

Improving follow-up visits among individuals with hypertension: Quality Improvement project in the District Hospital, Seoni, Madhya Pradesh, India, 2021–2022

Rupali Bharadwaj,^{1,2} Mogan Kaviprawin ,^{1,3} Namita Neelkanth,⁴ Vinod Kumar Navkar,⁵ Mohamed Jainul Azarudeen,¹ Ganeshkumar Parasuraman,¹ Archana Ramalingam,¹ Prabhdeep Kaur¹

To cite: Bharadwaj R, Kaviprawin M, Neelkanth N, *et al.* Improving follow-up visits among individuals with hypertension: Quality Improvement project in the District Hospital, Seoni, Madhya Pradesh, India, 2021–2022. *BMJ Open Quality* 2025;**14**:e003124. doi:10.1136/bmjopen-2024-003124

RB and MK are joint first authors.

Received 19 September 2024
Accepted 30 January 2025



© Author(s) (or their employer(s)) 2025. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ Group.

¹Non-Communicable Diseases Epidemiology Division, ICMR - National Institute of Epidemiology, Chennai, Tamil Nadu, India

²India Hypertension Control Initiative (IHCI) project, Seoni, Madhya Pradesh, India

³Epidemic Intelligence Service, ICMR - National Institute of Epidemiology, Chennai, Tamil Nadu, India

⁴Non-Communicable Disease Cell, State NCD Nodal Officer, Seoni, Madhya Pradesh, India

⁵Civil Surgeon, District Hospital, Seoni, Madhya Pradesh, India

Correspondence to

Dr Archana Ramalingam;
rarchana@nieicmr.org.in

ABSTRACT

Background In India, to achieve a 25% relative reduction in the prevalence of raised blood pressure (BP) by 2025, approximately 4.5 crore additional people with hypertension will need to have their BP effectively treated. We conducted a Quality Improvement (QI) initiative to improve follow-up and reduce missed visits among individuals with hypertension registered under India Hypertension Control Initiative, District Hospital, Seoni, Madhya Pradesh, India, in 2022.

Methods We conducted a quasiexperimental study from January to September 2022 in the District Hospital in Seoni, Madhya Pradesh. Following the Ishikawa diagram, the major root causes for missed visits were identified, and countermeasures were developed. The packages under Plan-Do-Study-Act (PDSA) included (i) training urban Accredited Social Health Activists to conduct house visits for individuals with missed visits and (ii) triangulating the follow-up records from various information systems. The review meetings for QI initiatives were conducted fortnightly to follow-up PDSAs. We calculated the proportion of individuals who were followed-up monthly, and the proportion of missed visits among those registered quarterly.

Results Cumulatively, 2850 individuals were registered with hypertension till September 2022. Following the intervention, the monthly follow-up proportion increased from 21% in January to 37% in September 2022. Missed visit proportion decreased from 66% (228/345) in quarter four, 2021, to 22% (40/180) in quarter three, 2022. Of the 1438 individuals counselled by ASHA home visits, 74.9% returned for follow-up.

Conclusion In our setting, QI initiatives suggested that missed visits decreased during the intervention period. However, the interventions must be implemented continuously for better monitoring and use in similar settings.

PROBLEM STATEMENT

Seoni is a district located in the southern region of Madhya Pradesh state, India, with a population of 136 000. The District

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Irregular follow-up for hypertension leads to uncontrolled blood pressure, a major risk factor for cardiovascular deaths. Reasons for this vary, however, there has been a gap in addressing and improving follow-up rates.

WHAT THIS STUDY ADDS

⇒ We documented an improvement in hypertension follow-up care, increasing from 18% to 54%, by implementing change ideas such as home visits through accredited social health activists (ASHAs) and improving accuracy of follow-up data through triangulation of data from the registers in the pharmacy using a quality improvement model.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Given the limited access to healthcare services in India and the widespread presence of ASHAs across the country, a viable approach to enhancing hypertension follow-up could involve leveraging the existing workforce.

Hospital (DH) in Seoni district, Madhya Pradesh, is the only public referral hospital for the entire district. The noncommunicable disease (NCD) clinic within the DH offers a comprehensive range of services, including screening, diagnosis, initiation of treatment and follow-up care for hypertension and other NCDs. Individuals with hypertension who are enrolled for treatment at the DH, Seoni, are initiated on treatment based on a standard treatment protocol. During each follow-up visit, the individuals with hypertension are prescribed antihypertensive medications by the medical officer of the health facility for a month's duration, which are dispensed by the pharmacist free of cost.

