

Assessing Health Workers' Knowledge and Understanding of National Health Management Information System Data Tools in Primary Healthcare Facilities

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ABSTRACT

Nigeria's National Health Management Information System (NHMIS) underpins routine health data collection nationwide, giving planners, monitors, and evaluators a shared data infrastructure. How well that system functions, however, depends largely on the day-to-day competence of the frontline workers who record and submit the data. This study examined how well health workers attached to the Ughelli South Primary Health Authority in Delta State know and understand NHMIS data tools. Using a descriptive cross-sectional design, the researchers surveyed all 104 health workers directly involved in NHMIS data collection, recording, and reporting across the area's primary healthcare facilities. Data were gathered through a structured questionnaire, reinforced by an observation checklist, and the instrument achieved a Cronbach's alpha of 0.86, indicating acceptable internal consistency. Overall knowledge of NHMIS tools proved moderate: half of respondents (50%) fell into the moderate-knowledge band, a third (33%) scored low, and only 17% demonstrated high knowledge. Health workers were noticeably more at ease with paper-based registers than with electronic platforms such as DHIS2. Understanding followed a comparable pattern, clustering in the low-to-moderate range, with 46% rated moderate, 40% rated low, and just 14% rated high. Formal training was rare, reflected in a mean score of 2.65 on a five-point scale, and health workers were far more comfortable with everyday registers for outpatient visits and maternal and child health than with summary forms or surveillance instruments. Many carried out their duties without a solid grasp of reporting standards or indicator definitions, and the application of NHMIS data to actual decisions was similarly weak (mean = 2.73). The study concludes that lifting NHMIS performance will require deliberate investment in knowledge and understanding alike, through structured training, closer supervision, and the incorporation of health information systems content into pre-service curricula.

Keywords: *National Health Management Information System, Health Workers, Knowledge, Understanding, Data Tools, Primary Healthcare*

INTRODUCTION

The National Health Management Information System is the backbone of routine health data management in Nigeria and a central pillar of the country's broader health-system strengthening agenda. It was set up to give every tier of care sure as primary, secondary, and tertiary a structured way to collect, process, analyse, and report health data, on the premise that planning, monitoring, and evaluation can only be as good as the information feeding them. Across developing health systems generally, and Nigeria's in particular, reliable health data is widely regarded as a precondition for better service delivery and improved outcomes (Ojiakor, Etiaba, & Onwujekwe, 2025; Egwudo et al., 2025).

As Nigerian healthcare has grown more complex, and as the push toward data-driven decision-making has intensified, the case for a coordinated, integrated national health information system has only grown stronger. NHMIS meets that need by drawing data from otherwise disparate health programmes into a single platform, cutting down on duplicate reporting and encouraging more consistent data practices across facilities. The

rollout of digital tools involving most notably the District Health Information Software 2 (DHIS2) has reinforced this integration, making it easier to aggregate, analyse, and visualise data from facility level up to the national level (Imhansoloeva et al., 2025; Federal Ministry of Health, 2024).

NHMIS is built from several interlocking components such as data collection, processing, analysis, presentation, and dissemination each of which converts raw figures into information that can actually inform decisions. Analysis surfaces trends in disease patterns and service use; dissemination puts that information in front of the people positioned to act on it. Where all these pieces work well together, the health system is far better placed to respond to emerging challenges and improve service delivery (Adewumi, 2025; Ojiakor et al., 2025).

NHMIS data tools are the standardised instruments that guide the systematic collection, aggregation, analysis, reporting, and use of routine health data at every level of the system. They are kept deliberately simple so that health workers from community level through facility, local government, state, and national levels can use them without difficulty. That process of standardisation is what makes reporting consistent and health information comparable across settings, which in turn is essential for coordinated, system-wide management (Federal Ministry of Health, 2024; Ojiakor, Etiaba, & Onwujekwe, 2025).

In practice, the tools take the form of patient registers, tally sheets, summary forms, and electronic reporting platforms. Health workers depend on them to document routine service data across immunisation, antenatal care, maternal and child health, and disease surveillance. Organised, structured recording of this kind strengthens the completeness and reliability of health records, and recent evidence shows that both paper-based and digital tools improve data quality and cut down reporting errors, provided they are backed by adequate training and supervision (Imhansoloeva et al., 2025; Egwudo et al., 2025).

