PREVALENCE OF HIGH BLOOD PRESSURE IN RURAL AREAS OF EAST AZARBAIJAN, NORTH WEST IRAN*

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ABSTRACT **Eight villages of East Azarbaijan were surveyed in the Summer of 1972 for the prevalence of hypertension.**

Three hundred seventy five men and women aged 40 - 60 years were examined in this survey and it was found that 16.6% of women and 6.7% of men are hypertensive. The highest rate occurs in women 51 - 60 years of age who have a prevalence rate of 22.2%. The figures indicate that even now hypertension is in important health problem of this area.

Hypertension is a significant cause of mortality and morbidity in industrialized countries and probably also in developing countries. For example statistics from the United States show that at least 15 million American adults are afflicted by hypertension and that in 1962, death rates for hypertensive heart disease had been 19.1 per 100,000 in white males, 20.4 in the white females, 72.8 in non-white males and 75.3 in non-white females (2). It should be remembered that hypertension mortality is always under-estimated, the death being assigned to other causes.

Some authors in the United States believe that one-fourth of the deaths after 50 are related to hypertension in one way

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or another.

In Iran, disease pattern is changing. Infectious and parasitic diseases are coming more and more under control, the crude mortality rate is declining, mostly because of reduction in infant mortality, and thus the population is going toward older ages, producing higher rates of chronic degenerative diseases including degenerative cardio-vascular disorders.

Most practitioners working in Iran are aware of the importance of cardio-vascular diseases as one of the main causes of death and morbidity in the larger cities. This is also supported by all existing data on mortality (5) and morbidity (3).

So far, there has been no report of population studies of degenerative cardio-vascular diseases in this country. Therefore, the Institute of Public Health Research decided to start some cross-sectional surveys to determine the prevalence of various types of these disorders in different parts of the country. Two health surveys were undertaken, one in the Rudsar area in the North in 1971 and one in the West Azarbaijan in the North-West in 1972. Some information was collected along with the information pertaining to other health problems. The result of these studies will be analyzed and reported later. The present paper shows the results of blood pressure readings in a survey especially arranged to determine the prevalence of cardio-vascular diseases in rural areas of East Azarbaijan. This study was carried out in the Summer of 1972.

METHODS OF STUDY

It was decided to include only the 40-60 year age group of the population in this study. We used the method of multistage random sampling and in this way we selected 8 villages from 4 Dehestans from the whole province of East Azarbaijan. The analysis of the population structure of these 8 villages has been reported elsewhere (1). The entire male and female population, 40-60 year of age, was examined. Because of the difficulties of obtaining the correct age (1) we could not limit ourselves to 40-59 year.

Each individual was interviewed and a questionnaire asking information about socio-economic status, occupation, education, number of children, and many other things, was filled and then height, weight and blood pressure were measured. Blood pressure was measured twice (with a one minute interval) in sitting position. We used a spring sphygmanometer (Erka, made in Germany) for measurement. Because of the bad conditions of the roads and the possibility of breakage we did not use mercury sphygnanometers. Diastolic blood pressure was determined according to diastolic fifth-phase level, that is, when the sounds

disappeared. The readings were recorded to the lowest 2mm Hg.

The figures of the first reading have been used for analysis because it is believed that this figure better reveals the cases of labile blood pressure in whom established hypertension will be more frequently encountered in the future. At the end, a 12-lead ECG was taken from each individual, the result of which will appear in a separate paper.

There were practically no refusals except in the case of a few women who were afraid of their absent husbands, but a considerable number of eligible persons, especially men, were absent at the time of the study, being on trips to towns or cities.

RESULTS Table 1 shows the population of the 8 localities and number of persons examined in each locality (the location of localities may be seen on the map).* It is seen that altogether, 375 people were examined, 177 males and 198 females. Table 2 gives the age and sex distribution of 375 examined persons, showing that 77.9% of the examined persons are in the 40-50 year age group and only 22.1% in the 51-60 group.

