCQ original English version, Quadrant	Office systolic mean BP	Age, the ratio of total cholesterol to high density lipoprotein cholesterol, BMI, smoking, and diabetes Crude results presented.	Crude difference mean systolic BP: Job strain : +1.2 mm Hg p=0.02 D (higher median): +1.5 mm Hg (p=0.05) C (lowest median): +1.9 mm Hg (p=0.01)	Crude difference mean systolic BP: Job strain : +2.5 mm Hg p=0.05 D (higher median): -1.00 mm Hg (NS) C (lowest median): +2.9 mm Hg (p<0.01)
Markovitz <i>et al.</i> , 2004 (54)	3,200 participants (1,443 men and 1757 women) PR: not mentioned	20-32 years old Workers of a normotensive cohort, USA Hypertensive workers at baseline were	Longitudinal study (8-year follow-up),	JCQ completed at baseline and at follow-up (change in score for longitudinal analysis), Dichotomous	Office hypertension (160/95 mmHg)	Age, baseline BP, education, BMI, change in BMI, alcohol intake, smoking, family history of high BP	Both genders Odds ratio of hypertension: Job strain at baseline : 1.27 (0.47–3.44) D or C at baseline : NS Change in D : 1.05 (1.01–1.09) Change in job strain : 2.06 (1.01–4.26)	

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
		excluded based on BP measure and medication		Cumulative exposure				
Guimont <i>et al.</i> , 2006 (55)	6,719 participants (3,483 men and 3,236 women), PR: 75% at baseline, 89% at follow-up	18-65 years old (mean 41.0±8.2 in men and 38±7.2), employees of 22 public organizations in Quebec City, Canada Workers on medication for hypertension at baseline were excluded	Prospective 7.5-year follow-up,	JCQ French version, Quadrant	Office mean BP	Age, BMI, social support at work, living with a child, number of years working for the organization, and baseline systolic or diastolic blood pressure values (controlled but not retained: physical activity, alcohol consumption, smoking, marital status)	Adjusted differences in mean BP Job strain at both times: Syst. BP: +1.8 mm Hg (0.1-3.5) Diast. BP: +0.8 mm Hg (-0.5-2.0) Risk ratios for BP increase in highest quintile MEN: Syst. BP: 1.33 (1.01-1.76), Diast. BP: 1.07 (0.84-1.36)	Adjusted differences in mean BP Job strain at both times: Syst. BP: +0.5 mm Hg (-0.8-1.8), Diast. BP: +0.5 mm Hg (-0.5-1.4) Risk ratios for BP increase in highest quintile WOMEN: Syst. BP: 1.15 (0.93-1.41), Diast. BP: 1.06 (0.85-1.31)
Kivimaki <i>et al.</i> , 2007 (56)	8,086 participants (5,630 men and 2,456 women), PR: 73% at	35-55 years old at baseline (mean 44.3), London-based civil servants, England	Prospective 12-year follow-up,	JCQ English version, Quadrant	Office hypertension (≥140/90 mm Hg or medication)	Age, gender, ethnicity, and employment grade	Both genders: Job strain Prevalence of hypertension: -1.2% Difference in mean BP: Syst. BP: -1.0 mm Hg	

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
	baseline	Hypertensive workers at baseline were not excluded					Diast. BP: 0.0 mm Hg No significant results. Baseline results are also given. There were no significant differences.	
Ohlin <i>et al.</i> , 2007 (57)	448 participants (197 men and 251 women) PR not mentioned	Under 63 years old (mean: 55 years old), employed with reading and writing skills, Sweden Hypertensive workers at baseline were not excluded	Prospective study followed for a mean of 6.5 years,	JCQ Swedish version , Quadrant	Office mean BP	Age, time to follow-up, baseline BP, hypertensive medication at baseline and education	Adjusted differences in mean BP: Job strain at baseline: Syst. BP + 7.7 mm Hg (p=0.02), Diast. +5.6 mm Hg (p=0.003) D : significant increase in crude syst BP (p=0.02), but when adjusted p=0.095. Diast BP: p=0.075 C : no significant increases (not shown)	Adjusted differences in mean BP: Job strain : No associations (not shown). D : No association (not shown) C (high): significant increase in crude syst BP (p=0.035), but when adjusted p=0.23.
Chandola <i>et al.</i> , 2008 (58)	10,308 participants at baseline,	35-55 years old, 20 civil service departments,	Prospective 12-year follow-up	JCQ English version (items not mentioned),	Office hypertension (≥140/85 mm	Age, gender, employment grade, health behaviors (alcohol consumption,	Both genders Adjusted odds ratios: One report of job strain:	

