

HYPERTENSION CARE IN AL ASYAH PRIMARY HEALTH CARE CENTER, AL QASSIM, SAUDI ARABIA: AN AUDIT OF STRUCTURE, PROCESS, AND OUTCOME

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هدف الدراسة : تهدف هذه الدراسة إلى تقييم جودة رعاية مرضى ارتفاع ضغط الدم بمركز الأسياح للرعاية الصحية الأولية بالقصيم من خلال التدقيق في البنية والإجراءات والمردود لرعاية مرضى ارتفاع ضغط الدم.
طريقة الدراسة : تم القيام بهذه الدراسة بمركز الأسياح للرعاية الصحية الأولية بمنطقة القصيم وذلك بمراجعة ملفات جميع مرضى الضغط المسجلين بالمركز وتم تقييم البنية والإجراءات التي تمت لهؤلاء المرضى وذلك باستخدام النظام النقطة المبني على توصيات منظمة الصحة العالمية ودليل متابعة مرضى الأمراض المزمنة والجودة النوعية والذي يعطى نقطة واحدة لأي إجراء تم عمله أو صفراً في حالة عدم القيام بهذا الإجراء، وبالنسبة لمؤشرات المردود فقد تم تقييمها معتمدين على التقرير السادس لتشخيص وعلاج ارتفاع ضغط الدم .

نتائج الدراسة : تم مراجعة ملفات مرضى ارتفاع ضغط الدم وعددهم 201 ملفاً وهم إجمالي المسجلين بالمركز وكانت نسبة انتشار الضغط بين السكان في مدينة الأسياح في سن البلوغ وما بعده 7.4 % ولوحظ أن هذه النسبة تزداد مع تقدم العمر. بلغت نسبة السعوديين في هذه الدراسة حوالي 95 % منهم ومتوسط أعمار المرضى 59 سنة بينما كان متوسط فترة مرضى الضغط حوالي 8 سنوات ، وبالنسبة لمؤشرات مردود الخدمة وجدنا أن هناك حوالي 80% من المرضى كان التحكم في ارتفاع الضغط لديهم جيداً مع العلاج وكان معظم المرضى وزنهم فوق المعدل الطبيعي أو لديهم سمنة ووجدنا أن 45.3% من إجمالي المرضى يعانون على الأقل من أحد مضاعفات مرض الضغط حيث أن 19.9 % يعانون من أمراض قصور شرايين القلب و18.4% يعانون من تضخم بعضلة القلب و 2.5% يعانون من جلطة دماغية و2% يعانون من جلطة بالقلب .

الخلاصة : أظهرت هذه الدراسة أن جميع الموارد الضرورية اللازمة لرعاية مرضى ضغط الدم المرتفع متوفرة وأن نتائج تقييم مؤشرات الإجراءات والمردود أظهرت الحاجة إلى تحسين نظام الإحالة والحاجة إلى برنامج جيد ومتواصل للتثقيف الصحي للمرضى وأسرهم والمجتمع ككل لاتباع سلوك صحي أكثر اعتدالاً.

الكلمات المرجعية: رعاية مرضى ارتفاع ضغط الدم، التدقيق، المردود، القصيم، الرعاية الصحية الأولية.

Objectives: The objective of this study is to assess the quality of hypertension care in Al-Asyah primary health cares (PHC) center, Al Qassim Region, Saudi Arabia through an auditing of structure, process, and outcome.

Subjects and methods: All files of registered hypertensive patients in the PHC center were reviewed as recommended by WHO, National Quality Assurance protocol, protocol of management of hypertension and criteria in the Sixth report of Joint National Committee on detection, evaluation and treatment of high blood pressure (JNCVI), to evaluate the structure, process, and outcome of hypertension care.

Result: All hypertensive patients registered in Al Asyah PHC center (201 patients) were included in this study. The prevalence of HTN among adults (≥ 15 years) was 7.4% and increased with age. Patients were mostly Saudi (94.5%) with a mean age of 58.6 ± 13.9 years. Most of the patients were diagnosed as essential HTN (98.5%) at Al Asyah PHC center (87.1%). The mean duration of the HTN was 7.7 years, and 48.8% had a family history of HTN and 35.3% had diabetes mellitus. Most patients were obese or overweight (53.7% and 31.3% respectively), blood pressure of 79.6% of the patients was well controlled, and 45.3% of these patients had at least one complication. Ischemic heart disease, left ventricular hypertrophy, stroke, and myocardial infarction were the most common recorded complications.

