

# Blood Pressure Control and Selected Care Practices among Patients with Hypertension Attending the Medical Clinic at Base Hospital Muthur, Sri Lanka: A Retrospective Record-Based Study

Rajiya Mohamed Muyeess<sup>1</sup>, Thayal Nathasha Vitiyala Vidanage<sup>2</sup>

<sup>1</sup> Medical Administration, Base Hospital Muthur, Sri Lanka

<sup>2</sup> Medical Administration, Base Hospital Mahiyangana, Sri Lanka

Corresponding author: Rajiya Mohamed Muyeess | Email: [muyeessrajiya@gmail.com](mailto:muyeessrajiya@gmail.com)

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## ABSTRACT

**Background:** Hypertension is a major modifiable risk factor for cardiovascular, cerebrovascular and renal disease. Facility-level studies of blood pressure control and routine documentation can identify practical gaps in chronic disease care. **Methods:** A retrospective record-based study was conducted using 189 hypertension clinic records from Base Hospital Muthur, Sri Lanka, reviewed during August–September 2026. The latest documented systolic and diastolic blood pressure values and selected indicators of comorbidity assessment, investigations, lifestyle advice, follow-up and referral/complication status were extracted. Blood pressure was classified as controlled when systolic blood pressure was <140 mmHg and diastolic blood pressure was <90 mmHg. Descriptive statistics and exploratory chi-square tests were used. **Results:** The mean age was  $45.25 \pm 14.53$  years (range 19–72). Of 188 records with sex documented, 133 (70.7%) were female. Mean systolic and diastolic blood pressures were  $133.47 \pm 23.28$  mmHg and  $75.79 \pm 13.67$  mmHg, respectively. Overall, 119/189 (63.0%) patients had blood pressure <140/90 mmHg and 70 (37.0%) were uncontrolled. Diabetes was documented in 85 (45.0%) records and CKD in 49 of 188 records with valid CKD status (26.1%). Creatinine was documented in 123 of 188 evaluable records (65.4%), glucose/HbA1c in 109 (57.7%), lipid profile in 139 (73.5%), urine investigation in 133 (70.4%), and lifestyle advice in 100 (52.9%). A next clinic date was documented in all 189 records; 59 (31.2%) had a missed scheduled follow-up. Blood pressure control was associated with sex in exploratory analysis ( $p=0.020$ ), while no statistically significant association was identified with diabetes ( $p=0.758$ ) or CKD ( $p=0.438$ ). **Conclusion:** Approximately three in five patients included in the study had a latest documented blood pressure below 140/90 mmHg. Follow-up appointment documentation was complete, but opportunities remain to strengthen lifestyle counselling, laboratory monitoring and follow-up of patients with uncontrolled blood pressure.

**Index Terms**— hypertension, blood pressure control, retrospective record-based study, medical clinic, documentation, Sri Lanka

## I. INTRODUCTION

Hypertension is a major global public health problem and an important modifiable risk factor for cardiovascular disease, stroke, heart failure, and chronic kidney disease. The World Health Organization (WHO) estimated that approximately 1.4 billion adults aged 30–79 years had hypertension in 2024 and that only about 23% had their hypertension controlled [1], [2].

Sri Lanka also carries a substantial hypertension burden. The WHO 2025 country profile estimated hypertension prevalence among adults aged 30–79 years at approximately 40%, with about 19% of adults with hypertension controlled at the population level [3]. Facility-level control rates are not directly comparable with population estimates because clinic populations comprise diagnosed patients already engaged with care; nevertheless, local studies can identify practical gaps in chronic disease management.

WHO guidance emphasizes blood pressure control, appropriate clinical and laboratory assessment, lifestyle modification and regular follow-up as core elements of hypertension management [4], [5]. For this facility-level study, a blood pressure below 140/90 mmHg was used as a simple, transparent indicator of control.

This study assessed blood pressure control and completeness of selected components of hypertension care among patients attending the medical clinic at Base Hospital Muthur.

## II. OBJECTIVES

- To determine the proportion of patients with hypertension whose latest recorded blood pressure was below 140/90 mmHg.
- To describe selected demographic and clinical characteristics of patients with hypertension attending the medical clinic.
- To assess selected hypertension care practices recorded in patient records, including relevant investigations, lifestyle advice and follow-up arrangements.
- To examine the relationship between blood pressure control and selected patient characteristics, including sex, diabetes and chronic kidney disease.

## III. METHODS

Base Hospital Muthur is a Type A Base Hospital in Trincomalee District, Sri Lanka, serving an estimated catchment population of approximately 150,000 and functioning as an apex referral hospital for six surrounding divisional hospitals. The medical clinic has a substantial workload, with more than 300 patients attending each clinic session. This retrospective record-based study reviewed hypertension clinic records during August–September 2026.