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
	PR: 67% participation at follow-up (N=6,484) (baseline PR not mentioned)	London Hypertensive workers at baseline were not excluded		Dichotomous	Hg or medication)	smoking, physical activity, diet)	0.88 (0.67–1.14) Two reports of job strain: 1.13 (0.91–1.40)	
Ambulatory BP measures								
Melamed <i>et al.</i> , 1998 (59)	145 men from industrial plants PR : 93%	27 to 60 years old (mean 44.1), employed in industrial plants Israel Hypertensive workers at baseline were excluded based on BP measure and medication	Longitudinal (variations within the same day),	C: 6 items. Work load: 1 item. Not the original JQC instrument. Ratio demand/control	Ambulatory mean BP ^f	Age BMI, baseline (office) BP.	Adjusted differences in mean BP: Job strain: Syst. BP: +4.2mmHg (p=0.001 Work load X control interaction) Diast. BP: +0.1 mmHg (ns) Systolic BP Main effect of workload: p=0.023 Main effect of C: p=0.046 Diast. BP: NS	None

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
							(not mentioned)	
Schnall <i>et al.</i> , 1998 (60)	195 men, PR: PR: 75% at baseline and 77% follow-up rate	30-60 y-old mean, general working population, USA Hypertensive workers at baseline were not excluded	Longitudinal (3 years follow-up),	JCQ English version, Dichotomous Cumulative exposure	Ambulatory mean BP	Age, BMI, race/ethnic group, alcohol use, 24-hour urine sodium excretion, Type A behavior, education, current smoking status, physical activity of the job and work site	Adjusted differences in mean BP Job strain at both times: Syst. BP + 11 mm Hg, Diast. BP +7 mm Hg	None
Fauvel <i>et al.</i> , 2003 (61)	303 participants (278 men and 25 women), PR: 78%	18-55 years old (mean 38.1), normotensive (<140/90 mm Hg) workers in a chemical company, France Hypertensive workers at baseline were excluded, based on BP measure and medication	Prospective 5-year	JCQ French version, Dichotomous Cumulative exposure	Ambulatory hypertension (≥140/90 mmHg) Ambulatory mean BP	Age, gender, BMI, alcohol consumption, occupation and sodium intake	Both genders Cumulative incidence of hypertension Job strain: No significant difference among the incidence curves. Difference mean BP: Job strain at both times: 24h syst BP: -2.0 mmHg 24h diast BP: -1.0 mm Hg Worksite syst. BP: 0.0 mm Hg Worksite diast. BP: 0.0 mm Hg No significant results.	
Riese <i>et al.</i> , 2004 (62)	159 women PR = 60%	Mean age 35.9 (SD 8.5) years, nurses Netherlands	Longitudinal study 12.2 month average	JCQ Dutch version, ratio demand/control Cumulative	Ambulatory mean BP	Social support at follow-up, age, oral contraceptive use Waist-hip ratio	None	Adjusted beta coefficients D/C: B=0.19 for the interaction

