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Understanding Gaps in the Non-Communicable Disease Care Cascade: Insights from a Quality Improvement Pilot in Kalahandi, Odisha

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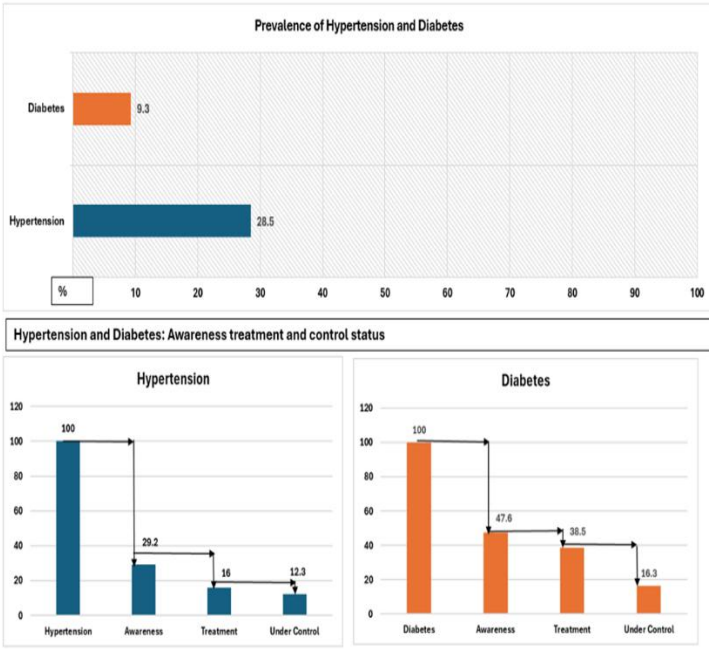
Background

Non-communicable diseases (NCDs) have become one of the leading causes of mortality globally, accounting for nearly 43 million deaths in 2021 (1). Strengthening quality of care, particularly for major conditions such as hypertension and diabetes, is a key priority for health systems worldwide (2) (3). India also faces a growing burden of NCDs. The National NCD Monitoring Survey (NNMS) reports substantial gaps in levels of awareness, treatment, and control of hypertension and diabetes (Fig 1).



- FIGURE 1:HYPERTENSION AND DIABETES TREATMENT CASCADE IN INDIA (NNMS 2017-18)

The Government of India launched the Ayushman Bharat - Health and Wellness Center Program to strengthen primary health care. These Health and Wellness Centers (now known as Aarogya Mandirs or AAM) deliver an expanded package of primary health care services, including care for common NCDs.

The ACT-QI Pilot in Kalahandi, Odisha

To address gaps in NCD care at AAM facilities and catchment populations, the ACT-QI (Addressing Care and Treatment Gaps through Quality Improvement) intervention adapted the WHO-SEARO Point of Care Quality Improvement (POCQI) model (6). By embedding quality improvement processes within facility workflows, the ACT-QI intervention aims to close diagnostic and treatment loops, enhance continuity of care, and strengthen treatment adherence for NCDs. This intervention applies the POCQI model to address critical quality gaps in the diagnosis and treatment of diabetes and hypertension within the NCD care cascade.

ACT-QI is being implemented in Kalahandi district in southwestern Odisha (7). The district comprises 13 blocks, of which two blocks have been selected for the study, one as the intervention block and the other as the control block.

Objective

To inform the design and implementation of this intervention, a formative assessment was conducted with the following objectives:

- To understand processes across the NCD care cascade and identify priority gaps that could inform problem identification for facility-level quality improvement (QI) cycles.
- To assess existing understanding of the QI approach and readiness of AAM staff who will support implementation of facility-level QI cycles.

The ACT-QI intervention is led by All India Institute of Medical Sciences, New Delhi and All India Institute of Medical Sciences, Bhubaneswar with technical support from Johns Hopkins University (JHU), under the India Primary Healthcare Support Initiative (IPSI) project.

