Evaluation of the effect of the introduction of a hypertension club on the management of hypertension at a community health centre in the Cape Town Metropole

[a] **Slingers N,** MBChB MFamMed [b] **De Villiers PJT,** MB, ChB, DOM, HonsBSc, MFamMed, PhD (Stell)
[a] Postgraduate student, Division of Family Medicine and Primary Care, Stellenbosch University
[b] Division of Family Medicine and Primary Care, Stellenbosch University
Correspondence to: Prof PJT de Villiers, e-mail: pjtdv@sun.ac.za
Keywords: hypertension club; Mitchell's Plain Community Health Centre; management; chronic diseases blood pressure

Abstract

Background: Hypertension is a widespread problem of immense economic importance in sub-Saharan Africa because of its high prevalence in urban areas, its frequent under-diagnosis, and the severity of its complications. A systematic review of interventions used to improve the management of hypertension in primary care showed that effective delivery of hypertensive care requires a systematic approach in the community. The rationale for establishing a hypertension club at the Mitchell's Plain Community Health Centre (MPCHC), Cape Town, South Africa is based on the findings of and recommendations made by a study done previously at MPCHC by the Chronic Diseases of Lifestyle Programme of the Medical Research Council. This study found that the blood pressure of hypertensive patients was not optimally controlled and both the drug and non-drug management of hypertension needed to be improved. The patients had asked for the introduction of a dedicated hypertension club.

Methods: A dedicated hypertension club was started at MPCHC and hypertensive patients were enrolled. A booking system with an appointment register was initiated. A hypertension record sheet was kept in the patient's folder. Observations like blood pressure (BP), weight, and urinalysis were recorded by the club's nurses. Health information officers were used to educate the patients about hypertension, its treatment and complications. The doctors' role was to fully assess the patients' risk profiles and to develop a management plan. To audit the club, a questionnaire was conducted on an initial group of 100 patients at the inception of the club and repeated on a group of 100 patients after six months. The aim was to assess the patients' knowledge of issues affecting the management of hypertension and their satisfaction with the service received at MPCHC. A folder review was done on the second group of patients. The intention was to evaluate whether there had been a change in the patients' BP over the preceding six months, whether the patients were compliant and whether observations were made regularly.

Results: The average age of the study population was early sixties. More women than men were studied. The knowledge of the follow-up group regarding factors affecting hypertension control was slightly better than that of the initial group, but remained poor. The knowledge of the consequences of poor hypertension control did not improve after six months. Salt use stayed the same. The patients were satisfied with the service received, although shorter waiting times were desired. About 64% of the patients had collected their medication as per schedule. In the initial group, 48% of the patients had a BP > 140/90 mmHg. After six months, 33% of the patients had a BP > 140/90 mmHg.

Conclusions: The study did not show much change in the patients' knowledge in the first six months after the institution of the hypertension club. Compliance was poor, although BP control improved somewhat. The benefit was in setting up the system.

SA Fam Pract 2009;51(2):143-147

Introduction

The prevalence of non-communicable diseases is increasing rapidly in the developing countries of the world owing to demographic transitions and changing lifestyles among people. Addressing the problems connected with non-communicable diseases will lead to major health gains worldwide.[1,2]

Chronic diseases accounted for 31.9% of deaths in South Africa in 1996. The South African National Burden of Disease study estimated that there were more than 500 000 deaths in the country in 2000, of which 37% were the result of chronic diseases of lifestyle.[3,4,5]

Hypertension is a widespread problem of immense economic importance in sub-Saharan Africa because of its high prevalence in urban areas, its frequent under-diagnosis, and the severity of its complications. In fact, two problems exist, namely detection and then the very low level of adequate treatment. Accordingly, the overall management of hypertension is as much a socio-economic as it is a therapeutic problem.[6]

Hypertension is one of the major risk factors for an increased risk of stroke, myocardial infarction, end-stage renal disease, congestive heart failure and peripheral vascular disease. Although pharmacological and non-pharmacological interventions are available, hypertension is frequently treated inadequately, and it contributes significantly to the financial and epidemiological burden of chronic diseases in South Africa. The South African Demographic and Health Survey in 1998 showed a hypertension prevalence of 21% for both genders. Hypertension was defined as blood pressure (BP) > 140/90 mmHg. Only 26% of hypertensive men and 38% of hypertensive women had a BP < 160/95 mmHg. This demonstrated a high level of hypertension in the South African community, and this is coupled with an inadequate treatment status.[7]