First author, year (reference)	N participants (N men / women) Participation rate (PR)	Age at baseline, Population type ^a , Country	Study design	D C S indicator, assessment ^b and prevalence	Outcome ^{c-d}	Covariates ^e	Main results / Comments	
							Results for men	Results for women
		Workers on medication for hypertension at baseline were excluded		exposure				term, p=0.02 D: B=0.17 p=0.04 C: not significant (not shown)
Tobe <i>et al.</i> , 2007 (63)	229 participants (106 men and 123 women) PR:69.7%	Mean age: 50.8 (SD 6.5) years, respondents to local advertisement and seminars Toronto, Canada Workers on medication for hypertension at baseline were excluded	Prospective 1-year follow-up	JCQ English version, Dichotomous	Ambulatory mean BP	Age gender ethnic background premature CVD education, BMI, smoking, alcohol consumption, participation in a stress management program, income, and physical activity	Both genders P-value for adjusted mean change over the last year Job strain: Syst. BP change over 1 year: (p=0.011).	

^a For example, the population could be composed of working participants or participants from the general population.

^b ERI: effort-reward imbalance. OC: overcommitment. ERI and OC assessment: questionnaire used (original Siegrist's questionnaire or else), number of items used and number of times assessed.

^c Hypertension or mean blood pressure.

^d Office or ambulatory. The number of readings is mentioned.

^e Listing of all covariates considered for adjustment.

^f Office measures were also taken.

Table C. Cross-sectional and prospective studies on the effort-reward imbalance (ERI) model according to types of blood pressure (BP) measures (office or ambulatory) [BMI=Body Mass Index; OC=overcommitment]

First author, year (reference)	N participants (N men / women), Participation rate (PR)	Age ^a , Population type ^b , Country	ERI and OC indicator, assessment ^c and prevalence	Outcome ^{d-e}	Covariates ^f	Main results	
						Men	Women
CROSS-SECTIONAL STUDIES							
Office BP measures							
Peter <i>et al.</i> , 1997 (64)	179 men PR: 95%	40-55 years old (48.3±4.6), Middle managers in a car producing company, Germany Workers on medication for hypertension not excluded but controlled for	Original Siegrist's questionnaire	Office hypertension (160/95 mmHg)	Age, BMI, smoking, alcohol consumption, physical activity, medication for hypertension	Adjusted odds ratio: ERI: 5,77 (1,47–22,72)	None
Peter <i>et al.</i> , 1998 (65)	3,427 participants (1,913 men and 1,514 women), PR: not mentioned	30-55 years old, workers from 40 companies, Sweden Workers on medication for hypertension not excluded but controlled for	Proxys to the Siegrist's questionnaire	Office hypertension (160/95 mmHg)	Age, BMI, smoking, alcohol, physical activity, cholesterol, fibrinogen, socioeconomic status	Adjusted odds ratios: ERI: 1.62 (1.07–2.43) OC: 0.83 (0.53–1.29)	Adjusted odds ratios: ERI: 1.56 (0.92–2.66) OC: 0.84 (0.48–1.45)
Peter <i>et al.</i> , 1999 (66)	2,288 men PR: not mentioned	30-55 years old, workers from 40 companies, Sweden	Original Siegrist's questionnaire	Office hypertension (160/95 mmHg)	Age, BMI, smoking, alcohol consumption, physical activity	Adjusted odds ratios: In day workers (N=1215):	None

First author, year (reference)	N participants (N men / women), Participation rate (PR)	Age ^a , Population type ^b , Country	ERI and OC indicator, assessment ^c and prevalence	Outcome ^{d-e}	Covariates ^f	Main results	
						Men	Women
		Workers on medication for hypertension not excluded but controlled for				ERI: 1.35 (0.77–2.36) OC: 0.91 (0.51–1.61) In day and late shift workers (N=597): ERI: 2.21 (1.10–4.42) OC: 1.13 (0.58–2.20)	
Irie <i>et al.</i> , 2004 (67)	441 participants (340 men and 101 women) PR: 87.8%	19-68 years old (men: 44.0±8.1 and women 42.8±6.9) 188 white-collar workers and 253 blue collar workers, Japan Workers on medication for hypertension not excluded	Siegrist's questionnaire, Japanese version	Office mean BP	Age, gender, BMI, smoking, physical activity, alcohol consumption, medical history	Both genders Adjusted Spearman's correlation coefficients ERI: Syst. BP: -0.024 (p=0.660) Diast. BP: -0.059 (p=0.284) OC: Syst. BP: -0.026 (p=0.619) Diast. BP: -0.041 (p=0.432)	
Xu <i>et al.</i> , 2004 (68)	421 women PR: 93.5%	18-59 years old (mean 38.8), General working population, China Workers on medication for hypertension not excluded	ERI questionnaire, Chinese version	Office mean BP	Age, BMI, education, physical activity (total number of walking hours during and after work), use of oral contraceptives	None	Adjusted mean BP: ERI: Syst. BP: +3 mmHg (p value 0.036) Diast. BP: +1.3 (p=0.184)