A designated registered nurse and trainee nurses staff the NCD clinic. There is a dedicated NCD register (a notebook with defined fields), which the nurse maintains to track monthly follow-up visits of individuals with hypertension. The median number of individuals followed up for hypertension each month between June and December 2021 was observed to be 347 (IQR: 264–414) in the DH. Even though each enrolled individual with hypertension is expected to make a monthly visit for follow-up care and drug refill, it was observed from the register that the percentage of monthly follow-up visits among individuals with hypertension enrolled in the DH was merely 18.1% in December 2021. The median monthly follow-up proportion between June and December 2021 was 20.5%.

BACKGROUND

Noncommunicable diseases (NCDs) contribute significantly to the mortality landscape in India, accounting for approximately 63% of total deaths. Among these, cardiovascular diseases are (responsible for around 27% of NCD-related deaths. Uncontrolled blood pressure (BP) is one of the key risk factors associated with cardiovascular diseases.¹ A representative survey reported that almost one in four individuals aged 15 years and above had hypertension in Seoni.²

The IHCI, adopting the HEARTS technical package, was implemented in India in 2017, targeting public health facilities.^{3,4} In 2019, the initiation of IHCI in Seoni district encompassed five core elements: the implementation of a uniform hypertension treatment protocol, the prioritisation of patient-centred care, the establishment of an efficient health information system, the practice of task shifting and the assurance of an uninterrupted supply of essential medications.

Cardiovascular Health Officers (CVHOs) are public health professionals recruited for the IHCI initiative and positioned at the district or state level. CVHOs offer technical support to the health facilities for the implementation of IHCI. CVHOs conduct 10–15 monthly supportive supervision visits to the health facilities in their assigned districts. During these visits, they use structured supervisory checklists to assess adherence to standardised treatment protocols, ensure the availability of antihypertensive drugs and monitor the performance of healthcare workers involved in hypertension care. Their role extends to providing timely, actionable feedback to healthcare providers and stakeholders to enhance service delivery. Additionally, CVHOs compile and submit detailed monthly reports to state and district health officials, highlighting the progress of programme implementation, key achievements and challenges encountered. They also improve the quality of service delivery by being part of setting-specific improvement initiatives.^{3,5} An Accredited Social Health Activist (ASHA) is a village-level female community health worker (CHW) who supports primary care initiatives of different national health programmes under the National Health Mission, Government of

India. ASHAs support the National Programme for Prevention and Control of Non-Communicable Diseases through involvement in health promotion, hypertension screening, house visits for counselling regarding follow-up care and facilitating care linkages between communities and health systems.⁶

Consistency in receiving suitable treatment and adhering to scheduled visits is pivotal for effective BP management.⁷ In a study done in Punjab, India, where IHCI was being implemented, the key reasons for missing follow-up visits were documented to be a lack of awareness regarding the necessity of regular follow-up visits, accessibility owing to a considerable distance from the healthcare facility and inadequate counselling provided by the health facility staff.⁸ The study's main recommendations encompass implementing reminder systems and using methods such as telephone calls, text messages or home visits by healthcare workers.⁸ In addition, programmatic evidence from a nearby district, Chhindwara, demonstrated improvement in follow-up visits with the involvement of rural ASHAs in tracking individuals with hypertension.

Based on the available evidence, our objective was to do an improvement project that focused on the infrequent monthly follow-up visits, with the expectation that this effort would lead to a more regular follow-up among individuals with hypertension and, consequently, an enhancement in the overall effectiveness of treatment. Our study focused on improving the monthly follow-up proportion, which stood at 18% in December 2021, to a target of 35% by June 2022. This improvement was planned through a carefully designed quality improvement initiative implemented at the District Hospital (DH) in Seoni, Madhya Pradesh. Furthermore, as part of our study, we implemented the intervention and documented the challenges encountered during the implementation process.

