

Background

In India, cardiovascular events are often diagnosed at lower blood pressure (BP) values than in Western countries, questioning whether the actual World Health Organization (WHO) cut-off points for hypertension (systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg) are appropriate in low-resource countries.

Methods

- A large population-based cohort study including 131 881 adults aged 35 to 90, living in a rural area, was followed-up during a 7-year mean duration for all-cause mortality and cardiovascular diseases (CVD) deaths.
- At baseline, casual BP was measured and lifestyle was assessed through a questionnaire.
- Mortality rates were calculated according to the systolic and diastolic BP, and their association was examined in a multivariate analysis, among all subjects, then stratified by sex and age-group.

Blood pressure measurement

- Measurements of casual BP were performed by trained health workers at the subjects' homes.
- Use of standard Indian mercury sphygmomanometers with a cuff of 14 cm wide and 45 cm long.
- Measurement on the right arm, the subject being in a seated position after a 5-minute rest in a comfortable position.

Mortality assessment

- Each subject was actively followed up for vital status by field workers through
 - municipal death registers,
 - death records from mosques, churches and social organizations,
 - during repeated house visits.
- If medical records were not available, the cause of death was established by interviewing a close family member of the deceased person using a verbal autopsy questionnaire.
- These questionnaires were then reviewed by a medical doctor for coding the cause of death according to the International Classification of Diseases – 10th Revision.

Conclusions

- The findings of our study are consistent with the current WHO recommendations for hypertension definition.
- Measurement limited to systolic BP alone would be effective in screening for hypertension in large populations.

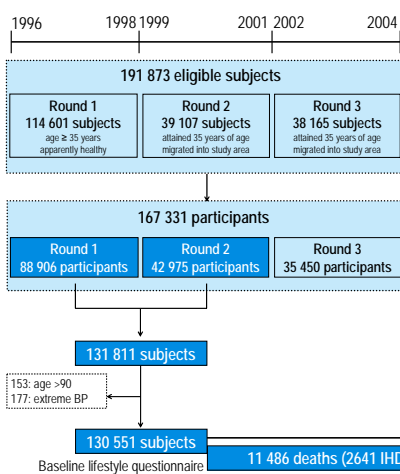
Acknowledgements

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Results

- 45% of the study subjects had hypertension.
- The nadir of CVD mortality rates was observed at 110 mmHg for casual systolic BP and 75-80 mmHg for casual diastolic BP.
- In the multivariate analysis, risks of all-cause mortality, ischemic heart disease and stroke increased significantly from systolic BP of 140 mmHg and diastolic BP of 100 mmHg.
- Similar levels of risk between systolic and diastolic BP and CVD deaths were observed in men and women.
- High systolic and diastolic BP values were greater predictors of mortality in the young age-group (34-44) than in the old age-group (65+).
- Systolic BP was a stronger independent predictor of CVD than diastolic BP.

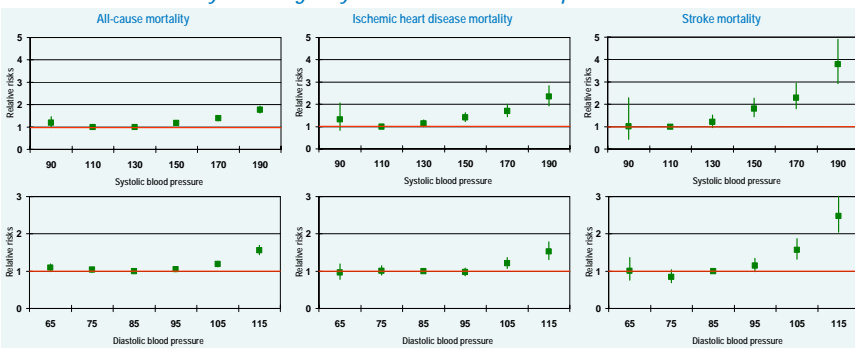
Flow chart: Trivandrum Oral Cancer Trial study



Mean values of BP and % of hypertension

	N obs.	Systolic BP		Diastolic BP		HP (%)
		Mean (mmHg)	SD	Mean (mmHg)	SD	
Sex						
Men	50193	130	18	84	11	43
Women	80358	131	19	85	11	45
Age group (years)						
34-39	34477	124	14	82	10	30
40-49	38350	128	16	84	11	40
50-59	26311	134	19	86	11	51
60-69	18994	138	22	87	12	59
70+	12419	143	24	86	13	65
Household assets						
Deprived	58598	129	19	84	11	41
Moderate	66416	132	19	85	11	47
Privileged	5536	133	18	86	11	51
Body mass index (kg/m²)						
14.0-15.9	5675	127	20	81	12	35
16.0-18.4	21231	127	19	82	11	36
18.5-22.9	53641	130	19	84	11	42
23.0-24.9	19904	133	18	86	11	49
25.0-27.4	15856	134	18	87	11	53
27.5-37.9	11029	136	18	89	11	59

Relative risks of mortality according to systolic and diastolic blood pressure values



Relative risks of mortality according to systolic and diastolic BP values stratified by sex and age-group

