

THE PREVALENCE RATE OF HYPERTENSION AMONG A GROUP OF INDUSTRIAL POPULATION-IRAQ

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نسبة انتشار حالة ارتفاع ضغط الدم لدى العاملين في احد المصانع
العراق

الخلاصة :

لقد تبين ان نسبة انتشار حالة ارتفاع ضغط الدم بين ١٠٩٨ من العاملين الذكور الذين تجاوزت مدة خدمتهم في العمل الخمس سنوات فاكثر ١١٪ / ٧٥ من المصابين شخصوا اثناء اجراء الدراسة . ان ارتفاع ضغط الدم اكثر بين العاملين في قسم الخدمات العامة (التنظيف). لقد وجدت علاقة معنوية بين وزن الفرد وعمره وارتفاع ضغط الدم ولكن لم نجد مثل هذه العلاقة مع سنوات خدمة الفرد وذلك عند استخدام الارتداء المحدد كاختبار لفحص العلاقة بين المتغيرات احصائياً.

SUMMARY :

The point prevalence of hypertension (HT) among 1098 male workers with five years of continuous employment was found to be 11.8% , 75% were newly discovered. HT was found to be more prevalent among employees of the general service department. Raised blood pressure was found to be associated significantly with duration of employment using the multiple regression analysis.

INTRODUCTION :

In most countries hypertension is one of the two most important causes of mortality among people. Cardiovascular and Cerebrovascular diseases⁽¹⁾. Several factors play a role in the causation of HT⁽²⁻⁸⁾. Several studies showed that about 15-20% of adults in U.S.A. have HT⁽⁹⁾, in Bombay 10% of 6000 persons over 20 years of age had

HT⁽¹⁰⁾. In Cuba 18.3% of 4451 persons had HT⁽¹¹⁾, in Iraq the prevalence rate (PR) of HT in adult age i.e. 15 years and above was 12.3% VS 9% for urban and rural population respectively⁽¹²⁾. On the other hand, Kawkami and his team⁽¹³⁾ found that Job-stress due to complicated machine operation was a significant predictor of diastolic blood pressure increase. The study of Ohnalcu et. al.⁽¹⁴⁾ is recalled here as they examined 1447 male workers aged 20-63 years in a factory in Tokyo, work-related stress was significant predictor of systolic and diastolic blood pressure. Only one study⁽¹⁵⁾ on PR of HT was carried out among electrical industrial workers in Iraq, so this study is conducted to measure the PR of HT among mechanical industrial workers as one of the parameters of health survey carried among workers in Al-Qadissiya State Establishment.

MATERIAL AND METHODS :

It was decided to include all workers who had spent five years or more in Al-Qadussyia State Establishment. Females were excluded because their number was small (n=95). 98.1% of the workers who worked in seven different departments responded to this study (1098 workers). Each participant was required to give his reply to a specific questionnaire in Arabic. The following examination was carried on each subject :

- a- weight and height⁽¹⁵⁾.
- b- Blood pressure measurement : The workers were instructed to avoid exertion and abstain from smoking, eating or exposure to cold or noise at least half an hour before they come to examination⁽¹⁷⁾, after at least fifteen-minutes rest in the examination room, blood pressure measurement was taken in supine position from the right arm by random-zero sphygmomanometer (Hawksley) of which the cuff width being 14 cm. (velcro type with lock) placing the instrument on equal levels as subject's heart. The cuff was inflated up to 20-30 mmHg after the radial pulse had disappeared. The diaphragm was

placed over the brachial artery in the cubital fossa as the cuff deflated allowing the mercury to fall at a rate of 2 mmHg/ second. The systolic blood pressure could be taken at the appearance of the tapping sound (korotkoff first sound) and the disappearance of all sounds (korotkoff phase v) as the diastolic blood pressure. Two measurements were taken and the mean of the blood pressure readings was used for analysis⁽¹⁸⁾. All measurements were carried by one person and during the period of 1991-92.