METHODS

Design

We conducted the quality-improvement time-series study in the DH, Seoni, Madhya Pradesh, from January to June 2022. We used the FOCUS PDSA method (F: Finding an opportunity for improvement; O: Organise a team; C: Clarify the process; U: Understanding the process and root causes; S: Select an improvement; PDSA: Plan-Do-Study-Act) of Quality Improvement (QI) and will involve iterative PDSA cycles.^{9,10}

Strategy

- Organising QI team: we involved medical officers (MOs), staff nurses of the NCD clinic, pharmacists, CVHOs working with the IHCI project and urban ASHAs of the district.
- Understanding the problem: we drew a process flow map to understand the current follow-up process of individuals with hypertension. The QI process for hypertension follow-up begins when the patient visits the

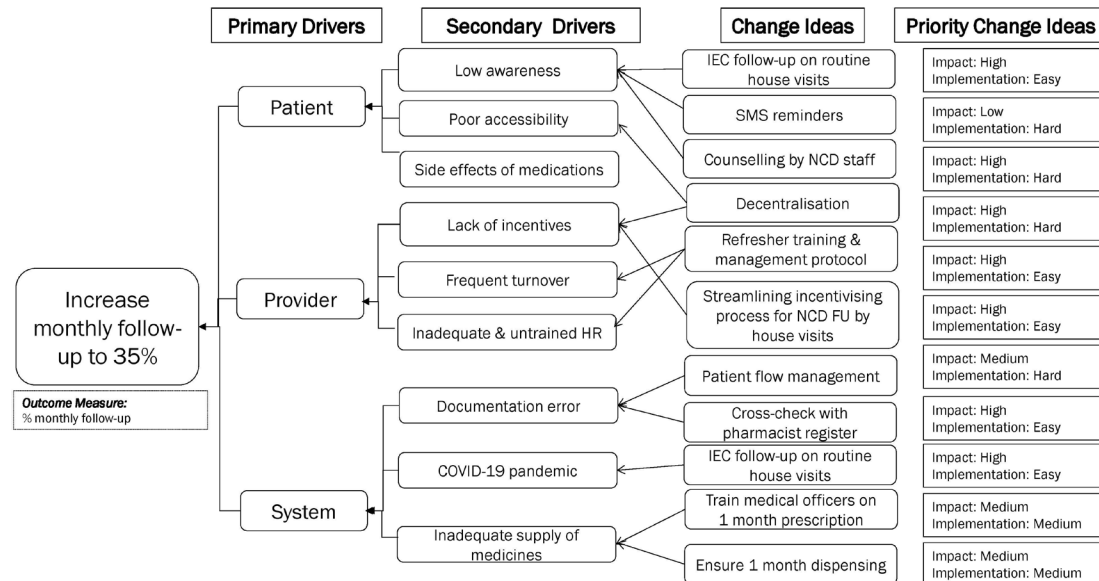


Figure 1 Driver diagram representing the drivers and change ideas for low follow-up of individuals with hypertension registered in the District Hospital, Seoni, Madhya Pradesh, India, 2021–2022. FU, follow-up; IEC, Information Education Communication; MO, medical officer; NCD, non-communicable disease.

health facility and is directed to the NCD clinic. There, the patient's BP is measured and expected to be recorded in both the patient's follow-up card and the clinic's follow-up register. The patient then consults with the MO, who reviews the BP reading and adjusts the treatment plan as needed while providing counselling on medication adherence. The patient proceeds to the pharmacy to receive medications, with the pharmacist documenting the patient's details and the drugs dispensed in the pharmacist register. Monthly follow-up rates and treatment outcomes, including BP control and missed visits, are monitored based on the NCD clinic's follow-up register. Using a fishbone diagram, we conducted a root-cause analysis involving the stakeholders to understand the problem. We then used a driver diagram to understand the primary and secondary influencers of the problem and came up with the change ideas for each root cause (figure 1). We realised that the primary influencers were factors related to patients, healthcare providers and the health facility/health system. From a patient perspective, lack of awareness of the importance of regular drug refill visits and poor access were the major influencers of the problem. Inadequate human resources, improper training and lack of incentives for ASHAs emerged as key provider-related factors. From the health system side, irregularities in the documentation of follow-up visits, lack of standard operating procedures (SOPs) to accurately document home visits by ASHAs and irregular supply of antihypertensives contributed to poor follow-up among individuals with hypertension. In particular, based on the field experience, there were instances of individuals with hypertension who would skip visiting the NCD clinic and directly visit the physician, obtain a prescription and receive drugs from the

pharmacist. Therefore, the register at the NCD clinic might miss these follow-up visits. The staff nurses were not providing a list of newly diagnosed cases to the ASHAs. In addition, though the ASHAs maintained their own home visit records, they were not systematically collated by the staff nurse and provided to the administrative section for processing the incentives. We came up with change ideas (interventions) for the key drivers of the problem. We prioritised the change ideas based on the ease of implementation and the impact of intervention.