Methods

The assessment was carried out in intervention block (Junagarh) and the control block (Jaipatna). It involved interviews with stakeholders across all levels; district, CHC (Community health centre), PHC (Primary health centre) and SHC (Sub-health centre). In total, the team visited 2 CHCs/ blocks, 4 PHCs, and 8 SHCs across both blocks, interviewing 35 stakeholders. The formative assessment included three key components:

- **Assessment of existing processes and monitoring mechanisms**
  Mapping of workflows across the continuum of care; screening, diagnosis, treatment initiation, follow-up, and referral; along with a review of data collection, reporting, and monitoring mechanisms at facility and block/district levels.
- **Assessment of QI capacity**
  Evaluation of the knowledge of potential facilitators, including district officials and medical officers at PHCs/CHCs, in applying Quality Improvement (QI) methods and tools.
- **Contextual and beneficiary perspectives**
  Assessment of broader health system and patient-level factors through patient interviews influencing service delivery to identify operational challenges and opportunities for strengthening hypertension and diabetes care.

Data collection and analysis

Based on a framework, semi-structured interview guides were developed and used for data collection. Data were collected through detailed field notes and audio recordings of all interviews.

Qualitative data were analysed using thematic analysis. Quantitative data were analysed using SPSS (version 26) and summarized using frequencies and percentages.

Findings

1. Challenges in existing processes and monitoring mechanisms

Seven thematic gaps were identified across the NCD care cascade from the formative findings (refer to figure 2):

i. Deviations in protocol implementation: Implementation of NCD guidelines was inconsistent across facilities, with variation in screening age criteria, referral practices and variation in diagnostic confirmation processes.
ii. Gaps in referral practices and documentation: Referral processes were inconsistent and often involved multiple steps, with no standardised tools or record-keeping systems in place. There was also no structured mechanism to track whether referred patients accessed higher facility, compromising continuity of care.
iii. Fragmented follow-up practices across levels of care: Follow-up mechanism was inconsistent, with most sub-centres lacking updated line-lists and a standardised definition of follow-up. Tracking mechanisms varied across facilities and were largely informal, with no structured system to track missed follow-up visits. As a result, follow-up was predominantly passive, relying on patients to return on their own, thereby compromising treatment adherence and continuity of care.
iv. Weak health information systems and manual dependency: Record-keeping practices were fragmented and inconsistent across facilities, with a limited understanding of the NCD portal and data elements. Incomplete, untimely and selective online data entry was leading to mismatch between manual registers and portal data. There was limited use of portal data for planning or follow-up tracking.
v. Lack of coordination and teamwork: Roles related to NCD were not clearly defined, with most responsibilities falling on CHOs at SHCs and AYUSH MOs at PHCs.
vi. Target-driven approach: Data were primarily compiled and reported for review at higher levels, with limited use for planning or action at the facility level. Review at a higher level focused on screening targets, with limited attention to follow-up and continuity of care.
vii. Capacity-building gaps: ANMs and ASHAs, lacked adequate role-specific training for NCD documentation, screening, and follow-up. There was a significant gap in understanding the NCD portal, particularly regarding data entry and interpretation of dashboard indicators.

2. Assessment of competencies for QI

This assessment explored the existing understanding of the QI approach, exposure to quality-related training, participation in quality initiatives, and perceived challenges in implementing QI activities.

