

# ASSOCIATION BETWEEN SALT INTAKE AND BLOOD PRESSURE IN A COMMUNITY-BASED POPULATION: A PROSPECTIVE STUDY

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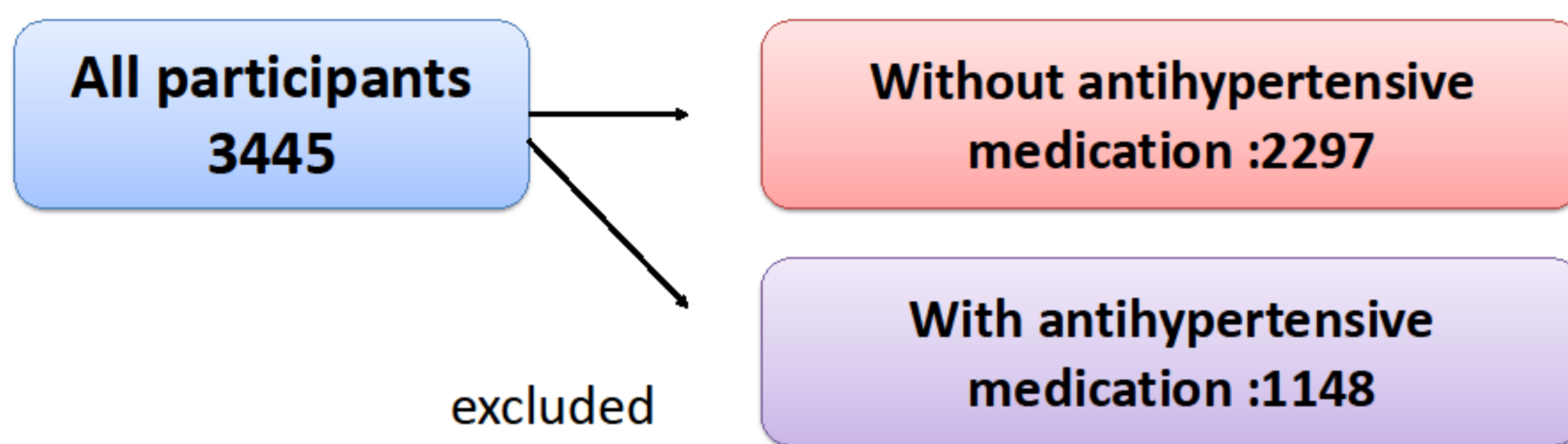
## Introduction and objective

- Hypertension is considered to be one of risk factors for cardiovascular diseases and mortality. (Hypertens Res.1995;18:181-196)
- Previous studies have reported that high sodium intake is related with high blood pressure. (BMJ.1988;297:319-328)
- In particular there is a stronger correlation among people with hypertension, and older people. (New Engl J Med 2014;371:601-11)

However the association between salt intake and blood pressure levels has been inconclusive and might be affected by characteristics of the subjects in the study. We investigated this in a community-based Japanese population.

## Methods

This study included 2297 participants aged  $\geq 40$ , without antihypertensive medication at a local health screening in Takahata, Japan.



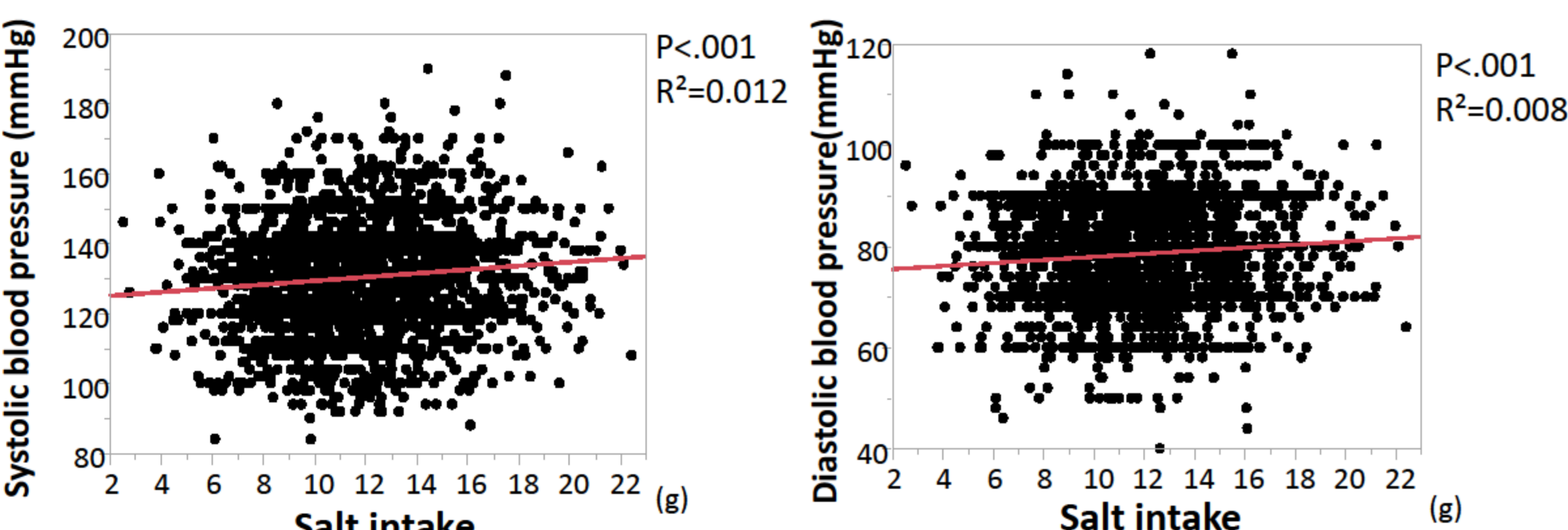
«Test item»