One of the key aspects that we uncovered was that urban ASHAs were not effectively mobilising patients for follow-up visits. This was because ASHAs were not provided with an updated line list of registered patients with hypertension. Also, the staff nurses who supervise the ASHAs do not maintain a record of the home visits made by ASHAs. Therefore, the ASHAs did not receive incentives for home visits on time, leading to demotivation and dissatisfaction. We also tried to reduce documentation errors regarding follow-up visits by triangulating data from the pharmacist's register.

c. Plan-Do-Study-Act:

PDSA-1: our change idea #1 was to effectively involve urban ASHAs in conducting home visits to motivate individuals registered in the NCD clinic for regular follow-up. For effective home visits, we require the following:

1. Provision of an updated line list (of registered individuals with hypertension) to the ASHAs by the staff nurses
 2. Accurate record-keeping of home visits made by ASHAs
 3. Tracking to see if incentives were provided to ASHA.
- We involved 24 Urban ASHAs representing 24 blocks of Seoni district. We had 1870 patients registered in DH till December 2021 from 24 blocks. New registrations from

January 2022 were planned to be updated in the ASHA line list during the monthly review meetings subsequently.

The quality improvement project was explained during the regular monthly review meeting in the first week of January 2022. The line list of hypertension patients registered in the NCD Clinic, DH, Seoni, was stratified according to the blocks and was provided as an Excel sheet (printout) to the respective ASHAs each month. The details in the line list include patient ID, name, age, gender, phone number, current address and date of visit in each month. We trained the ASHAs to contact the individuals with hypertension in the line list during their routine home visits for other programme activities. The date of the home visit for each patient is documented in the register maintained by ASHAs. We informed ASHAs regarding the incentives for motivating patients for the NCD follow-up visits that already exist within the National Health Mission (NHM) programme of India to the tune of 50 rupees (Indian currency) for every 6 months of continuous follow-up visits per NCD patient.¹¹

We conducted refresher training for ASHAs every month during their monthly review meeting with the staff nurses. ASHAs were asked to submit follow-up field records during the monthly meetings. We worked with the administrative division of NHM and ensured that the incentives were released promptly after submitting monthly follow-up reports from the field visit register of ASHAs.

PDSA-2: due to the engagement of staff nurses in various programme-related tasks, the record-keeping for patients attending the NCD clinic at the DH was found to be incomplete, leading to an underestimation of follow-up percentages. Additionally, we observed instances where individuals with hypertension directly sought medications from the MO without visiting the NCD clinic, resulting in gaps in documentation within the NCD register. We addressed this issue by triangulating the information related to follow-up visits from the pharmacy register, as the pharmacist also captured each drug-refill visit (change idea #2). Since the staff nurse in the DH is already engaged in other program activities and clinical care, we trained the pharmacist to cross-reference the NCD and pharmacy register. The pharmacist was employed in the DH from 8 o'clock in the morning to 5 o'clock in the evening. However, he is actively involved in dispensing medicines to patients only in the morning. Hence, the pharmacist was available in the afternoon to get involved in other activities. Thus, the QI team involved the pharmacist in updating the follow-up line list by cross-referencing the NCD and pharmacist registers. Consequently, the NCD register was updated by cross-referencing the pharmacist's register from March 2022, ensuring accurate recording of follow-up visits.

Measurement

We calculated the monthly follow-up proportion by dividing the number of individuals with hypertension followed up in the current month by the cumulative

number of individuals with hypertension registered till the previous month.

In addition, we also looked at how the quality-improvement project impacted the treatment outcomes that were routinely collected through the IHCI. The IHCI project was monitored through quarterly cohorts. Within the IHCI project, the individuals registered for hypertension in a particular quarter (registration quarter) of the year are assessed for treatment outcomes in the subsequent quarter (assessment quarter). *For example, if new individuals with hypertension are registered in the second quarter (April-June, ie, registration quarter), their treatment outcomes were assessed in the third quarter (July-September, ie, assessment quarter).*^{3 12}

The main treatment outcomes assessed include BP control, BP uncontrol and missed visits.