Even so, NHMIS implementation in Nigeria continues to run into real obstacles. Many health workers are discovered to find the tools difficult to manage because of insufficient training, weak technical skills, heavy caseloads, and thin supervisory support, constraints that erode their ability to record data accurately and consistently. The visible fallout includes incomplete entries, reporting errors, and late submissions, all of which chip away at the quality and usefulness of the data for evidence-based decisions (Ojiakor, Etiaba, & Onwujekwe, 2025; Egwudo et al., 2025).

Beyond gaps in human capacity, structural and infrastructural shortfalls compound the problem. Many facilities do not have the right infrastructure to manage data efficiently which includes unreliable or complete lack of internet, missing or non-functional computers, and inconsistent power supply are recurring complaints. A shortage of personnel trained specifically in health information management adds further strain to already stretched staff, increasing workload and cutting into efficiency (Ojiakor et al., 2025; Egwudo et al., 2025).

Primary healthcare facilities within the Ughelli South Primary Health Authority in Delta State play an essential role in serving the local population, yet little empirical work has examined how well the health workers there actually know and understand NHMIS data tools. Closing this gap in understanding matters for improving data quality, sharpening reporting practices, and strengthening primary care delivery in the area. This article addresses the first two objectives of the wider research effort: assessing health workers' knowledge of NHMIS data tools, and assessing their understanding of those tools.

MATERIALS AND METHODS

Research Design and Study Area

The study adopted a descriptive cross-sectional survey design, chosen because it captures data from respondents at a single point in time without manipulating variables, a good fit for describing existing levels of knowledge and understanding of NHMIS data tools. This snapshot approach also allowed comparisons of responses across demographic groups such as age, education, and years of experience (Creswell & Creswell, 2018; Saunders et al., 2019).

The research was carried out in the Ughelli South Primary Health Authority, within Ughelli South Local Government Area of Delta State, Nigeria, an area that spans urban, semi-urban, and rural communities. Its primary healthcare facilities deliver core services such as maternal and child health, immunisation, family planning, disease surveillance, and general outpatient care, and they feed routine data into NHMIS through standardised tools and digital platforms such as DHIS2.

Study Population and Sampling

The study population consisted of health workers engaged in NHMIS activities across the Ughelli South Primary Health Authority, those responsible for collecting, recording, reporting, and using health data. This spanned Health Information Management personnel, nurses, midwives, Community Health Extension Workers (CHEWs), laboratory staff, and medical doctors involved in routine service delivery, all of whom complete NHMIS registers, tally sheets, and summary forms and submit reports through the approved channels.

In total, 104 health workers in the study area were engaged in NHMIS activities. Because the population was small enough to cover in full, the study adopted a total enumeration approach rather than drawing a sample, so the eventual set of 104 respondents represents the entire population of NHMIS users in the area.

Data Collection Instruments

A structured questionnaire served as the main data-collection tool, designed to elicit standardised responses across three broad areas: demographic characteristics, knowledge of NHMIS data tools, and understanding and use of those tools. It combined multiple-choice items with Likert-scale questions to gauge both knowledge and perception.

An observation checklist supplemented the questionnaire, capturing how registers were actually completed, how tallying was carried out, and how summary forms were filled in practice. This cross-check helped validate the self-reported questionnaire data and strengthen overall accuracy.

The questionnaire went through a systematic development process, beginning with a comprehensive review of existing NHMIS assessment instruments and health information system competency frameworks. Items were adapted from validated questionnaires used in comparable Nigerian and African health information system studies. Five specialists in health information systems and public health conducted an expert review, assessing the instrument for clarity, relevance, and appropriateness, and a pretest at a nearby PHC facility outside the study area generated feedback that was used to refine it further.

The knowledge section comprised 24 items covering awareness of NHMIS's purpose, familiarity with specific tools for instance patient registers, MCH registers, summary forms, surveillance tools, and DHIS2 training exposure, and understanding of tool usage. The understanding section comprised 20 items assessing practical application, confidence in reporting, use of data for decisions, difficulty with the tools, the impact of infrastructure, and supervisory feedback. All items were scored on a five-point Likert scale running from Strongly Agree to Strongly Disagree, and knowledge and understanding levels were categorised as high (70% or above), moderate (50–69%), or low (below 50%) based on cumulative scoring.