Although infectious diseases are a threat in many developing countries, the health systems of these countries have to address a double burden of chronic and acute conditions. The chronic disease management model is more complex than that required for acute problems, as it entails multiple causes over a lifetime and a more horizontal and integrated approach, with the patient, family and community being active participants.[8]

A systematic review of interventions used to improve the management of hypertension in primary care showed that effective delivery of hypertensive care requires a systematic approach in the community. This incorporates the regular review of patients and a willingness to intensify antihypertensive treatment. The findings also recognised that it is the system of care, not the specialty of the physician, which determines high quality chronic disease management. However, it also highlighted the need for further study of various aspects of care, including the use of allied health professionals in the management process, self-monitoring and enhanced clinical decision support and clinical information systems.[9]

Locally, studies have focused on different aspects of the care of hypertension patients. One study highlighted the insufficient knowledge of a group of community healthcare workers about hypertension as a chronic disease, hence the need for staff working in primary healthcare facilities to recognise that the beliefs and attitudes towards treatment may differ from their own.[10] Another study showed that current guidelines based on blood pressure levels are more expensive than guidelines based on absolute risk.[11]

The rationale for establishing a hypertension club at Mitchell's Plain Community Health Centre (MPCHC) was based on the findings of and recommendations made by a study done previously at MPCHC by the Chronic Diseases of Lifestyle Programme of the Medical Research Council. This study evaluated the treatment status and experiences of hypertensive patients at MPCHC. The blood pressure of hypertensive patients was not controlled optimally and both the drug and non-drug management of hypertension needed to be improved. Urinalysis and eye tests were conducted infrequently. The study group suggested that steps should be taken to improve the knowledge of the patients and pointed out that patients had asked for the introduction of a dedicated hypertension club.[12]

Mitchell's Plain is an area that was planned and built as a new suburb in the 1970s to alleviate housing shortages in the coloured communities during the time of forced removals in South Africa. It is located 20 km from the city of Cape Town and has an estimated population of 305 343. Only 21.2% of the population has completed a senior high school education and 3.9% has postgraduate qualifications. There is a high unemployment rate of 16.2% of the economically active community, and crime is endemic in the area. The majority of people (65%) live in houses on separate stands, while 6% live in shacks in informal settlements. Most households have access to piped water, toilets and electricity. In 2002, hypertension was the cause of 8.5% of deaths in the Mitchell's Plain subdistrict.[13]

MPCHC is a large, primary healthcare centre that provides curative health services to the population of Mitchell's Plain. Before the establishment of the hypertension club, hypertensive patients attended the general outpatient department and were not afforded any extra time or special interventions.

The purpose of the establishment of a hypertension club in MPCHC was to channel all hypertensive patients through a dedicated process to enhance the quality of care that they received and to ensure that they were managed efficiently and comprehensively. A hypertension club has been used in various primary healthcare centres and consists of the following generic features:

- A booking system, so that patients can be guaranteed that they will be seen on a particular day and which facilitates the planning of the deployment of staff.
- A register, where the names, sex, date of birth and addresses of patients are recorded to facilitate monitoring and evaluation, planning and budgeting.
- The patient is assessed and managed by a nurse before seeing the doctor. The nurse does the basic observations and manages minor acute medical problems. This gives the doctor more time to deal with the possible complications of the disease and to make changes to the drug regimen if necessary.
- The patient is also exposed to some form of health education, either from the nurse or a trained health information officer. These staff members may then refer a patient to other appropriate healthcare workers if they identify any serious problems.

The aim of this study was to review the effects of the introduction of a hypertension club on the management of hypertension at MPCHC.

The objectives of the study were to:

- Start a dedicated hypertension club at MPCHC.
- Institute a special hypertension management record sheet to be kept in the patient's folder.
- Institute a health promotion service through the training and development of health promotion officers who would educate the hypertensive patients about hypertension, its complications and how to prevent them.
- Conduct a questionnaire survey that would assess the patient's knowledge about hypertension and its complications, as well as to establish the patient's experience of the service and elicit suggestions for improvement.
- Conduct a folder review to audit elements of the quality of implementation of the hypertension club service.

Methods

The study design was a prospective survey, conducted before and after the introduction of the hypertension club, and included a post-implementation audit during 2002.

Hypertensive patients were defined as patients who attended the MPCHC and had been started on treatment for hypertension because their blood pressure was higher than 140/90 mmHg on three separate occasions.