Conclusion: This study proves that all essential resources needed for hypertension care are available, but the results of process and outcome indicators show the need for the improvement of

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the referral system as well as good continuous constant health education programs to encourage the patients, their families and the community to observe more healthy lifestyles.

Key Words: Hypertension care, Audit process, outcome, Qassim, PHC.

INTRODUCTION

Hypertension (HTN), a major public health problem world wide, is associated with high morbidity and mortality rates. The majority of cases are asymptomatic and, therefore, go unrecognized and untreated, leading to a high risk of coronary artery disease, heart failure, renal failure and cerebrovascular disease.¹⁻⁴ The true prevalence of HTN in Saudi Arabia is unknown but according to the studies carried out in the Kingdom, HTN seems to affect about 10% of the Saudi population.⁵⁻⁷ In another study, the prevalence of HTN was found to be 30 % among people aged 35 years and above attending PHC centers in the Al Qassim Region.⁸ The high prevalence of HTN in Saudi Arabia calls for its management in primary health care (PHC) centers. Firstly, the follow up procedure for hypertensive patients does not require any sophisticated techniques. Secondly, in the more relaxed atmosphere of the PHC centers, physicians have more time for the patients than in the busy secondary and tertiary care system. Thus, it has been shown that uncontrolled HTN may be associated with the lack of attention of a PHC care physician to the patient.⁹

The aim of this study is to assess the quality of hypertension care in AL Asyah primary health care (PHC) center in the Al Qassim region, Saudi Arabia, through the auditing of structure, process, and outcome of hypertension care.

SUBJECT AND METHODS

AL Asyah, is small town in the Qassim region served by Al Asyah primary health care (PHC) Center. It is the only PHC in Al Asyah. It serves approximately 4628 inhabitants (4414 Saudi and 214 non Saudi). One of the clinics in this PHC center was selected and equipped as a chronic disease clinic and started operating in October 1999. This mini-clinic cares for diabetic, hypertensive and asthmatic patients. Indicators for structures, process and outcome of hypertension care were assessed using the scoring system based on the recommendation by WHO, Quality Assurance protocol, protocol of management of chronic diseases and the sixth report of joint National committee on detection, evaluation and treatment of high blood pressure (JNCVI). Data

was collected by the authors from July to September 2003. All files of hypertensive patients were reviewed using a two-part pre-designed form. Part I included the degree of availability of all essential resources for care of HTN (man power, chronic diseases register, files, ECG, blood pressure apparatus, medications, ophthalmoscope, stethoscope, weighing scale, health education materials, protocol for management of HTN, appointment system). Part II included the process and outcome measures. The processes included were: patient characteristics such as age, sex, nationality, marital status, education, and occupation. Besides relevant history such as duration, type, severity of HTN, type of treatment, referral to the hospital, there were also risk factors as diabetes, family history of HTN, smoking, hypercholesterolemia, hypertriglyceridemia. Information on regular health measurements such as blood pressure, body mass index, urine dipstick, fundus examination, creatinine, cholesterol and triglyceride levels, ECG and chest X-ray was elicited as also were health outcome measures including the degree of patient control, and creatinine level. Information on the presence of such complications as left ventricular hypertrophy, ischemic heart disease, myocardial infarction, and stroke was asked for.

RESULTS

A total of 201 files of hypertensive patients registered in Al Asyah PHC center were included in this study. The prevalence of hypertension among adults of 15 years and above was 7.4%. Table I shows the demographic characteristics of the studied group, 94.5% of whom were mostly Saudi with a mean age of 58.6 ± 13.9 years. Most of the patients were diagnosed as essential HTN (98.5%) and 87.1% of these were diagnosed at the Al Asyah PHC center. The mean duration of the HTN was 7.7 years; 48.8% had a family history of HTN and 35.3% had diabetes mellitus.

Table 2 shows that the prevalence of hypertension increased with age. Among males and females above 65 years, it was 55.4% and 57.1% respectively.

