

**HYPERTENSION MANAGEMENT
AND SURVEILLANCE AT
PRIMARY CARE LEVEL:
A SITUATIONAL ANALYSIS IN
THE LIMPOPO PROVINCE**

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Background

Hypertension is a major public health problem as it contributes to the development of extensive disease and disability, even in developing countries. The Reconstruction and Development Programme¹ of South Africa identified it as one of the five major diseases that should be addressed at primary level. The National Department of Health² has identified it as a priority disease with emphasis on the provision of primary health care services to control hypertension so as to minimize the sequel of high blood pressure. The recent Demographic and Health Survey³ found a high prevalence of the condition amongst adults and poor levels of control. Despite national programs to encourage detection and treatment, there are clearly shortcomings in the diagnosis and clinical management of hypertension.

Steyn and Bradshaw⁴ have argued that a comprehensive surveillance system is important for the management of non-communicable diseases including hypertension. They highlight the need for an information system that monitors the processes and outputs at facility level, in addition to population based information, and have suggested some indicators that could be used for the management of hypertension. Tools for the collection of such indicators need to be developed and evaluated, however, there is little information about what systems are already in place aside from the emerging District Health Information that collects basic information about the number of chronic disease patients treated at primary care facilities each month.

The implementation of clinical guidelines is another strategy that is used for improving disease management. Several international guidelines on hypertension have been developed over the last few years, each promoting a somewhat different approach to its management. These have generally not been used in African countries and a questionnaire survey⁵ conducted in 1996 showed that there was negligible implementation of the WHO-ISH Guidelines and that no African country other than Nigeria at that time had produced guidelines for the management of hypertension.

Clinical guidelines were developed in South Africa in 1995 by the Hypertension Society of South Africa⁶ and have been adapted by the Department of Health² for implementation in the public sector. These guidelines are aimed at providing simple practical protocols that could be followed in the primary care setting to improve the

quality of care. They are targeted particularly at professional clinical nurses and general practitioners, and reflect realistic objectives that can be applied widely, aiming to diminish the impact of poorly treated hypertension in this country.

Several reports in the literature have shown a discrepancy between hypertension guidelines and actual practice. Figures show that 50% of patients drop out from care in the first year of treatment⁷. A key component of this process is physician adherence to treatment guidelines. The factors that influence physician behavior and optimal use of practice guidelines are poorly understood⁸. Physician practice is associated with awareness of guidelines and familiarity with treatment practices. However, it has been shown that the incorporation of guidelines into clinical practice is largely dependent of the attitudes of health professional in clinical settings and that a passive dissemination of the guidelines is unlikely to effect changes⁹. It is also suggested that awareness of and agreement with national hypertension management guidelines may be important determinants of practice¹⁰.

In order to inform the development of a coherent strategy to improve the management and surveillance of hypertension, it was necessary to conduct a situational analysis on the overall health care service provision for hypertension at primary care level. This project reports on a situational analysis that was conducted in 2002 in the Limpopo Province, one of the poorest provinces of the country but which has a strong emphasis on primary health care.

Aim and objectives of the study

The overall aim of this study was to conduct a situational analysis of hypertension care and surveillance in the primary health care setting in the Limpopo Province.

The specific objectives were:

1. To describe blood pressure measuring and diagnostic procedures, treatment criteria, and referral patterns for hypertension care in the primary health care setting in Limpopo Province,
2. To determine the record keeping system used for the treatment of hypertension in the Limpopo Province,
3. To determine the familiarity of primary health care providers with the hypertension treatment guidelines,
4. To describe the flow of information between primary health care facility level and the central Provincial Department of Health and
5. To describe the extent of the use of data collated by the health care facility to monitor and plan their own services.

Methodology

Study design

This was a cross-sectional descriptive study undertaken using quantitative methods.

Study population and sampling

The health care facilities studied were selected from all primary health care facilities in the Limpopo Province (a total of 519 health facilities). These comprised four different types of health facilities that provide primary care situated in the six districts of the province: district hospitals, ordinary clinics, mobile clinics, and community health centres. For selection of the study sample, a combination of probability and non-probability sampling methods was used. There was a three-stage sampling strategy. The health facilities were stratified proportionally by type and within each stratum the facilities were then ordered by district whereby a random sample was selected). A sample of thirty health facilities was systematically chosen proportional to the number of facilities in a district, this was a form of pseudostratification that ensured sufficient representation of all districts. The Table 1 shows the numbers of each type of health care facilities in the province and in the sample.

Table 1: The number of facilities in the province and the sample

<u>Facility type</u>	<u>Province</u>	<u>Sample</u>
District hospitals	6	6
Ordinary clinic	398	18
Mobile clinics	94	4
Health centres	21	2
<u>Total</u>	<u>519</u>	<u>30</u>

The hospital in each district was included, and the sample of 24 clinics was allocated proportionately to the 6 districts (proportional to the total number of facilities in the district as shown in Table 2). This led to the following sample sizes per district. A full list of the sampled facilities is given in Appendix A.

Table 2: The number of clinics and hospitals included in the sample according to health districts.

<u>District</u>	<u>Clinics</u>	<u>Hospitals</u>	<u>Total</u>
Lowveld	7	1	8
Vhembe	6	1	7
Sekhukhuni	3	1	4
Capricorn	3	1	4
Waterberg	3	1	4
Bohlabela	2	1	3
Total	24	6	30

All professional nurses and doctors who were involved in the management of chronic diseases at the selected facilities were interviewed. One nurse involved in the clinical management of hypertension patients in each facility was asked to respond to the facility questionnaire.

In addition to the sample of facilities, two assistant directors from the provincial Information Management section and the Epidemiology section were also interviewed about the flow of information from facility level to the provincial health department.

The sample size of 30 health facilities was a compromise between desired precision and budgetary constraints. While greater precision was desirable, this was not possible due to budgetary constraints. The resulting levels of precision, none-the-less, enabled the study to provide some insight into adherence to the national guideline, which is currently unknown.

Data collection

Two questionnaires were used for the collection of data namely the facility questionnaire and clinician questionnaire (Appendix B). The facility questionnaire elicited information about the record-keeping tools and methods for hypertension care, statistics on hypertension patient attendance and its utilization, available anti-hypertensive drugs and the equipment available for measuring blood pressure and evaluating patients.

The clinician questionnaire elicited information about the criteria used to diagnose hypertension and initiate treatment, first line drug treatment choices by health

workers, familiarity of health workers with the hypertension management guidelines as well as training in the management of patients with hypertension. The questionnaires consisted of a mixture of prompted and unprompted questions. An interview schedule was used to ask about the flow of information from primary health care facility level to the provincial health department.

Fieldwork for the study was conducted for a duration of six weeks between June and July 2002. A research intern together with one research assistant collected the data from the selected health facilities. The questionnaires were completed by the fieldworkers while conducting the interviews. For purpose of quality control, the questionnaires were checked for completeness after each day by the fieldworkers.

Ethical considerations

The study proposal was presented and approved by the MRC Ethics Committee and the Limpopo Province Research Committee. Permission to conduct the study in the health facilities was granted by the PHC District Director and the facility supervisors. This was done in the form of a written letter (Appendix C). Written consent was given by the health workers who participated in the study. Information was handled confidentially and anonymously in the report. No personal medical information was used in this study.

Data analysis

The questionnaire data were computerised, cleaned and analysed using SPSS statistical software. Descriptive statistics were compiled and cross-tabulations were used for basic analysis of the data.

Results

Background Characteristics of the Sample

Table 3: Health facilities sampled and the distribution of health workers interviewed

Facility type	Total number of facilities in the province	Total number of selected facilities	Health worker profession		
			Professional nurse	Doctor	Total
Clinics	398	18	37 (100.0)	0 (0)	37 (100.0)
District hospitals	6	6	13 (68.4)	6 (31.6)	19 (100.0)
Mobile clinics	94	4	8 (100.0)	0 (0)	8 (100.0)
Health centres	21	2	4 (100.0)	0 (0)	4 (100.0)
Total	519	30	62 (91.2)	6 (8.8)	68 (100.0)

The demographic characteristics of the sample are reflected in Table 3. The figures in the table indicate the total number of facilities in the province (N= 519), selected facilities (N= 30) that were visited and the number of participants (N=68) who were interviewed in each type of facility. Within the six districts that were visited, there were 18 clinics, 6 hospitals, 4 mobile clinics and only 2 health centres that were sampled. The study participants included professional nurses (91.2%) and doctors (8.8%) who were involved in hypertension management. Most of the nurses were based in the clinics, with few of them in hospitals, mobile services and health centres. The doctors were only based in the hospitals and consequently the report on the results is focusing mainly on the professional nurses.

Availability of Hypertension Equipment, Guidelines and Drugs in Facilities

Availability of guidelines in health facilities

The Hypertension Society of Southern Africa (1995) developed guidelines, which are simple and practical in the management of hypertension especially in primary health care setting. Questions regarding the availability of these guidelines were asked in the survey and findings appear in Table 4. The data reveal that there are five different types of guidelines that are available and used by health workers for the management of hypertension within different health facilities. The *National Department of Health hypertension guideline* appears to be the most commonly used across all types of

health facilities. The *Primary Health Care (PHC) formulary* is available in only few of the hospitals (15.4%) and clinics (5.9%) while *Primary Clinical Care (PCC) manual* is found in very few clinics (8.8%).

Table 4. Availability of guidelines in health facilities

Guidelines available in facilities	<i>Hospital</i>	<i>Health centre</i>	<i>Clinic</i>	<i>Mobile clinic</i>	<i>Total</i>
National Department of Health guideline	12 (92.3)	4 (100.0)	31 (91.2)	7 (100.0)	54 (93.1)
Primary Health Care formulary	2 (15.4)	0 (0)	2 (5.9)	0 (0)	4 (6.9)
Primary Clinical Care manual	0 (0)	0 (0)	3 (8.8)	0 (0)	3 (5.2)

Usefulness of guidelines in health facilities

Questions were asked about the usefulness of the available hypertension guidelines and the results are displayed in Table 5. The findings reflect that the *National Department of Health hypertension guideline* seems to be regarded as useful in diagnosing hypertension, referral of patient with unconfirmed diagnosis, prescribing treatment, identifying complication and is applicable within primary health care setting. The *PHC formulary* and *PCC* are considered useful and applicable in fewer health facilities and this may be related to the limited availability of these guidelines in some facilities.

Table 5. Usefulness of guidelines in health facilities

Usefulness	<i>NDOH guideline</i>	<i>PHC formulary</i>	<i>PCC manual</i>
Diagnosing	52 (98.1)	4 (100)	3 (100)
Prescribing treatment	51 (96.2)	4 (100)	3 (100)
Secondary level referral	53 (100.0)	4 (100)	3 (100)
Identifying complications	53 (100.0)	4 (100)	3 (100)
Applicability	50 (92.6)	4 (100)	3 (100)

Availability of equipments in the health facilities

Availability of the necessary equipment for the management of hypertensive patients is shown in Table 6. The data indicate that on the average there are 14 baumanometers in every hospital, 2 baumanometers in each health centre, about 4 in each clinic and 5 baumanometers in each mobile clinic. Some of the health facilities have broken baumanometers: 2 hospitals, 7 clinics and 2 mobiles. However, these broken baumanometers are serviced in health facilities. Poor calibration of baumanometers cuts across all facilities: 2 hospitals, 12 clinics, 1 health centre and 2 mobiles. On average there are fourteen standard cuffs in each hospital, one in each health centre, three in each clinic and about four in each mobile clinic. There is a discrepancy between the number of baumanometers and standard cuffs available in some of the facilities. Large cuff sizes appear to be available in almost half of the facilities whereas small cuffs are not available in almost all the facilities.