Operational definition

BP control

An individual with hypertension who has a systolic BP <140 mmHg or diastolic BP <90 mmHg in the most recent visit of the assessment quarter.

BP uncontrol

An individual with hypertension who has a systolic BP ≥140 mmHg or diastolic BP ≥90 mmHg in the most recent visit of the assessment quarter.

Missed visits

An individual with hypertension registered in the registration quarter and has not visited the DH even once in the assessment quarter.

Data analysis

The monthly follow-up proportion was plotted on a run chart for the QI initiative. We assessed the improvements after implementing change ideas by detecting a 'special cause variation' in the run chart by applying the following standard run chart rules.¹³ This includes detecting (i) a shift (if six or more consecutive data points above the median follow-up); (ii) trend (five or more sequential data points all going up) and (iii) the presence of too few or too many runs to identify a special cause variation. We calculated and expressed the quarterly BP outcomes as proportions.

RESULTS

The total number of individuals registered at the DH for hypertension was 2077 by the end of December 2021 (baseline). The total registrations were 2115 by the end of the QI period (September 2022). Of the 24 urban ASHAs from 24 wards in the district, all were trained to provide counselling during home visits in January 2022. After removing duplicate records, we line-listed 1438 individuals who received home visits from ASHAs during the study period. Among them, 74.9% (1069/1438) of individuals returned for follow-up. Incentives of 53 450 Indian

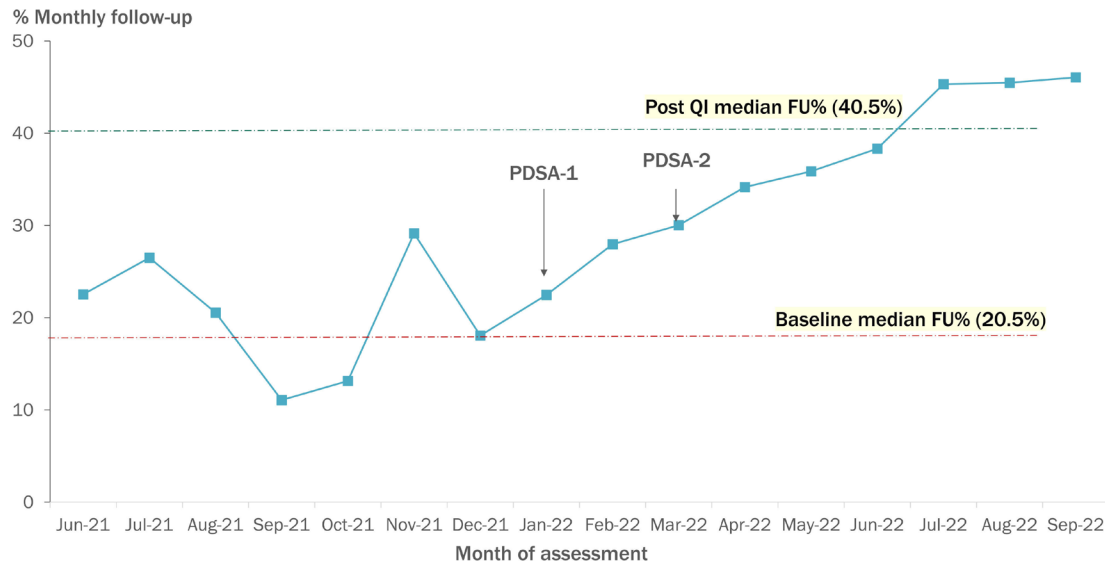


Figure 2 Run chart representing a change in monthly follow-up proportion of individuals registered with hypertension in the District Hospital, Seoni, Madhya Pradesh, India, 2021–2022. FU, follow-up; PDSA, Plan-Do-Study-Act; QI, Quality Improvement.

National Rupee were provided to ASHAs for consistently tracking and visiting 1069 patients during the QI period.

The monthly follow-up percentage (FU%) increased from 18.1% (375/2077) in December 2021 to 28% (624/2231) in February 2022. In March 2022, after implementing change idea #2 in addition to change idea #1, FU% increased from 37.9% (910/2398) to 54.1% (1523/2850) by September 2022. The run chart showed a *shift* in follow-up proportion above the baseline median of 20.5% following QI interventions (as five or more FU% points were above the median after QI) (figure 2).