Table 3 and Fig. 1 show the frequency distribution of systolic blood pressure in each sex. Mean SBP is 130.5mm in women (σ =24.3mm) and 121.9mm in men (σ =19.6mm). Table 4 and Fig. 2 show the frequency distribution of diastolic blood pressure. Mean DBP is 75.55mm in women (σ =14.56mm) and 71.44mm in men (σ =12.9mm).

All of this data show blood pressure tends to be a little higher in women in this age group.

Table 5 shows the prevalence of hypertension by age and sex For definition, we have used the values and cut — points recommended by the Expert Committee of the World Health Organization in 1959 (6) to differentiate three blood pressure group:

A. systolic blood pressure below 140mmHg and disastolic diastolic blood pressure below 90mmHg., both below= normotensive;

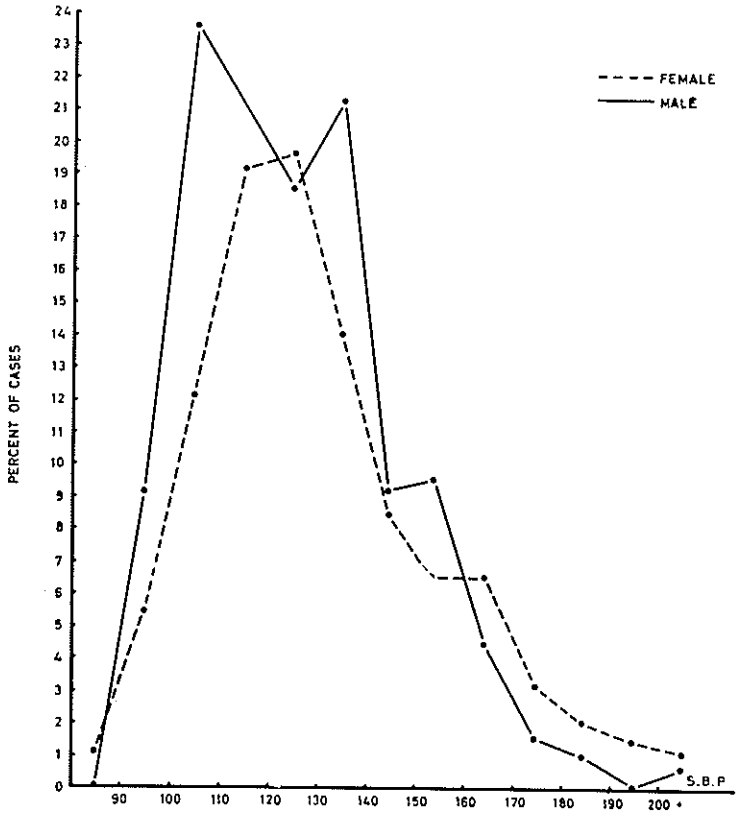
B. systolic blood pressure 160mmHg. or more or diastolic blood pressure 95mmHg. or more, or both above these levels= hypertensives;

C. systolic blood pressure less than 160mmHg. and diastolic blood pressure less than 95 but not simultaneously below 140mmHg. Systolic and 90mmHg. diastolic=borderline.

It is seen in the table that the prevalence of hypertension is higher in females as compared with males (16.6% and 6.7% respectively), the difference being statistically significant ($P < 0.01$).

