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An appraisal of hypertensive patients care in primary health centres in Riyadh region, Saudi Arabia

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Introduction: Hypertension is a risk factor for several serious health problems such as stroke and myocardial infarction [1–3].

Previous attempts to define the magnitude of the hypertension problem in Saudi Arabia have been scattered and confined to selected population samples such as patients attending hospitals [4]. The only community-based study conducted in the Riyadh region showed a prevalence of 2.7% [5]. A preliminary finding from a recent nutritional survey of the whole of Saudi Arabia was that 6% had systolic blood pressure ≥ 160 mm Hg and 5.7% had diastolic blood pressure ≥ 95 mm Hg [6]. A screening study of 50–60 year old Saudis attending primary care centres in Madinah showed a prevalence of 10% [7].

Early detection and proper control of hypertension can delay the onset of complications and possibly prevent some of them [8]. To achieve these goals, Saudi Arabia has adopted the strategy of health for all by the year 2000 through primary health care (PHC) with the management of chronic diseases as one of its main elements [9, 10].

We are not aware of any local evaluation of the care provided to hypertensive patients. The present study was designed to determine the volume of hypertensive patients registered through primary health care centres and to assess their efficiency in delivering hypertension care.

Subjects and methods: Riyadh region, with a population of 2.11 million inhabitants, has 268 health centres. During the implementation of primary health care in 1984 the population was surveyed by health centre workers, who completed Family Health Records (FHR).

For the present study, the city of Riyadh was divided into five sections: north, south, east, west and central. These contained about equal numbers of health centres. Three were randomly selected from each section to make a total of 15 representing various socioeconomic classes in the city. For rural areas 15 health centres were randomly selected. A total of 30 centres (11.2%) from Riyadh region were, therefore, surveyed. The patients were entered into the health centres chronic disease register [11] as hypertensive if they were known to suffer from hypertension, were on antihypertensive medication or were found to have high blood pressure (BP) during the initial checkup. Hypertension was defined as a systolic BP of 140 mm Hg or more and a diastolic pressure of 90 mm Hg or more.

Data forms to ascertain sociodemographic characteristics of patients, clinical features, health centre profile and health care resources available to such patients were sent to the participating health centres. Primary care physicians working in these centres completed the forms from the hypertension register. It took two months (October–November 1993) to complete the data forms for all the patients in the registers. Body mass index (BMI) [12] was calculated for every patient according to the formula weight (kg)/height $(m)^2$. The completed data forms were entered into PC computer, and SPSS PC software [13] was used for statistical analysis. The Chi square test was used where appropriate.

Results: 1,167 patients were registered as hypertensives in the 30 health centres selected. The total population surveyed in their catchment areas comprised 207,541 individuals. The percent rate of hypertension was, therefore, 0.6% (0.5% in urban and 0.8% in rural areas). There was nothing in the health records to indicate how many BP recordings were taken before the diagnosis. Furthermore, it is not clear whether WHO guidelines [14] were observed during BP measurements. Health centres have no clear-cut policy on screening to detect hypertensive patients who develop hypertension after the initial check-up.

Facilities for doing complete blood counts, urine microscopy and urine dipstick were available in 63.3% of the health centres. 46.7% of the urban and 60% of the rural health centres adopted a policy of repeat prescription every 2 weeks. However, 53.3% of urban and 40% of rural health centres preferred to follow-up their hypertensive patients every 4 weeks.

The sociodemographic characteristics of hypertensive patients showed that those below 35 years represented 5.4% of the total while 82.1% were between the ages of 36 and 65 years. Elderly patients ≥ 65 years represented 12.5% of the total. Most patients were Saudis (85.2%), females (66.3%), married (86.7%) and illiterate (73.7%).

34.3% of the patients had both hypertension and diabetes. A family history of hypertension was positive in 25.2%. Attendances of 6 times or more at the health centres were noted in 63.1% of patients (Table 1). Of all the hypertensives, 85.3% had a BMI ≥ 25 kg m^{-2} and 51.2% ≥ 30 kg m^{-2}. A urine dipstick was positive for proteinuria in 6.1% and the test was not performed in 17.1%. 69.7% of the patients were not formally referred to a hospital.

Hospital admission was recorded in only 5.1% of patients. 30.5% of patients were compliant and 21.3% non-compliant. However, 48.2% of records did not have information regarding compliance. Health records were deficient in important information such as smoking history and cardiovascular risk factors.

Of all the hypertensive patients, 64.8% were on methyldopa, propranolol or atenolol. It is not clear how patients were managed – for example, when therapy was started and whether non-pharmacological approaches such as diet, reduction of weight were tried and reinforced.

More female patients than males attended the health centres. They were referred to hospitals to a larger extent and their overall diastolic BP was better controlled. A diastolic BP of 95 mm Hg and above was recorded in 31.9% of females as compared with 40.1% of males. The overall

Table 1: Effect of age on diagnosis, control, attendance and referral.