Table 6. Availability of equipments in health facilities

	<i>Hospital (N=6)</i>	<i>Health (N=2) centre</i>	<i>Clinic (N=18)</i>	<i>Mobile (N=4) clinic</i>	<i>Total=30</i>
Mean number of baumanometers per type of facility	14.02	2.27	3.93	5	25.22
Any broken baumanometers in facilities	2	0	7	2	11 (37.9)
Calibration					
Number of facilities that never calibrate their baumanometers	2	1	12	2	17 (58.6)
Either 3- monthly or annually	2	0	0	1	3 (10.3)
Only when broken	1	1	6	1	9 (31.0)
Total	5	2	18	4	29 (100.0)
Mean number of standard cuffs per facility	14.53	1.28	3.04	4.49	23.34
<i>Large cuff sizes available in facilities</i>					
Yes	3	1	5	1	10 (33.3)
No	3	1	13	3	20 (66.7)
Total	6	2	18	4	30 (100.0)
<i>Small cuff sizes available in facilities</i>					
Yes	0	0	1	1	2 (6.7)
No	6	2	17	3	28 (93.3)
Total	6	2	18	4	30 (100.0)
Number of facilities that had Stethoscope in good working condition	6	2	18	4	30 (100.0)

Table 7. Availability of hypertensive drugs for treating patients in different health facilities

		<i>Availability at 4 levels of services</i>					
Class of drug mentioned	<i>List of drugs Mentioned</i>	<i>Hospital (N=6)</i>	<i>Health (N=2) centre</i>	<i>Clinic (N=18)</i>	<i>Mobile (N=4) clinic</i>	<i>Total (N = 30)</i>	
<i>Diuretics</i>	HCTZ	4	1	14 (77.8)	3	22 (73.3)	
	Reserpine	4	1	5 (27.8)	1	11 (36.7)	
<i>Beta-blockers</i>	Atenelol	1	1	10 (55.6)	2	14 (46.7)	
	Inderal	*	*	1 (5.6)	*	1 (3.3)	
	Nifedipine	1	*	2 (11.1)	*	3 (10.0)	
	Adalat	5	2	8 (44.4)	*	15 (50.0)	
<i>Calcium channel blockers</i>	Perindopril	*	*	1 (5.6)	*	1 (3.3)	
	Captopril	*	*	2 (11.1)	*	2 (6.7)	
	Capoten	2	*	6 (33.3)	*	8 (26.7)	
<i>ACE Inhibitors</i>	Moduretic	1	1	4 (22.2)	2	8 (26.7)	
	Cardifen	*	*	1 (5.6)	*	1 (3.3)	
	Diamicrone	*	1	*	*	1 (3.3)	
<i>Other related drugs</i>	Coversil	5	2	3 (16.7)	*	10 (33.3)	
	Neproson	*	*	1 (5.6)	*	1 (3.3)	
	SlowK	*	*	1 (5.6)	*	1 (3.3)	
	Minipress	*	*	1 (5.6)	*	1 (3.3)	
	Lasix	*	*	*	1	1 (3.3)	
<i>Not recommended</i>	Methyldopa	5	2	13	2	22 (73.3)	
	Brufen	*	*	1	*	1 (3.3)	

* = Not available.

Availability of hypertensive drugs for treating patients in different health facilities

Hydrochlorothiazide (HCTZ), Reserpine, Beta-adrenergic blocking agent, Calcium channel blocker, and ACE Inhibitor are highly recommended drugs (by the national guideline) for the management of hypertension at primary health care level. The results indicate that more than half of the facilities keep the HCTZ, Methyldopa, Reserpine, ACE Inhibitors, Moduretic, Adalat and Beta blocker (i.e. Atenelol). The calcium channel blocker, Nifedipine, Neproson, Slow K, Minipress and Capoten are available in very few hospitals and clinics. Perindopril, Captopril and Cardifen are found in the clinics only. Diamicrone and Coversil are available in the health centre and some clinics. Lasix is kept by one mobile clinic. Drugs such as Methyldopa and Renitec are not recommended for hypertension but are still provided. Methyldopa is an expensive drug with many side effects and is not included in the guideline.

Training of health workers on the management of hypertension in the last two years

Training in the management of hypertension was another focus area in the study. The findings on the training of health workers on the management of hypertension within the last two years (Table 8) indicate that only 8 people attended the courses on hypertension management. For those who attended training, 1 was in a hospital, 6 in clinics, and another 1 in a mobile clinic. The majority 54 (87.1%) did not attend any training on hypertension management

Table 8. Training attended by health workers on the management of hypertension in the last two years

	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile Clinic</i>	<i>Total</i>
Training attended					
Yes	1	0	6 (16.2)	1	8 (12.9)
No	12	4	31 (83.8)	7	54 (87.1)
Total	13	4	37 (100.0)	8	62 (100.0)
Additional training needed					
Yes	12 (100.0)	4 (100.0)	31 (100.0)	7 (100.0)	54 (100.0)

Hypertension Management in health facilities

Diagnostic procedures to identify patients with hypertension

According to the National guideline (1998), the diagnostic procedures essential for the management of hypertension include the accurate assessment of blood pressure, evaluation of associated cardiovascular risk factors and diseases, history taking as well as execution of a detailed physical examination for patients.

These diagnostic procedures used were explored in the study and the results are reflected in table 9. It appears that health workers follow different procedures when measuring patients' blood pressure levels. The data reveal that more than half of them prefer patients to be seated when their BP is measured. Nearly half of the staff allow patients to rest for few minutes before measuring BP. Less than half of them support the arm of the patient while others allow patients to lie down. Few of the health workers mention the measuring of both systolic blood pressure (SBP) and diastolic blood pressure (DBP) in diagnosing patients. Others consider low DBP and ignore SBP. Important points considered by health workers in diagnosing hypertension are: finding out whether patients had a smoke, drank coffee and or have eaten thirty minutes before blood pressure is measured.

History taking including identification of risk factors are other aspects of diagnostic procedures in hypertension management. To this end the data reveal that more than 50% of the health workers assess cardiovascular risk factors and related diseases during patient history taking. A few of them check some factors such as: persistence of severe headache (48.4%), dizziness (40.3%), diet of the patient (27.4%), oedema (27.4%), and problems with vision (22.6%) that may be related to elevated blood pressure. In conducting physical examination as a process in diagnosing hypertension, the findings show that 67.7% of the health workers check for oedema. Some of the health workers (33.9) reported that they checked for signs and symptoms of heart failure, 8.1% conduct an examination to detect enlarged heart. Signs and symptoms of previous strokes are not assessed. Other vital signs and symptoms mentioned to a lesser extent: blurring vision, protein in urine, body weight, distended jugular veins, puffiness of the face, chest examination, and enlarged liver.

Table 9. Diagnostic procedures reported by the staff to identify patients with Hypertension (unprompted responses)

	<i>Mentioned</i>	<i>%</i>	<i>Not Mentioned</i>	<i>%</i>
BP measurement				
Sitting position	55	88.7	6	9.7
Let patient rest before measuring BP	30	48.4	31	50.0
Arm supported	20	32.3	41	66.1
Lying position	18	29.0	43	69.4
Measure both SBP&DBP	13	21.0	48	77.4
Appropriate cuff size	5	8.1	56	90.3
Record low DBP ignore SBP	1	1.6	60	96.8
Avoid smoking, eating, drinking before measuring BP	1	1.6	60	96.8
History taking				
Existing diseases	38	61.3	24	38.7
Risk factors	32	51.6	30	48.4
Severe headache	30	48.4	32	51.6
Dizziness	25	40.3	37	59.7
Diet of the patient	17	27.4	45	72.6
Oedema	17	27.4	45	72.6
Blurring vision	14	22.6	48	77.4
Physical examination				
Oedema	42	67.7	20	32.3
Heart failure	21	33.9	41	66.1
Vital signs	18	29.0	44	71.0
Blurring vision	13	21.0	48	77.4
Proteins in urine	11	17.7	51	82.3
Body weight	11	17.7	51	82.3
Distended Jocular Veins	8	12.9	54	87.1
Puffiness of the face	7	11.3	55	88.7
Chest examination	6	9.7	56	90.3
Enlarged liver	5	8.1	57	91.9
Enlarged heart	5	8.1	57	91.9

Routine investigations for hypertension care

The National guideline indicated that routine investigations should be conducted during first visits as well as following visits to the facility. The guideline stated that the patient's body weight should be recorded at each visit when BP is measured. Also urine dipstick analysis for protein, blood and glucose should be done.

Results on routine investigations (Table 10) reflect that 61.3% health workers conduct physical examination frequently and during every visit to the facility. Less than half conduct these investigations only when patients complain. Very few health workers who do routine investigations at first visits only while even fewer report that there is no time to do these investigations. The majority (83.9%) of health workers weigh patients more frequently while the rest seem not to have time to do so and or do it on an irregular basis for newly diagnosed patients only. Urinalysis as part of routine investigation is done frequently by 54.8 % of the health workers. Some of the health workers test urine for diabetic patients only. Again time is mentioned as an impeding factor in testing urine for other health workers. Fewer health workers conduct eye examination as part of the routine and patients with eye problems are often referred to the ophthalmic clinics based in the hospitals.

Table 10. Routine investigations for hypertension care

	<i>N</i>	<i>Mentioned</i>	<i>%</i>
Physical examination			
More often	38		61.3
Only when patient complains	14		22.6
Don't have time to examine patients	5		8.1
Rarely	5		8.1
Total	62		100.0
Weight measurement			
More often	52		83.9
Rarely	7		11.3
Don't have time	2		3.2
On newly diagnosed patients	1		1.6
Total	62		100.0
Urinalysis			
More often	34		54.8
Don't have time	14		22.6
Done on diabetic patients	7		11.3
When patient complains	3		4.8
Done on pregnant women	2		3.2
Done on newly diagnosed patients	1		1.6
Annually	1		1.6
Total	62		100.0
Eye examination			
Patients are referred to hospital	24		38.7
When patient complains of eye problems	17		27.4
More often	8		12.9
Don't have time	7		11.3
Rarely	4		6.5
Done by clinic sister at fourth night	1		1.6
For Ante-natal care	1		1.6
Total	62		100.0
Management of Newly Diagnosed Patients			

Table 11. Management of newly diagnosed hypertensive patients

	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile Clinic</i>	<i>Total</i>
Managing hypertensive patients					
By appointment				0	2 (6.7)
In a dedicated clinic	1	0	1 (5.6)	0	1 (3.3)
Treated with all other patients	1	0	0 (0)		
Total	4	2	17 (94.4)	4	27 (90.0)
	6	2	18 (100.0)	4	30 (100.0)
Confirmation of hypertension diagnosis					
BP is monitored over a 1 week period	3	2	8 (44.4)	3	16 (53.3)
BP is monitored over a 1 month period	2	0	8 (44.4)	1	11 (36.7)
BP is monitored over a 3 month period	1	0	2 (11.1)	0	3 (10.0)
Total	6	2	18 (100.0)	4	30 (100.0)
Actions taken for newly diagnosed HT patients					
Refer patient to the hospital	1	2	11 (61.1)	4	18 (60.0)
Advice on lifestyle modification	3	0	10 (55.6)	2	15 (50.0)
Treat the patient with medication	3	0	5 (27.8)	0	8 (26.7)
Actions taken for HT patients with end-organ damage					
Referred to the hospital	3	2	16 (88.9)	4	25 (83.3)
Treat both conditions and monitor Bp	1	0	2 (11.1)	0	3 (10)
Admit the patient	2	0	0 (0)	0	2 (6.9)
Total	6	2	18 (100.0)	4	30 (100.0)

The results in Table 11 indicate different procedures followed in managing newly diagnosed hypertensive patients. According to the findings there is one dedicated hypertension clinic at one hospital. One clinic and one hospital have an appointment system for hypertensive patients. In about half of the facilities patients are treated with all other patients who are presenting with other health problems. Generally, there is no hypertension clinic in almost all the facilities visited except for one hospital.

With regard to management of newly diagnosed patients the guidelines suggests that the blood pressure should be repeated three times at intervals of at least 1-2 days before a person is labelled as hypertensive. If this is not possible due to travelling

distance to the clinic or economic reasons, then it should be repeated once a week or once every two weeks according to the blood pressure reading.

To this end the data reveal that confirmation of the diagnosis of hypertension is made after several BP measurements. Most health workers in all the facilities monitor patients' BP for a period of 1 week before confirming hypertension. 8 health workers in clinics and only 1 in the hospital and mobile reported that they monitor BP for a 1-month period while another 1 in hospital and 2 in clinics monitor BP over a three-month period before confirming hypertension.

The results show that all health workers in the health centres and mobile clinics and half of those in the clinics refer newly diagnosed patients with unconfirmed hypertension to hospital for confirmation on diagnosis. Half of the health workers in all facilities except a health centre advise patients on lifestyle modification another half of those in hospitals prescribe treatment to patients. However, there are few health workers in clinics who prescribe treatment for newly diagnosed patients. Health workers in health centres and mobile clinics do not prescribe treatment for the newly diagnosed patients. Data reveal that patients with end organ damage and other complications are managed in hospitals.