The BP control increased from 22% (76/345) in the assessment quarter (Q4) of 2021 to 52% (53/102) in Q1 of 2022 and remained over 50% throughout the QI period. Similarly, the missed visit proportion decreased from 66% (228/335) in the assessment quarter (Q4) of

2021 to 30% (31/102) in Q1 of 2022. Furthermore, the missed visits were reduced to 22% (40/180) in Q3 of 2022 (figure 3).

Balancing indicators

Of the 24 ASHAs involved in QI, 75% responded that the personal workload was increased due to home visits conducted to improve follow-up for hypertension care.

DISCUSSION

Our QI initiative focused on improving regular monthly drug refill follow-up visits among individuals with hypertension registered in a district hospital (public tertiary care facility) in Madhya Pradesh, India. Based on the root-cause analysis, we conducted two PDSA cycles. The first

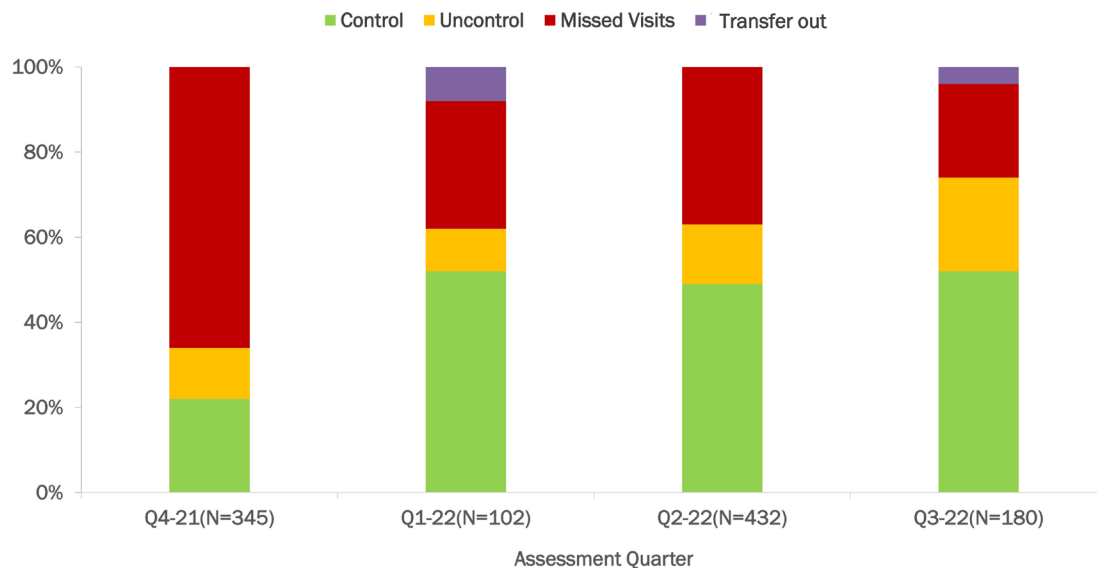


Figure 3 Quarterly treatment outcomes of individuals with hypertension registered in the District Hospital, Seoni, Madhya Pradesh, India, 2021–2022.



change idea involved urban ASHA conducting follow-up home visits for all registered patients. The second change involved reducing documentation errors by triangulating data from follow-up visits from the pharmacy register to those available in the routine register. As a result of our QI efforts, the FU% increased twofold from the baseline, and more than 50% of the registered patients returned for follow-up care.

Under the National Health Mission's Ayushman Bharat Programme, ASHAs regularly conduct home visits in their designated areas for various priority health problems. ASHAs are familiar with the local communities and have vital links with the healthcare system.^{14 15} Consequently, delivering health education and reminders for hypertension follow-up through home visits by ASHAs is feasible and can ensure sustainability. Also, in the Indian context, documentation errors severely limit a programme manager's ability to assess treatment outcomes for hypertension programmes. The use of information available in other registers within the same health facility can help reduce errors and improve monitoring, as shown by the current QI initiative. Chhattisgarh, another state in India, had a similar initiative using *Mitanins* (CHWs) for screening, follow-up and referral for hypertension. Garg *et al* evaluated this initiative and found that using CHWs to improve the follow-up of individuals with hypertension was feasible and yielded good programmatic outcomes.¹⁶