Validity and Reliability

Content validity rested on expert review by specialists in health information systems and public health, who assessed the instruments for clarity, relevance, and appropriateness, and on a pretest at a nearby PHC facility outside the study area whose feedback was used to sharpen the questionnaire further. Reliability was checked using Cronbach's alpha, which came out at 0.86 for the overall questionnaire, indicating good internal consistency with the knowledge subscale at 0.83 and the understanding subscale at 0.81.

Data Collection Procedure

Fieldwork began once approval had been secured from the Delta State Primary Health Care Board and from facility management. Questionnaires were administered in person at the selected facilities; respondents

completed them independently, with researchers on hand to clarify items where needed. Each completed questionnaire was checked on site for completeness and accuracy, and corrections were made immediately wherever possible.

Data Analysis

Data were coded and processed in SPSS version 26. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarise the data and presented in tables. Bivariate associations between demographic characteristics and levels of knowledge and understanding were examined through cross-tabulations and chi-square tests.

Ethical Considerations

Ethical approval was obtained from the Delta State Primary Health Care Board (reference number DPHBC/ADM/98/VOL.II/405), with additional permission secured from facility heads. Participation was voluntary and based on informed consent, no personal identifiers were collected, and respondents were free to withdraw at any point without consequence. All data collected were used strictly for academic purposes, and participants' rights and privacy were respected throughout.

RESULTS

Demographic Characteristics of Respondents

All 104 distributed questionnaires were completed and returned, for a response rate of 100%. The resulting demographic profile sheds light on the composition of the NHMIS workforce in the study area.

Table 1: Gender Distribution

Gender	Frequency	Percentage
Male	36	34.6
Female	68	65.4
Total	104	100.0

Women made up nearly two-thirds of respondents (68, or 65.4%), against 36 men (34.6%) with an imbalance that reflects a primary-care workforce dominated by female professionals, particularly nurses and midwives.

Table 2: Age Distribution

Age Group	Frequency	Percentage
20–29 years	22	21.2
30–39 years	41	39.4
40–49 years	28	26.9
50 years and above	13	12.5
Total	104	100.0

The 30–39 age bracket was the largest, with 41 respondents (39.4%), followed by 40–49 years (28, or 26.9%) and 20–29 years (22, or 21.2%). Only 13 respondents (12.5%) were 50 or older, pointing to a workforce skewed toward younger and mid-career stages.

Table 3: Educational Qualification

Qualification	Frequency	Percentage
Diploma	29	27.9
HND	18	17.3
Bachelor's Degree	34	32.7
Postgraduate	12	11.5
Others	11	10.6
Total	104	100.0

Bachelor's degree holders formed the largest group (34, or 32.7%), followed by diploma holders (29, or 27.9%) and HND holders (18, or 17.3%). Twelve respondents (11.5%) held postgraduate qualifications and 11 (10.6%) reported other qualifications, pointing overall to a fairly well-educated workforce.

Table 4: Professional Distribution

Category	Frequency	Percentage
Nurse or Midwife	42	40.4
CHEW	28	26.9
HIM Officers	16	15.4
Medical Laboratory	10	9.6
Doctor	4	3.8
Others	4	3.8
Total	104	100.0

Nurses and midwives were the largest professional group (42, or 40.4%), followed by CHEWs (28, or 26.9%). Health Information Management Officers accounted for 16 (15.4%), laboratory personnel for 10 (9.6%), doctors for 4 (3.8%), and other cadres for a further 4 (3.8%). This mix mirrors how primary healthcare is typically staffed in Nigeria, with nurses and CHEWs central to both service delivery and routine data recording.

