Abstract

Introduction

Increasing prevalence of non-communicable diseases such as hypertension among employees is a burden to the individual, the family and the country. This study aimed to determine the prevalence, correlates of hypertension and the economic impact due to hypertension among senior officers (SOs) and managerial assistants (MAs) of government Public Administration offices in Colombo district. A total of 275 SOs and 760 MAs were selected. Both samples were selected randomly.

Methodology

A cross sectional survey to detect prevalence of hypertension and a cross sectional comparative study was carried out among randomly selected 272 senior officials (SOs) and 739 managerial assistants (MAs) attached to government administrative offices in the Colombo District. Blood pressure (BP) was measured using the standardized protocol of American Heart Association (AHA). Classification of hypertension was done according to Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). Data collection was done using a self-administered questionnaire which gathered information on socio demographic, economic characteristics, life style related practices and occupational characteristics and a data sheet which gathered information pertaining to the clinical examination and investigation findings such as blood pressure measurement, weight, height, waist and hip circumferences and biochemical parameters. A quantitative dietary assessment was carried out among the study participants using an interviewer administered food frequency questionnaire. Twenty four hour urinary sodium to assess the salt intake as a correlate of hypertension was conducted among 84 senior officers and 84 managerial assistants. All measurement and investigations were done adhering to standard protocols. Occupational stress was assessed using a standardized instrument, namely the Efforts Rewards Imbalance (ERI) model which was adopted and validated to the Sri Lankan context among administrative officers. The instrument showed good validity and reliability.

The economic impact caused by hypertension among study participants, as perceived from the perspective household and productivity loss to the government was assessed

by conducting a cross sectional survey in 134 hypertensives working in ten randomly selected government Public Administration offices in Colombo district.

Results

Two hundred and seventy two (98.9 %) SOs and 739 (97.2%) MAs responded to the invitation to participate. The mean ages were 44.1 (SD ± 9.0) and 42.1 (SD ±8.7) years for SOs and MAs respectively. Fifty eight percent (n= 156) of the SOs and more than 75 % (n=571) of the MAs were females.

The crude prevalence of hypertension based on classification of JNC 7 criteria among 30- 60 years SOs and MAs attached to government Public Administration offices in the Colombo district was 32.4 per hundred population (95% CI ;26.8-37.9) (N=88) and 29.4 per hundred population (95% CI; 26.2-32.7) (N=217) respectively. The age and sex adjusted prevalence of hypertension among 30- 60 years SOs and MAs attached to above offices was 32.9 per hundred population with a 95% CI of 27.4 to 38.6 and 33.01 per hundred population with a 95% CI of 29.6 to 36.4 respectively. The observed differences between the two percentages among SOs and MAs were not statistically significant (p>0.05).

Of the SOs 63.6% (n=173) were normotensives and 4.0% (n=11) were pre-hypertensives while 21.3% (n= 58), 1.5% (n= 4), and 0.7% (n= 2) were in the hypertension stage I, stage II and in the isolated systolic categories respectively. Considering MAs 63.5% (n=469) were normotensives and 7.2% (n= 53) were pre-hypertensives, while 19.9% (n= 147), 1% (n= 7), and 1.9% (n= 14) were in the hypertension stage I, stage II and in the isolated systolic categories respectively. Of the hypertensive SOs and MAs 52.3% (n=46) and 35% (n=76) were unaware they were having hypertension respectively. Of the patients diagnosed and on treatment for hypertension 68.6% (n=24) of SOs and 43% (n=49) of MAs had controlled hypertension.

