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Improved hypertension control among primary care patients in Jamaica between 1995 and 2013

Michelle A Harris[*1], *Trevor S Ferguson* [2], *J Peter Figueroa* [1]

ABSTRACT

Objective

To compare hypertension control among patients who attended selected public primary care clinics in the South East Region of Jamaica in 2013 and 1995.

Methods

Patient records from six randomly selected health centers in the South East Health Region of Jamaica were audited in 2013 and the data were compared with published findings from a similar study done in 1995. Blood pressure control was defined as BP of less than 140/90 mmHg or less than 130/80 mmHg among those who were also diagnosed with diabetes. The last blood pressure reading recorded in the patient chart was used to assess for hypertension control. The differences in proportions were tested for significance using the chi-square test and the student t test was used for differences in means.

Results

Five hundred patient records were audited in 1995 and 469 in 2013. The median age was 60 and 65 years and males comprised 18% and 35% ($p < 0.001$) of the patients in 1995 and 2013 respectively. More patients had their routine screening tests completed in 2013. Control was achieved among 26.8% (95% CI: 22.7- 30.9%) of patients in 2013, compared with 18.2% (95% CI: 14.6-21.8%) in 1995, $p = 0.002$. Angiotensin converting enzyme inhibitors (61%) were the medications most commonly used by the patients in 2013 while thiazide diuretics (72%) were more frequently used in 1995.

Conclusions

Hypertension control among primary care patients has improved. However, 3 of every 4 patients with hypertension who are prescribed medication are still not controlled. There needs to be closer monitoring of blood pressure control, medication adherence and appropriate treatment intensification as needed, at the primary care clinics.

Keywords: Hypertension, Jamaica, Cardiovascular Disease, Prevention

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[1]Department of Community Health and Psychiatry, Faculty of Medical Sciences, University of the West Indies, Mona Kingston – 7, Jamaica

[2]Caribbean Institute for Health Research, Formerly Tropical Medicine Research Institute, University of the West Indies, Mona Kingston – 7, Jamaica

***Corresponding Author:**
Michelle Harris
Department of Community Health and Psychiatry, Faculty of Medical Sciences, University of the West Indies, Mona Kingston – 7, Jamaica
michelle.harriso6@uwimona.edu.jm

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INTRODUCTION

Cardiovascular diseases such as stroke and myocardial infarction are among the leading causes of death and disability in Jamaica and the wider Caribbean. This has been the case since 1985.[1] Among the modifiable risk factors for these conditions are hypertension, diabetes and obesity. A

21% prevalence of hypertension in the general population 15 to 74 years was reported in the Jamaica Health and Lifestyle survey (JHLS) of 2000-2001.[2] This prevalence increased to 25% in the 2007/2008 survey with equal rates of hypertension among males and females.[2]

Only half of the persons with hypertension were aware of their status and 40% reported being on treatment for it. Of those on treatment, only 41% achieved control of their hypertension. More women (70%) were aware of their hypertension than men (31%) and the women (45%) were also more likely to be controlled than the men (31%).[2]

There have been several studies that looked at the management and control of hypertension among patients who attended primary care clinics in the Caribbean. In 1995, Wilks et.al, reviewed the management of patients who attended primary care clinics at government health centers, at private practitioners' office and at a specialist clinic.[3, 4] Blood pressure was controlled, i.e. less than 140/90 mmHg, among 18% of the patients from the public clinics, 20% from the private and 15% from the specialist clinics.[3] Similar studies were done in Trinidad and Tobago, Barbados and the British Virgin Island [5] and repeated 5 years [6] and 10 years later [7] in Trinidad.

In Barbados hypertension control was achieved among 38% of patients attending public primary care clinics and among 35% of patients in private primary care clinics.[8] Poor levels of control of chronic illnesses have been widely documented [3, 8-10] and have been associated with poor adherence rates.[11] Poor adherence has contributed to the worsening of these conditions and to increased health care costs.[12] The failure to increase medication dosages among visit–adherent patients can also be a contributor to poor control as this was shown to be a strong predictor of sub-optimal control, among a cohort of patients with type 2 diabetes mellitus (T2DM).[13]

In 2013, an assessment was done of the management of patients with hypertension who attended public primary care clinics in the South East Region of Jamaica.[14] This paper will compare the management and the outcomes among patients with hypertension seen in the public primary care clinics in 1995 and in 2013. The clinics were selected from the same region of Jamaica, but were not the same clinics that were assessed in 1995.