Blood pressure levels used as criteria for hypertension management

The National guidelines state that to be considered hypertensive means: having a blood pressure above 140/90 mmHg. The aim of therapy is to achieve and maintain ideal goal BP of 140/90 – 160/95 mmHg with minimal or no side effects. In patients with end organ damage the target should be lower than 140/90 mmHg.

Unprompted questions were asked about the different blood pressure levels that health workers use to diagnose hypertension that warrants management. The data in table 12 show these different blood pressure levels. There is not much difference between the cut off points for diagnosing elevated BP that nurses and doctors prefer to use in the facilities. It appears that the majority (73.3%) of the nurses as well as doctors (66.7%) use 140/90 mmHg as the cut off point for diagnosing elevated BP. Few of the nurses (16.7%) and doctors (33.3%) use the BP level below 140/90 mmHg whilst the other 10.0% nurses take BP level above 160/95 mmHg to diagnose elevated BP in

uncomplicated patients. Seemingly most of the health workers follow the BP levels recommended by the national guidelines for hypertension diagnosis.

In managing patients with end-organ damage, less than 50% of the health workers use BP level 160/95 mmHg to put complicated patients on anti-hypertension medication, with 27.6% using BP above 160/95 mmHg and a few of them 13.8% using BP 140/90 mmHg whilst another 10.3% use DBP \geq 130 mmHg to put complicated patients on medication. It is not clear in this case whether those who mentioned BP above 160/95 mmHg also include the DBP \geq 130 or not. However, BP levels reported for putting patients with end-organ damage on medication seem not to be in line with the recommendations in the guideline.

Also there seems to be various target BP levels that health workers aim to achieve for both their complicated and uncomplicated hypertensive patients beside the recommended ones. According to the data, it appears that less than half of the health workers (41%) aim at achieving BP level below 140-160 mmHg for their uncomplicated hypertensive patients whilst another 32% aim for BP level below 160/95 mmHg and 27% aim for BP level above 160/95 mmHg. Target BP levels aimed for uncomplicated patients seem to be acceptable to some extent except for the one above 160/95 mmHg.

For patients with end organ damage or any co-morbid conditions, it appears that very few of the health workers (10.9%) aim to achieve BP level less than 140/90 mmHg as recommended in the guideline and surprisingly most of them (89.1%) aim for BP level above 140/90 mmHg. This raises concerns, as the target BP level for complicated patients should be strictly below 140/90 mmHg.

Table 12. Blood pressure levels utilised for hypertension management

Cut off points used to diagnose HT in uncomplicated patients	<i>Nurses</i>	<i>Doctors</i>
> 140/90 mmHg	44 (73.3)	4 (66.7)
< 140/90 mmHg	10 (16.7)	2 (33.3)
> 160/95 mmHg	6 (10.0)	0 (0.0)
Total	60 (100.0)	6 (100.0)
Cut off points for HT medication in patients with end-organ damage &/ comorbid conditions	N	%
160/95 mmHg	28	48.3
> 140/90 mmHg	16	27.6
140/90 mmHg	8	13.8
DBP \geq 130 mmHg	6	10.3
Total	58	100.0
Target BP level in uncomplicated patients		
< 140/90 mmHg	27	41
< 160/95 mmHg	21	32
> 160/95 mmHg	18	27
Total	66	100
Target BP level in patients with end-organ damage &/ Co-morbid conditions		
< 140/90 mmHg	57	89.1
> 140/90 mmHg	7	10.9
Total	64	100.0

Treatment criteria used for newly diagnosed uncomplicated patients and 60+ years

According to the national guideline, the HCTZ should be the first line drug of therapy for newly diagnosed uncomplicated hypertensive patients. One of the following drugs should be added as second line drugs to the HCTZ: Reserpine, Beta-adrenergic blocking agent, Calcium channel blocker, or ACE Inhibitor. Methyldopa is not recommended for hypertension treatment in the Department of Health guideline.

Questions were asked to find out different types of drugs that were usually prescribed for newly diagnosed hypertensive patients in the facilities and the results are revealed in Table 13. It appears that most health workers across all facilities prescribe HCTZ as first line drug of choice for hypertension treatment, while only few add a second

line drugs at the initiation of medication such as Reserpine, Methyldopa, Atenelol, Capoten, Moduretic, Adalat, Brufen, Paracetamol, and Renitec.

The treatment approach for patients 60 years and older appears to be similar for those who are younger. The HCTZ seems to be prescribed to older patients by most of the health workers across different facilities. The second line drugs that are mentioned by very few of the workers include: Reserpine, Methyldopa, Atenelol, Capoten, Moduretic, Adalat, and Coversil.

Table 13. Treatment criteria used for newly diagnosed uncomplicated patients by nurses and patients over 60 years and older by both nurses and doctors

<i>Drugs prescribed for newly diagnosed uncomplicated patients</i>	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile Clinic</i>	<i>Total</i>
Hydrochlorothiazide	8	3	29(78.4)	3	43 (69.4)
Reserpine	*	*	1 (2.7)	*	1 (1.6)
Methyldopa	3	*	2 (5.4)	*	5 (8.1)
Atenelol	*	*	1 (2.7)	*	1 (1.6)
Capoten	1	*	*	*	1 (1.6)
Moduretic	1	*	6 (16.2)	1	8 (12.9)
Adalat	1	1	2 (5.4)	1	5 (8.1)
<i>Treatment approach for newly diagnosed HT patients 60 years & older</i>					
Hydrochlorothiazide	8(61.5)	2 (50.0)	26(72.2)	2 (25.0)	38 (62.3)
Reserpine	2	*	4	*	6 (9.8)
Methyldopa	2	*	1	2	5 (8.2)
Atenelol	*	*	*	1	1 (1.6)
Capoten	1	*	*	*	1 (1.6)
Moduretic	1	1	3	3	8 (13.1)
Adalat	1	*	4	2	7 (11.5)
Coversil	1	*	*	*	1 (1.6)

* = not available

Factors relating to initiating and modifying anti-hypertensive medication

According to the hypertension guidelines (1998) drug treatment should be started immediately if blood pressure of the patient is $\geq 140/90$ mmHg after six months with at least one major risk factor. Drug dose should be reduced if the patient presents

with symptoms of dizziness or SBP too low on standing or when hypertension is well controlled for one year.

Questions regarding the above-mentioned factors were asked and findings are reflected on table 14. It appears that different health workers at different facilities have authority to decide about initiating a patient's anti-hypertensive medication. Doctors are the ones who decide about starting medication for the patients across all the facilities. Of those in mobiles reported that the doctor based in hospitals make that decision because there are no doctors in mobiles. In the case of professional nurses more than half of those in health centres and in clinics also make that decision whilst only few of those in hospitals and mobiles do that.

As indicated earlier that BP has to be repeated for several occasions before diagnosing hypertension, the same applies to initiating treatment for patients. It appears that most health workers in health centres and mobiles initiate drug treatment if BP remains high after monitoring it for 2 weeks or less and few of those in hospitals and clinics do that. Half of those in hospitals and less than half of those in clinics and mobiles monitor BP for a month before initiating treatment. Only few of them in facilities monitor elevated BP for a period of three months before initiating treatment except those in the mobiles.

There are different reasons why health workers consider reducing drug dose for hypertensive patients. According to the data in all facilities few of them reduce drug dose when the patient presents with dizziness or other side effects. Whilst only 1 in a hospital and another 1 in a clinic reported that they do so when patient's BP is controlled for 1 year. Most of those in hospitals, health centres, and clinics only reduce the dose when the BP is controlled for a lesser period and there are the other few of those in hospitals, clinics and mobiles who do not reduce the drug dose but refer patients to the doctor to decide about drug reduction.

Table 14. Factors relating to initiating and modifying anti-hypertensive medication

	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile Clinic</i>	<i>Total</i>
Who decides to start anti-hypertensive medication					
Doctor's decision	11	2	13 (35.1)	7	33 (53.2)
Professional nurse's decision	3	3	28 (75.7)	1	35 (56.5)
When would treatment be initiated if BP is still raised					
After monitoring BP for 2 weeks or less	3	3	10 (27.8)	6	22 (36.7)
After monitoring BP for 1 month	6	0	17 (47.2)	2	25 (41.7)
After monitoring BP for 3 months	1	1	6 (16.7)	0	8 (13.3)
Refer to the doctor to initiate treatment	2	0	3 (8.3)	0	5 (8.3)
Total	12	4	36 (100.0%)	8	60 (100.0)
When is the drug dose reduced					
Due to side effects	1	1	6 (16.2)	2	10 (16.1)
BP is controlled for 1 year	1	0	1 (2.7)	0	2 (3.2)
BP is controlled for a lesser period	8	2	22 (59.5)	2	34 (54.8)
Done by the doctor	2	0	12 (32.4)	5	19 (30.6)

Referral criteria of health workers for hypertensive patients

The National guideline states the following as referral criteria for hypertensive patients to secondary care level: patients who present with stroke, target organ damage, diabetes, pregnancy, patients with hypertension aged 18-30 years, and children with hypertension.

Health workers were asked about their criteria for referral of hypertensive patients to secondary care level. The results are displayed in Table 15. It appears that almost all health workers in facilities refer patients to secondary care level when their BP is uncontrolled. The majority of the workers in health centres and mobile clinics refer patients who are complicated whilst less than half of those in hospitals and clinics refer when patients present with complications. Few of those in clinics and mobiles refer patients for their six months review by the doctor. Very few of those in hospitals, health centres and clinics refer patients for the doctor's further management of the condition, as well as those patients who default treatment.

Table 15. Referral criteria of health workers for hypertensive patients

	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile Clinic</i>	<i>Total</i>
Referral criteria					
Patients with uncontrolled Bp	11	3	35 (94.6)	6	55 (91.7)
Complicated patients	5	3	14 (37.8)	4	26 (43.3)
For 6-month review	0	0	8 (21.6)	1	9 (15.0)
For doctor's further management	1	1	3 (8.1)	0	5 (8.3)
Patients who default treatment	1	0	3 (8.1)	0	4 (6.7)

Lifestyle modification and patient health education for hypertensive patients

According to the National guidelines (1998), the major objective for hypertension management is to empower patients to actively become involved in the management of their hypertension through lifestyle modification and to ensure that they understand the importance of compliancy to treatment through continued patient health education. The data in Table 16 reflect the types of lifestyle modification advices that health workers offer hypertensive patients as well as health education activities that take place within the facilities.

In most facilities patients are offered advice on lifestyle modification during consultation because there is not enough time to conduct group education. According to the data, health workers seem to adhere to the recommendations made in the guidelines with regard to lifestyle modification and patient education. It appears that almost all health workers in all the facilities advise their patients to restrict salt intake in their food, to follow a prudent diet, to do regular physical exercises and to control their body weight. Most of those in clinics and mobiles advise patients to stop smoking whilst few of those in hospitals and health centres do so. Very few of the health workers in all facilities ask patients to reduce alcohol intake.

In addition to the above-mentioned advices, there are other advices offered to patients, which do not appear in the national guideline. These included avoiding stressful situations mentioned by most health workers in health centres and less than half of those in other facilities. Solving social problems, not overworking, and avoiding caffeine were some of the advices mentioned by few of those in hospitals, clinics and mobiles.

Regarding health education activities taking place in facilities, health workers at different facilities do offer spot-on health talks with patients during consultation. The data show that more than half of the health workers in all the facilities teach patients to know their BP readings, to know the names of drugs they are taking, the strength and frequency of taking treatment as well as about the consequences of uncontrolled BP. Less than half of them teach patients to take their treatment regularly as prescribed including before clinic visit, to know about hypertension as a chronic disease with risk factors. However, it appears that very few of those in hospitals, clinics and mobiles teach patients to request BP measurements at every visit to the clinic and ask them to return drug containers whilst those in health centres do not.

