

PREVALENCE OF HYPERTENSION IN WORKERS OF VEGETABLE OIL REFINERIES IN TEHRAN

Daryoush Parvizpour

ABSTRACT

968 male workers employed in five vegetable oil refineries were studied to discover the effects of age, length of employment and smoking habit on the prevalence of hypertension. The results obtained indicate that the overall prevalence of hypertension is 6.61% showing a direct relationship to the age. Considering the length of employment only, in the workers aged 50 and above, there is also a direct relation between the length of employment and prevalence of hypertension. Furthermore, the results show that not only smoking causes elevation of blood pressure, but the number of cigarettes smoked per day are also important, i.e. the workers who smoke more have a higher prevalence of abnormal pressure.

INTRODUCTION

At least since Janeway's work it has been known that patients with elevated arterial pressure tend to die prematurely⁽¹⁾. In most patients the raised pressure and its consequence constitute the disease (Essential hypertension)⁽²⁾. The most common cause of death among these patients are heart diseases, apoplexy and uremia. We now know that arterial pressure is a quantitative phenomenon and its dangerous consequences are related to it quantitatively, the higher the pressure the worse the prognosis⁽³⁾.

The studies such as a cross sectional population study of men aged 50-64 years in Czechoslovakia, Japan, Sweden and USSR

indicates that hypertension is not a rare problem and its prevalence varies between 10% to 33%(4). Also it has been assumed that in the USA, about 22 million people are suffering from hypertension(5).

Furthermore, studies done in Iran have shown that the prevalence of hypertension has risen in different parts of the country to the extent of 6.7% in the males and 16.6% in the females between 40–60 years of age in the rural areas in East Azarbayjan(6), 17.04% in the males and 24.83% in the females above 35 years in the city of Bandar Pahlavi(7), 19.15% in male weavers and 7.5% in the male metal shop workers aged between 40–59 years in the city of Isfahan(8, 9). The purpose of this paper is to show the prevalence of hypertension in the workers of vegetable oil refineries in Tehran.

MATERIALS AND METHODS

A total of 968 male workers of five vegetable oil refineries in Tehran, were examined for this purpose. Along with completing a special questionnaire covering the questions such as: age, sex, marital status, socio-economic status, occupation, smoking habit, other addictions, history of any kind of cardio-vascular or renal diseases, diabetes, thyrotoxicosis, history of hypertension in the family, a physical examination was also carried out before the work days began. Blood pressure was measured on the right arm in the sitting position using the spring sphygmomanometer, after 10 minutes rest in a quiet room. The systolic blood pressure recorded at the appearance of the first sound when the cuff is deflated slowly and diastolic pressure recorded in the point of disappearance of the sound. The criteria used for classification are those recommended by the expert committee of the World Health Organization(10).

1. below 140/90 mm Hg normal range
2. 160/95 mm Hg and above hypertensive range
3. In between of these figures were classified as borderline.

Due to the variation of arterial pressure resulting from the effect of environmental factors, in hypertensive and borderline cases the measurements were done twice with an interval about one week and the minimum figures were considered in this study.

RESULTS

1. Table 1 shows the workers examined by age and length of employment. As indicated in this table the majority of workers 34.71% are

aged 40–49 years, and as the length of employment concerned the per cent of the workers decrease as the length of employment increases.

2. As indicated in Table 2 which shows the distribution of the workers examined by age and blood pressure level. The hypertensive cases occur after the age of 39 years. There is also an association between age and hypertension amongst the workers(11). The difference between the prevalence of workers suffering from hypertension in the age groups 40–49 and 50+ years are statistically significant, ($P < 0.01$). Considering the borderline cases there is also an increase in the rates as the age increases.

3. Table 3 and 4 show the prevalence of hypertension, mean, systolic and diastolic blood pressure in the workers aged 40–49 and 50+ years old by the length of employment. The study of these tables indicate that there is no increase in the prevalence of hypertension in the age group of 40–49 with the length of employment, whereas in the workers aged 50 and above there is an association between the hypertension and the length of employment.