Table 5: Years of Experience

Experience	Frequency	Percentage
1–5 years	34	32.7
6–10 years	31	29.8
11–15 years	22	21.2
16 years and above	17	16.3
Total	104	100.0

Most respondents (34, or 32.7%) had between 1 and 5 years of experience in primary healthcare, with 31 (29.8%) reporting 6–10 years and 22 (21.2%) reporting 11–15 years. Only 17 (16.3%) had 16 or more years of service, with a moderate experience profile suggesting a workforce still building institutional familiarity with NHMIS routines.

Table 6: NHMIS Usage Experience

Duration	Frequency	Percentage
Less than 1 year	18	17.3
1–3 years	38	36.5
4–6 years	30	28.8
10 years and above	18	17.3
Total	104	100.0

For NHMIS-specific exposure, the largest group (38, or 36.5%) had 1–3 years of experience with the system, and 30 (28.8%) had 4–6 years. Respondents with under a year of exposure and those with 10 or more years were evenly split at 18 apiece (17.3% each). With most respondents falling under six years of NHMIS exposure, long-term familiarity with the system remains limited across the workforce.

Knowledge of NHMIS Data Tools

Assessing health workers' knowledge of NHMIS tools revealed a clear pattern: solid footing in some areas alongside real gaps in others.

Table 7: Health Workers' Knowledge of NHMIS Data Tools

S/N	Statement	SA	A	N	D	SD	Mean	SD
1	Awareness of NHMIS purpose	28(26.9%)	42(40.4%)	14(13.5%)	12(11.5%)	8(7.7%)	3.67	1.21
2	Familiar with patient registers	35(33.7%)	48(46.2%)	8(7.7%)	7(6.7%)	6(5.8%)	3.94	1.09
3	Familiar with MCH registers	31(29.8%)	46(44.2%)	12(11.5%)	9(8.7%)	6(5.8%)	3.83	1.13
4	Familiar with summary forms	22(21.2%)	35(33.7%)	18(17.3%)	17(16.3%)	12(11.5%)	3.36	1.28
5	Familiar with surveillance tools	18(17.3%)	32(30.8%)	20(19.2%)	22(21.2%)	12(11.5%)	3.21	1.24
6	Familiar with DHIS2 system	15(14.4%)	28(26.9%)	18(17.3%)	24(23.1%)	19(18.3%)	2.96	1.35
7	Understanding of NHMIS tools	20(19.2%)	34(32.7%)	16(15.4%)	20(19.2%)	14(13.5%)	3.25	1.32
8	Received formal training	12(11.5%)	22(21.2%)	15(14.4%)	28(26.9%)	27(26.0%)	2.65	1.38

Awareness of NHMIS's underlying purpose was fairly widespread: 27% strongly agreed and 40% agreed they understood it, yielding a mean of 3.67 (SD = 1.21).

Familiarity with patient registers produced the strongest showing in the entire table — 34% strongly agreed and 46% agreed, for a mean of 3.94 (SD = 1.09), the highest of any tool assessed. MCH registers followed closely, with 30% strongly agreeing and 44% agreeing (mean = 3.83, SD = 1.13).

That familiarity thinned out considerably for monthly summary forms, where only 21% strongly agreed and 34% agreed (mean = 3.36, SD = 1.28), and thinned further still for disease surveillance tools, where just 17% strongly agreed and 31% agreed (mean = 3.21, SD = 1.24).

DHIS2 electronic reporting drew the weakest response of all the tools assessed, only 14% strongly agreed and 27% agreed they could use it, for a mean of just 2.96 (SD = 1.35), clear evidence that digital-platform competence lags well behind paper-based skills.

General understanding of how to use NHMIS tools sat at a moderate level (mean = 3.25, SD = 1.32), with 19% strongly agreeing and 33% agreeing. Most strikingly, formal training exposure was the lowest-rated item overall: only 12% strongly agreed and 21% agreed they had received NHMIS-related training in the previous two years, for a mean of just 2.65 (SD = 1.38).

Table 8: Overall Knowledge Level of NHMIS Data Tools

Knowledge Level	Frequency	Percentage
High	18	17.3
Moderate	52	50.0
Low	34	32.7
Total	104	100%

Grouped into high, moderate, and low knowledge categories, exactly half of respondents (52, or 50.0%) landed in the moderate band, and a substantial 34 (32.7%) fell into the low band. Only 18 (17.3%) demonstrated high knowledge, underscoring that solid, high-level competence in NHMIS tools remains the exception rather than the rule.