Evidence from studies done in India has shown that ASHAs were overburdened with activities from multiple programmes. However, the challenge was aggravated by delays in incentivisation and a lack of supportive supervision.¹⁷⁻¹⁹ Our study focused on providing timely incentives for undertaking home visits for hypertension care. We also ensured that an updated line list of individuals with hypertension was provided promptly to the ASHAs. The district hospital's MOs and staff nurses provided supportive supervision and training to empower ASHAs to perform their tasks better. Amidst the challenges faced by ASHAs, ensuring timely incentivisation, supportive supervision and appreciation from the staff nurses and MOs motivated the ASHAs to focus effectively on mobilising individuals with hypertension for follow-up care.

In other low-middle-income countries in the region, the effectiveness of home visits by CHWs for hypertension care was studied. The study showed that among the 2645 individuals with hypertension enrolled in 2016–2017, 92% were followed up through home visit intervention by 2019. In addition, BP control improved from 48% to 53%.²⁰ In Western Kenya, CHWs were involved in improving follow-up visits among individuals who were irregular for drug refills. Overall, 49% were followed up in the facility, and SBP decreased by 10.4 at the end of 18 months of continuous home visits by CHW.²¹

In 2021, Tamil Nadu, a state in Southern India, initiated a home-based care programme for NCDs using CHWs. This programme included BP screening, doorstep delivery of drugs, follow-up care for hypertension and referral of individuals with uncontrolled hypertension for

dose escalation to health facilities. After a year of implementation, a community-level survey revealed that over half of the patients receiving these home-based services were satisfied, and 90% expressed willingness to continue with home-based care.²²

Therefore, the literature reveals that the involvement of CHWs in multicomponent, holistic and patient-centric strategies has resulted in consistent improvement in follow-up and treatment outcomes in all settings.

Strength and limitations

The study strengths include the involvement of local stakeholders like staff nurses and ASHAs in root-cause identification and designing interventions. The involvement and training of all the urban ASHAs are strengths that will ensure sustainability after the intervention period. Teaching and coaching QI concepts to the local stakeholders will have lasting implications for the hospital. The study is not devoid of limitations. We did not document the time taken for home visits by ASHAs and the number of home visits made for each registered individual with hypertension. Therefore, it is unclear whether multiple visits to the same individuals contributed to the increased follow-up. Time taken for home visits could inform about the extra burden that the QI initiative added to each ASHA's routine. We also did not document how the QI initiative on home visits for follow-up care impacted ASHAs' involvement in other health programmes.

CONCLUSION

The quality improvement initiative, which involves home visits by ASHAs and triangulating data from the pharmacy register, has resulted in a notable improvement in the proportion of follow-up visits among individuals registered for hypertension care in a public-sector district hospital. Given the limited access to healthcare services in India and the widespread presence of ASHAs across the country, a viable approach to enhancing hypertension follow-up could involve leveraging the existing workforce. Nonetheless, in regions with difficult terrain and challenging accessibility, it is essential to exercise caution when implementing this strategy.

Contributors RB, GP, AR and PK: conception; RB, MK, GP, AR, NN, VKN, MJA and PK: design of the work; RB, AR and PK: study design and execution; RB, NN, VKN and MJA: responsible for data collection; RB, MK and AR: analysis and interpretation of data; RB, MK and AR: drafted the work or substantively revised it; MK and AR: provided manuscript revisions and oversight. AR is guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval We abstracted the deidentified secondary data from the facility's follow-up records. The Institutional Ethics Committee, the Indian Council of Medical Research and the National Institute of Epidemiology, Chennai approved the study (NIE/IHEC/201709-02).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID ID

