PESHAWAR HYPERTENSION STUDY: EPIDEMIOLOGIC PROFILE OF JUVENILE AND IN-SERVICE POPULATION

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Abstract

A survey has been carried out in Peshawar to study the prevalence of hypertension in the juvenile and active in-service population. The subgroups of the population surveyed included 1,565 school students, 1,681 college students, 1,029 textile factory workers, 1,127 police personnel, 1,006 civil servants, 398 female teachers and 206 commandos. The active in-service persons were predominantly young: 2,469 persons were 21-45 years old and 714 persons were 46-60 years old, constituting 78% and 22% of the adults examined, respectively. Diagnosis of definite hypertension was made by the presence of abnormally high blood pressure, 165/95 mm Hg or above in adults and 160/90 mm Hg or above in the juveniles, on three different occasions, using a stand-dard mercury sphygmomanometer. Definite hypertension was present in 15 out of 1,380 students (1.1%) 5-10 years old, 32 out of 1,957 students (1.6%) 10-20 years old and no significant difference was found between male and female students. In the in-service groups definite hypertension was found in 13 out of 398 (3 .3%) female teachers, 23 out of 902 (2.5%) factory workers, 36 out of 800 (4.5%) police personnel, 48 out of 8'>5 (5.6%) civil servants and 4 out of 206 (2%.) commandos. Overall prevalence for age group 21-60 years was 5 per 1,000. In the juvenile group 2 out of 47 (5%) cases and amongst adults 2/ out of 129 (21%) cases were known hypertensives (JPMA 30-174, 1980).

Introduction

Hypertension has acquired epidemic proportions and has offered the biggest challenge ever to the mankind. In the European countries and the United States definite hypertension is prevalent in 15-18% of the adult population (Richard, 1976; Kagan, 1977). In Africa hypertension has been reported as the commonest cardiovascular disorder (Akinkugbe, 1972), and in several Asian countries high prevalence ofhypertension has been reported (Shigematsu, 1977; Bhattia, 1977; Tseng, 1977). In Pakistan community surveys have shown hypertension to be a major problem (Syed et al., 1973; Mirza, 1976). We have reported hypertension as the commonest cardiovascular problem in a hospital population in Peshawar (Ilyas et al., 1977).

This paper reports results of a community based project in Peshawar for hypertension in juvenile population of school and college students, and in the active in-service persons in various professional subgroups.

Material and Methods

A community based project was carried out during 1976-77 to assess the prevalence and pattern of hypertension in the school and college students and in the active in-service persons in various professional groups in Peshawar. This capital city of the Frontier Province has a population of over 700,000 and is 990 feet from the mean sea level and is located on 34°-0 latitude and 71°-32 longitude. The Juvenile group included students from 4 primary, 6 middle and 2 high schools and 2 colleges. This group consisted of 1,380 students 5-10 years old and 1,957 students 11-20 years old, with 1,696 male and 1,681 female students. The oreak up of the In-Service Groups examined and the age and sex

distribution of the population surveyed are shown in Tables I and II.

Table I: Sub-Groups of the Survey Population

Subjects	*Number*	%
School Students	1,656	23
College Students	1,681	24
Factory Workers	1,029	14.5
Police Force	1,127	16
Civil Servants	1,004	14
Female Teachers	398	5.5
Commandos	208	3
Total:	7,103	

Table II: Age and Sex Distribution of The Survey Population

Age (Yrs.)	5-10	11-20	21-30	31-40	41-50	51-60
Male	711	1,538	1,073	738	513	451
Female	669	1,012	200	198	—	—
Total	1,380	2,550	1,273	936	513	451