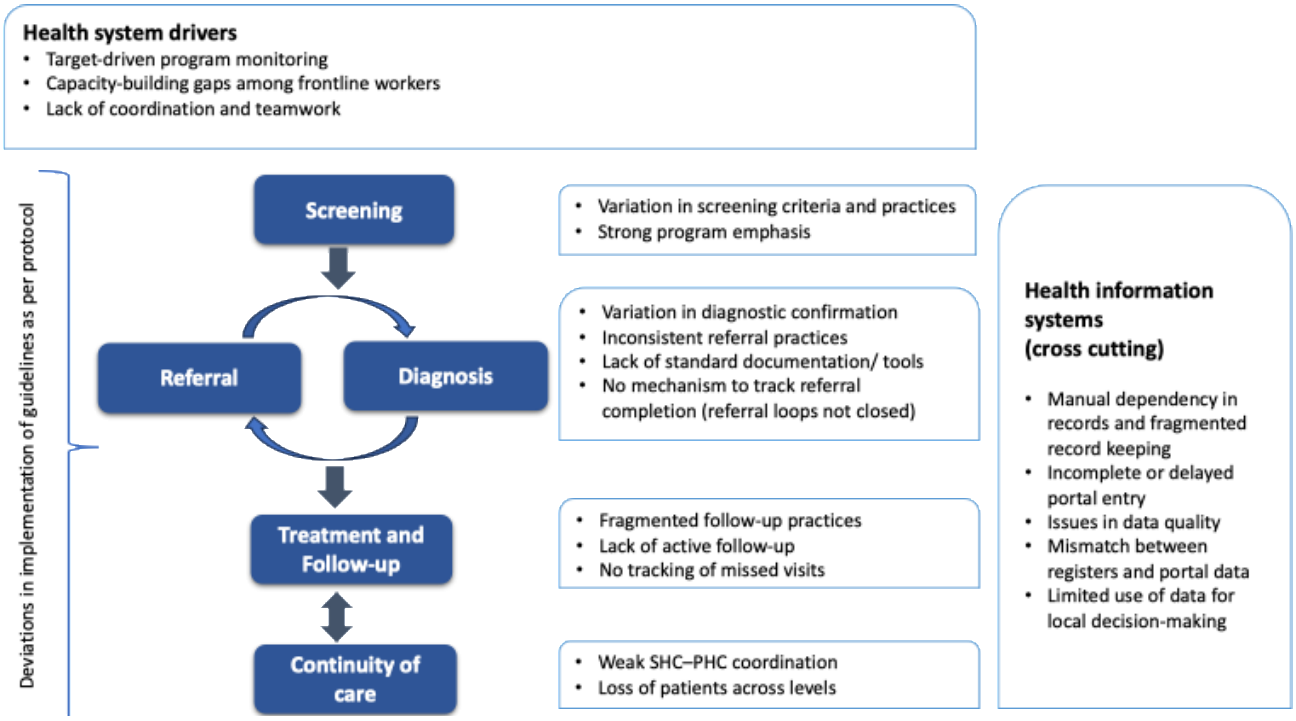
i. Understanding of the concept of quality: Nine out of 13 respondents (69%) described quality primarily in terms of patient satisfaction and service availability, while six respondents linked quality to the presence of inputs such as infrastructure and resources. Four respondents (31%) associated quality with adherence to guidelines and documentation practices, particularly in the context of NQAS processes. Only three respondents (23%) mentioned the use of data or outcomes for improving service quality. Overall, quality improvement was largely interpreted as compliance with NQAS certification processes rather than as a continuous effort to improve service delivery. Only two respondents (15%) demonstrated an understanding that quality assurance and quality improvement are distinct concepts.

ii. Quality-related training and familiarity with QI tools: Most respondents (10 out of 13; 77%) reported attending quality-related trainings under NQAS or Kayakalp. However, none had received dedicated training on QI methods and tools such as PDSA cycles or root cause analysis. While 61.5% indicated familiarity with certain QI tools, more than half (53.8%) had never used them in practice, suggesting a gap between awareness and practical application.

iii. Quality initiative engagement, implementation challenges, and readiness for QI: Quality-related work was largely perceived as part of certification processes such as NQAS or Kayakalp, with activities often undertaken to meet program requirements and district review priorities. Challenges highlighted include limited coordination and teamwork across facility staff, shortages of human resources, and high workload due to multiple program responsibilities. Quality-related activities were frequently viewed as additional tasks rather than an integral part of routine service delivery, indicating limited ownership of continuous improvement processes.

iv. Training needs for strengthening QI capacity: Majority of respondents (92%) emphasized the need for structured training on QI methods and tools. Participants highlighted the importance of practical, hands-on and team-based workshops, along with refresher trainings and orientation on existing program guidelines such as NCD and NQAS.