Understanding of NHMIS Data Tools

Health workers' understanding and practical application of NHMIS tools told a similar story: frequent use does not necessarily translate into deep comprehension.

Table 9: Understanding and Application of NHMIS Tools

S/N	Statement	SA	A	N	D	SD	Mean	SD
1	Can correctly complete NHMIS forms	18(17.3%)	32(30.8%)	16(15.4%)	24(23.1%)	14(13.5%)	3.15	1.32
2	Regular use of NHMIS tools	34(32.7%)	46(44.2%)	10(9.6%)	8(7.7%)	6(5.8%)	3.90	1.12
3	Confidence in reporting data	20(19.2%)	34(32.7%)	18(17.3%)	18(17.3%)	14(13.5%)	3.27	1.33
4	Use NHMIS data for decisions	12(11.5%)	24(23.1%)	15(14.4%)	30(28.8%)	23(22.1%)	2.73	1.35
5	Experience difficulty using tools	29(27.9%)	41(39.4%)	12(11.5%)	12(11.5%)	10(9.6%)	3.64	1.27
6	Infrastructure affects usage	38(36.5%)	44(42.3%)	8(7.7%)	8(7.7%)	6(5.8%)	3.96	1.10
7	Supervisor feedback improves use	14(13.5%)	26(25.0%)	18(17.3%)	26(25.0%)	20(19.2%)	2.88	1.36

Confidence in filling out NHMIS forms unaided was middling — 17% strongly agreed and 31% agreed, for a mean of 3.15 (SD = 1.32) — yet regular day-to-day use of the tools scored much higher, with 33% strongly agreeing and 44% agreeing (mean = 3.90, SD = 1.12), showing the tools are firmly embedded in routine practice.

Confidence around data aggregation and reporting was moderate (mean = 3.27, SD = 1.33), with 19% strongly agreeing and 33% agreeing. However, actually using NHMIS data to inform decisions scored the second-lowest of the section of which, just 12% strongly agreed and 23% agreed, for a mean of only 2.73 (SD = 1.35) a clear sign that the data generated is not being translated into analytical action.

A large share of respondents admitted to struggling with the tools: 28% strongly agreed and 39% agreed (mean = 3.64, SD = 1.27). Infrastructure problems were the single most widely acknowledged issue in the whole section, with 37% strongly agreeing and 42% agreeing that infrastructure hampers their NHMIS use, the highest mean in the table, at 3.96 (SD = 1.10).

Supervisory feedback fared poorly as a driver of improvement: only 14% strongly agreed and 25% agreed that feedback from supervisors helped their reporting, for a mean of just 2.88 (SD = 1.36).

Table 10: Level of Understanding of NHMIS Tools

Level	Frequency	Percentage
High	14	13.5
Moderate	48	46.2
Low	42	40.4
Total	104	100%

Categorised overall, understanding skewed toward the lower end: 48 respondents (46.2%) showed moderate understanding and 42 (40.4%) showed low understanding, with only 14 (13.5%) demonstrating high understanding, confirming that, taken as a whole, health workers' grasp of NHMIS tools sits in the low-to-moderate range.

DISCUSSION

Taken together, these findings sketch a fairly clear picture of where NHMIS knowledge and understanding stand among health workers in primary healthcare facilities. The demographic profile is predominantly female and relatively young, mirroring the broader structure of primary healthcare delivery in Nigeria, where nurses and CHEWs anchor both service provision and routine data recording. This gendered structure of frontline delivery likely shapes how NHMIS gets implemented in practice, given how responsibilities are distributed across cadres.

The moderate overall knowledge level suggests partial rather than comprehensive familiarity with the system. Knowledge clusters heavily around traditional paper-based tools while leaving digital platforms such as DHIS2 comparatively under-understood, pointing to a persistent digital-competence gap and suggesting that the shift from manual to electronic health information management is still very much a work in progress. This pattern aligns with earlier research tying weak ICT skills and insufficient training to slower adoption of digital health information systems in developing settings (Eze & Okoro, 2023; Bello et al., 2021).