Blood pressure was recorded, after 20 minutes of rest with physical and mental relaxation, in the sitting posture by one examiner by a standard mercury sphygmomanometer. All blood pressure measurements were carried out at the premises of various schools, offices of various organisations or at the vocational sites. Three recordings were taken on the first occasion, and the presence of abnormally high pressure on three different occasions was accepted as definite hypertension (WHO, 1973). In the juvenile group systolic blood pressure 160 mm Hg and/or diastolic 90 mm Hg or above was regarded as definite hypertension, and in the adults systolic blood pressure 165 mm Hg and/or diastolic 95 mm Hg or above as definite hypertension. In the adults 160/90 mm Hg was regarded as-borderline hypertension and in

the juvenile group 155/85 mm Hg as borderline hypertension.
In cases with definite hypertension urinalysis, chest X-ray and electrocardiogram were obtained, and they were prescribed antihypertensive drugs and antifailure regime in the presence of cardiac decompensation and are being followed up periodically. In the juvenile group of hypertensives hiscory of hypertension in the family was interrogated and in some instances parents or siblings were also examined for blood pressure.

Results

fuvenile Population
In the Juvenile Group of school and college students definite hypertension was present in 15 out of 1,380 (1.1%) students in the age-group 5-10 years and in 32 out of 1,957 (1.6%) students in the age group 11-20 years, and no significant difference was found between male and female students. Thus 47 cases of hypertension were found in 3,337 students i.e., a prevalence of 1.4% was obtained (Table III).

Table III: Juvenile Hypertension in School and College Students

Age Group (Yrs.)	*Male*	*HT*	*Female*	*HT*	*Total*
5-10	711	9 (1.3%)	669	6 (0.9%)	1380 15 (1.1%)
11-20	945	17 (1.8%)	1,012	15 (1.5%)	1957 32 (1.1%)
Total	1656	26 (1.6%)	1,681	21 (1.3%)	3337 47 (1.6%)

(HT: Hypertension)

In the juvenile group of servicemen comprising of 596 workers, policemen and civil servants definite hypertension was found in 9 persons (1.5%) (Table IV).

Table IV: Hypertension in Juvenile In-Service Subjects (16-20 Years)

Factory Workers	*Police Force*	*Civil Servants*
2/127 (1.6%)	6/327 (1.8%)	3/139 (2%)
Total:	9/596 (1.5%)	

In-Service Population

Female Teachers

Factory Workers:
Definite hypertension was present in 23 out of 902 textile factory workers. Although in the age group 51-60 years hypertension was present in 6%, but because of large number of workers available in the age group 21-30 years, overall prevalence rate was low (Table VI).

Table V: Hypertension in the Female Teachers

Age-Group Years	*Sabjects*	*Hypertension Cases*
21-30	141	3 (2%)
31-40	228	8 (3.5%)
41-50	29	2 (6.9%)
Total:	398	13 (3.3%)

Table VI: Hypertension in The Textile Factory Workers (Males)

Age-Group Years	*Subjects*	*Hypertension Cases*
21-30	431	7 (1.6%)
31-40	299	8 (2.7%)
41-50	123	5 (4%)
51-60	49	3 (6%)
Total:	902	23 (2.5%)

Police Force

36 out of 800 (4.5%) police personnel were found to have definite hypertension, and in the age group 41-60 years hypertension was present in 5% (Table VII).

Table VII: Hypertension in The Police Force (Male)

Age-Group Years	*Subjects*	*Hypertension Cases*
21-30	316	11 (3.5%)
31-40	121	5 (4%)
41-50	56	5 (9%)
51-60	307	13 (4%)
Total:	800	36 (4.5%)

Civil Servants
Definite hypertension was found in 48 out of 865 (5.6%) civil servants and in the age group 51-60 years hypertension- was present in 13% (Table VIII).

Table VIII: Hypertension in Civil Servants (Male)

Age-Group Years	*Subjects*	*Hypertension Cases*
21-30	285	11 (4%)
31-40	248	13 (5%)
41-50	273	16 (6%)
51-60	59	8 (13%)
Total:	865	48 (5.6%)

Commandos
Lowest prevalence of hypertension (2%) was found amongst the commandos. However, the number of subjects available was small and most of them were 21-40 years old (Table IX).