FIG. No. 1

SYSTOLIC BLOOD PRESSURE IN 177 MALE AND 198 FEMALE STUDIED IN RURAL AREAS OF AZERBAIJAN, JUNE - JULY 1972



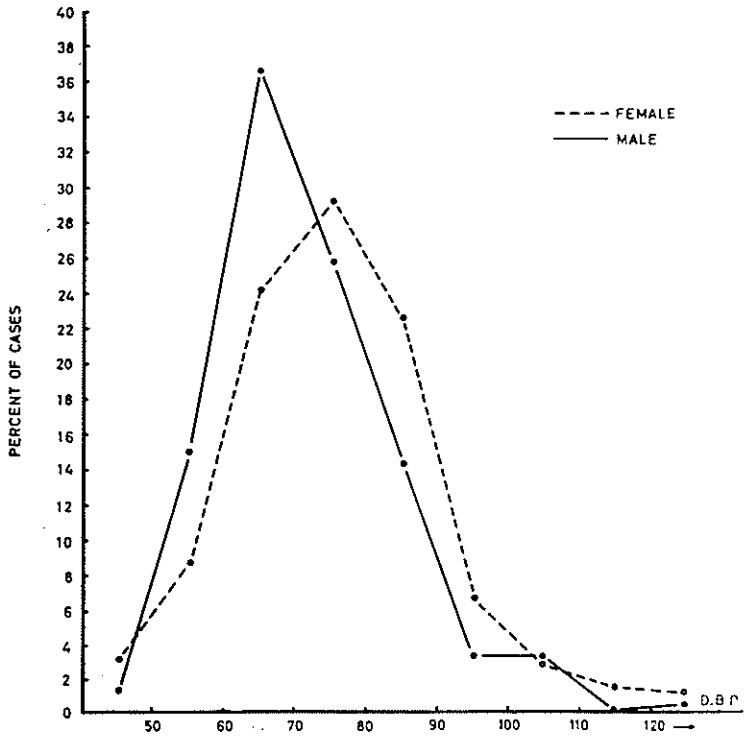
It is also seen that the prevalence of hypertension is higher in the 51-60 age group as compared with 40-50, but the difference is not statistically significant perhaps because of the low number of examined persons in the older age group. The highest rate occurs in women aged 51-60 who show a prevalence rate of 22.2%.

DISCUSSION

Studies in different areas of the world have shown that in traditional stable areas, which include most of the rural areas of developing countries, high blood pressure is relatively uncommon and in many instances does not increase with age(4). Our figures from the rural areas of East Azarbaijan show that hypertension is by no means a rare condition in this part of the country.

FIG. No. 2

DIASTOLIC BLOOD PRESSURE IN 177 MALE AND 198 FEMALE STUDIED IN RURAL AREAS OF AZERBAIJAN, JUNE - JULY 1972



The percent of hypertensive women is almost similar to the white population of the United States (2), although the figure for men is lower. This indicates that hypertension is even now an important health problem in this area and will become more so in the future. Comparison with figures from other parts of the country will allow us to look carefully for the causes of high blood pressure in the population of this area.

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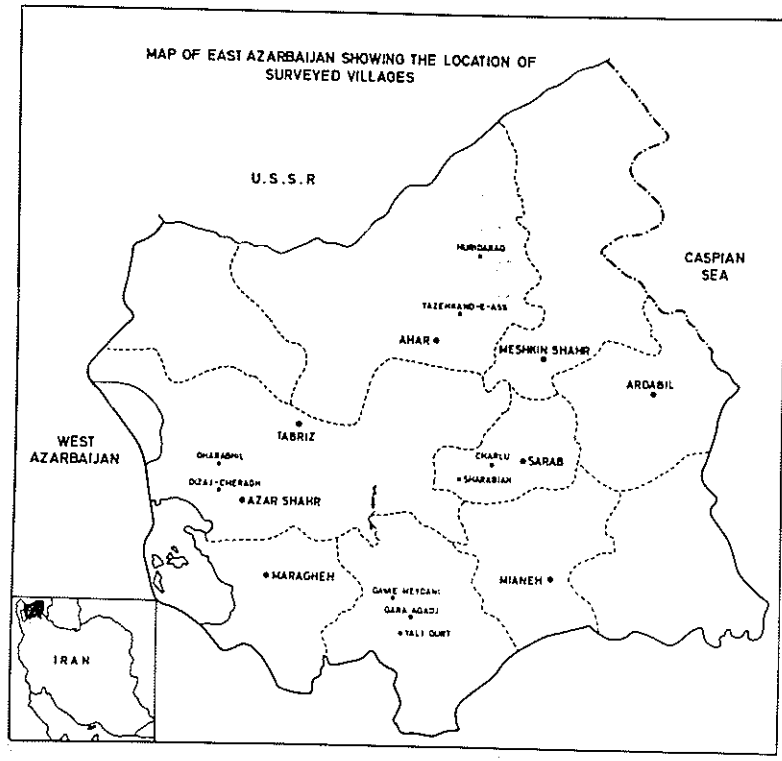