All hypertensive patients were enrolled in the hypertension club system, excluding diabetic patients who would be seen at the diabetes club.

The hypertension club had the following organisational characteristics:

- An appointment system, with a register kept in the reception area. This allowed for the files to be drawn the day before the appointment. Patients were booked to come in every three months.
- With each visit the nurses checked and recorded the patient's weight and BP, using standard mercury sphygmanometers and bathroom scales, did a dipstix urinalysis, and completed some elements of the patient's hypertension record sheet.

- Health information officers would educate the patients in small groups about hypertension, its treatment and complications. They would also emphasise the importance of lifestyle changes and assist patients in trying to make behavioural changes if necessary. They used flip charts and posters so as to convey a standardised message.
- The doctor's role was to fully assess the patient's risk profile. This was done by reviewing and updating the hypertension record sheet, taking a history, assessing the patient's knowledge and need for education, reviewing drug therapy, examining the patient for end-organ damage and taking appropriate action (ordering further tests, referral, etc).
- The doctor would then develop a management plan for the patient and answer any questions that the patient raised. As part of the documentation of the assessment of risk and end-organ damage, the doctor would record whether urinalysis and fundoscopy had been performed. The nurses facilitated this process by doing the urinalysis, dilating the pupils of patients as necessary and updating the hypertension record sheet.
- The existing staff and equipment at the MPCHC were used, apart from the introduction of health information officers. The latter were existing staff redeployed on a part-time basis to assist in the management of the burden of chronic diseases at MPCHC. They were trained by the doctors at MPCHC and sent on specific training courses for health information officers.

The pre-implementation questionnaire survey was conducted through personal interviews by the attending doctors. The first 100 patients who attended the hypertension club and agreed to participate were used. The post-implementation survey was carried out similarly after six months on a second group of 100 consecutive patients who had been in the club since its inception. Some of them may have taken part in the pre-implementation survey. The purpose of the survey was to assess the patients' knowledge of issues affecting the management of hypertension and their satisfaction with the service received at MPCHC.

A folder audit was conducted by the researcher on the patients who participated in the post-implementation survey. The intention was to evaluate whether: (1) there had been a change in the patients' BP over the preceding six months; (2) the patients had collected their medication every month; (3) the patients' medication had been increased in the interval between the two measurements; and (4) whether fundoscopy had been carried out during the preceding six months.

The patients were asked to sign informed consent forms for their participation in the survey and to access their medical records. They had the right to refuse to participate without having any aspect of their care compromised and were assured that all information would remain confidential. Approval to conduct the study was granted by the research committee of the division of family medicine and primary care of Stellenbosch University.

Results

Pre- and post-implementation questionnaire survey

The age and gender profile of the participants before and after the institution of the club are depicted in Table I. The vast majority were women and older than 60 years.

The knowledge of the participants regarding factors that may affect hypertension control is depicted in Table II. There were nominal improvements in all three factors measured (weight control, dietary salt and alcohol reduction), but the only statistically significant improvement in the post-implementation group was the knowledge that salt reduction may improve hypertension control.

Table I: Age and gender distribution of study participants

	Mean age (years)	Male	Female
Initial study group (n = 100)	64.8 ± 7.1	28%	72%
Six-month follow-up group (n = 100)	62.6 ± 8.1	36%	64%

Table II: Participants' knowledge of factors affecting hypertension control

Factors that can lower your BP	Weight control		Less dietary salt		Less alcohol and other measures	
	Yes	No	Yes	No	Yes	No
Initial study group (n = 100)	39	61	22	78	35	65
Six-month follow-up group (n = 100)	47	53	40	60	41	59
ρ value	0.252		0.005		0.381	

The knowledge of the participants regarding the consequences of poor hypertension control is depicted in Table III. The knowledge of the participants pre- and post-implementation was generally poor, apart from the knowledge about strokes, and no statistical differences were found.

Table III: Knowledge of consequences of poor hypertension control

Poor hypertension control can cause:	Stroke		Heart attack / angina		Kidney failure		Heart failure	
	Yes	No	Yes	No	Yes	No	Yes	No
Initial study group (n = 100)	77	23	43	57	6	94	8	92
Six-month follow-up group (n = 100)	67	33	44	56	15	85	17	83
ρ value	0.114		0.886		0.035		0.051	

The use of salt in the food of the participants is depicted in Table IV. Almost 50% in both groups never added salt to their food, but no statistically significant differences were found between the groups.