Table 16. Lifestyle modification and patient health education for hypertensive patients

Lifestyle modification	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile Clinic</i>	<i>Total</i>
Salt restriction	9 (69.2)	4	33 (89.2)	8	54 (87.1)
Reduce alcohol intake	2 (15.4)	1	13 (35.1)	3	19 (30.6)
Follow a prudent diet	13 (100.0)	3	31 (83.8)	8	55 (88.7)
Regular physical activity	9 (69.2)	2	30 (81.1)	8	49 (79.0)
Stop smoking	5 (38.5)	1	26 (70.3)	7	39 (62.9)
Control weight	7 (53.8)	3	18 (51.4)	6	34 (54.8)
Avoid stress	5 (38.5)	3	16 (43.2)	3	27 (43.5)
Solve social problems	1 (7.7)	0	11 (29.7)	2	14 (22.6)
Not to overwork	4 (30.8)	0	4 (10.8)	0	8 (12.9)
Avoid caffeine	2 (15.4)	0	3 (8.1)	1	6 (9.7)
Health education					
Know Bp readings	9 (69.2)	4	32 (86.5)	4	49 (79.0)
Know name, strength, frequency	9 (69.2)	3	26 (70.3)	7	45 (72.6)
Consequences of uncontrolled hypertension	11 (84.6)	3	18 (48.6)	5	37 (59.7)
Take treatment regularly as well as during clinic visit	6 (46.2)	2	17 (45.9)	3	28 (45.2)
Hypertension is a risk factor	7 (53.8)	2	13 (35.1)	5	27 (43.5)
Request Bp measurements at every visit	1 (7.7)	0	8 (21.6)	1	10 (16.1)
Return drug containers	1 (7.7)	0	4 (10.8)	0	5 (8.1)

Problems experienced and suggestions made with regard to hypertension management

Problems experienced in managing hypertension in different facilities and various suggestions on how they could be addressed were asked to health workers and their responses are shown in table 17. Problems were divided into three categories namely patient, staff and administration related issues. The data show that most of the health workers in all facilities complain about patient related problems such as non-compliance to prescribed medication. Few complain about patients not following lifestyle modification and advices given to them.

Staff related problems like shortage of health workers is mentioned by less than half of the health workers (47.7) across all facilities: 12 in hospitals, only 1 in a health centre, 15 in clinics and another 3 in mobiles. Very few of those in hospitals and clinics (6.9) mention problems with communication breakdown among health workers and unavailability of social workers and ophthalmic sisters (3.1) in the clinics.

Administration related problems were more common in the hospitals and clinics. Less than half of health workers in all facilities complained about drug (38.5) and equipment shortage (21.5). 10 of those in clinics and only 1 in a mobile complained about the late supply of patient medication by the hospital dispensaries. Problems such as BP machines not in good working condition, shortage of consultation rooms, and budget shortage are more common in hospitals and clinics only. Stationery and shortage of transport in the facilities is experienced in clinics.

Several solutions are suggested regarding how the above-mentioned problems can be addressed with staff. Regarding staff shortage related solutions, 52.6% of the health workers in hospitals and less than half of those in clinics (44.1%) and less than half of those in mobiles suggest that additional staff should be hired in the facilities. Few of them mention that there should be a 2-way communication between nurses and doctors who manage hypertensive patients and that support groups for patients should be organised. Only 1 of those in clinics and mobiles suggest that ophthalmic sisters and social workers be made available within the clinics. In addition, for those in hospitals (5.3%) and clinics (2.9%) mention that staff should basically change their attitudes.

In solving administrative problems half of the health workers in health centres and less of those in hospitals (26.3%), 38.2% in clinics and in mobiles suggest that management should make sure that enough medication is made available for patients in nearest clinics. Half of those in hospitals (52.6%) and few in clinics (20.6%) and some in mobiles suggest that patients should be given more health education especially at the clinic level. The issue of management looking into the problem of late supply of patient medication from dispensaries is suggested by half of the workers in health centres and very few of those in hospitals (10.5%) and clinics (38.2%).

Also there is a suggestion by those in hospitals, clinics and mobiles that proper and enough equipment be made available in different facilities. In addition, workers in hospitals, health centres and clinics to follow-up patients who default treatment as well as the fact that nurses have to be trained in Primary Health Care. Few workers in the facilities indicate that transport should be made available. Few of those in hospitals (15.8%) and clinics (5.9%) suggest that additional consultation rooms should be built in their facilities. Those in clinics 2.9% feel that a copy of the National Department of Health hypertension guideline should be made available and displayed where everybody can see it.

Table 17. Problems experienced in managing hypertension in facilities and suggestions on how they could be addressed

<i>Problems</i>	<i>Hospital</i>	<i>Health centre</i>	<i>Clinic</i>	<i>Mobile clinic</i>	<i>Total</i>
Patient related issues					
Non-compliance to treatment	15	2	22(62.9)	4	43(66.2)
No lifestyle change	6	0	5 (14.3)	1	12(18.5)
Transport shortage	1	1	2 (5.7)	2	6 (9.2)
Staff related issues					
Staff shortage	12	1	15 (42.9)	3	31 (47.7)
Communication breakdown	2	0	3 (8.6)	1	6 (9.2)
No social workers & ophthalmic sisters in the clinics	1	0	1 (2.9)	0	2 (3.1)
Administration related issues					
Drug shortage	5	2	15 (42.9)	3	25 (38.5)
Equipment shortage	5	0	6 (17.1)	3	14 (21.5)
Late treatment supply from hospital dispensary	1	1	10 (28.6)	0	12 (18.5)
BP machines not in good working condition	2	0	4 (11.4)	0	6 (9.2)
Consultation room shortage	2	0	2 (5.7)	0	4 (6.2)
Budget shortage	1	0	1 (2.9)	0	2 (3.1)
Stationery shortage	0	0	1 (2.9)	0	1 (1.5)
No proper patient health education	1	0	0	0	1 (1.5)
<i>Suggestions on addressing problems</i>					
Staff related issues					
Additional staff	10 (52.6)	0	15 (44.1)	3	28 (43.8)
2-way communication among nurses & doctors	1 (5.3)	0	4 (11.8)	1	6 (9.4)
Arrangement of support groups	1 (5.3)	0	1 (2.9)	0	2 (3.1)
Availability of social workers and ophthalmic sisters in clinics	0	0	1 (2.9)	1	1 (1.6)
Change of attitude by staff	1 (5.3)	0	1 (2.9)	0	2 (3.1)
Administration related issues					
Enough treatment at clinics	5 (26.3)	2	13 (38.2)	2	22 (34.4)
Enough patient health education	10 (52.6)	0	7 (20.6)	2	19 (29.7)
Solve medication supply from dispensaries	2 (10.5)	2	13 (38.2)	0	17 (26.6)
Availability of equipment	7 (36.8)	0	7 (20.6)	2	16 (25.0)
Follow-up defaulters	2 (10.5)	2	8 (23.5)	0	12 (18.8)
Availability of transport	2 (10.5)	1	4 (11.8)	4	11 (17.2)
Additional consultation rooms	3 (15.8)	0	2 (5.9)	0	5 (7.8)
PHC training for nurses	4 (21.1)	1	1 (2.9)	0	6 (9.4)
Availability of copy NDOH guideline in facilities	0	0	1 (2.9)	0	1 (1.6)

Management of Hypertension Information in health facilities

Table 18. Record keeping tools for hypertension in facilities

	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile clinic</i>
Mean number of total attendances per month	2715	4957	2293	1340
Mean number of HT attendance per month	22.29	14.30	58.22	6.09
Source of attendance numbers				
Primary Health Care form	5	2	15	2
Chronic Diseases register	0	0	3	0
Tick register	0	0	0	1
Medical book	1	0	0	0
Rough work book	0	0	0	1
Total	6	2	18	4
Register for HT patients				
Chronic Diseases register	4	2	18 (100.0)	3
Tick register	0	0	0	1
Medical book	2	0	0	0
Total	6	2	18 (100.0)	4
Records used for HT patients				
General patient file kept at facility	6	2	7 (38.9)	1
Patient card kept by patient	3	2	7 (38.9)	3
Notebook kept by patient	1	0	10 (55.6)	1
Copy of referral letter	1	0	2 (11.1)	2
Treatment chart	0	0	1 (5.6)	0

Record keeping tools for hypertension in facilities

Questions were asked about the kinds of records used in facilities for the management of hypertension. Table 18 shows the record keeping systems used within health facilities. The results reflect the average numbers of patients who attended different facilities as well as those treated for hypertension over the previous month prior to the conduction of the project. The average number of patients who visited facilities over the previous month prior the conduction of the project was about 2715 in hospitals, with most 4957 in health centres, about 2293 in clinics and only 1340 in the mobiles. In addition the average number of patients who were treated for hypertension in facilities over the previous month prior to the project, was about 22 in hospitals, 14 in health centres, with 58 in clinics and about 6 in mobiles.

It appears that there are many different kinds of record keeping tools used for hypertension in the health facilities. For the information on monthly statistics, it appears that almost all health facilities use the monthly statistical reports or forms as their source of information. These are standardised primary health care forms that indicate only the total numbers of patients (with a certain condition) who visited the facility during a particular month. Few facilities like clinics use the chronic diseases register whilst half of those in mobiles use the tick register and the rough workbook. Only 1 hospital use the medical book as their source of information.

For registering hypertensive patients, the commonly used register within health facilities is the chronic diseases register with the tick register being used by only few of the mobiles and less than of the hospitals using the medical book. There are also different kinds of records used for hypertension management. It appears that the general patient file that is kept at the facility and the patient card that is kept by the patient are commonly used across all health facilities: 1 hospital, 10 (55.6%) clinics and 1 mobile use notebooks that are kept by patients whilst another hospital, 2 (11.1%) clinics and 2 mobiles also use copies of the referral letters. Treatment charts are used in only 1 clinic.

Type of information documented on hypertension records

Table 19 presents data on different types of information that health workers document in the hypertension records. The information relates to five different issues namely information about the patient, socio-demographic data of the patient, patient's clinical information related to hypertension, other pathologies or related conditions and date for next visit.

There seems to be consistency in the type of information recorded in both the hypertension register, files kept at facilities and the patient-held consultation record. Information about the facility was only mentioned by less than half of the health workers for inclusion in both records. The socio-demographic data was recorded by more than half of them for inclusion in the register and the file kept at the facility. For the patient-held consultation record, only the patient name appears to be included and

very few additional items are included: the age, gender and physical address of the patient.

The patient's clinical information related to hypertension appears to be recorded by more than half of the health workers in both records except for items such as diagnosis, patient history, nursing care notes and vital signs which were mentioned by very few of them. Information about other pathologies and related conditions is recorded by less than half of the workers for inclusion in both records and the same applies to information about the date for next visit to the facility.

Other information items were mentioned the least for inclusion in the register and the files kept at facilities. This is surprising because these are very important documents for providing continuity of care in any facility. In addition the patient-held consultation record for hypertensive patients also does not have comprehensive information but this might be reasonable when taking the confidentiality principle into consideration.

Table 19. Type of information documented on hypertension records

<i>Information on Chronic Disease register</i>	<i>N</i>	<i>%</i>
Information about the facility		
File number	11	39.3
Visit date	11	39.3
Health worker signature	4	14.3
Admission date	3	10.7
Facility name	1	3.6
Socio-demographic data of patient		
Patient name	25	89.3
Age	21	75.0
Physical address	20	71.4
Gender	18	64.3
Patient's clinical information related to HT		
Treatment & drugs received	25	89.3
Systolic BP level	16	57.1
Diastolic BP level	16	57.1
Diagnosis	11	39.3
Main complaints	11	39.3
Patient history	4	14.3
Vital signs	4	14.3
Related conditions or other pathology		
Weight	11	39.3
Other diseases	2	7.1
Date for next visit		
Return date	8	28.6
<i>Information on patient file kept at facility</i>		
Information about the facility		
Visit date	9	34.6
File number	9	34.6
Facility name	4	15.4
Health worker signature	3	11.5
Socio-demographic data of patient		
Age	20	76.9
Physical address	17	65.4
Gender	15	57.7
Patient name	14	53.8
Patient's clinical information related to HT		
Treatment & drugs received	22	84.6
Systolic BP level	15	57.7
Diastolic BP level	15	57.7
Diagnosis	7	26.9
Nursing care notes	5	19.2
Vital signs	4	15.4
Patient history	1	3.8

Related conditions or other pathology		
Weight	12	46.2
Other diseases	7	26.9
Date for next visit		
Return date	9	34.6
<i>Information on patient-held consultation record</i>		
Information about the facility		
Visit date	13	43.3
File number	7	23.3
Facility name	5	16.7
Health worker signature	4	13.3
Socio-demographic data of patient		
Patient name	22	73.3
Physical address	12	40.0
Gender	10	33.3
Patient's clinical information related to HT		
Treatment & drugs received	26	86.7
Systolic BP level	17	56.7
Diastolic BP level	17	56.7
Nursing care notes	9	30.0
Diagnosis	5	16.7
Vital signs	2	6.7
Related conditions or other pathology		
Weight	9	30.0
Date for next visit		
Return date	13	43.3

Hypertension statistics and its utilization in health facilities

According to the formalities of the province, health facilities have to submit their monthly statistics to the district offices then finally to the Information Management section and the Epidemiology section in the Provincial office.