4. Table 5 shows the type of hypertension in the workers. As indicated in this table there are no cases having only systolic hypertension in the workers aged 40–49 years, whereas 40% of workers aged 50 and above are suffering from systolic hypertension.

5. The effect of smoking cigarettes on blood pressure of workers aged 40 and above are reflected in Table 6. The study of this table shows that, the workers who smoke gave a higher prevalence of abnormal blood pressure (equal or above the level of 140/90 mm Hg), when compared with non-smokers. The difference between these groups is statistically significant, ($P < 0.01$).

DISCUSSION

The results obtained from this study shows that the prevalence of hypertension in the workers aged 40 and above is equal to 11.68%. This figure with the results obtained from other studies indicates that hypertension is not a rare problem in Iran, and its prevalence varies in different groups living or working in different conditions. Apart from the hypertensive cases the increase in the per cent of workers being in the borderline stage with the age constitute an important point and indicates the necessity to follow up these cases(12).

Furthermore, the effect of the length of employment on the prevalence of hypertension which are reflected in Tables 3 and 4 indicates that only in the workers aged 50 and above is there an association between the hypertension and length of employment ($P < 0.01$). The reason for this may be that this group of workers being former 36%

and supervisors 57% are subjected not only to the physical or chemical factors existing in the workshops like the other workers but they are also subjected to stress factors due to their responsibilities. This fact can also explain the presence of workers having only systolic hypertension in this group of workers, as reflected in Table 5.

On the other hand, not only smoking causes elevation of blood pressure(13), but also the number of cigarettes smoked per day are important. As indicated in Table 6 the workers who smoke more have a higher prevalence of abnormal pressure. The differences are statistically significant ($P < 0.01$).

Therefore it can be concluded that the results obtained from this study and similar ones done in Iran and other countries indicate that the environmental factors play a major part in the occurrence of hypertension(14, 15). So if we try to identify these factors which influence the occurrence of hypertension then the measures applied for the prevention will be in a community level rather than an individual one. Surely this will be a worthy achievement.

TABLE I
WORKERS EXAMINED BY AGE AND LENGTH OF EMPLOYMENT

AGE GROUPS LENGTH OF EMPLOY- MENT (Yrs)	(Yrs)	-19	20-29	30-39	40-49	50+	TOTAL	%
- 9		24	154	110	76	44	408	42.15
10-19		-	18	94	188	96	396	40.91
20+		-	-	20	72	72	164	16.94
TOTAL		24	172	224	336	212	968	100
%		2.48	17.77	23.14	34.71	21.90	100	

TABLE II
DISTRIBUTION OF WORKERS BY AGE AND BLOOD PRESSURE LEVEL

AGE GROUPS (Yrs)	No. OF WORKERS	NORMOTENSIVE		BORDERLINE		HYPERTENSIVE	
		No.	%	No.	%	No.	%
-19	24	24	100	-	-	-	-
20-29	172	168	97.67	4	2.33	-	-
30-39	224	216	96.43	8	3.57	-	-
40-49	336	288	85.71	24	7.14	24	7.14
50+	212	120	56.60	52	24.53	40	18.77
TOTAL	968	816	84.30	88	9.09	64	6.61

TABLE III
PREVALENCE OF HYPERTENSION, MEAN SYSTOLIC AND
DIASTOLIC PRESSURE IN THE WORKERS AGED 40-49 YEARS
ACCORDING TO THE LENGTH OF EMPLOYMENT

LENGTH OF EMPLOYMENT (Yrs)	No. OF WORKERS EXAMINED	MEAN SYSTOLIC PRESSURE (mm Hg)	MEAN DIASTOLIC PRESSURE (mm Hg)	HYPERTENSIVE WORKERS	
				No.	%
-9	76	123.5	74.5	8	10.53
10-19	188	123.51	75.74	12	6.38
20+	72	125.31	77.19	4	5.56
TOTAL	336	124.11	75.81	24	7.14

TABLE IV
PREVALENCE OF HYPERTENSION, MEAN SYSTOLIC AND
DIASTOLIC PRESSURE IN THE WORKERS AGED 50+ YEARS
ACCORDING TO THE LENGTH OF EMPLOYMENT