Table 3 shows that 98.5% of the patients were diagnosed as essential HTN, and most (93.5%)

Table 1: Demographic characteristics of hypertensive patients in Al-Asyah PHC Center 2003

Characteristics	No. (%)
Age:	
< 15	1 (0.5)
15 - <45	29 (14.4)
45 - <65	99 (49.3)
>65	72 (35.8)
Sex:	
Male	97 (48.3)
Female	104 (51.7)
Marital status:	
Single	37 (18.4)
Married	164 (81.6)
Educational status:	
Illiterate	125 (62.6)
Educated	76 (37.8)
Nationality:	
Saudi	199 (94.5)
Non-Saudi	11 (5.5)
Occupation:	
Official, teacher, salesman	25 (12.5)
Police/Army	8 (4.0)
Farmer	15 (7.5)
Housewife	106 (52.7)
Unemployed	47 (23.4)
Family history:	
Positive family history	98 (48.8)
Negative family history	25 (12.4)
Not recorded	78 (38.8)
Smoking habit:	
Smoker	21 (10.4)
Non-smoker	158 (78.6)
Not recorded	22 (10.9)
Diabetes:	
Yes	71 (35.3)
No	130 (64.7)

Table 2: Prevalence of hypertension by sex and age group in Al Asyah PHC Center 2003

Age group (in years)	Male No. (%)	Female No. (%)	Total No. (%)
15-<45	13 (1.2)	16 (1.4)	29 (1.3)
45 - <65	48 (27.0)	52 (23.5)	100 (25.1)
≥65	36 (55.4)	36 (57.1)	72 (56.3)

were Grade I HTN. Most (87.1%) were diagnosed at the PHC center. For 41.8% of the patients, the duration of hypertension since diagnosis was <5 years, for 25.9% it was 5 – 10 years and for 32.3% >10 years. The mean duration of HTN was 7.7±5.8years, mean systolic blood pressure was 139.7 mmHg and mean diastolic blood pressure was 82.4 mmHg. Nine patients (4.5%) managed by diet plus exercises only and 192 (95.5%) needed

Table 3: Disease characteristics in Al Asyah PHC Center 2003

Characteristics	No. (%)
Duration of HTN (years):	
<5	84 (41.8)
5 – 10	52 (25.9)
>10	65 (32.3)
Place of diagnosis:	
Hospital	26 (12.9)
PHC	175 (87.1)
Type of HTN:	
Primary	198 (98.5)
Secondary	3 (1.5)
Grading of HTN:	
Grade I	188 (93.5)
Grade II	13 (6.5)
Grade III	-
Place of follow-up:	
PHC	109 (54.2)
Hospital	20 (10.0)
Both	72 (35.8)
Management:	
Diet + exercise	9 (4.5)
Diuretics	4 (2.0)
Diuretics + beta blocker	8 (4.0)
Beta blocker	55 (27.4)
ACE inhibitor	60 (29.9)
Ca channel blocker	7 (3.5)
Diuretic + ACE inhibitor	13 (6.5)
Beta blocker + ACE inhibitor	27 (13.4)
Beta blocker + Ca channel blocker	10 (5.0)
ACE inhibitor + Ca channel blocker	4 (2.0)
Others or three drugs regimen	4 (2.0)

Table 4: Process measures completed for hypertension patients in Al-Asyah PHC Center, 2003

Process measure completed	No. (%)
Blood pressure every visit	190 (94.5)
Body weight every visit	196 (97.5)
Fasting blood sugar	201 (100.0)
Annual examination	192 (95.5)
Annual referral to the hospital	187 (93.0)
Urine dipstick for protein	193 (96.0)
Fundus examination	59 (29.4)
Creatinine level	196 (97.5)
Blood urea level	194 (96.5)
Cholesterol level	182 (90.5)
Triglyceride level	118 (58.7)
Chest X-ray	194 (96.5)
Electrocardiogram (ECG)	183 (91.0)
Complete blood count (CBC)	200 (99.5)
Body mass index	201 (100.0)
Health education check list	188 (93.5)

drugs. One hundred nine cases (54.2%) had regular follow up in the PHC center, 72cases (35.8%) had regular follow-ups in both (PHC and hospital).