The logistic regression analysis revealed significant correlates of hypertension among SOs after adjusting for confounding factors, to be age more than 40 years (OR=5.23; 95% CI 2.08- 13.17), occupational stress as measured by high efforts rewards ratio (OR=2.8; 95% CI 1.1- 7.4), over-commitment (OR=2.5; 95% CI 1.1- 5.6) and high efforts (OR=2.5; 95% CI 1.2- 5.3), positive family history (OR=6.01; 95% CI 2.5-14.3), dyslipidemia (OR=5.09; 95% CI 2.02- 12.8), being a current smoker (OR=4.8; 95% CI 1.1- 21.05) and current alcohol consumption (OR=3.5; 95% CI 1.2- 10.3), high

body mass index (OR=5.09; 95% CI 2.9-26.01) and high waist hip ratio (OR=3.4; 95% CI 1.2- 9.8). The significant protective factors were moderate energy intake (OR=0.34; 95% CI 0.15- 0.75) and a health promotive work setting (OR= 0.365; CI; 0.17-0.79). Being a male was a positive non-significant correlate of hypertension after adjusting for confounders.

Among the MAs significant positive correlates of hypertension were, being more than 40 years of age (OR=3.16; 95% CI 1.37- 7.46), male (OR=3.02; 95% CI 1.01- 9.12), occupational stress measured by high efforts (OR=3.02; 95% CI 1.9- 4.8), average working hours more than 50 hours per week (OR=1.48; 95% CI 1.01- 2.14), positive family history (OR=5.35; 95% CI 3- 9.56), dysglycemia (OR=2.23; 95% CI 1.16- 4.28), dyslipidemia (OR=2.76; 95% CI 1.40- 5.47), being a current smoker (OR=26.48; 95% CI 6.49- 208.15), current alcohol consumption (OR=1.3; 95% CI 1.06- 1.67), high body mass index (OR=2.02; 95% CI 1.35- 3.02) and high fat intake (OR=1.56; 95% CI 1.02- 2.38) and consumption of less than five servings of fruits and vegetables (OR=2.76; 95% CI 1.40- 5.47). The significant protective correlates were commuting distance of less than 20 Km (OR=0.85; 95% CI 0.73- 0.99), health promotive work setting (OR=0.48; 95% CI 0.28- 0.81).

The computed mean salt intake among SOs and MAs was 10.84 (SD±4.9) g and 11.33 (SD±5.5) g per day respectively ($p>0.05$). The mean salt excretion among hypertensives and non-hypertensive SOs was 12.2 (± 3.4) g and 9.5 (± 2.1) g and among MAs was 12.6(± 1.8) g and 10.6 (± 2.9) g respectively. Twenty four hour urinary sodium excretion was significantly higher ($p<0.05$) among hypertensives compared to non-hypertensives among SOs (OR=2.6; 95% CI 1.1- 6.5) and MAs (OR=1.96; 95% CI 1.1- 5.8).

Having a history of pregnancy induced hypertension was a statistically significant correlate among MAs (OR=1.96; 95% CI 1.1- 3.5) but not among the SOs (OR= 1.4; 95% CI 0.5- 4.3).

Considering the direct household cost for outpatient care (OPD), the total mean (OPD) cost was for obtaining treatment from a consulting a physician was the highest among both SOs (Rs.5554.98) and MAs (Rs.5357.21) while the lowest was for a general practitioner among both SOs (Rs.2229.07) and MAs (Rs.2992.08). Of the total OPD cost the highest mean cost was for investigations at all three different types of consultations. The mean admission cost to a government hospital for disease

(Rs.12560.00) and investigation (Rs. 7741.40) was lower than the cost incurred in the private sector admission for disease (Rs.138785.00) and investigation (Rs.68589.36).

The economic impact of loss of production due to sickness absenteeism to the government was estimated to be Rs. 210513.81for the 34 SOs due to their taking 78.5 days off and Rs.194787.27 for the 95 MAs due to taking 268 days off. The estimated economic impact due to lost earnings of a male and female SO leaving the workforce early at age 50 years when the retirement age is 60 years were Rs. 6643906.73 and Rs.6989780.60 respectively and economic impact due to lost earnings for a male and female MA was Rs.3013023.00 and Rs.3178862.85 respectively.

Conclusion

The prevalence of hypertension among SOs and MAs was high. Even though the two study populations belonged to the same occupational group it is obvious the determinants varied across the study populations. Timely, cost effective interventions and periodic screening are important to prevent this upsurge.

Key words: Administrative officers, hypertension, prevalence, correlates, economic impact