Questions were asked to find out about the hypertension monthly statistics and its utilization in different health facilities. Findings are shown in Table 20. Every month each facility compile statistics on the total number of patients treated for hypertension. The data reveal that only 1 of the health workers in health centre, hospital, mobiles and 10 in clinics utilize the data that they collate for planning purposes within their health facilities. These findings suggest that most health workers in facilities do not use the data for any planning purposes in their facilities.

For those who utilise the data, it is mostly for planning individual / group health talks with the patients only in some of the hospitals, few clinics and mobiles. Some of those in clinics (30.0%) use it for research purposes, while others 20.0% use it to plan awareness days. Those in health centres and others in clinics use the data to make follow-up on defaulters. This illustrates an interest on the part of some of the health workers in that they do not only compile the information for the district office but that they also use it for their own planning purposes.

Table 20. Hypertension statistics and its utilization in health facilities

	<i>Hospital</i>	<i>Health Centre</i>	<i>Clinic</i>	<i>Mobile Clinic</i>	<i>Total</i>
Number of health care providers who reported using collated data at their facilities					
Yes	1	1	10 (55.6)	1	13 (46.4)
No	4	1	8 (44.4)	2	15 (53.6)
Total	5	2	18 (100.0)	3	28 (100.0)
Data used for:					
Individual/group health talks	1	0	4 (40.0)	1	6 (46.2)
Research purposes	0	0	3 (30.0)	0	3 (23.1)
Organise awareness days	0	0	2 (20.0)	0	2 (15.4)
Follow-up defaulters	0	1	1 (10.0)	0	2 (15.4)

Flow of information

Questions were also asked to find out about the flow of information from the facility level to the provincial health department. Two assistant directors from the provincial department responded to these questions. According to them the primary health care facilities compile monthly statistics and send them to the six district offices. The district officers analyse the data and send them to the provincial health department. Assistant directors from the Provincial Department of Health further analyse the data for provincial management and raw data are send to the National Health Department. No feedback is received by the facilities from the provincial office.

Discussion

It has become apparent on the basis of the collected data that the overall management and surveillance of hypertension in the Limpopo Province differ between various health facilities. In the process of conducting analysis, a number of issues emerged from the data, which constitute the discussion of this report. The study reflects some issues on the availability of hypertension guidelines and their usefulness, availability of equipments used for hypertension management, BP measuring and diagnostic procedures, treatment criteria, referral criteria, record keeping systems, and utilization of hypertension data by health workers. In addition, flow of information from primary health care level to the provincial department of health was another area of concern.

Availability and usefulness of guidelines in health facilities

According to the findings, it is clear that health workers consult different types of sources of information (i.e. guidelines) for managing hypertension within facilities. These guidelines appear to be useful in providing information for health workers and seem applicable in different health facilities. It is apparent that the National guideline is the most commonly available and used guideline in all the health facilities. Seemingly other types of sources are also available but in very few hospitals and clinics and these included the Primary health Care formulary and the Primary Clinical Care manual. It is not clear whether these sources are relevant or outdated. However, the data show that health workers appraise those guidelines that they have as useful in helping them to manage hypertension in their facilities.

National guidelines for hypertension appear to have been disseminated in facilities, however, it has to be emphasized that the incorporation of recommendations into clinical practice is largely dependent on the awareness of and agreement of health workers with these guidelines in clinical settings¹⁰.

Availability of equipments in the health facilities

The guideline specifies that a baumanometer (BP machine) in good working condition, with appropriate cuff size and a properly working stethoscope should be used in the measurement of BP. These are the equipments that are expected to be available for managing hypertensive patients in health facilities.

The data reveal that on average the number of baumanometers expected to be found were about 14 in a hospital, at least 2 in a health centre, with 4 in a clinic and about 5 in a mobile clinic. However, these average numbers might be questionable to some extent but the estimates appear to be reasonable when looking at the type of facilities. The same applies to the number of standard cuff sizes of which are expected to correspond to the number of available baumanometers in a facility. It is interesting to see that most of the facilities do not calibrate their baumanometers, which is evident from table 6. On one hand it appears that baumanometers were only calibrated either 3-monthly or annually only in hospitals and mobile clinics. Thus on the other hand all facilities send their BP machines for service only when they are broken or not working.

The results also show that there is basically shortage of appropriate cuff sizes within facilities. Large cuff sizes were only available in half of the hospitals and health centres with less than half of clinics and mobile having just few. With regard to small cuff sizes for children, they are only available in one clinic and mobile. Shortage of large cuff sizes especially in the clinics and mobiles may suggest that health workers may find it difficult at times to accurately measure patients' BP levels and maybe have to refer patients to the hospital. The issue of small cuff sizes not being available in most facilities may be attributed to the fact that usually the BP levels of small children are not necessarily recorded. It is clear from the data that all health facilities have stethoscopes that are in good working condition.

Availability of anti- hypertensive drugs for treating patients in different health facilities

The National guideline recommends that the following anti-hypertensive medication for treating hypertensive patients at primary care level should be used in facilities: Hydrochlorothiazide (HCTZ), Reserpine, Beta-blockers, Calcium channel blockers, and ACE Inhibitor.

Availability of the above-mentioned anti hypertension drugs was checked across different types of health facilities that were visited. It appears that the HCTZ and Reserpine were generally available in all the facilities, including Methyldopa, which is not accepted by the Hypertension Society Executive members to be used as second

line drug. Beta-blocker e.g. Atenolol was available in half of all the facilities with Inderal only available in very few clinics. The Calcium channel blocker e.g. Nifedipine was available in hospitals and clinics only whilst the Adalat was available in hospitals, health centres and clinics except mobiles. The ACE Inhibitor e.g. Captopril was only available in clinics and seemingly not in other facilities even though it is recommended in the guideline. However, there were other inhibitors that were available like Perindopril and Cardifen which were also available in clinics only, Capoten in hospitals and clinics, Moduretic in few of all the facilities and Diamicon only in health centres.

The unavailability of other drugs in some of these facilities like health centres and mobiles is not clear but may be attributed to the fact that these facilities can only get certain types of drugs and not others. This may be clear that most of the drugs are available in hospitals and clinics mainly because these are facilities that patients get referred to either from health centres or mobiles. However, there are other drugs that are mentioned to be available within the facilities that might be related to hypertension treatment. These included Coversil, which is available in all facilities except in mobiles, Neproson, SlowK, and Minipress only in clinics with Lasix in the mobiles. Basically the fact that most drugs are available in clinics may relate to the issue that clinics are the first point of contact where most patients go to when having health problems.

Training attended by health workers on the management of hypertension

It is important for health workers at primary level to get training on the management of hypertension because primary health care services should be the stronghold of hypertension control (National guideline, 1998). Health workers need to be updated with the latest information regarding the management of this condition.

It is concerning to see that only few health workers across all facilities attended training in the management of hypertension in the last two years. However, those who did not get any training indicated that they would like to receive it. It is interesting to see that health workers are willing to attend training so that they get the latest information about this condition and its management. This suggests a need to

organize training courses on the management of hypertension for health workers so that the quality of care at primary level is improved.

Problems experienced in the management of hypertension in facilities and suggestions on how they could be addressed

Health workers in different facilities reported different kinds of problems experienced in managing hypertension. These problems relate to patients, staff as well as administration issues.

The data show that patient and staff related issues are more common across all facilities whilst administration issues are more common in hospitals and clinics. Problems which are mentioned by health workers across facilities that appear to be carrying more weight include non-compliance of patients to treatment, shortage of staff, shortage of drugs, equipment shortage, communication breakdown amongst health workers who manage hypertensive patients, shortage of consultation rooms, BP machines that are not in good working condition. Therefore, various suggestions are put forward by health workers on how these problems could be addressed.

Most of the suggestions relate to staff and administration issue in the facilities. Suggestions included the fact that more staff should be hired, enough treatment to be made available at clinics, hospital dispensaries to supply patient medication in time at the clinics, to provide adequate equipment and transport to facilities, to follow-up on defaulters, patients to be given more health education especially at clinic level, nurses to be trained in primary health care. In addition there must be 2-way communication between health workers in different facilities where patients get referred.

Diagnostic procedures to identify patients with hypertension

It becomes apparent from the data that most health workers ignore some of the recommendations made for accurate blood pressure measuring, however, it is not clear whether these are their everyday practices. At least most of them indicate that patients should be in a sitting position when their BP is being measured. But it becomes questionable that only less than half of them mention that they let patients rest for 5 minutes before measuring BP and very few measure both systolic and diastolic blood pressures using appropriate cuff size as well as making sure that the

patient has not smoked, eaten or drank anything 30 minutes before. These may suggest that most health workers do not really adhere to the recommendations.

The fact that few of them use an appropriate cuff size for obese patients shows that most of the time BP levels of these patients are being under estimated. This may be related to the fact that 53.2% indicated that they have and use only standard cuff sizes for all their patients who visit their facilities. It is also surprising to see that some health workers mention other criteria not included in the guideline such as patients being in a lying position when measuring BP and the fact that they only record the diastolic blood pressure and ignore the systolic when measuring BP in their patients. Based on these, it becomes evident that training is needed and that emphasis must be put to health workers on the accurate assessment of patients' blood pressure measuring for the proper management of this condition.

Another aspect of treating new patients with hypertension is adequate medical history taking. According to the National guideline (1998) it includes evaluation of associated cardiovascular risk factors and diseases, which should ideally be assessed by medical practitioners. Even though this is the case, nurses indicate that they also conduct the evaluation themselves during history taking of the patient. Checking for existing diseases includes evaluating if the patient has myocardial infarction, target organ damage (i.e. cardiac failure, left ventricular hypertrophy, renal disease, previous stroke) and diabetes mellitus. There are major as well as minor risk factors that should be assessed. Major risk factors include smoking, hyperlipidaemia (significantly high blood cholesterol level), whilst major factors include family history of hypertension or cardiovascular disease, obesity, high alcohol intake, and sedentary lifestyle (physical inactivity).

It is clear from the results that most of the nurses do conduct the evaluation of cardiovascular risk factors and diseases despite the fact that it has been suggested that this should be done by a medical practitioner. In addition to that, they also assess for other specific contributing factors for elevated blood pressure of which are very important when taking into consideration the fact that the blood pressure level of a patient might be affected by many different aspects.

Execution of a detailed physical examination is another procedure stated in the National guideline that has to be conducted. This includes assessing the signs and symptoms of an enlarged heart, heart failure and previous stroke as well as oedema. From the data it appears that most health workers usually look for oedema when conducting physical examination on their patients with few looking for signs and symptoms of heart failure and enlarged heart as recommended and this raises a concern. However, there were other specific assessments mentioned including vital signs, blurring vision, proteins in urine, body weight, distended jocular veins, puffiness of the face, chest exam and enlarged liver although it is not clear to what extent are these important in identifying new patients with hypertension.

Routine investigations for hypertension care

The data reflect that most health workers conduct routine investigations for hypertensive patients more frequently as expected. Body weight measurements appear to be more frequently done then followed by physical examination, urinalysis and eye examination. Few of those who do not conduct urinalysis on a regular basis may be attributed to the fact that they either don't have time, only do the examination when patients complain about related urinary problems, on pregnant women, on diabetic patients or on newly diagnosed patients only. Eye examination is not really conducted frequently and appears to be usually conducted when patients complain of eye problems or at hospital during referral from clinics. On the whole routine investigations especially body weight measurements and urinalysis are frequently done.

Management of newly diagnosed hypertensive patients

According to the National guideline (1998) the vision is to increase accessibility to health care services and effective management at primary level for patients with hypertension. Therefore, data on the management of newly diagnosed patients were identified. Basically very few hospitals and clinics use the appointment system or a dedicated hypertension clinic for treating hypertensive patients. Thus almost all facilities indicate that hypertensive patients are treated with all the other patients as they visit the facility on a daily basis. This may also complement the issue of a supermarket approach that has been introduced to increase accessibility of health care to everybody.