Table IV: Salt use by patients

	Never adds salt to food	First tastes food before adding salt	Always adds salt to food
Initial study group (n = 100)	57	33	10
Six-month follow-up group (n = 100)	46	41	13
ρ value	0.295		

The satisfaction of the participants with the service at the MPCHC (general satisfaction, friendliness and caring of staff, and respect shown by the staff) is depicted in Table V. The participants scored their satisfaction on a five-point Likert scale. The satisfaction with the services was generally high and there was no improvement post-implementation.

Table V: Satisfaction with services offered by MPCHC

	Initial study group	Six-month follow-up group	Standard deviation
	Mean	Mean	
Satisfaction with treatment	4.17	4.17	0.10
Staff friendliness or caring	4.35	4.27	0.10
Respect shown by staff	4.47	4.33	0.09

Scoring of services as follows: 1 = very unhappy, 2 = dissatisfied, 3 = uncertain, 4 = satisfied, 5 = very happy

The participants were also questioned regarding factors that would improve their experience and the quality of the health care they received at the MPCHC. More than 80% of both the pre- and post-implementation groups listed shorter waiting times as the most important factor. More staff and improved attention by staff were not seen as very important (less than 15%). When asked about what factors would be likely to improve the quality of care they received, better qualified staff was seen as important by both groups, but the post-implementation group was more concerned about this issue (66% versus 33% in pre-implementation group). Medicine shortages were less of a concern six months post-implementation. Only 9% of patients in the first study and 12% of patients in the second study made further suggestions for improvements in the quality of service.

Post-implementation folder audit

Medication: Medication was collected by 64% of the patients as per schedule, and 20% of the patients had the dosage of their medication increased after six months.

Assessment for complications: A fundoscopy was performed on 27% of the patients , while a urinalysis had been done on 75% of the patients.

Weight measurement: The weight of 78% of the patients had been measured on both visits. Of these patients, 28% showed an increase in weight, with an average weight increase of 1.5kg. Fifty per cent showed a decrease in weight, with an average weight loss of 1.82kg, whilst 22% showed no change in their weight after six months.

Blood pressure recordings: In the initial group, 48% of the patients had a BP > 140/90 mmHg. After six months, 33% of the patients had a BP > 140/90 mmHg.

Change in blood pressure readings: The BP of 29% of the patients had decreased after six months; 59% of these patients showed a loss of weight, 10% an increase in weight, 7% stable weight and 24% had not been weighed on both visits.

Nine per cent of the patients had an increased BP after six months; 56% of these showed an increase in weight, 22% a decrease in weight, 11% stable weight and 11% had not been weighed on both visits.

Discussion

The institution of the hypertension club showed minimal effect on the knowledge of patients regarding hypertension as a disease and its consequences, but technical and organisational improvements regarding the hypertension management programme were achieved.

The knowledge of the post-implementation group regarding factors affecting hypertension control improved slightly, but remained unsatisfactory despite the improved health education programme in the club. Possible reasons for the small change in patient knowledge include, firstly, that the time period between the two surveys was only six months. The results may have been better if this period had been longer, thereby giving more time to educate the patients. Secondly, the information was not imparted in the best way (group vs individual) and thirdly, the information was possibly not in a clearly understandable format and it might be necessary to adjust it according to the patients' levels of understanding.

However, the folder audit showed that each chosen marker of the management process was in fact implemented, viz (a) every patient's blood pressure was taken at each visit; (b) every patient was weighed at every visit; (c) regular urinalysis was done; and (d) fundoscopy was performed on 27% of the patients.

Only 30% of the group of 48% patients who started with a BP > 140/90 mmHg had lower BP six months after the introduction of the club. Possible reasons for this include:

- Only 64% of the patients collected their medication as per schedule, implying a lack of compliance with medication prescribed and hence less than effective pharmacological therapy. This should be assessed, as it may be explained by a lack of knowledge or by process issues that made the timeous collection of medication difficult.
- There was not enough emphasis on weight control. This very important aspect of non-pharmacological control of BP should be monitored more closely. The health promotion officers could offer patients support in trying to maintain a healthy weight. This might serve as an opportunity to expand the scope of the hypertension club to include body mass index (BMI) measurements.
- The time of six months may be too short to bring about changes in behaviour, as it probably takes patients longer than this to go through the behaviour modification cycle.
- It may be that the club needs to provide more support for patients by targeting specific aspects of behaviour change, e.g. exercise groups, smoking cessation support groups, smoking cessation medication, and more individual dietary analysis, advice and support.