METHODS

The 2103 survey was conducted as a part of a cluster randomized controlled trial of an intervention to improve the management of dyslipidemia and other chronic diseases among primary care patients in the South East Health Region of Jamaica. Six health centers were randomly selected and assigned to either the intervention or control group. A health center was included if there were physician services there each day and were excluded if a diabetes intervention was already being conducted there. Medical records of patients 18 years or over, that attended for at least 18 months and that were diagnosed with hypertension, diabetes, dyslipidemia, heart disease or peripheral vascular disease were eligible to be audited. The medical record of every second patient registered to be seen by the physician was included in the audit if it met the inclusion criteria. A baseline audit was first conducted followed by an intervention and a re-audit of the same medical records. The data recorded at re-audit are presented here. The details of the methods used for this study are documented elsewhere.[14,15] The most recent blood pressure reading documented in the patient record was used to assess control. Blood pressure was considered controlled if it was less than 140/90 mmHg or of less than 130/80 in patients with diabetes.

The 1995 study was a part of a study to assess the management of patients who attended primary care clinics at government health centers, at private practitioners' office and at a specialist clinic.[3, 4] There were 500 patients with hypertension selected from the public primary care clinics. Patient records were selected from among patients that attended the clinics over a six-week period. They were included in the audit if the patient was over 30 years old and had attended the clinic for at least one year. Blood pressure was considered controlled if less than 140/90 and based on the value recorded in the patient records. The details of the methods have been published elsewhere.[2]

Statistical methods:
The data were analyzed using Stata 13 statistical software. The differences in proportions were tested for significance using the chi-square test and the student t test was used for differences in means. The effect of age and sex on blood pressure control was assessed using univariate analysis. Logistic regression was done to assess the odds of control of BP by the number of antihypertensive medications prescribed.

Ethical approval to conduct the RCT was received from the University of the West Indies ethical review board and the study was registered at Clinicaltrials.gov with identifier: NCT02438943.

RESULTS

A total of 500 charts of patients with hypertension were audited in 1995 and 469 were audited in 2013. The median age of the patients in 1995 was 60 years compared with a median age of 65 years among those in 2013. Significantly more males were included in the sample of charts that were reviewed in 2013 ($p < 0.001$) (Table 1).

Table 1 Comparison of Process of Care Measures done for Primary Care Patients in 1995 and 2013

	1995		2013		
	n = 500	%	n = 469	%	p value
Sex (M/F)	77/423	15/85	167/302	36/64	< 0.001
Median Age (IQR) (years)	59.6	51-70	65.1	56-73	
On treatment for HTN	435/500	87.0	459/469	98.2	< 0.001
Process of care measures					
Weight ever recorded	151/435	34.7	434/467	92.9	< 0.001
Height ever recorded	15/435	3.4	117/467	25.1	< 0.001
Smoking habit recorded	65/435	14.9	212/466	45.4	< 0.001
Alcohol habit recorded	52/435	12.0	190/467	40.7	< 0.001
Advice on physical activity	19/435	4.0	125/434	49.3	< 0.001
Advised on dietary	81/435	19	185/435	42.5	< 0.001
Advised on medications	n/a	-	241/435	68.5	< 0.001
Screening done					
BP within last 12 mths	483/500	96.6	469/469	100	< 0.001
BP done at last visit	-	-	417/469	88.9	-
Blood glucose last 12 mths	54/435	12.4	230/467	49.3	< 0.001
Serum creatinine ever	78/435	17.9	396/467	84.8	< 0.001
ECG ever done	60/435	13.8	310/467	66.4	< 0.001
Fundoscopy last 12 mths	0/435	0.0	27/467	5.8	< 0.001
Outcome measure					
BP controlled	79/435	18.2	123/459	26.8	0.002

Patient Monitoring:
There was a significant improvement in the recording of weight, height, smoking and alcohol status in 2013 when compared with 1995 ($p< 0.001$). However the height was still only being recorded for a quarter of the patients and therefore only limited BMI's could be calculated. Blood pressure monitoring was high during both time periods with as many as 90% of the patients having their blood pressure tested at their most recent visit in 2013. Blood glucose monitoring within the previous 12 month period increased from 12% in 1995 to 49 % in 2013 ($p <0.001$). There was significant improvement in the screening for all parameters in 2013 when compared with 1995 even though the numbers of fundoscopy examinations that were conducted still remained low. Serum

creatinine monitoring had also improved significantly.

Anti-hypertensive medications:
Over the eighteen years since the 1995 study was conducted, newer classes of medications have become available to patients attending public primary care clinics. The angiotensin converting enzyme (ACE) inhibitors (61%) and the calcium channel blockers (38%) were frequently prescribed in 2013. Enalapril was the most common ACE inhibitor prescribed. In the 1995 audit the thiazide diuretics (72%) were most commonly used followed by methyldopa (41.4%) and reserpine alone (22%) or in combination form as Brinerdin (13.7%). The angiotensin receptor blockers are a relatively new class of drugs, which was used by patients in 2013.

Blood pressure control:
Significantly more 26.8% (95% CI 22.7- 30.9%) of patients on treatment achieved hypertension control in 2013 than the 18.2% (95% CI; 14.6 - 21.8%) of patients that achieved control in 1995 p < 0.001 (Table 2).