		Age in years		
	n (1,167)	< 35 (63)	35–65 (958)	> 65 (146)
Diagnosis				
Hypertension only	767	48 (76.2)	634 (66.2)	85 (58.2)
Hypertension+diabetes	400	15 (23.8)	324 (33.8)	61 (41.8)
Systolic BP (mm Hg)				
< 145	498	41 (65.1)	408 (42.6)	49 (33.6)
145–159	406	21 (33.3)	341 (35.6)	41 (28.0)
≥ 160	263	1 (1.6)	209 (21.8)	53 (36.3)
Diastolic BP (mm Hg)				
< 95	762	41 (65.1)	619 (64.6)	102 (69.9)
95–105	337	20 (31.7)	282 (29.4)	35 (23.9)
106–115	56	2 (4.8)	47 (4.9)	7 (4.8)
>; 115	12	0 (0.0)	10 (1.0)	2 (1.4)
Attendance at HC				
Nil	145	6 (9.5)	122 (12.7)	17 (11.6)
Two	131	11 (17.5)	99 (10.3)	21 (14.4)
Three	79	7 (11.1)	58 (6.1)	14 (9.6)
Six	212	14 (22.2)	177 (18.5)	21 (14.4)
Twelve	286	13 (20.6)	255 (26.6)	18 (12.3)
> 12	314	12 (19.0)	247 (25.8)	55 (37.7)
Referral				
Nil	813	48 (76.2)	661 (68.9)	104 (71.2)
Once	182	7 (11.1)	154 (16.1)	21 (14.4)
Twice	106	6 (9.5)	87 (9.1)	13 (8.9)
> 2	66	2 (3.2)	56 (5.8)	8 (5.5)

mean systolic and diastolic BPs were 152 mm Hg and 93 mm Hg respectively (Table 2).

More rural than urban patients attended their health centres ($p < 0.01$). Referrals to specialists exceeded those of urban patients. However, their overall BP control was the same (Table 3).

Compliance was better among younger male patients with hypertension only and living in urban areas ($p < 0.01$) as compared with other groups (Table 4).

Of all the patients, 22.5% showed a systolic blood pressure of 160 mm Hg or more. 34.7% of patients had a diastolic BP of 95 mm Hg or more. Control was better in patients having hypertension and other chronic diseases such as diabetes mellitus than in patients with hypertension alone ($p < 0.04$ in the case of systolic and $p < 0.01$ in the case of diastolic blood pressure) (Table 5).

Table 2: Patients' gender by control, attendance and referral rate at health centres.

	Male (393)	Female (774)
Systolic BP (mm Hg)		
< 145	177 (45.0)	321 (41.5)
145–159	130 (33.1)	276 (35.7)
≥ 160	86 (21.9)	177 (22.9)
Diastolic BP (mm Hg)		
< 95	235 (59.8)	527 (68.1)
95–105	131 (33.3)	206 (26.6)
106–115	21 (5.3)	35 (4.5)
> 115	6 (1.5)	6 (0.8)
Attendance at HC		
0	52 (13.2)	93 (12.0)
2	58 (14.8)	73 (9.4)
3	25 (6.4)	54 (6.9)
6	70 (17.8)	142 (18.3)
12	102 (25.9)	202 (26.1)
> 12	86 (21.9)	210 (27.1)
Referral		
0	279 (70.9)	534 (68.9)
1	51 (12.9)	131 (16.9)
2	34 (8.7)	72 (9.3)
> 2	29 (7.4)	37 (4.8)

Table 3: Urban/rural by control, attendance and referral.

	Urban (844)	Rural (323)
Systolic BP (mm Hg)		
< 145	372 (44.1)	126 (39.0)
145–159	285 (33.8)	121 (37.5)
≥ 160	187 (22.2)	76 (23.5)
Diastolic BP (mm Hg)		
< 95	551 (65.3)	211 (65.3)
95–105	248 (29.4)	89 (27.6)
105–115	38 (4.5)	18 (5.6)
> 115	7 (0.8)	5 (1.5)
Attendance at HC		
0	112 (13.3)	33 (10.2)
2	119 (14.1)	12 (3.7)
3	71 (8.4)	8 (2.5)
6	186 (22.0)	26 (8.0)
12	221 (26.2)	83 (25.7)
> 12	135 (15.9)	161 (49.8)
Referral		
0	615 (72.9)	198 (61.3)
1	123 (14.6)	59 (18.3)
2	64 (7.6)	42 (13.0)
> 2	42 (4.9)	24 (7.4)

Discussion: The lack of a well-defined screening programme or case finding policy may account for the variations in prevalence of hypertension between these health centre studies as compared with community-based studies done in Saudi Arabia [6]. Study of blood pressure in children has not been a matter of concern until recently. In addition, health centres did not have the appropriate blood pressure cuff for children [15]. Making blood pressure measurement part of every health check, whether at school or at work, when consulting a doctor or nurse, inside or outside hospital, should help to reveal hypertension much earlier in a high risk population.