- Questionnaire (Smoking status, alcohol consumption and family history)
- Height and weight, blood pressure, blood and urine test
- Daily intake of salt and potassium was estimated by Kawasaki's equation by using a spot urine sample (Clin Exp Pharmacol Physiol 1993 Mar;20(3):199)

## Results

Baseline characteristics	All (N=2297)	Distribution of salt and potassium intake
characteristics	All (N=2297)	Salt intake
Male sex-no.(%)	1060(46.1)	
Age-yr	60.1 $\pm$ 10.5	Potassium intake
>65yr-no.(%)	820(35.7)	
Body-mass index -kg/m <sup>2</sup>	23.1 $\pm$ 3.1	
eGFR *-ml/min/1.73m <sup>2</sup>	83.6 $\pm$ 15.9	
Systolic blood pressure(SBP)-mmHg	130.3 $\pm$ 15.5	
Diastolic blood pressure(DBP)-mmHg	78.5 $\pm$ 10.2	
Sodium intake-mEq/day	203.5 $\pm$ 52.8	
Potassium intake-mEq/day	53.5 $\pm$ 10.7	
Diabetes-no.(%)	96(4.4)	
Hypercholesterolemia-no.(%)	771(33.6)	
Obesity-no.(%)	597(26.0)	
Alcohol use-no.(%)	982(42.8)	
Smoking-no.(%)	812(35.4)	
Family history of CVD†-no.(%)	690(30.0)	