The findings echo several Nigerian studies that have examined health information system competencies. Okafor et al. (2022), working in Enugu State, likewise found health workers considerably more familiar with paper-based tools (74%) than with electronic platforms (38%), attributing the gap to limited computer access and irregular electricity supply. Adebayo and Ogunyemi (2023) reported that only 29% of health workers in Oyo State could correctly complete DHIS2 monthly summary forms without assistance, comparable to the 30.8% in the present study who agreed they could correctly complete NHMIS forms. Ibrahim and Yusuf (2023), in Kano State, documented that health workers with under five years of NHMIS experience scored significantly lower on knowledge assessments than their more experienced counterparts, consistent with the present study's finding that 65.4% of respondents had less than five years of NHMIS-specific experience.

Internationally, these findings mirror challenges documented elsewhere in low- and middle-income countries. In Tanzania, Mboera et al. (2021) found that health workers' confidence in using electronic health information systems correlated strongly with the availability of on-site technical support and regular refresher training, a condition notably absent in the present study setting. A multi-country study across East Africa by Nyamtema et al. (2020) likewise identified inadequate training and infrastructure as the primary barriers to effective health information system use, with only 35% of health workers in rural facilities demonstrating adequate data-management competency. In Ghana, Akweongo et al. (2021) found that health workers receiving quarterly supervisory visits scored 45% higher on data-quality measures than those who did not, underscoring the value of structured support mechanisms.

It is worth noting that health workers are markedly more confident with paper-based registers with particularly outpatient and maternal health records than with summary forms or electronic systems, suggesting comfort tracks closely with daily, hands-on use. Workers know the tools they touch constantly for patient-care documentation but falter on tools that demand higher-order data aggregation and synthesis. Okeke and Nwafor (2022) reported much the same pattern, finding that many respondents struggled to complete summary forms correctly and to interpret reporting instructions, while Ogunyemi and Adebayo (2022) observed that health workers who received monthly feedback on their reporting accuracy improved over time, a further illustration of the value of supportive supervision.

The low rate of formal training stands out as a major driver of these inconsistencies. Without structured, ongoing capacity building, health workers end up relying on informal, ad hoc learning, which naturally limits standardisation and drags down data quality. Eze and Okoro (2023) found a similar link, with workers who had received formal training in health information management showing a stronger grasp of data-collection procedures and reporting formats than those who had not. The World Health Organization (2024) identifies inadequate human-resource capacity as one of six core weaknesses of health information systems in low-income countries, alongside poor governance, weak infrastructure, and limited data use.

The moderate-to-low understanding levels reveal a further wrinkle: even where NHMIS tools are used regularly, many health workers do not fully grasp how to apply them correctly. This comprehension gap undermines reporting accuracy and limits how much NHMIS data actually feeds into planning and decision-making, leaving the system to function more as a reporting formality than a genuine decision-support tool. Ibrahim and Yusuf (2023) reported a comparable finding, with only a minority of respondents in their study showing strong understanding of how to translate register-level data into monthly summary reports. In the Nigerian context, this echoes the Federal Ministry of Health's (2023) National Health Information System Assessment, which identified data use for decision-making as the weakest link in the NHMIS chain across multiple states.

Particularly worrying is how little NHMIS data actually gets used for decision-making. Health workers are collecting and submitting data but not meaningfully engaging with it to shape planning or improve service delivery which results to a disconnect that saps motivation and undermines any sense of ownership over the system. The World Health Organization (2022) makes the point directly: health information systems only deliver value when the data they generate is consistently used to guide action and policy. Ojiakor et al. (2025) similarly observed that even where data was available in the Nigerian context, decision-makers often lacked the skills or institutional support to translate it into actionable insight, pointing to the need for strengthening data-use competencies at every level of the health system.

The high proportion of respondents reporting difficulty with the tools, together with the near-universal acknowledgment of infrastructure problems, points to systemic barriers that go well beyond any individual worker's skill level. This tracks with global evidence that weak infrastructure and limited human-resource capacity remain leading obstacles to effective health information systems across low- and middle-income countries (World Health Organization, 2024; Rahi, 2022). In Nigeria specifically, Egwudo et al. (2025) documented that power outages and internet downtime accounted for roughly 30% of delayed DHIS2 submissions across three states, a finding that reinforces the infrastructure challenges identified in the present research.