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Table 1

List of villages, population and number of persons examined in each village, East Azarbaijan, June-July 1972

Name of village	Population	Persons examined		
		M	F	Both sexes
Davamaydani	336	11	13	24
Dizadj-Cheragh	268	15	14	29
Asskand	146	11	10	21
Huridaragh	501	22	36	58
Sharabian	937	58	57	115
Gharaghil	646	36	35	71
Yaligurt	388	16	21	37
Charlu	235	8	12	20
All villages	3457	177	198	375

Table 2

Distribution of 375 persons examined in East Azarbaijan, by sex and age, June - July 1972

Sex / Age group	M		F		Total	
	No.	%	No.	%	No.	%
40-50	139	78.6	153	77.3	292	77.9
51-60	38	21.4	45	22.7	83	22.1
Total	177	100	198	100	375	100

Table 3

Systolic Blood Pressure in 177 males and 198 females in East Azarbaijan, June-July 1972

Systolic blood pressure	F		M		Total	
	No.	%	No.	%	No.	%
80-89	2	1.01	0	0	2	0.53
90-99	11	5.5	16	9.03	27	7.2
100-109	24	12.1	42	23.7	66	17.6
110-119	38	19.2	33	18.6	71	18.9
120-129	39	19.6	38	21.4	77	20.5
130-139	28	14.1	16	9.03	44	11.7
140-149	17	8.5	17	9.6	34	9.06
150-159	12	6.06	8	4.5	20	5.3
160-169	12	6.06	3	1.7	15	4
170-179	6	3.03	2	1.1	8	2.13
180-189	4	2.02	1	0.57	5	1.33
190-199	3	1.5	0	0	3	0.8
200+	2	1.01	1	0.57	3	0.8
Total No.	198	100	177	100	375	100

Table 4

Diastolic Blood pressure in 177 males and 198 females in East Azarbaijan, June-July 1972

Diastolic blood pressure	F		M		Total	
	No.	%	No.	%	No.	%
40-49	6	3.03	2	1.1	8	2.1
50-59	17	8.5	26	14.9	42	11.4
60-69	48	24.2	65	36.6	113	30.1
70-79	58	29.2	46	25.9	104	27.7
80-89	45	22.7	25	14.1	70	18.6
90-94	7	3.5	3	1.6	10	2.6
95-99	6	3.03	3	1.6	9	2.4
100-109	6	3.03	6	3.3	12	3.2
110-119	3	1.5	0	0	3	0.8
120-129	2	1.01	1	0.57	3	0.8
Total	198	100	177	100	375	100

Table 5

Prevalence of hypertension by age and sex in rural areas of East Azarbaijan, June - July 1972

Sex	Age group	No. examined	Normotensive		Bordertine		Hypertensive	
			No.	%	No.	%	No.	%
F	40-50	153	115	75.1	15	9.18	23	15.1
	51-60	45	23	51.1	12	26.6	10	22.2
	Total	198	138	69.6	27	13.6	33	16.6
M	40-50	139	115	82.7	15	10.7	9	6.5
	51-60	38	28	73.6	7	18.6	3	7.8
	Total	177	143	80.7	22	12.8	12	6.7
Both Sexes		375	283	74.9	49	13.1	45	12