### Systolic and diastolic blood pressure and salt intake



### Systolic and diastolic blood pressure and salt intake ; adjustment for age and sex

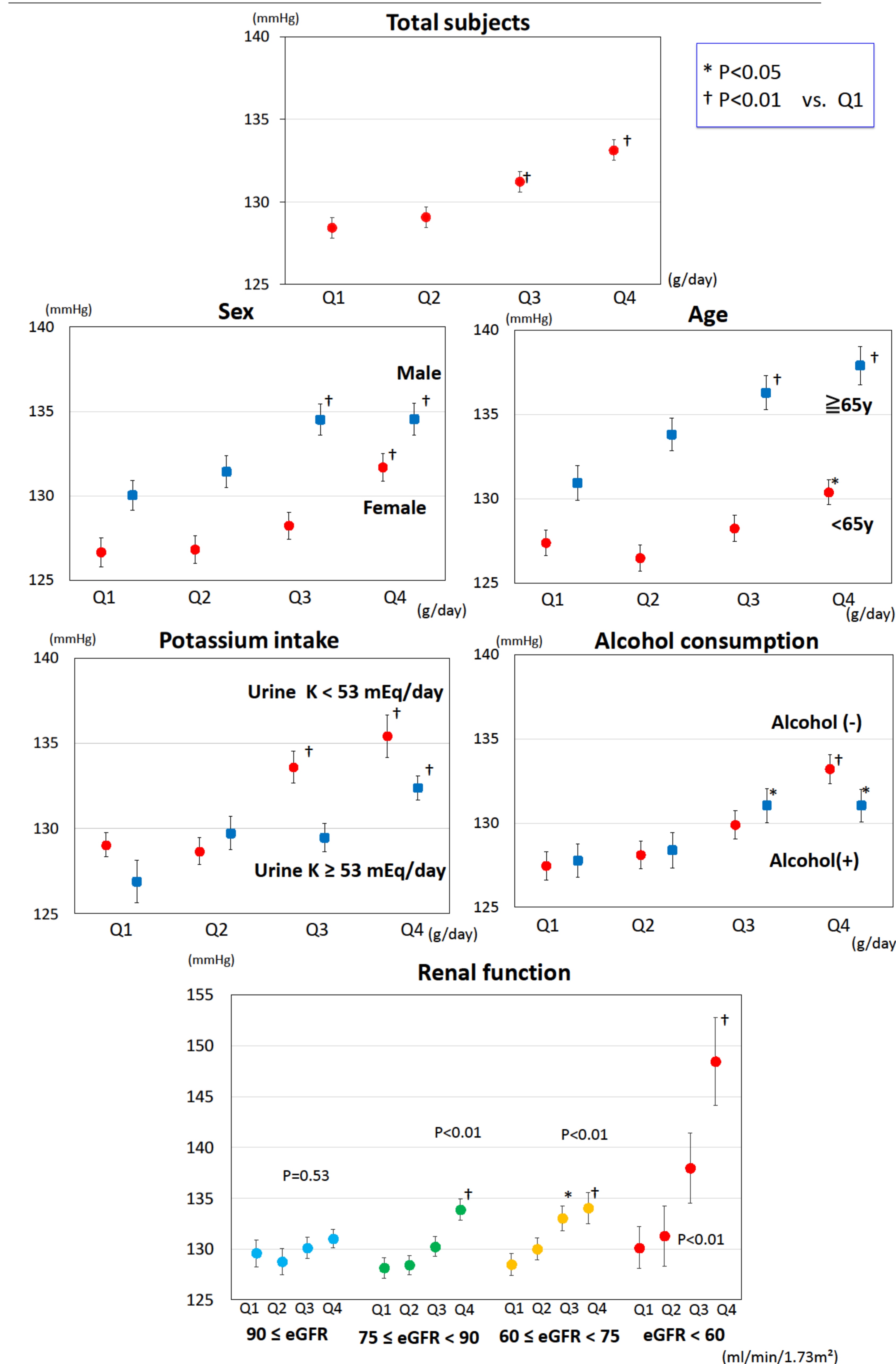
Systolic blood pressure				
	Regression coefficient	SE	t	P-value
Sex (female)	-1.88	0.310	-6.07	<.001
Age (+1yr)	0.37	0.029	12.48	<.001
<b>Salt intake (+1SD)</b>	<b>1.66</b>	<b>0.300</b>	<b>5.52</b>	<b>&lt;.001</b>
Diastolic blood pressure				
	Regression coefficient	SE	t	P-value
Sex (female)	-2.42	0.207	-11.70	<.001
Age (+1yr)	-0.01	0.020	-0.57	0.567
<b>Salt intake (+1SD)</b>	<b>0.90</b>	<b>0.200</b>	<b>4.49</b>	<b>&lt;.001</b>

## Conclusions

This study showed that salt intake was positively associated with blood pressure, and that the association was affected by characteristics of subjects including male sex, aging, alcohol intake, low potassium intake, and reduced renal function.

### Age, sex-adjusted systolic blood pressure according to Quartiles of salt intake

	The 1 <sup>st</sup> quartile (Q1) n=574	The 2 <sup>nd</sup> quartile (Q2) n=574	The 3 <sup>rd</sup> quartile (Q3) n=573	The 4 <sup>th</sup> quartile (Q4) n=576
Salt intake (g/day)	~9.8	9.8~11.9	11.9~13.9	13.9~



- The systolic blood pressure(SBP) and diastolic blood pressure(DBP) showed a significant positive correlation with salt intake after adjustment for age and sex.
- In subgroup of men, aged  $\geq 65$ , subjects with alcohol consumption, and low intake of potassium, a significant difference in SBP was detected for those in the 3rd quartile of salt intake.

- The association between SBP and salt intake was insignificant in subjects with normal renal function( $eGFR \geq 90$  ml/min/1.73m<sup>2</sup>), while the association was stronger and statistically in those with impaired renal function( $eGFR < 60$  ml/min/1.73m<sup>2</sup>)
- It is inferred that sensitivity of salt intake is strongly accelerated in these groups.