Eligible records of patients with hypertension attending medical clinic sessions during August and September 2026 constituted the sampling frame. Simple random sampling was carried out from eligible records from each clinic session during the study period. A total of 189 patient records were selected and included in the final analysis. Direct patient identifiers were not included in the analysis dataset.

**Variables and definitions.** Variables extracted were age, sex, documented diabetes, documented chronic kidney disease (CKD), latest systolic blood pressure (SBP), latest diastolic blood pressure (DBP), documentation of serum creatinine, glucose or HbA1c, lipid profile, urine investigation, lifestyle advice, next clinic date, missed scheduled follow-up, and referral or complication. Blood pressure control was defined as SBP <140 mmHg and DBP <90 mmHg at the latest documented visit. The antihypertensive-drug-count field was unpopulated and was excluded from analysis.

**Data quality and statistical analysis.** Data were checked for completeness and internal consistency. One sex value was missing, one CKD entry contained an invalid value and one creatinine field was missing; these were excluded only from analyses involving the affected variable. Categorical variables are presented as frequencies and percentages. Continuous variables are summarized using mean, standard deviation, median and range. Chi-square tests were used for exploratory comparisons of blood pressure control by sex, diabetes and CKD status. A two-sided p-value < 0.05 was considered statistically significant.

Administrative clearance was obtained from Base Hospital Muthur before data extraction. The study involved retrospective review of routinely maintained clinical records without direct patient contact. No patient names, identification numbers, contact details, or other personally identifiable information were extracted into the study dataset. Data were analysed and reported in aggregate form.

## IV. RESULTS

A total of 189 patient records were included. Mean age was  $45.25 \pm 14.53$  years (median 46; range 19–72). Seventy patients (37.0%) were younger than 40 years, 50 (26.5%) were aged 40–49 years, 30 (15.9%) were aged 50–59 years, 28 (14.8%) were aged 60–69 years and 11 (5.8%) were aged 70 years or older. Sex was documented in 188 records; 133 (70.7%) were female and 55 (29.3%) were male.

Table I: Demographic and clinical characteristics (N=189)

| Characteristic               | n   | %    |
|------------------------------|-----|------|
| Female*                      | 133 | 70.7 |
| Male*                        | 55  | 29.3 |
| Diabetes documented          | 85  | 45.0 |
| No diabetes documented       | 104 | 55.0 |
| CKD documented†              | 49  | 26.1 |
| No CKD documented†           | 139 | 73.9 |
| BP controlled (<140/90 mmHg) | 119 | 63.0 |
| BP uncontrolled              | 70  | 37.0 |

\* Sex available for 188 records. † Valid CKD status available for 188 records.

Mean SBP was  $133.47 \pm 23.28$  mmHg (median 129 mmHg), while mean DBP was  $75.79 \pm 13.67$  mmHg (median 73 mmHg). Overall, 119 (63.0%) patients met the study definition of controlled blood pressure and 70 (37.0%) were uncontrolled.

**Table II: Completeness of selected hypertension-care documentation**

| Indicator                  | Documente<br>d n/N | %     |
|----------------------------|--------------------|-------|
| Serum creatinine           | 123/188            | 65.4  |
| Glucose/HbA1c              | 109/189            | 57.7  |
| Lipid profile              | 139/189            | 73.5  |
| Urine investigation        | 133/189            | 70.4  |
| Lifestyle advice           | 100/189            | 52.9  |
| Next clinic date           | 189/189            | 100.0 |
| Missed scheduled follow-up | 59/189             | 31.2  |
| Referral/complication      | 124/189            | 65.6  |

The next clinic date was documented in every record. Lifestyle advice was documented in just over half of the records. Among the investigation indicators, lipid profile and urine investigation documentation exceeded 70%, whereas glucose/HbA1c documentation was present in 57.7%.

**Table III: Exploratory association between selected characteristics and BP control**

| Characteristic         | Controlled n<br>(%) | Uncontrolle<br>d n (%) | p<br>valu<br>e |
|------------------------|---------------------|------------------------|----------------|
| Female (n=133)         | 91 (68.4)           | 42 (31.6)              | 0.02<br>0      |
| Male (n=55)            | 27 (49.1)           | 28 (50.9)              |                |
| No diabetes<br>(n=104) | 67 (64.4)           | 37 (35.6)              | 0.75<br>8      |
| Diabetes (n=85)        | 52 (61.2)           | 33 (38.8)              |                |
| No CKD (n=139)         | 90 (64.7)           | 49 (35.3)              | 0.43<br>8      |
| CKD (n=49)             | 28 (57.1)           | 21 (42.9)              |                |

The exploratory sex comparison reached the conventional  $p < 0.05$  threshold ( $p = 0.020$ ); however, this unadjusted association should be interpreted cautiously. The diabetes and CKD comparisons were not statistically significant.