Table 2 Main Treatments Prescribed for Patients with Hypertension in 1995 and 2013

Blood pressure medications	1995 n = 435	2013 n = 459	p value
	n (%)	n (%)	
Thiazide diuretics	313 (72)	223 (48.6)	< 0.001
Other Diuretics	19 (4.4)	67(14.6)	< 0.001
Methyldopa	180 (41.4)	24 (5.2)	< 0.001
Reserpine	96 (22.1)	38 (8.3)	< 0.001
Brinerdin*	59 (13.6)	0 (0.0)	< 0.001
Beta Blockers	44 (10.1)	63 (13.7)	0.097
Vasodilators	26 (6.0)	5 (1.1)	< 0.001
ACE inhibitors	3 (0.7)	281 (61.2)	< 0.001
Calcium channel blockers	1 (0.2)	176 (38.3)	< 0.001
ARBs**	0 (0.0)	89 (19.4)	< 0.001

**Brinerdin consists of Clopamide, Dihydroergocristine, and Methyldopa*
***ARBs Angiotensin receptor blockers*

There was no difference in blood pressure control by sex (p= 0.253) or among those over sixty years compared with those less than sixty years (p = 0.643) (Table 3).

Table 3 Blood Pressure Control by Gender and Age among Patients with Hypertension seen in 2013

	Blood pressure control		p value
	%	95% CI	
By gender			
Males	23.9	17.4-30.4	
Females	28.8	23.7-33.9	0.253
By age			
< 60 years	28.4	21.4 - 35.3	
> 60 years	26.4	21.4 - 31.3	0.643

Of the records of patients with hypertension that were reviewed in 2013, 23.7% were prescribed one medication, 44.8% were on 2 medications, 25.4% were prescribed three medications and 24 or 5.2% of the patients were prescribed four medications (Table 4). There was no difference in the control of hypertension among those who were prescribed 1, 2 or 3 medications but those who used 4 medications were less likely to be controlled (OR = 0.19, CI 0.04-0.87, p = 0.033).

Table 4 Blood Pressure Control by Number of Medications Prescribed among Patients in 2013

Medications prescribed		% Blood pressure control			Odds of Control		
	n (%)	%	95% CI	p value	OR	95% CI	p value
1	100 (23.7)	31.5	22.9 - 40.1	-	ref.	-	-
2	208 (44.8)	27.4	21.4 -33.5	0.410	0.81	0.49-1.34	0.409
3	118 (25.4)	25.2	17.4 – 33.0	0.285	0.73	0.41-1.3	0.286
4	24 (5.2)	8.3	2.7- 19.3	0.020	0.19	0.04-0.87	0.033

DISCUSSION

Control of hypertension is important in order to prevent CVD complications such as stroke, heart failure and kidney failure. Since only half of those in the general population with hypertension are aware of it,[2] it is even more imperative that those who are aware should maintain adequate levels of control. This is important if the population burden of hypertension and its complications are to be reduced. The Jamaica Health and Lifestyle Survey of 2008 reported that blood pressured control was better among women than men in the general population[2] but this sex difference was not observed among the patient records reviewed in 2013.

Since 1995, guidelines for the management of patients with hypertension[16] and diabetes[17] have been developed for use in the Caribbean and by 2013 more patients had their process of care measures and screenings done as per these guideline. An improved level of counseling of patients about their dietary habits, physical exercise and medications was a notable improvement.

The introduction of the National Health Fund has made more medications available and affordable for persons using both the private and public sector health services. These include the newer classes of antihypertensive medications such ACE inhibitors or calcium channel blockers and the increased use of these medications in 2013 was evident. Of note however was that BP control was similar for those prescribed between one and three medications while those who were prescribed more were less likely to be controlled.

The improved medications and monitoring of these patients could have contributed to the observed improvement in blood pressure control. A similar improvement in glycaemic control was not observed among patients with diabetes who attended these same clinics and that also benefitted from closer monitoring and newer anti-diabetic medications.[15] It is possible that other factors such as the overall obesity epidemic has contributed to the failure to see the same gains for patients with diabetes as has been seen in the patients with hypertension.

Adequate monitoring of patients must be accompanied by treatment intensification where needed as failure to do so was observed to be an important predictor of sub-optimal control in another study.[13] The introduction of a computerized health information system that allows for the prompt review of patient management by the health care providers and their technical supervisors, is recommended as one of the ways in which the quality of health care delivered can be improved.[18].

LIMITATIONS

The data reported in this study were taken from that which was recorded in patient records and there could have been some measurement errors. The role of patient adherence was not explored and its impact on blood pressure control could not be reported here.

CONCLUSION

While the observed improvement in hypertension control is welcome, it is concerning that three of every four patients on treatment are still not controlled. There must therefore be more frequent reviews of patient outcomes. The contribution of non-adherence and the failure to increase treatment as needed must be determined and strategies put in place to address these.

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