LENGTH OF EMPLOYMENT (Yrs)	No. OF WORKERS EXAMINED	MEAN SYSTOLIC PRESSURE (mm Hg)	MEAN DIASTOLIC PRESSURE (mm Hg)	HYPERTENSIVE WORKERS	
				No.	%
-9	44	125.91	77.27	4	9.09
10-19	96	137.5	81.67	20	20.83
20+	72	133.68	81.53	16	22.22
TOTAL	212	132.36	80.65	40	18.87

TABLE V
CLASSIFICATION OF HYPERTENSION BY AGE

AGE GROUPS (Yrs)	ONLY SYSTOLIC		ONLY DIASTOLIC		SYSTOLIC & DIASTOLIC		TOTAL	
	No.	%	No.	%	No.	%	No.	%
40 - 49	-	-	8	33.33	16	66.67	24	100
50 +	16	40	4	10	20	50	40	100
TOTAL	16	25	12	18.75	36	56.25	64	100

TABLE VI
SMOKING HABIT AND BLOOD PRESSURE LEVEL IN WORKERS
AGED 40 AND ABOVE

SMOKING HABIT		No. OF WORKERS EXAMINED	B.P < $\frac{140}{90}$		B.P $\geq \frac{140}{90}$	
			No.	%	No.	%
NON - SMOKERS		345	275	79.71	70	20.29
SMOKERS	< 10 CIGARETTES PER DAY	35	40	75.47	13	24.53
	10 - 20 CIGARETTES PER DAY	135	87	64.44	48	35.56
	> 20 CIGARETTES PER DAY	15	6	40	9	60
	TOTAL	203	133	65.52	70	34.48

REFERENCES

1. Janeway, T.C. (1913): A clinical study of hypertensive cardiovascular disease. Arch. Intern. Med. 12:755.
 2. Pickering, G. (1965): Hyperiesis: High blood pressure without evident causes; essential hypertension. Brit. Med. J. 2, pp. 959-968, 1021-1026.
 3. Pickering, G. (1972). Hypertension; definition, natural histories and consequences. Amer. J. Med. Vol. 25, p. 570.
 4. Hatano, S. (1976): The world wide problem of hypertension and stroke. Proceeding of a WHO meeting held in Tokyo, 1974, p.19-28.
 5. Kellner, A., Robin, E., Ross, R.S. & Wessner, S. (1973): National Heart Blood Vessel, Lung and Blood Program, Vol. III. Report of the panel chairman, US Department of Health, Education and Welfare.
 6. Nadim, A., Amini, H., Daneshpajoo, M. (1973). Prevalence of high blood pressure in rural areas of east Azarbayjan, north west Iran. Iranian J.P.H. Summer 1973, Vol. 2, No.2.
- ۷- دکتر برزگر، محمد علی (۱۳۵۲) بررسی و شیوع عوامل مساعده کننده از دیاد فشار خون شریانی، پایان نامه برای دریافت درجه فوق لیسانس بهداشت عمومی در رشته اپیدمیولوژی از دانشکده بهداشت دانشگاه تهران.
8. Parvizpour, D. (1976). Noise exposure and prevalence of high blood pressure among weavers in Iran. JOM, Vol. 18, No. 11, p. 730.
 9. Parvizpour, D., Meshgi, P. (1977). Prevalence of hypertension in the metal shop workers in Isfahan, Iran. Unpublished.
 10. World Health Organization (1959). Technical Series No. 168, Geneva.
 11. Miall, W.E., Lovell, H.G. (1967). Relation between change of blood pressure and age. Brit. Med. J., 2:660.
 12. Julius, S., Schok, M.A. (1971). Borderline hypertension, a critical review. J. Chronic. Dis. 23:p.723.
 13. Doll, R., Hill, A.B. (1956). Lung cancer and other causes of death in relation to smoking: A second report on the mortality of British doctors. Brit. Med. J. 2:p.1071.
 14. Read, D., Laborthe, D. and Stallones, R. (1970). Health effects of westernization and migration among chamorros. Am. J. Epidem., 98:p. 161.