## V. DISCUSSION

This retrospective study found that 63.0% of the 189 patients included in the study had a latest documented blood pressure below 140/90 mmHg. The result represents control among patients attending a hospital clinic and should not be interpreted as a population prevalence. For context, WHO estimated substantially lower hypertension control at the population level in Sri Lanka, but the populations and methods are different and direct comparison is inappropriate [3].

Despite the majority meeting the study threshold, 37.0% had an SBP  $\geq 140$  mmHg and/or DBP  $\geq 90$  mmHg at the latest documented visit. Routine identification of these patients could support repeat measurement, assessment of adherence, medication review, cardiovascular risk assessment and closer follow-up. WHO guidance emphasizes structured treatment protocols and regular reassessment until blood pressure targets are achieved [4], [5].

Documentation performance varied across care processes. The next clinic date was documented in all records, indicating a consistent appointment-recording process. In contrast, lifestyle advice was documented in 52.9%. Because this was a record study, absence of documentation cannot distinguish between counselling that was not provided and counselling that was provided but not recorded.

Laboratory documentation was also variable. Creatinine was documented in 65.4% of evaluable records, glucose/HbA1c in 57.7%, lipid profile in 73.5% and urine investigation in 70.4%. Standardized chronic-disease records or checklists may improve the visibility of whether recommended assessments have been completed and reviewed.

Missed scheduled follow-up was documented in 31.2% of records. Missed attendance may interrupt blood pressure reassessment, medication review and reinforcement of lifestyle measures. A simple mechanism to identify missed visits, particularly among patients with uncontrolled blood pressure or important comorbidities, could therefore be useful.

Exploratory analysis identified an association between sex and blood pressure control ( $p=0.020$ ), with a higher proportion of females meeting the study definition of control than males. No statistically significant association was identified for diabetes ( $p=0.758$ ) or CKD ( $p=0.438$ ). These comparisons were exploratory and unadjusted and should therefore be interpreted cautiously.

## VI. STRENGTHS AND LIMITATIONS

The study used routinely available clinical information and included 189 records, allowing a practical assessment of facility-level hypertension care. The indicators are simple and reproducible, making repeat study feasible. Limitations include the single-centre design, reliance on the latest recorded BP rather than repeated measurements, and dependence on documentation quality. Medication-count data were unavailable. The dataset also lacked information on adherence, smoking, body mass index, duration of hypertension, cardiovascular risk and specific antihypertensive medicines. One sex value, one CKD value and one creatinine value were not usable. Exploratory subgroup comparisons were unadjusted and should not be interpreted causally.

## VII. RECOMMENDATIONS

- Introduce a standardized hypertension clinic documentation checklist covering BP, investigations, lifestyle counselling, medication review and follow-up.
- Flag patients with BP  $\geq 140/90$  mmHg for timely clinical review and repeat measurement.
- Strengthen documentation of lifestyle counselling and cardiovascular risk-reduction advice.
- Use a simple missed-visit register or recall mechanism, prioritizing patients with uncontrolled BP and high-risk comorbidities.
- Repeat the assessment after an agreed interval to assess changes in BP control and documentation completeness.

## VIII. CONCLUSION

Among 189 hypertension clinic records reviewed at Base Hospital Muthur during August–September 2026, 63.0% had a latest documented blood pressure below 140/90 mmHg and 37.0% were uncontrolled. Appointment documentation was complete, while lifestyle counselling and selected laboratory monitoring indicators were less consistently documented. Standardized documentation, focused review of uncontrolled patients and stronger follow-up of missed appointments could provide practical targets for quality improvement and repeat assessment.

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## DECLARATIONS

The study involved a retrospective review of routinely maintained clinical records without direct patient contact. No personally identifiable information was extracted into the study dataset. No separate ethics approval or waiver is claimed in this manuscript. Administrative clearance was obtained from Base Hospital Muthur before data extraction.

**Consent for publication:** Not applicable; no identifiable patient information is presented.

**Competing interests:** The authors declare no competing interests.

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**Data availability:** The anonymized study dataset is not publicly available because it was derived from routine hospital clinical records. De-identified aggregate data may be made available subject to institutional requirements.

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## AUTHORS

First Author – Rajiya Mohamed Muyeess, Medical Administration, Base Hospital Muthur, Sri Lanka. Email: muyeessrajiya@gmail.com.

Second Author – Thayal Nathasha Vitiyala Vidanage, Medical Administration, Base Hospital Mahiyangana, Sri Lanka. Email: thayalnv@gmail.com.

Correspondence Author – Rajiya Mohamed Muyeess. Email: muyeeDr srajiya@gmail.com.