Health workers reported various periods for which they monitor the patients' blood pressures before labelling them as hypertensive. According to the guideline BP is supposed to be repeated three times at intervals of at least 1-2 days. It appears that most health workers across all facilities adhere to this recommendation in that they prefer to monitor the patient's blood pressure for a period of 1 week before confirming hypertension, although the period of repeating the measurement was not really specified. In addition a period of 1 month was also reported to be used by less than half of them across all facilities whilst there were few of those in hospitals and clinics who monitor BP for a period of 3 months.

Seemingly the 1&/3 month period of repeating the blood pressure measurement might be due to when the 1-2 days interval is not possible because of the distance that patients have to travel to the facility or even financial reasons. This is also specified in the guideline, which makes it interesting in that health workers appear to be adhering to this very recommendation. The guideline specifies that repetition of BP measurements can be adapted accordingly by repeating once a week or once every two weeks depending on the BP reading.

The findings also show that there are various actions that are taken during further management of hypertensive patients. For newly diagnosed patients who have unconfirmed hypertension, half of health workers in clinics and all those in health centres and mobiles reported that they refer these patients to the hospital for further management. What they do is only to query hypertension on the record and the health care provider to which the patient is referred will confirm the diagnosis. Other actions taken for these kinds of patients include giving advice on lifestyle modification, which was done by health workers in hospitals, clinics and mobiles. However, lifestyle modification is recommended for patients whose DBP remains 90-99 mmHg and/or SBP 140-169 mmHg after six months, with no major risk factors. Most importantly the BP should be reviewed annually and ensuring that the patient is not lost to follow-up.

Health workers in hospitals and very few in clinics also reported that newly diagnosed patients are treated with anti-hypertension medication but surprisingly those in health

centres and mobiles do not. In the guideline medication is recommended when DBP remains ≥ 90 mmHg or SBP ≥ 140 mmHg after six months, with at least one major risk factor. In this case medication is prescribed and still lifestyle modification should be continued. Based on these it appears that newly diagnosed patients are managed according to the guideline even if still health workers in health centres, clinics and mobiles have some limitation when coming to administering drugs.

There are also actions that are taken when hypertensive patients have complications such as end-organ damage in the facilities. In this case the guideline states that when patient has target organ damage (e.g. cardiac failure, renal disease) and symptoms (visual or cerebral disturbances, e.g. severe headaches), Nifedipine should be administered. In addition the patient must urgently be referred for hospital admission.

Apparently most health workers across all health facilities reported that such patients who present with complications are referred to the hospital for further management (i.e. hospitalisation). Very few of those in hospitals and clinics indicated that they treat the patients for both conditions and monitor the BP regularly. It appears that hospital referral is a common practice for managing complicated patients by health workers as compared to administering medication. Perhaps this is due to the fact that most nurses in the facilities do not have authority to decide about medication for these kinds of patients. However, this creates a paradox in that nurses are usually the first point of contact where patients go for health care because doctors are not readily available like in the hospital.

Blood pressure levels utilised for hypertension management

According to the findings most health workers use the recommended 140/90 mmHg as the cut off point for diagnosing hypertension and only a few use the WHO cut off point. For putting patients with end-organ damage on medication, the recommended level of DBP 130 mmHg or more does not come out clearly and appears to be used by only few of the workers and this needs special attention because there should be consistency in the level that has to be used. Health workers also reported upon various target blood pressure levels aimed to be achieved for hypertensive patients. Most health workers reported aiming at the recommended target BP level for uncomplicated patients. Seemingly it is difficult to achieve the target BP levels for

patients with end-organ damage. It appears that the recommended target blood pressure level of strictly below 140/90 was reported by very few of the health workers. This suggests that special attention need to be paid to this issue if the quality of care for hypertension is to be improved.

Referral criteria of health workers for hypertensive patients

According to the guideline (1998) hypertensive patients should be urgently referred when malignant hypertension is suspected (DBP \geq 130 with target organ damage), symptomatic patients with BP 200/115 mmHg, refractory hypertension (BP inadequately controlled after 2 months on step 3 drugs), severe side effects of drugs, and hypertensive pregnant women. In addition the following patients should be referred: Myocardial infarction/stroke, diabetes mellitus, patients 18-30 years, patients with abnormal urinary dipstick results and children with hypertension.

The data reflect different criteria for referral of hypertensive patients by health workers to secondary care level. Most of the health workers across all facilities indicated that they usually refer patients with uncontrolled hypertension as well as those patients who present with complications. These were the two referral criteria that were most common across facilities. There were also other referral criteria that were reported by only few of the health workers and they included the fact that they refer patients for their 6 month review at hospital, for doctors further management of the condition and for those patients who default treatment. On the whole it appears that health workers are familiar with the referral criteria for hypertensive patients to secondary care level.

Lifestyle modification and patient health education for hypertensive patients

The hypertension management guidelines specified that there are specific lifestyle modifications that health workers should advice their hypertensive patients on. For instance weight reduction in overweight patients, salt restriction with increased intake of fruits and vegetables, reduction of alcohol intake and/or stopping consumption if possible, following a prudent diet, regular moderate physical activity, as well as to stop smoking (National guideline, 1998).

It is encouraging to see that health workers advise patients on most of the recommended lifestyle modification protocols. However not much attention is paid to encouraging patients to stop smoking and to reduce alcohol intake. Also, other specific advices were mentioned besides the ones recommended; patients are advised to avoid stressful situations, to try and solve social problems, not to overwork, and to avoid caffeine. These suggestions have not been shown to be useful in the control of BP.

In line with the national guidelines, patients are also empowered to actively become involved in the management of their hypertension. Thus they are taught the distinction between having a risk factor and having a disease, to understand hypertension and its consequences if not treated adequately, informed about their BP readings at every visit and to tell any medical practitioner they visit about their hypertension and drugs taken. In addition to reassure those with mild hypertension with excessive fear of strokes, to know the name, strength and dose of their drugs, to return drug containers at each visit, and about the importance of support systems, (1998).

The data show that the health workers do emphasise patient education in facilities. But few of them teach their patients to request BP measurements at every visit to any facility or even to return the drug containers. These need to be emphasised too because it will assist patients to know about the status of their BP readings as well as for health workers to be able to identify those patients who do not take their treatment regularly. But on the whole, acquisition of communication and counselling skills by health workers appears to be adequate for managing hypertensive patients in facilities.

Treatment criteria used for newly diagnosed uncomplicated patients and those 60 years and older

For newly diagnosed uncomplicated patients, the findings reflect that there are different types of drugs usually prescribed by health workers. The data show that the most commonly prescribed drug is the HCTZ, which appears to be the first line drug preferred by most health workers across all facilities. This is supported by recommendations from the national guideline for the management of hypertension. The guideline specifies that HCTZ should be the first line drug of therapy for uncomplicated hypertensive patients with one of the following agents to be added as

second line drugs if blood pressure is not controlled: Reserpine, Beta-blockers, Calcium channel blocker and ACE Inhibitor (Department of Health, 1998).

This particularly shows consistency in the pattern of prescribing first line drug treatment to newly diagnosed uncomplicated patients within health facilities. There appears to be inconsistencies with regard to second line drugs in that some facilities do not have certain drugs available to them. For instance health workers in hospitals reported using Methyldopa, ACE Inhibitor (Capoten, Moduretic), and Calcium channel blocker (Adalat) as second line drugs. Those in health centres mentioned Adalat only whilst those in mobiles mentioned both Adalat and Moduretic. With those in clinics it appears that they used most second line drugs except for Capoten. It appears that Methyldopa, Moduretic and Adalat were the most commonly used second line drugs for newly diagnosed uncomplicated patients across different facilities. The recommended second line drugs Reserpine, Atenelol, Nifedipine and Captopril were not mentioned to be commonly used across facilities. This inconsistency in drug usage may perhaps account for the poor levels of control identified with regard to hypertension.

Regarding the treatment approach for older patients health workers in facilities use HCTZ as the first line drug as it is the case with newly diagnosed uncomplicated patients. However, agents used as second line drugs seem to be different. For those in hospitals, they use Reserpine, Methyldopa, Capoten, Moduretic, Adalat and Coversil. In health centres they use Moduretic whilst in clinics they use Reserpine, Methyldopa, Moduretic, and Adalat. Those in the mobiles use Methyldopa, Atenelol, Moduretic and Adalat. Generally Reserpine, Methyldopa, Moduretic and Adalat were the most commonly used second line drugs for treating older patients although the guideline specifies the use of Nifedipine in the elderly. To account for the specific examples of second line drugs that appear in the guideline, it is specifically those for which a generic is available, to ensure cost-containment.

Factors relating to initiating and modifying anti-hypertensive medication

It appears from the data that the authority to decide on initiating anti-hypertension medication for patients lies with certain health workers in different facilities. The decision to initiate anti-hypertension medication is commonly made by most doctors

in hospitals and mobiles whilst in health centres and clinics most nurses appear to commonly make that decision. This is not clear why as it has not been indicated in the guideline who has to decide on that. If the patient's blood pressure is raised and persists for a certain period, then drug therapy has to be initiated. Most health workers in health centres, mobiles and few in hospitals and clinics indicated that they usually initiate treatment for patients after monitoring BP for 2 weeks or less. Half of those in hospitals and few in clinics and mobiles monitor BP for 1 month before initiating treatment whilst very few of them use a period of 3 months. There appears to be different periods that health workers use to monitor BP before initiating treatment to patients of which is not clear why because the guideline specified a 6 months period. This may suggest that maybe the monitoring period is dependent on the severity of the elevated BP.

For ongoing management of hypertensive patients, there are different reasons why health workers consider reducing the drug dose. Basically very few health workers in all facilities consider reducing drug dose when patients present with side effects. The recommended period of hypertension being well controlled for 1 year to consider step down management is reported only by very few of those in hospitals and clinics. This raises a concern and reasons for this practices need to be looked into. However, it appears that for most health workers across facilities the preferred duration to consider reducing drug dose is when hypertension is controlled for a period lesser than 1 year. This may perhaps suggest a point that reasons to reduce drug dose are dependent on the condition of the patient.

Record keeping tools for hypertension in facilities

Health workers were asked about the total numbers of patients who attend facilities as well as those treated for hypertension per month. The findings reveal that there were different total numbers of patients who visited the facilities as well as those who were treated for hypertension over the previous month prior to the project. It appears that clinics had a high number of patient attendances as well as hypertension treatments than all other facilities. This may suggest that patient flow is most concentrated in the clinics and perhaps more manpower is needed.

With regard to the record keeping system, the data show that health workers use and keep different kinds of records for hypertension care. Basically facilities have to compile monthly statistics on hypertensive patients who attended the facility per month. The source of information used for that in most facilities was the Primary Health Care (PHC) form. Other sources mentioned included the Chronic Diseases Register, Tick register, Medical book, and Rough workbook. However, the monthly PHC form appears to be consistently used across all health facilities. This suggests that a monthly statistical information system is in place within the province even though not much is reflected on the form but just total number of patients who attend the facility in a particular month.

For purposes of registering hypertensive patients, a chronic disease register seems to be used across all facilities but it is not specific for hypertensive patients because it includes all other kinds of chronic conditions or services provided within the facility. Perhaps developing a register for hypertension only is necessary to provide comprehensive information if a hypertension surveillance system is to be developed. Nevertheless, the record keeping system for hypertension appears to be fairly standardised across various health facilities but improvements still need to be made.

There are also different records that are used for hypertensive patients in facilities. General patient files kept at facilities and patient cards kept by patients appear to be the most commonly used records for hypertensive patients across all facilities. Other records that are used include notebooks kept by patients, a copy of the referral letter, and treatment chart. Although, multiple patient records are used in some health facilities, it is not the case with others because there is shortage of stationery. That is why in some facilities patients are encouraged to buy notebooks or exercise books to keep as their records. A patient record is an important source of information that makes it possible to provide continuity of care.

Type of information documented on hypertension records

It appears that there are minimal differences in the kinds of information documented by health workers on hypertension records. According to the data, information on the register, files kept at facilities and records kept by patients appear to be similar to some extent. However, other information items were mentioned the least for inclusion

in the register and the facility files of which is not clear whether they are not important or just forgotten but the findings show consistency of information across these records. The fact that other information items were mentioned the least for inclusion is questionable because these records are supposed to be comprehensive documents providing the overall health condition of the patient.

On the contrary the fact that the patient-held consultation record is also not comprehensive might be accounted for. This can be attributed to the fact that the patient-held consultation record has limited space and so not all information can be recorded. This might also be attributed to the fact that any person can access the record; perhaps this is a way of maintaining the confidentiality principle with regard to information about the patient.