Table 5: Health outcome measures among hypertensive patients in Al Asyah PHC Center, 2003

Outcome measures	No. (%)
Cholesterol level:	
Acceptable (≤ 240 mg/dl)	102 (50.7)
High (> 240 mg/dl)	80 (39.8)
Not recorded	19 (9.5)
Triglyceride level:	
Acceptable (≤ 250 mg/dl)	100 (49.8)
High (> 250 mg/dl)	18 (9.0)
Not recorded	83 (41.3)
Body mass index:	
Normal (< 25)	30 (14.9)
Overweight ($25 < 30$)	63 (31.3)
Obese (≥ 30)	108 (53.7)
Not recorded	-
Creatinine level:	
Normal (< 1.5 mg/dl)	188 (93.5)
Abnormal (> 1.5 mg/dl)	8 (4.0)
Not recorded	5 (2.5)
Urea:	
Normal (15-40 mg/dl)	186 (92.5)
Abnormal (> 40 mg/dl)	8 (4.0)
Not recorded	7 (3.5)
Electrocardiogram (ECG):	
Normal	127 (63.2)
Abnormal	56 (27.9)
Not done	18 (9.0)
Chest X-ray:	
Normal	157 (78.1)
Abnormal	37 (18.4)
Not done	7 (3.5)
Fundus examination:	
Normal	47 (23.4)
Abnormal	12 (6.0)
Not done	142 (70.6)
Hypertension control:	
Controlled (BP $< 140/90$ mmHg)	160 (79.6)
Not controlled	38 (18.9)
Not recorded	3 (1.5)
Patient compliance to appointment:	
Good (attend clinic every 1-2 months)	192 (95.5)
Fair (attend clinic every 3-6 months)	2 (1.0)
Poor (not attend clinic since 6 months)	7 (3.5)

Table 4 shows the results of the completed process. All the items of the process showed high percentages of coverage, except the examination of the fundus (29.4%).

Table 5 shows the results of health outcome measures. Serum urea and creatinine level were normal in most patients, while serum cholesterol and triglyceride levels were high in 39.8 % and 9.0% respectively. Moreover, most of the patients were obese or overweight (53.7% and 31.3% respectively). ECG, chest X-ray and fundus examination showed variable levels of abnormality.

The patients' compliance to appointment was good (95.5%).

DISCUSSION

Care of hypertensive patients by the primary health care (PHC) team should be appropriate, achievable and relevant. Auditing the structure, process, and outcome of care is extremely important.¹⁰ All essential resources for hypertension care are available in Al Asyah PHC center unlike in the Al-sharif study which found that many essential resources for hypertension care were inadequate at the primary health care centers in the Aseer region.¹¹ In our study, the prevalence of HTN among adult males aged 15 years and over was 7.5% and among females of the same age group was 7.3%. This is higher than the results of the Al Owayyed study (0.6%), the Taffinder study (4.2%) and the Saudi Arabia family health survey (SFHS) which showed a prevalence rate of 4% for males and 7% for females.^{10,12,13} The prevalence of HTN tends to increase with age.¹⁴ In this study, it was found to be 27% in males and 23.5% in females aged 45 -<65 years reaching 55.4% in males and 57.1% in females aged ≥ 65 years. This is in accordance with the results of the Saks study in Estonia which found that the prevalence of HTN among patients aged 65 years and above was 63.2% and was more common among females than males.¹⁵ Also Siddiqui found that the prevalence of HTN was more common in females than males and increased with age.¹⁶ Our results are higher than those of the Al Owayyed study (23%), the Hewart study (26%) and SFHS1996.^{10,13,17} These higher percentages of prevalence of HTN could be due to the fact that only 8.6% of population is aged between 45-<65 years, and 2.7% of the population is aged 65 years and above.

Our study revealed that as in the Al Khaldi study, the data base information, namely demographic and HTN related data was available in all hypertensive patient files giving a mean of 89.4%.¹⁸

Sixty-two point two percent of the patients were illiterate; 51.7% of the patients were females (house wives) and 56.3% were > 65 years old.