Hypertension is considered as WHO definition⁽¹⁹⁾, systolic blood pressure equal to or higher than 160 mmHg and/or diastolic blood pressure equal to or higher than 95 mmHg, or receiving drug treatment for hypertension.

RESULTS :

Table 1 shows the means and standard deviations and coefficient of variation for the parametric variables studied for all age groups. The crude PR of HT among workers studied was 11.8%. 97 subjects (75%) had newly diagnosed HT, the remained (25%) had HT by history. Table 2 shows the asso-

Table 1 : Mean and Standard deviations (SD) and coefficient of variations for the parametric variables studies for all age groups (No. =1098 workers).

Variable	Mean $\pm$ SD		Coefficient of variation
Age (years)	30.32	8.40	27.70
No. of cigarettes smoked perday, (smokers)	18.92	9.97	52.70
Years of employment	9.84	5.96	60.53
Weight (Kg)	70.75	12.84	18.15
Height (cm)	171.36	6.61	3.86
body mass index kg/m ²	24.09	4.41	17.19
Systolic BP mmHg	120.63	16.76	13.90
Diastolic BP mmHg	74.48	11.69	15.70

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Table 2. The association between hypertension (HT) and other variables.

The variable		Total workers	Workers with HT No.	PR	df	χ^2
Smoking habit	yes	364	37	10.2	1	1.5
	No	734	93	12.7		
Alcohol Consumption	yes	90	14	15.6	1	1.3
	No	1008	116	11.5		
Family history of HT	yes	238	43	18.1	1	11.3
	No	860	87	10.1		
BMI	obesity	87	39	44.8	2	138.1
	over weight	330	68	18.2		
	normal	681	31	4.6		
Age group	20-29	583	41	7.0	3	x
	30-39	359	46	12.8		
	40-49	125	33	26.4		
	50+	31	10	32.3		
Department	General service	70	18	25.7	x 6	22.9
	General administration	71	13	18.3		
	Surface treatment	73	10	13.7		
	Production	646	73	11.7		
	Plastic moulding	38	4	10.5		
	maintenance	106	7	6.6		
	Technical	94	5	5.3		

** PR = prevalence rate

ciation between HT and other variables with test of significance. Multiple linear regression analysis was applied between different important variable using step down method, as shown in Table 3. From this statistical analysis the period of employment shows no relation with blood pressure after controlling for the other factors, BMI is found to be the highest and significantly correlated independent factor to diastolic blood pressure.

DISCUSSION :

The overall PR of HT among 1098 mechani-

cal workers who had five and more years of service was 11.8% which is in agreement with the estimated range of 8-18% in adults given by WHO⁽²⁾. This rate is comparable to that found by Alwan et. al⁽¹²⁾. The PR of HT is higher significantly among workers with family history of HT ($P < 0.005$), also the PR increased with advancing age (Table 2). This result is consistent with the findings of several studies⁽¹⁷⁻²¹⁾. In our study the increased body weight is strongly associated with HT ($P < 0.005$). This finding is in agreement with that of other stud-

Table 3 : Multiple regression relationship between different variables and systolic and diastolic blood pressure.

		Systolic B.P	diastolic B.P
Intercept		87.7	44.4
Variables	b	0.18	0.21
-Age	t	2.8*	4.9*
-period of service	b	- 0.005	- 0.006
	t	- 0.14	- 0.24
- BMI	b	0.60	0.75
	t	6.7*	8.7*
Coefficient of determination		0.114	0.16
F		31.22*	51.98*

b = Coefficient of regression, t = T value, F = value, * P < 0.005.

ies (4,5,12-14). No significant relation was found between smoking or alcohol consumption and high level of blood pressure which is in agreement with other studies (22,23). Interestingly, the interplant variation in PR of HT may explain effect of certain work (such as stress) on the morbidity of hypertension. The highest PR of HT was found among employees working in the general service department who were mainly drivers. Drivers are known to be prone to get high morbidity of HT (24) probably due to the stress that accompanies driving. The study recommends pre-employment and periodic medical examination to detect, treat and follow up individuals with HT, also weight reduction programs should be encouraged.

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