Hypertension statistics and its utilization

Regarding the monthly statistics compiled, the data reveal that data are used to some extent by some health workers in different facilities. Collated data were reported to be commonly utilized by health workers in health centres and in clinics with a few in hospitals and mobiles. Basically collated data are used for different purposes. Health workers in hospitals, clinics and mobiles commonly use data for organizing individual/group health talks whereby lifestyle modification is emphasised. Individual talks during consultation are more possible than group talks due to time constraints. In addition to that those in clinics use data for purposes of research and to organize awareness days for communities whilst others use it to identify patients who default treatment and then make plans to follow them up.

However, for those who do not use the information, it is mainly because they just compile it for the district, they lack support from their seniors or they are not responsible for that duty and that senior matrons are supposed to use it for planning. This may indicate that some health workers lack the interest to use the information for planning services due to lack of support and encouragement from management or they do not know how. This suggests a limitation on the utilization of information regardless of its availability. Therefore, this suggests a need to encourage, support and train nurses on how to utilize information. It is essential to develop the culture of information utilization for various purposes at the primary care level.

Flow of information on hypertension from facility level to the provincial department of health

Flow of information from primary health care facilities to the provincial health department was another area of concern in the management of hypertension. The assistant directors from the provincial department indicated various views on this issue. According to their responses, the primary health care facilities compile their monthly statistics using a standardized PHC form and send them to the district offices and then to the provincial office. Not much information is reflected on the forms but only the total numbers of patients who visited the facilities on a particular month for each type of service or condition.

The quality of information received by the information management section is adequate because there is a computer software namely District Health Information System (DHIS) which does validation of data before it could be sent over to the Epidemiology section. However, there are problems with regard to receiving information from the districts due to the fact that there are delays by district officers. There are no data capturers and the district officers have to do all the functions of capturing data, analysing it and reporting it to the province. The absence of personnel at district level slows down the flow and submission of information to the information management section.

The two assistant directors indicated that there is a gap in the feedback mechanism because management give feedback to the province and then to the districts but no feedback is given to health facilities. Thus the feedback mechanism need to be looked into so that people at grass roots level get to know about what the data they compile are used for. This will encourage them to compile accurate data because if they are not aware of the importance of that data, possibilities are they will compile it just for the sake of compiling and submitting to the district.

Another important point mentioned is that programme managers have not yet developed the culture of using information because they do not have indicators available. This shows that programme managers do not usually use this information for planning purposes. However, workshops will be organized for programme managers (PHC managers) to assist them in developing indicators and data elements

for their own usage. In addition they will be informed about the importance of information usage. Outside stakeholders like the HST and HISP have been approached for assistance in addressing the managers in these workshops.

It appears from the findings that it is important to develop a hypertension surveillance system at primary health care level. The total number of patients who attend facilities only is not enough for the management of this condition. Thus a surveillance system will provide comprehensive and useful information on the overall management of this condition at primary care setting.

Conclusions and recommendations

This study provides some insight into the management and surveillance of hypertension at primary care level.

Clearly there are different kinds of guidelines that are available and used by health workers within various health facilities. These guidelines appear to be useful in assisting the health workers to manage hypertension adequately. However, the fact that the National department of Health guideline for the management of hypertension is available in most of the health facilities does not suggest agreement and adherence to all the specified recommendations. There are inconsistencies identified with regard to the guidelines and actual practice of which is important in the management of hypertension.

The study findings show clear evidence that most equipment for the management of hypertensive patients in facilities such as mercury baumanometers, standard cuffs and stethoscopes are available. Of concern however, is the finding that facilities never calibrate their mercury baumanometers and in addition the fact that most facilities do not have large or small cuff sizes. It is important that baumanometers are calibrated on a regular basis to ensure they stay in good working condition at all times. Importance of the extent to which small cuff sizes ought to be available in facilities is not known.

Drugs used for treatment of hypertension are available in different facilities as recommended by the guidelines. However, there appears to be shortage of second line drugs such as Nifedipine and Captopril in most facilities. But results suggest that there are other specific drugs that are commonly used as second line drugs for treating hypertensive patients. These drugs include Adalat, Moduretic, Capoten and Coversil. Other related drugs include Inderal, Perindopril, Cardifen, Diamicrone, Neprosone, SlowK, Minipress and Lasix. Usage of these agents as second line drugs needs to be reviewed, as they are not specified in the guidelines.

The study reveals generally a large proportion of health workers who have not had any training in the management of hypertension in the past two years. This indicates a

need for facilities to organize training courses on hypertension management for their health workers. This will assist in providing and updating them with the latest information on the management of this condition.

There was almost universal experience of different problems among health workers in managing hypertension. Given various problems most popular among facilities – non-compliance of patients to treatment, staff shortage, drug & equipment shortage, late treatment supply by hospital dispensaries, and BP machines not in good working conditions – there is a need for management to address these problems immediately if the quality of hypertension care is expected to improve.

Results on the accurate measurement of blood pressure indicate that very few health workers reported that they measure both the SBP and DBP, using appropriate cuff size, and check whether the patient had food, smoked or drank coffee 30 minutes before measuring the blood pressure. This is not clear whether these are everyday practices or not, because it may suggest that in most cases patients' BP levels are not accurately assessed. It is important to understand factors that may limit these procedures.

Evaluation of cardiovascular diseases and risk factors in hypertensive patients appears to be done regularly as compared to execution of a detailed physical examination. Most health workers did not report checking for signs and symptoms of heart failure and enlarged heart as well as assessing symptoms of previous strokes. This may suggest that these risk factors are overlooked and not treated properly. However, routine investigations are also conducted on a regular basis.

The study reveals variations in the patterns of managing newly diagnosed hypertensive patients across facilities. Patients are treated on a daily basis with all other patients. This may be attributed to the fact that facilities are using the supermarket approach to provide health services to patients. Health workers monitor patients' BP for a period of 1 week before labelling them as hypertensive. These patients are either referred to the hospital for further management of the condition or they are treated accordingly. These findings are specified in the guidelines and may suggest consistency in the management of these patients across facilities.

The blood pressure levels utilised for hypertension management observed in this study are cause for concern. Cut off points for diagnosing elevated BP were found to be consistent. Although specifications are in place to assist health workers to manage uncomplicated patients and those with end organ damage, there appears to be variations. The study suggests a clear need to explore reasons behind the choice of BP levels used in managing these patients.

The patterns of referring hypertensive patients to secondary care level appear to be followed adequately. The lifestyle modifications that have been identified in this report suggest that, for health workers across facilities, advising patients to stop smoking and to reduce alcohol intake should be primary areas of concern. The apparent reduction of smoking and alcohol consumption are important for minimising risk factors. With patient education activities, health workers seem to ignore the point of teaching patients to request BP measurements at every visit to any facility as well as to return drug containers. The latter may assist health workers to identify patients who default treatment.

The patterns for the treatment criteria for hypertensive patients appear to be consistent across facilities. The HCTZ is commonly used as the first line drug with other agents added as second line drugs. But there are inconsistencies with the second line drugs. The findings suggest that Reserpine, Atenelol, Nifedipine and Captopril are not available in most facilities. This raises a concern, as these are the drugs specified for hypertension treatment in the guideline, thus available anti-hypertension medication used in facilities need to be reviewed.

Study results show evidence of factors related to initiating anti-hypertension medication and reducing drug dose for patients. Health workers reported that they initiate treatment after monitoring elevated BP for a week or a month of which contradicts with the specification in the guideline. The same applies to reducing the drug dose whereby most health workers reported doing it when BP is well controlled for a period lesser than one year. Factors relating to these decisions may be attributed to the severity of the condition of the patient. It is important to understand the factors leading to such decisions.

The record keeping system for hypertension within health facilities is fairly standardised. Different kinds of records are used for hypertensive patients in combination for some of the health facilities but not in others. It appears that developing a hypertension register is necessary. There is a need to add other types of information for inclusion in the monthly PHC form because the total number of attendances is not sufficient for the management of hypertension.

Health workers document different types of information on the hypertension records. Other information is least mentioned for inclusion on the records although this is not clear why but the information appears to be consistent across health facilities.

The monthly statistical information compiled in health facilities is utilised for planning purposes but not by all health workers. Much still remains to be done in encouraging and training nurses within a primary care setting on how to utilize this information. There is lack of interest on the part of some of the health workers to utilise the information mainly due to poor support but some just don't know how.

The channels of submitting monthly statistical information to different levels appear to be followed properly. Lack of personnel in the district offices seems to be the only barrier to timely submission of this information to the Information Management section. Another important issue is that programme managers do not have indicators for hypertension so they don't use this information for planning purposes. So they need to be assisted on how to develop indicators that will be included on the PHC form for their own usage. The feedback process is also an issue in that health workers at the health facility level do not receive any. There is basically lack of communication from the top level to the lower level.

These data provide a useful check on the overall management of hypertension at primary level. It will also be useful to establish a surveillance system for hypertension management and the data will serve to inform health workers, health managers, researchers as well as policy makers.

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APPENDIX A

List of 30 selected health facilities in the Limpopo Province.

<u>HOSPITALS</u>	<u>REGION</u>	<u>DISTRICT</u>
1.Tintswalo	Bushbuckridge	BB North
2.Thabamooopo	Southern (Sekhukhuni)	Zebediala/Lebowakgomo
3.Messina	Northern (Vhembe)	Ndzelele/Tshipise
4.DR. C.N. Phatudi	Lowveld (Mopani)	Halegratz
5.Helene Franz	Central (Capricorn)	Bochum/Dendron
6.FH Odendaal	Bushveld (Waterberg)	Warmbaths/Nylstroom

<u>CLINICS</u>	<u>REGION</u>	<u>DISTRICT</u>
7.Brooklyn	Bushbuckridge	
8.Shatale	Bushbuckridge	
9.Mafele	Southern (Sekhukhuni)	Noko Tlou/Fetakgomo
10.Schoonoord	Southern(Sekhukhune)	Tubatse/Kgwariti/Steelpoort
11.Lwamondo	Northern (Vhembe)	Elim
12.Makuleke	Northern (Vhembe)	Levubu/Shingwedzi
13.Taaibos	Northern (Vhembe)	Louis Tritchardt
14.Bergplaats/Vhambelani Maelula I		Ndzelele/Tshipise
15.Pfanani	Northern (Vhembe)	Thohoyandou
16.Mninginisi satellite	Lowveld (Mopani)	Giyani
17.Makgope	Lowveld (Mopani)	Halegratz
18.Lorraine	Lowveld (Mopani)	Hoedspruit/Makwutsi
19.Meedingen	Lowveld (Mopani)	Mooketsi/Bolobedu
20.Seakamela	Central (Capricorn)	Bochum/Dendron
21.Schoongezicht	Central (Capricorn)	Moletji/Matlala
22.Jakkalskuil	Western (Waterberg)	Koedoesrand/Rebone/Bakenberg

<u>MOBILES</u>	<u>REGION</u>	<u>DISTRICT</u>
23.Jane Furse Mobile D	Southern (Sekhukhune)	Tubatse/Kgwariti
24.Donald Fraser Mobile	Northern (Vhembe)	Mutale
25.WF Knobel Mobile	Central (Capricorn)	Moletji/Matlala
26.Beauty Mobile	Western (Waterberg)	Koedoesrand/Rebone/Bakenberg

<u>PHC CLINICS</u>	<u>REGION</u>	<u>DISTRICT</u>
27.Ellisras LA PHC	Bushveld (Waterberg)	Ellisras
28.Warmbaths LA PHC	Bushveld (Waterberg)	Warmbaths/Nylstroom

<u>CHC</u>	<u>REGION</u>	<u>DISTRICT</u>
29. Tshilwavhusiku CHC	Northern (Vhembe)	Louis Tritchardt
30. Tiyani CHC	Lowveld (Mopani)	Mooketsi/Bolobedu

APPENDIX B: QUESTIONNAIRES

**HEALTH CARE SERVICE PROVISION WITH REGARD TO THE TREATMENT
OF HYPERTENSION AT PRIMARY LEVEL IN THE NORTHERN PROVINCE**

	Office use									
<i>Facility Questionnaire No:</i>									4	
<i>DISTRICT</i>										
<i>TYPE OF HEALTH FACILITY</i>										
<i>NAME OF HEALTH FACILITY</i>									12	
<i>DATE OF VISIT DDMMYR</i>						2	0	0		20
<i>HEALTH WORKER PROFESSION</i>										
<i>Interview starts: ----- h-----</i>										
<i>Interview ends: ----- h -----</i>									31	

HYPERTENSION MANAGEMENT

I would like to ask you questions about the management of hypertension in your health facility. Feel free to answer the questions since your responses will be anonymous and therefore be kept confidential. There is no wrong or right answer.