Conclusions

Although the lack of improvement in patient knowledge about the disease was disappointing, the programme and organisational improvements were more significant. There was improved compliance and better BP control, as well as a system of earlier identification and management of possible complications of hypertension.

A more efficient patient management system was introduced. Previously each doctor had been able to see only 30 patients in the morning, whereas they could now see 45 patients in the same time period. It was perhaps too early to assess the impact of the introduction of health information officers. It is hoped that, over time, they will be able to improve the patients' knowledge about their disease and assist them with the necessary behavioural changes.

The appointment system gave patients the assurance that they would be seen on a specific day, although the survey indicated that waiting times were still a major concern. The system enabled the management to plan the optimal utilisation of staff. A register of hypertensive patients attending MPCHC was also started. This should aid management in their planning for staff requirements and budget allocations. The club system made research and auditing easier than before.

The club system empowered the patients. They became aware that they were supposed to have their BP and weight measured and their urine tested at every visit, and had access to additional sources of information.

The institution of the club and its evaluation posed a number of challenges. It was time consuming to get staff buy-in and participation from the very beginning to ensure the sustainability of the club process. The deployment and training of the health information officers was a lengthy process. It was difficult to conduct the questionnaire survey in the busy primary healthcare clinic, both in terms of getting a large enough sample size as well as getting co-operation from the doctors to conduct the patient interviews.

The main shortcoming of the audit was that no pre-implementation standards were set for the optimal management of hypertension and of the club, and hence compliance with those standards could not be measured at the post-implementation audit. The results of the audit did, however, set a baseline for future evaluations. The questionnaire survey was conducted by the attending doctors, which may have resulted in social desirability bias, and it thus would have been preferable for a person not involved in the care of patients to conduct patient satisfaction surveys.

In conclusion, although the study did not show significant change in the patients' knowledge in the first six months after the institution of the hypertension club, the benefit was in the implementation of the system, which needs more time to take hold before it can be re-evaluated against predetermined standards of care.

References

1. Nissinen A, Berrios X, Puska P. Community-based noncommunicable disease interventions: lessons from developed countries for developing ones. Bull World Health Organ 2001;79(10):963–70.
2. Mufunda J, Chatora R, Ndambakuwa Y, et al. Emerging non-communicable disease epidemic in Africa: preventive measures from the WHO Regional Office for Africa. Ethnicity & Disease 2006;16:521–6.
3. Chopra M, Sanders D. From apartheid to globalisation: health and social change in South Africa. Hygiea Internationalis 2004;4(1):153–74.
4. Steyn K, Fourie J, Temple N. Chronic diseases of lifestyle in South Africa: 1995-2005. Medical Research Council Technical Report; May 2006. Available from www.mrc.ac.za/chronic/cdl1995-2005.pdf (Accessed /12/2006).
5. The South African Demographic and Health Survey 2003. Available from www.doh.gov.za/facts/sadhs2003/main.html (Accessed /01/2007).
6. Opie L, Seedat YK. Hypertension in Sub-Saharan African populations. Circulation 2005;112:3562–8.
7. Steyn K, Gaziano TA, Bradshaw D, Laubscher R, Fourie J. Hypertension in South African adults: results from the Demographic and Health Survey, 1998. J Hypertens 2001;19(10):1717–25.
8. Yach D, Hawkes C, Linn Gould C, Hofman K. The global burden of chronic diseases. JAMA 2004;291:2616–22.
9. Fahey T, Schroeder K, Ebrahim S. Educational and organizational interventions used to improve the management of hypertension in primary care: a systematic review. British Journal of General Practice 2005;55:875–82.
10. Sengwana MJ, Puoane T. Knowledge, beliefs and attitudes of community health workers about hypertension in the Cape Peninsula, South Africa. Curationis 2004;27(1):65–71.
11. Gaziano TA, Steyn K, Cohen DJ, Weinstein MC, Opie LH. Cost-effectiveness analysis of hypertension guidelines in South Africa: absolute risk versus blood pressure level. Circulation 2005;112:3569–76.
12. Steyn K, Levitt N, Fourie J, Rossouw K, Martell R, Stander I. Treatment status and experiences of hypertension patients at a large health centre in Cape Town. Ethn Dis 1999;9:441–9.
13. A population profile of Mitchells Plain: socio-economic information from the 2001 census. Available from web.capetown.gov.za/eDocuments/A_Profile_Of_Mitchell_s_Plain_1052006141827_359.pdf (Accessed /12/2006).