This study revealed that all items of the process of HTN care showed a higher percentage of coverage with a mean percentage of 96.7% which was higher than Al -Owayyed study.¹⁰ The mean duration of HTN in this study was 7.7 years. Approximately 98.5% of cases were diagnosed as essential HTN, which is in accordance with the result of Al- Owayyed study finding that 99% of

the patients had essential HTN and 77% had it for less than 10 years¹⁰. Our study showed that 188 cases (93.5%) had Grade I HTN and 13 cases (6.5%) had Grade II HTN. This classification is in consonance with that used in the (JNCVI) report.¹⁹ This figure was higher than what was reported by Al – Owayyed (66.1%) and the Stern studies (27%) on the patients with Stage I HTN.^{10,20} This could be due to the fact that blood pressure measurement was taken only at the start of treatment or could be the result of the use of a different definition of Stage I HTN treatment.

Hypertension is common in diabetics and its treatment is important to prevent cardiovascular complications.²¹ Evidence of raised blood sugar was found in 73 cases (36.3%) and this was lower than the result of the Al-Owayyed study in which 64% of the patients had high blood sugar,¹⁰ but was higher than the result of the Al Humaidi study (30%),²² the Framingham study in which 21% of the patients with hypertension had high blood sugar.²³ Only 10.4% were smokers compared to 14% and 17% in other studies.¹⁰ A family history of HTN is a risk factor of HTN; 48.8% of our samples had a family history of HTN, 12.4% had no family history and for 38.8% there was an unrecorded family history of HTN. This is in accordance with the Al Mustafa study which reported 47.7% of the hypertensive patients with a positive family history of HTN,²⁴ but was higher than the results of the Al Owayyed study in which 18.1% of the hypertensive patients had a family history of HTN and 81.9% had a negative family history of HTN.¹⁰ High cholesterol level was found in about 40% of our sample. This was higher than the results of the Al Owayyed study (32%), Al Humaidi Study (31%),²¹ Framingham's heart study (30%),²³ and Charles et al (15%).²⁵ Obesity is known to be one of the most prevalent nutritional disorder in Saudi Arabia. Our study showed high percentages of overweight and obesity among hypertensive patients (31.3%) and (53.7%) respectively. This in accordance with the previous studies done by Al Turki, El Hazmi, Al Nuaim and Al Humaidi.²⁶⁻²⁹ ECG abnormality was found in 27.9% of the cases; and this is higher than the Al Owayyed study in which there was evidence of abnormal ECG in 8.7% of the patients with HTN.¹⁰ Also there were abnormal chest X-rays in 18.4% of the cases. This again in accordance with the Al Owayyed study which had 20.2% and the Levy D, et al survey in which chest X-rays gave evidence of left ventricular hypertrophy in more than 15-20% of adults with HTN.¹⁰ It was, however, less than what was reported in the

Martinez study in which echocardiography indicated that 32 % of mild hypertensive patients had left ventricular hypertrophy.³⁰ Referral of all hypertensive patients to the hospital for annual follow up in HTN or cardiology clinic is mandatory. In this study, the percentage of annual referral was 93%. In spite of this, the percentage of available data on fundus examination in hypertensive files was (27.6%). This result is in accordance with the results of the Al Owayyed study which showed that fundoscopy was done in 25% of hypertensive patients.¹⁰ Variation between the number of referrals and the availability of fundoscopy report in patient files may be attributed to poor coordination between the hospital and the PHC center. Compliance with follow-up appointments was high in our study (95.5%). This could be the result of the antihypertensive medications being prescribed to the patients from the PHC center or the hospital instead of being given to the patients through the PHC centers only in the Al Qassim region. Our study showed that blood pressure in 79.6% of the hypertensive patients was well controlled, and this was higher than the results of the Al Owayyed study of 55% and the Sterns study of 53%.¹⁰⁻²⁰ Of the patients, 95.5% needed medications, while 4.5% were controlled with diet and exercises only. This agreed with the Al Owayyed study in which 5% of the patients were controlled with diet and exercises.¹⁰ Approximately 45.3% of our hypertensive patients had at least one reported complication. Ischemic heart disease was the most commonly observed complication (19.9%), followed by left ventricular hypertrophy (18.4%), stroke (2.5%), myocardial infarction (2%), nephropathy (1.5%) and retinopathy (0.5%).

CONCLUSION

This study proves that all essential resources needed for hypertension care are available. The results of process and outcome indicators however, show the need to improve the referral system and establish good continuous health education programs to encourage patients, their families and the community to observe more healthy lifestyles.

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