



Improving Routine Health and Nutrition Data Quality in Ethiopia: *Recommendations from a Systematic Review*

EXECUTIVE SUMMARY

We conducted a systematic review to address gaps in understanding the quality of Health Management Information System (HMIS) data, particularly nutrition data, across Ethiopia's diverse regions. We screened 790 papers, including 25 studies, to evaluate completeness, consistency, and timeliness metrics as per WHO standards. Findings revealed wide variability in completeness (50%-100%), accuracy (38.9%-90.5%), and timeliness (41.87%-93.71%), with significant deficiencies noted, including indicator discrepancies and timeliness issues. Poor data quality was attributed to human resource shortages, capacity gaps, behavioral influences, and infrastructural deficits. Addressing these challenges through resource allocation, training, supervision, and feedback mechanisms is crucial for enhancing HMIS data quality, supporting informed decision-making, and improving population health outcomes in Ethiopia. Future interventions should prioritize sustainable improvements in data management to ensure reliable and comprehensive health information across the country.



THE PROBLEM

Public health initiatives globally rely heavily on robust health data for effective evaluation, policy formulation, and service delivery assurance [1,2]. However, over 40% of countries lack evidence of adherence to data quality assurance processes in health facility data [3], underscoring the critical need for reliable data [4]. Completeness ensures all required data elements are reported across various levels, while timeliness measures prompt submission before deadlines [5]. In Ethiopia, challenges persist in HMIS data quality due to human resource shortages, inadequate training,

infrastructural limitations, and behavioral influences [8,9]. This review synthesizes data from 2015, highlighting strategies to enhance data quality and improve healthcare policy effectiveness in Ethiopia.

KEY MESSAGES

- Reliable health data is essential for effective public health initiatives and policy decisions, ensuring comprehensive and timely information for decision-makers.
- Challenges in HMIS data quality persist in Ethiopia, including human resource shortages and infrastructural limitations, impacting healthcare delivery and policy formulation.
- Standardize reporting practices across health facilities. Enhance data validation through internal audits comparing HMIS reports with source documents and WHO estimates. Invest in infrastructure for timely data capture effectiveness.

Box 1. Methodology

PubMed, HINARI, and Google Scholar databases were systematically searched using keywords like "Data quality," "Completeness," "Accuracy," "Timeliness," and related terms. Adhering to PRISMA guidelines, studies from Ethiopia since 2015 examining HMIS data quality were included. A two-stage screening process evaluated eligibility, with discrepancies resolved by consensus. Data extraction used a standardized tool for study specifics and quality assessment. Outcomes focused on completeness, consistency, and timeliness metrics, synthesized for comprehensive reporting.

1. Completeness of Routine Health Data

Nineteen studies focused on completeness, revealing disparities across regions. While some districts achieved 100% completeness rates, others reported as low as 52.76%. Few studies met the WHO's benchmark of 90% completeness, indicating significant room for improvement.

2. Consistency of Routine Health Data

Studies assessed internal and external consistency, highlighting discrepancies in reported data compared to source documents and external benchmarks like WHO estimates. Over-reporting of immunizations and maternal health services was prevalent, while diseases like tuberculosis and severe acute malnutrition were consistently under-reported.

3. Timeliness of Routine Health and Nutrition Data

Thirteen studies evaluated timeliness, with reports varying widely from 41.87% to 93.71%. Despite some regions achieving high timeliness rates, over half of the studies reported rates below 80%, suggesting challenges in data reporting timelines.

4. Nutrition Data Quality

Five studies assessed nutrition data quality, highlighting deficiencies compared to child and

maternal health indicators. Severe acute malnutrition was notably under-reported, with accuracy ranging from 55% to 97%. Nutrition indicators also exhibited lower completeness rates, with only half of the reports submitted on time. Significant discrepancies in external consistency were noted, especially for deworming and vitamin A supplementation. Overall, nutrition data quality in HMIS fell short of standards set for other health indicators. Limited research on nutrition data quality underlines potential ongoing challenges in this critical area.

5. Overall Quality of Routine Health Data

Overall data quality fell below optimal standards in most studies, with none achieving a quality score of 90%. Challenges such as inaccurate reporting, under-reporting of critical health indicators, and inconsistencies across regions were pervasive.

5. Challenges Undermining Data Quality

Factors contributing to poor data quality included inadequate supportive supervision, insufficient training in data management practices, and inconsistent data reporting practices. Other challenges included technical issues like mobile phone reporting without documentation and inadequate infrastructure.

In conclusion, Ethiopia's HMIS faces significant challenges in ensuring high-quality data across its health indicators. Addressing these challenges requires targeted interventions such as

enhanced training, improved supervision, and standardized reporting practices. Future research and policy efforts should focus on these areas to strengthen the reliability and utility of HMIS data, thereby improving healthcare delivery and population health outcomes.

KEY RECOMMENDATIONS

1. **Standardize Reporting Practices:** Implement standardized reporting protocols across all health facilities and regions. This includes clear guidelines on data collection, reporting frequencies, and quality checks to ensure all required data elements are consistently reported.
2. **Enhance data validation:** Strengthen internal audits comparing HMIS reports with source documents and WHO estimates to address over-reporting and under-reporting issues effectively.
3. **Invest in timely data capture:** Upgrade infrastructure for reliable internet, digital tools, and healthcare staff training to ensure prompt data transmission and establish real-time reporting systems for consistent data timeliness.

FURTHER INFORMATION

The research report from which information for this policy brief was drawn from is available on the NIPN website (<http://www.nipn.ephi.gov.et/>). Detailed descriptions of findings and statistical methods used are included in the research report.

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