Table 4: Compliance by residence, age, sex and diagnosis.

	n	Complaint (356)	No complaint (248)	Not available (563)
Residence				
Urban	844	266 (31.5)	133 (15.8)	445 (52.7)
Rural	323	90 (27.9)	115 (35.6)	118 (36.5)
Age				
< 35	63	19 (30.2)	13 (20.6)	31 (49.2)
35–65	958	303 (31.6)	211 (22.0)	444 (46.3)
> 65	146	34 (23.3)	24 (16.4)	88 (60.2)
Sex				
Male	393	145 (36.9)	74 (18.8)	174 (44.3)
Female	774	211 (27.3)	174 (22.5)	389 (50.3)
Diagnosis				
Hypertension only	767	244 (31.8)	173 (22.6)	350 (45.6)
Hypertension + other diseases	400	112 (28.0)	75 (18.8)	213 (53.3)

Table 5: Diagnosis by systolic/diastolic BP control.

	Diagnosis				
	Hypertension (767)	(%)	Hypertension other chronic disease *e.g.* diabetes (400)	(%)	Total 1,167
Systolic BP (mm Hg)					
< 145	311	(40.5)	187	(46.8)	498
145–159	268	(34.9)	138	(34.5)	406
≥ 160	188	(24.5)	75	(18.8)	263
Diastolic BP (mm Hg)					
< 95	463	(60.4)	299	(74.8)	762
95–105	250	(32.6)	87	(21.8)	337
106–115	45	(5.9)	11	(2.8)	56
> 115	9	(1.1)	3	(0.7)	12

Table 6: Patient compliance by management and blood pressure control (n = 1,167).

	Compliance			
	Complaint	No complaint	No data	Total
Medications				
Not regular	50	32	102	184
1	277 (31.8)	182 (20.9)	411 (47.3)	870
2	29 (27.4)	30 (28.3)	47 (44.3)	106
3	0 (0.0)	4 (57.1)	3 (42.9)	7
Referrals				
0	218 (26.8)	149 (18.4)	446 (54.8)	813
1	62 (34.1)	44 (24.1)	76 (41.8)	182
2	41 (38.7)	31 (29.2)	34 (32.1)	106
3	35 (53.0)	24 (36.4)	7 (10.6)	66
Admissions				
0	336 (30.4)	226 (20.4)	445 (40.2)	107
1	18 (37.5)	16 (33.3)	14 (29.2)	48
2	2 (16.7)	6 (50.0)	4 (33.3)	12
Systolic BP (mm Hg)				
< 145	146 (29.3)	91 (18.3)	261 (52.4)	498
145–159	146 (35.9)	92 (22.7)	168 (41.4)	406
≥ 160	64 (24.3)	65 (24.7)	134 (50.9)	263
Diastolic BP (mm Hg)				
< 95	252 (33.1)	139 (18.2)	371 (48.7)	762
95–105	92 (27.3)	90 (26.7)	155 (45.9)	337
106–115	11 (19.6)	16 (28.6)	29 (51.8)	56
> 115	1 (8.3)	3 (25.0)	8 (66.7)	12

This is expected to have an impact on the preventive, curative and promotive aspects of health of the public. However, resources are limited. So to avoid over-using available health care resources, criteria for investigation and/or the use of antihypertension medication may need to be set with regard to blood pressure level and the medical condition of the patients.

Lack of resources is reflected in the high referral and admission rate. The patients who did not attend for follow-up visits may still be seen in other health facilities such as

private clinics. This is particularly true in urban health centres and may explain why they have a lower prevalence of hypertension than rural ones. The rural population attended their health centres more often and were referred to hospital more frequently than urban patients. This finding may be explained by the fact that PHC services may be the only free health facilities available to them.

However, health centres have an artificial overload created by a policy which dictates that all hypertensive patients should see their doctors every two weeks for repeat prescriptions. There is very little advantage in seeing all patients at such short intervals. Three months or perhaps four months follow-up are sufficient for well controlled patients.

Furthermore, the health centre nurse and doctor can see patients alternately if the blood pressure is under control. These suggestions may reduce the overcrowding of health centres and improve the problem of short consultation time [16].

Levels of control of hypertension were sub-optimal. The control was better in the case of female patients. This may be attributed to the fact that females attend PHCs more frequently than males for reasons such as illness, pregnancy-related problems and when accompanying their children.

Only about a third of the patients were considered by their doctors as compliant. The rest were either non-compliant or the doctors did not enquire about this important aspect of patient management.

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