Overall, the findings suggest that quality is often perceived as dependent on external factors such as infrastructure and resources rather than as a responsibility owned by facility teams.



- FIGURE 2: OPERATIONAL AND SYSTEM GAPS IDENTIFIED ACROSS THE NCD CARE CASCADE DURING THE FORMATIVE ASSESSMENT

3. Contextual and beneficiary perspectives

Beneficiary perspectives were additionally assessed to understand contextual factors. A total of 162 beneficiaries attending HWCs were interviewed to examine service utilisation, health-seeking behaviour, and perceptions of the quality and accessibility of NCD care. Beneficiaries attending the HWCs had a mean age of 50.2 years.

- Referrals were primarily facilitated by ASHAs (27%), while 22% of beneficiaries accessed services on their own.
- Almost all beneficiaries had their blood pressure measured (99%) and 79% underwent blood glucose testing.
- Assessment for hypertension and diabetes related complications was limited (95% beneficiaries reported not getting assessed).
- Almost 93% received medicines and 97% reported receiving counselling services.
- Overall, 52% and 42% of beneficiaries reported 'very satisfied' and 'satisfied' with services at HWCs.

Learnings and Recommendations

Learning	Recommendation
Understanding local context and QI capacities: Examining the NCD care cascade alongside existing understanding of the QI approach helped identify gaps and informed the overall intervention design.	*Health system interventions should be preceded by a structured assessment of service delivery processes and implementation capacity to identify priority gaps and guide context-specific implementation strategies.*
Emphasise need for focus on all levels of care cascade: NCD program, still in an early phase of implementation, placed strong emphasis on screening coverage, while follow-up practices remain fragmented, referral mechanisms often lack closure, and linkages between different levels of care are weak, contributing to patient attrition within the system	*Program monitoring and review mechanisms should move beyond a predominantly target-driven approach to consider performance across the full service delivery cascade. Strengthening coordination and communication between different levels of care can further support continuity of services.*
Capacity to interpret and use routine program data: Although routine data entry in the NCD portal was undertaken, issues such as incomplete data entry and limited understanding of dashboard indicators affected the use of data for monitoring program performance and identifying service delivery gaps.	*Strengthen data quality and data-use capacity through training that goes beyond data entry procedures. Regular data review processes should be institutionalized to promote accountability and informed decision making.*
Leveraging NQAS platforms to strengthen continuous quality improvement (CQI): Existing NQAS trainings and efforts primarily focus on certification processes, with limited emphasis on QI methods and tools that support CQI in service delivery.	*Moving beyond certification, focused preparation toward CQI approach and integrating it in existing NQAS platform to strengthen facility teams' ability to identify gaps and implement locally driven solutions.*
Readiness and ownership are critical for implementing quality improvement Quality-related activities were largely perceived as compliance with certification processes, while operational constraints such as workload, coordination gaps, and competing program priorities limited engagement in QI work, reflecting lack of ownership among those responsible for implementation.	*QI initiatives should incorporate strategies to build ownership and readiness among stakeholders. This may include team-based capacity-building approaches, clear role definition, supportive supervision, and integrating QI activities into routine program workflows.*

Next steps

- Intervention phase (ongoing): The intervention phase is underway. A reference guide for problem identification, along with QI workshops and NCD portal training, all designed based on formative findings, have been completed. Facility teams are implementing POCQI cycles with ongoing facilitation and documentation.
- Evaluation phase: An endline assessment will examine both implementation processes and service delivery outcomes. The evaluation will assess process indicators related to QI implementation and care provision, alongside service delivery performance across the NCD care cascade, to determine the overall impact of the intervention.

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