Mogan Kaviprawin <http://orcid.org/0000-0002-1659-059X>

REFERENCES

- World Health Organisation. Hypertension. 2023. Available: <https://www.who.int/india/health-topics/hypertension>
- Government of India. National Family Health Survey (NFHS-5), District fact sheet, Seoni, Madhya Pradesh, India, 2019-21. 2019. Available: <https://nfhs.in/nfhuser/publication.php>
- Kaur P, Kunwar A, Sharma M, *et al.* The India Hypertension Control Initiative-early outcomes in 26 districts across five states of India, 2018-2020. *J Hum Hypertens* 2023;37:560-7.
- Krishna A, Pathni AK, Sharma B, *et al.* A perspective of private health care providers in the state of Madhya Pradesh on adopting key strategies of the India hypertension control initiative. *J Clin Hypertens (Greenwich)* 2020;22:1321-7.
- BMC Health Services Research. India hypertension control initiative: decentralization of hypertension care to health wellness centres in Punjab and Maharashtra, India, 2018-2022. 2024. Available: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-024-11354-9>
- Module for ASHA on Non-Communicable Diseases. Ministry of Health and Family Welfare, Government of India. 2024. Available: https://mohfw.gov.in/sites/default/files/Module%20for%20ASHA%20on%20Non-communicable%20Diseases_1.pdf
- Kuria N, Reid A, Owiti P, *et al.* Compliance with follow-up and adherence to medication in hypertensive patients in an urban informal settlement in Kenya: comparison of three models of care. *Tropical Med Int Health* 2018;23:785-94.
- Das B, Neupane D, Singh Gill S, *et al.* Factors affecting non-adherence to medical appointments among patients with hypertension at public health facilities in Punjab, India. *J Clin Hypertens (Greenwich)* 2021;23:713-9.
- Batalden P. *Building knowledge for improvement-an introductory guide to the use of FOCUS-PDCA*. Nashville, TN: Quality Resource Group, Hospital Corporation of America, 1992.
- Taylor MJ, McNicholas C, Nicolay C, *et al.* Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Qual Saf* 2014;23:290-8.
- National Health Mission, Government of India. ASHA incentives under National Health Mission. 2024. Available: https://nhm.gov.in/New_Update-2022-23/communization/ASHA/Orders_and_guidelines/ASHA-Incentive.pdf
- Reddy SK, Kunwar A, Durgad K, *et al.* Decentralization of India Hypertension Control Initiative services to maintain continuum of care for hypertensive patients during COVID-19 pandemic in Telangana. *WHO South East Asia J Public Health* 2021;10:S49-58.
- Perla RJ, Provost LP, Murray SK. The run chart: a simple analytical tool for learning from variation in healthcare processes. *BMJ Quality & Safety* 2011;20:46-51.
- Module for Multi-Purpose Workers. Module for multi-purpose workers - prevention, screening and control of common ncds_2.pdf. 2023 Available: https://main.mohfw.gov.in/sites/default/files/Module%20for%20Multi-Purpose%20Workers%20-%20Prevention%2C%20Screening%20and%20Control%20of%20Common%20NCDs_2.pdf
- Ministry of Health and Family Welfare. Operational guidelines. National Programme for Prevention and Control of Non-Communicable Diseases. 2023. Available: https://mohfw.gov.in/sites/default/files/NP-NCD%20Operational%20Guidelines_0.pdf
- Garg S, Dewangan M, Nanda P, *et al.* Impact of community health workers on improving identification and primary care of hypertension among the urban poor - findings from Chhattisgarh state of India. *BMC Prim Care* 2023;24:272.
- Sharma R, Webster P, Bhattacharyya S. Factors affecting the performance of community health workers in India: a multi-stakeholder perspective. *Glob Health Action* 2014;7:25352.
- Manjunath U, Sarala R, Rajendra D, *et al.* Assessment of Workload of ASHAs: A Multi-stakeholder Perspective Study for Task-sharing and Task-shifting. *J Health Manag* 2022;24:62-73.
- Khandre RR, Jakasania A, Raut A. 'We are working for seven days a week': Time motion study of accredited social health activists from central India. *Med J Armed Forces India* 2023;79:S142-9.
- Jafar TH, Gandhi M, de Silva HA, *et al.* A Community-Based Intervention for Managing Hypertension in Rural South Asia. *N Engl J Med* 2020;382:717-26.
- Vedanathan R, Kamano JH, DeLong AK, *et al.* Community Health Workers Improve Linkage to Hypertension Care in Western Kenya. *J Am Coll Cardiol* 2019;74:1897-906.
- Ravichandran G, Olickal JJ. Home-based care for noncommunicable diseases and patient satisfaction: A community-based cross-sectional study from Tamil Nadu, India. *Int J Noncommun Dis* 2023;8:84-90.