First author, year (reference)	N participants (N men / women), Participation rate (PR)	Age ^a , Population type ^b , Country	ERI and OC indicator, assessment ^c and prevalence	Outcome ^{d-e}	Covariates ^f	Main results	
						Men	Women
Kobayashi <i>et al.</i> , 2005 (19)	1,401 women PR: 50%	35-63 years old, workers of a retail business in Miyagi Prefecture, Japan Workers on medication for hypertension not excluded but controlled for	Siegrist's questionnaire, Japanese version	Office hypertension (140/90 mm Hg)	Age, smoking, alcohol consumption, physical activity, occupation, education, marital status, medication, pregnancy history, relative weight	None	Adjusted odds ratios: ERI: Syst. BP: 0.88 (0.55–1.40) Diast. BP: 0.92 (0.56–1.51)
Yu <i>et al.</i> , 2008 (69)	452 participants (281 men and 165 women) PR: not mentioned	22-58 years-old (37±6.5), workers from a thermal power plan, China Workers on medication for hypertension not excluded	ERI questionnaire ,Chinese version	Office hypertension (140/90 mm Hg or medication)	Age, gender, education, marital status, income, length of service, BMI, family hypertensive history, salt intake, smoking, caffeine and alcohol consumption, and physical activity	Adjusted odds ratios hypertension: Both genders: ERI: 2.12 (1.23–3.67) OC, Effort, Reward: not significant (not shown).	
						ERI: 3.13 (1.72–5.70)	ERI: 0.63 (0.20–1.98)
Bellingrath <i>et al.</i> , 2009 (70)	104 women PR: not mentioned	25-61 years old (mean: 45, 9.75), Healthy female school teachers, Germany and Luxembourg Workers on medication for hypertension not	ERI, Siegrist's questionnaire, German version	Office mean BP	Age	None	Adjusted partial correlations with ERI (d of Cohen): Syst. BP: -0.08 mm Hg Diast. BP: 0.02 mm Hg

First author, year (reference)	N participants (N men / women), Participation rate (PR)	Age ^a , Population type ^b , Country	ERI and OC indicator, assessment ^c and prevalence	Outcome ^{d-e}	Covariates ^f	Main results	
						Men	Women
		excluded					
Ambulatory BP measures							
Vrijkotte <i>et al.</i> , 2000 (71)	109 men PR: 57%	47.2±5.3 years old, white-collar workers at the same company, Amsterdam, Netherlands Workers on medication for hypertension excluded	ERI questionnaire Dutch version	Ambulatory mean BP Mild hypertension (Diastolic BP: ≥85)	Age, waist-to-hip ratio, BMI, waist circumference, smoking, alcohol consumption, education, years of service, physical activity, positive mood, and negative mood	Adjusted mean BP: ERI: Syst. BP: +3.9 mmHg (p=0.049) Diast. BP: no effect (not shown) Mild hypertension: ERI had no effect (not shown)	None
Steptoe <i>et al.</i> , 2004 (72)	197 participants (105 men and 92 women) PR: 55%	45-59 years old, London-based civil servants, UK Hypertensive workers were excluded (based on a previous diagnosis or medication)	ERI questionnaire, English version (5 items efforts, 7 items reward, 5 items OC), prevalence not shown	Ambulatory mean BP	Age, BMI, smoking, physical activity, job control	Both genders Adjusted mean BP: ERI: no effect in men and women (not shown) OC in men over the day: OC in women: Syst. BP: not significantly higher in the morning, similar in the other periods of the day (not shown) OC had no effect on Diast. BP in men and women (p=0.20)	
Maina <i>et al.</i> , 2011 (48)	100 participants (26 men and 74 women)	36.0±2.1 years old (men) and 34.9±1.1 years old (women)	Siegrist's questionnaire, Italian version	Ambulatory mean BP	Age, gender, smoking, alcohol consumption, education	Both genders Adjusted mean BP: ERI: Adjusted Syst. BP at work: +4.52	