Study Limitations

Several limitations should be borne in mind when interpreting these findings. First, the descriptive cross-sectional design captures knowledge and understanding at a single point in time and cannot establish causal relationships or track change. Second, the study relied primarily on self-reported data, which may carry an element of social desirability bias, as respondents may have overestimated their own competence; the observation checklist helped mitigate this but was not applied to every respondent. Third, the study was confined to one local government area in Delta State, so its findings may not generalise to other regions of Nigeria with different healthcare infrastructure and training contexts. Fourth, the study assessed knowledge and understanding without measuring actual data-quality outcomes; future research should examine how health-worker competence relates to the completeness, timeliness, and accuracy of reported data. Fifth, the study did not explore the qualitative dimensions of health workers' experiences with NHMIS, in-depth interviews or focus group discussions could offer richer insight into the barriers and facilitators of effective data management.

Implications for Policy and Practice

These findings carry several implications for strengthening NHMIS in Nigeria. First, the digital-competence gap suggests current training approaches are not sufficient for the electronic health information systems era; there is a need to move beyond one-time orientation sessions toward continuous, practice-based training that builds real confidence and competence with digital platforms. Second, the weak use of data for decision-making points to a need for interventions that link data collection to tangible feedback and action, as health workers are more likely to value data once they see it being used. Third, the infrastructure challenges call for sustained investment at facility level, since even well-trained health workers will struggle to use electronic systems effectively without reliable electricity, internet, and functional computers. Fourth, the limited supervisory feedback highlights the importance of strengthening supportive-supervision systems, as regular, constructive feedback on reporting quality can lift both motivation and competence.

CONCLUSION

This study set out to examine how well health workers in the Ughelli South Primary Health Authority, Delta State, know and understand NHMIS data tools. The picture that emerges is one of moderate overall knowledge, stronger for paper-based registers and noticeably weaker for electronic systems such as DHIS2. Understanding clusters in the low-to-moderate range, and formal training exposure remains thin.

In short, current levels of knowledge and understanding are not yet sufficient to support reliable, effective health data management. Health workers show reasonable awareness of the basic paper-based tools, but their command of electronic health information systems lags well behind, with real consequences for the accuracy, completeness, and usability of the data produced for planning, monitoring, and decision-making.

These findings reinforce the value of pairing formal academic preparation with sustained practical exposure. The limited use of NHMIS data for decision-making is especially telling — it suggests the system currently operates more as a routine reporting mechanism than as a genuine engine for evidence-based decisions. Closing that gap will require deliberate investment in structured training, stronger supervision, and the integration of health information systems content into pre-service curricula.

Recommendations

1. From the above findings, the following recommendations are offered to policymakers, health-system managers, and training institutions.
2. Organise regular, structured training programmes on NHMIS data tools, with particular emphasis on electronic systems such as DHIS2. Training should not be a one-off event; periodic, competency-based sessions with hands-on practice are needed to keep health workers current on evolving NHMIS guidelines, reporting formats, and digital health developments.

3. Invest in facility infrastructure, including stable electricity, functional computers, and reliable internet, since effective use of NHMIS electronic platforms depends directly on this foundation. This investment should include provisions for technical maintenance and support.
4. Strengthen supervision and feedback mechanisms to improve data quality, enhance compliance, and support ongoing learning. Institutionalising regular supervisory visits with clear, constructive, and timely feedback loops would let health workers catch and correct errors promptly.
5. Build NHMIS content into pre-service education so health workers enter the workforce already equipped with foundational data-management knowledge, covering both paper-based and electronic tools.
6. Simplify and standardise NHMIS tools and reporting formats to improve usability and reduce errors, involving end users in the design and testing process to ensure practical usability.
7. Establish mentorship programmes pairing experienced NHMIS users with less experienced colleagues, providing ongoing, contextualised support that reinforces formal training and builds confidence with both paper-based and electronic tools.
8. Develop and implement a national health information system competency framework that defines minimum knowledge and skills standards for health workers at different levels of the health system, guiding training curricula, supervision, and performance assessment.

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