Table IX: Hypertension in Commandos (Male)

Age-Group Years	Subjects	Hypertension Cases
21-30	130	2 (1.6%)
31-40	54	1 (1.8%)
41-50	24	1 (4%)
Total:	208	4 (2%)

Discussion

Hypertension has acquired epidemic proportions and this seems to be a price for the civilisation. In the developed countries it has a high prevalence and this is increasing in the developing countries. The prevalence rate for definite hypertension in the United States for all persons 18-74 years old is 18%, and the prevalence in the blacks is twice as high as in the whites (Kagan, 1977). It is estimated that in Europe 4-10% of population as a whole and 15-30% of persons 45-74 years old are suffering from permanent hypertension (Richard, 1976). In Australia, 16% of 26,000 subjects were found to have hypertension (Reader, 1977). In Taipei 11 % of urban population has been found to have hypertension (Tseng, 1977).

Hypertension is the most common cardiovascular condition in most African countries and hypertensive heart failure was the commonest cardiovascular condition constituting 28% all cardiac cases seen in Ibadan (Akinkugbe, 1972). Nationwide data on blood pressure from Japan showed that hypertension was present in 3%, 8%, 16% and 28%, of persons in the third, fourth, fifth and sixth decades of life (Shigematsu, 1977). In India field survey have demonstrated a high prevalence of hypertension in 16% of the population examined and 25% of medical out-patients (Bhattia, 1977).

In a cohort study of randomly selected individuals in a defind community of about 2000 persons in Karachi, hypertension has been found in 10% (Syed et at, 1973) and hypertension was present in 5.5% of all medical admissions in a hospital in the same city (Rab and Shah, 1977). In the Punjab, hypertension prevalence of 4% in the age group 20-40 years and 13% in the age-group above 40 years have been reported in selected institutional population of over 5,000 male subjects (Mirza, 1976). We have found hypertension as the commonest cardiovascular condition encountered in the hospital population, over a 5 years period, constituting 7.5% of all medical cases and 37% of cardiac cases (Ilyas et al., 1977).

In the juvenile group from schools and colleges a low yet definite prevalence of hypertension (1.4%) in

the age group 5-20 years was found, similar results were also available from the juvenile group of 596 professionals (factory workers, police personnel, civil servants) 16-20 years old, in whom 9 cases (1.5%) of definite hypertension were found (Table IV).

Our survey deals with the active in-service adult population and this is not a survey of a total or general population. In the in-service group majority of the persons were young, because of lower retiring age of 55 years, and lower prevalence of hypertension, 5 per 1,000 in the age group 21-60 years, has been found. From a total of 3,137 adults which have been examined 263 (8%) persons were 46-50 years old and 451 (14%) persons were 51-60 years old. However, in the older age-groups hypertension, was detectable in higher prevalence of 6% of factory workers, 9% of police force and 13% of civil servants (Table VI, VII, VIII). In the juvenile group 2 out of 47 (5%) cases of hypertension were known and amongst the adults 27 out of 129 (21%) cases of hypertension were known and were receiving treatment. The population surveyed belonged to Peshawar which is still not a very fast city and is only partially industrialized.

In our series it has been demonstrated that the civil servants had a significantly higher prevalence of hypertension (5 6%) as compared to the textile factory workers (2.4% Table X). Although the civil servants seem to enjoy more power and facilities in this country yet remain more tense and under stress. Amongst the adult groups the commandos showed the lowest prevalence (2%) of hypertension, indicating the influence of physical exercise and fitness in providing protection from hypertension.

In most of the field works for hypertension mercury sphygmomanometers are used and automated sphygmomanometry has also been recently used for screening large groups of people but no single instrument can be reliably used to provide data correlatable to that of mercury sphygmomanometer (Labarthe et al., 1973). We have also reported significant false positive and negative hypertensive results using a semi-automated sphygmomanometer in comparison with a mercury sphygmomanometer (Ilyas et al., 1975).

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