First author, year (reference)	N participants (N men / women), Participation rate (PR)	Age ^a , Population type ^b , Country	ERI and OC indicator, assessment ^c and prevalence	Outcome ^{d-e}	Covariates ^f	Main results	
						Men	Women
	PR: 30%	Volunteers from two call centers, Italy Workers on medication for hypertension excluded				(0.16-9.20) Adjusted Diast. BP at work: +4.17 (0.50-7.85) Beta coefficients: Effort: Syst. BP: 0.5 (-3.2–4.2) Diast. BP: 1.3 (-1.9–4.6) Reward: Syst. BP: -0.6 (-3.6–2.5) Diast. BP: -0.3 (-2.9–2.4) OC: Syst. BP: -1.5 (-4.8–1.8) Diast. BP: -1.1 (-3.7–1.6)	
PROSPECTIVE STUDY							
Ambulatory BP measure							
Gilbert-Ouimet <i>et al.</i> , 2011 (73)	1,595 participants (629 men and 966 women), PR: 79.5%	44.0±8.1 years old (men) and 42.8±6.9 years old (women) White-collar workers, Quebec City (Canada) Hypertensive workers at baseline were excluded (based on BP measure and medication)	ERI and OC, Siegrist's questionnaire, French version Cumulative exposure	Ambulatory mean BP Cumulative incidence of hypertension (135/85 mm Hg or medication)	Age, gender, education, income, marital status, BMI, waist circumference, family history of CVD, medication, diabetes, smoking, alcohol consumption, physical activity, situations that may affect BP during measurement	ERI: Adjusted mean BP: Syst. BP: +0.17 (p=0.84) and Diast. BP: +0.42 (p=0.83) Adjusted cumulative incidence ratios of hypertension: 1.04 (0.56–1.95) OC: Adjusted BP	ERI: Adjusted mean BP in women exposed at both times : <45 years old: Syst. BP: +1.86 (p=0.05) and Diast. BP: +1.48 (p=0.02). ≥45 years old: Syst. BP: +0.06 (p=0.95) and Diast. BP: -0.26 (p=0.70).

First author, year (reference)	N participants (N men / women), Participation rate (PR)	Age ^a , Population type ^b , Country	ERI and OC indicator, assessment ^c and prevalence	Outcome ^{d-e}	Covariates ^f	Main results	
						Men	Women
		(for analysis on cumulative incidence of hypertension)				means in men in highest tertile: Syst BP: +1.66 (p=0.02) Diast. BP: +0.89 (p=0.10)	Adjusted cumulative incidence ratios of hypertension in women exposed at both times: < 45 years old: 1.20 (0.53–2.75) ≥45 years old: 2.78 (1.26–6.10) OC: Adjusted BP means in women in highest tertile: Syst BP= +1.28 (p=0.03) Diast. BP= +1.02 (p=0.01)

^a In prospective studies, age at baseline is presented.

^b For example, the population could be composed of working participants or participants from the general population.

^c ERI: effort-reward imbalance. OC: overcommitment. ERI and OC assessment: questionnaire used (original Siegrist's questionnaire or else), number of items used and number of times assessed.

^d Hypertension or mean blood pressure.

^e Office or ambulatory. The number of readings is mentioned.

^f Listing of all covariates considered for adjustment.

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