1. Are the hypertensive patients treated in a dedicated clinic by appointment, or in the general clinic with all the other patients?										
		1.1 Appointments		Yes 1	No 2				32	
		1.2 Dedicated clinic		Yes 1	No 2					
		1.3 With all the other patients		Yes 1	No 2					
1.4 Other:				Yes 1	No 2				35	
2. What was the total number of attendances in this facility last month?										38
3. What was the total number of hypertension attendances last month?										
4. In 2001, how many patients were treated at this facility for hypertension ?										45
5. Where do you get this information?										
			5.1 Tally sheet		1					
			5.2 Monthly statistical report		2					
			5.3 Chronic Diseases Register		3					
5.4 Other, specify:				4						
6. Where do you register the hypertensive patients?										
			6.1 In the chronic disease register		1					
			6.2 In the hypertension register		2					
			6.3 Only in the patient record		3					
6.4 Other, specify:				4						
7. If you keep a register, how often is it updated?										
			Daily		1					
			Weekly		2					
			Monthly		3					
8. What is the date of the last entry? dd/mm/yy										54

9.	What information is recorded in the hypertension register?			55
	9.1	File number	Yes 1 No 2	
	9.2	Patient number	Yes 1 No 2	
	9.3	Name	Yes 1 No 2	
	9.4	Age	Yes 1 No 2	
	9.5	Gender	Yes 1 No 2	
	9.6	Physical address	Yes 1 No 2	
	9.7	SBP	Yes 1 No 2	
	9.8	DBP	Yes 1 No 2	
	9.9	Diagnosis	Yes 1 No 2	
	9.10	Treatment	Yes 1 No 2	
	9.11	Weight	Yes 1 No 2	
9.12	Other diseases	Yes 1 No 2	66	
10.	How often do you send hypertension statistics to the District Office?			67
	Monthly	1		
	Quarterly	2		
	Never	3		
11.	Do you use this information for planning at this facility and how do you use it?			
12.	Who confirms the diagnosis of hypertension before it goes in the register?			
	Doctor	Yes 1 No 2		
	Nurse practitioner	Yes 1 No 2		
Other:				
		Yes 1 No 2	78	
13.	At this clinic how does the health-care provider confirm hypertension diagnosis?			

14. At this clinic, what usually happens to patients who have unconfirmed hypertension?					
15. What kind of patient record is used for the hypertensive patients at this clinic?					
15.1 General patient file kept by patient		Yes 1	No 2		
15.2 General patient file kept at facility		Yes 1	No 2		
15.3 Patient card, with BP & treatment recorded on it, and kept by patient		Yes 1	No 2		
15.4 Notebook kept by patient		Yes 1	No 2		
15.5 Other:		Yes 1	No 2		
What information is recorded on the clinic file?					
		Age	Yes 1	No 2	100
		Gender	Yes 1	No 2	
		Physical address	Yes 1	No 2	
		SBP	Yes 1	No 2	
		DBP	Yes 1	No 2	
		Diagnosis	Yes 1	No 2	
		Treatment	Yes 1	No 2	
		Weight	Yes 1	No 2	
		Other disease	Yes 1	No 2	108
What information is recorded on the patient-held consultation record?					
		Age	Yes 1	No 2	
		Gender	Yes 1	No 2	
		Physical address	Yes 1	No 2	
		SBP	Yes 1	No 2	
		DBP	Yes 1	No 2	
		Diagnosis	Yes 1	No 2	
		Treatment	Yes 1	No 2	
		Weight	Yes 1	No 2	
		Other disease	Yes 1	No 2	117

25.	How many standard cuff sizes (12.5 x 23 cm) are available at this facility?	YYYY.			
26.	Do the baumanometers have large cuffs for obese patients?	Yes 1	No 2		
27.	Do the baumanometers have small cuffs for children?	Yes 1	No 2		
28.	Does your facility have a stethoscope?	Yes 1	No 2		
29.	Is it in working order?	Yes 1	No 2		
30.	Is there a dedicated clinic for hypertensive patients where all patients are seen by a nurse and doctor?	Yes 1	No 2		
31.	Does the clinic arrange for any other support group meetings of hypertensive patients?	Yes 1	No 2		
<i>The following question we would like to record on tape. The information will only be used for research purposes and will be discarded after analysis. All information will be kept confidential</i>					
32.	What are the problems you experience with hypertension management at your facility?				
					219
					224
33.	What is your role in caring for hypertensive patients?				
33.1	Supervise the entire facility				
33.2	Supervise the hypertension clinic				
33.3	Provide care for hypertensive				
33.4	Other:				
34.	How many professional clinical nurses and doctors are currently treating hypertensive patients in this facility?				
					234

**HEALTH CARE SERVICE PROVISION WITH REGARD TO THE TREATMENT OF
HYPERTENSION AT PRIMARY LEVEL IN THE NORTHERN PROVINCE**

	Office use											
<i>Clinician Questionnaire No:</i>									4			
<i>DISTRICT</i>												
<i>TYPE OF HEALTH FACILITY</i>									9			
<i>NAME OF HEALTH FACILITY</i>									12			
<i>DATE OF VISIT DDMMYY</i>								2	0	0		20
<i>HEALTH WORKER PROFESSION</i>												
<i>Interview starts: ----- h-----</i>												
<i>Interview ends: ----- h -----</i>												31

HYPERTENSION MANAGEMENT

I would like to ask you questions about the management of hypertension at your health-care facility. Feel free to answer the questions since your responses will be anonymous and therefore kept confidential. There is no wrong or right answer.

1. Considering available resources at this facility, at what blood pressure would you diagnose a patient as hypertensive?

SBP				34
DBP				

2. What additional information do you consider to diagnose hypertension?

3. When would you usually start treating a newly diagnosed patient with anti-hypertension medication?

3.1			48
3.2			

4. Who decides when a patient should get anti-hypertension treatment at this facility?

Doctor	Yes 1	No 2	
Nurse practitioner	Yes 1	No 2	
Other:	Yes 1	No 2	

5. What procedure is followed to measure blood pressure in your hypertensive patients?

5.1		
5.2		
5.3		
5.4		

6. What criteria are followed for using a large cuff at this facility?

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6.1						
6.2						65
7. What treatment approach do you have for newly diagnosed HT patients 60 years and older?						
7.1						67
7.2						
8. Given the limited time, what can you usually achieve when examining a newly diagnosed patient?						
8.1 Assess existing diseases (diabetes, organ damage, myocardial infarction)			1			
8.2 Look for risk factors (smoking, family history of hypertension, obesity, high alcohol intake)			2			
8.3 Other, specify:			4			
9. For follow-up visits, how often do you do physical examinations on your HT patients?						
		Annually	1			
		6-Monthly	2			
		More often	3			
		Don't have time	4			
10. What do you look for in a physical examination?						
Signs and symptoms of:		Enlarged heart	Yes 1	No 2		
		Heart failure	Yes 1	No 2		
		Previous stroke/s	Yes 1	No 2		
Other:			Yes 1	No 2		
11. Given the constraints in your facility, how often do you request body weight measurements for your hypertension patients?						
		Annually	Yes 1	No 2		76
		6-Monthly	Yes 1	No 2		
		More often	Yes 1	No 2		
		Don't have time	Yes 1	No 2		79
12. Given the constraints in your facility, how often do you request urinalysis for your hypertension patients?						

	Annually	Yes 1	No 2		80
	6-Monthly	Yes 1	No 2		
	More often	Yes 1	No 2		
	Don't have time	Yes 1	No 2		83
13. Given the constraints in your facility, how often do you request eye examinations for your hypertension patients?					
	Annually	Yes 1	No 2		84
	6-Monthly	Yes 1	No 2		
	More often	Yes 1	No 2		
	Don't have time	Yes 1	No 2		87
14. At a follow-up visit, if a patient's blood pressure is raised what do you check for?					
	Target organ damage	Yes 1	No 2		88
	Co-existing risk factors	Yes 1	No 2		
	Diabetes	Yes 1	No 2		
	Pregnancy in women	Yes 1	No 2		
Other		Yes 1	No 2		
15. If any of this co-morbidity are present, what level of BP will you put the patient on anti-hypertensive medication?					
	140 / 90 mmHg	Yes 1	No 2		
	160 / 95 mmHg	Yes 1	No 2		
	Other (specify):				
16. How many HT patients did you refer to secondary level care during the past month?		YYYY.			
17. What are your usual criteria for secondary level care referral?					
18. What lifestyle modification do you offer hypertensive patients at this facility?					

18.1 Reduce salt and alcohol intake	Mentioned 1	Not mentioned 2		
18.2 Control weight	Mentioned 1	Not mentioned 2		
18.3 Follow a prudent diet	Mentioned 1	Not mentioned 2		
18.4 Regular physical activity	Mentioned 1	Not mentioned 2		
18.5 Stop smoking	Mentioned 1	Not mentioned 2		
19. What HT patient education activities take place at this facility?				
19.1 Teach that HT is s risk factor and not a disease	Mentioned 1	Not mentioned 2		
19.2 Know their BP reading	Mentioned 1	Not mentioned 2		
19.3 Teach consequences of uncontrolled HT	Mentioned 1	Not mentioned 2		
19.4 Request a BP measurement at each visit	Mentioned 1	Not mentioned 2		
19.5 Know name,strength,dosage & frequency of	Mentioned 1	Not mentioned 2		
19.6 Return the drug containers at each visit	Mentioned 1	Not mentioned 2		
19.7 Take HT tablets before clinic visit	Mentioned 1	Not mentioned 2		

20 What drug do you usually prescribe if required for newly diagnosed, uncomplicated hypertensive patients?					
					134
21 What is the target blood pressure level in your uncomplicated hypertensive patients?					
	SBP				137
	DBP				
22 What is the target blood pressure level in your hypertensive patients who have end-organ damage or other co-morbid conditions?					
	SBP				
	DBP				
23 How often are these target blood pressures achieved in all your hypertensive patients?					
	Never	1			
	Seldom	2			
	Often	3			
Other:					
		4			
24 When do you consider reducing the drug dose for hypertensive patients?					
22.1 If they present with symptoms of dizziness / SBP too low on standing, or other side-effects	Mentioned 1	Not mentioned 2			
22.2 If there is a need for compliance improvement	Mentioned 1	Not mentioned 2			
22.3 If hypertension is controlled for one year	Mentioned 1	Not mentioned 2			
22.4 Other:					
	Yes 1	No 2			151
25 Is the guideline issued by the National Department of Health for the treatment of hypertension at primary level available at this facility?					
	Yes 1	No 2			
26 Do you find this guideline useful for diagnosing hypertension?					
	Yes 1	No 2			153

APPENDIX C: Letter of consent

Medical Research Council
Private Bag X 385
Pretoria 0001
Tel: (012) 339 8596
Fax: (012) 339 8582

Dear Colleague

Study of hypertension management

I am part of a research team at the Medical Research Council (MRC) which is studying the management of hypertension within primary care. Hypertension affects many South Africans, and we are conducting a survey to find out about the management, record keeping and surveillance systems in primary care facilities. We plan to interview professional nurses and doctors to obtain information about the procedures that are normally used for diagnosis and treatment of hypertensive patients.

Your facility has been randomly selected for inclusion in the survey, and I would greatly appreciate it if you would consider participating in this study. It will take approximately 20 minutes for me to introduce the study and to interview you. The information that I collect will be recorded anonymously and will be treated completely confidentially. Individual clinicians will not be identifiable in the data that are collected. Your participation in the study is entirely voluntary.

The observations will be pooled and used to inform the health service managers of any areas that are identified for improvement. We anticipate that this study will provide information that will assist everybody involved in the management of hypertension to improve the quality of care provided.

I would be most grateful if you would agree to be interviewed and indicate your consent by signing below. Should you have further queries, you are most welcome to contact me.

Yours sincerely

Dorothy Sekokotla
Research Intern

Consent:

I have read the letter outlining the study and am willing to participate in the interview.

Full name:-----

Signature:_____

Date:_____