

Management Information System (MIS) In Rural Health Unit Sipocot

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Abstract

This study explored the utilization experiences of personnel in the Rural Health Unit (RHU) of Sipocot, Camarines Sur regarding their paper-based data management system and the emerging Management Information System (MIS). Using a Narrative Inquiry design, data were collected from sixteen purposively selected RHU personnel through open-ended questionnaires and follow-up interviews. Findings revealed persistent challenges in record management, inventory tracking, and health program reporting under the manual system, including duplicate patient records, delays in reporting, and stock-out incidents. The emerging MIS was perceived as a promising tool for improving efficiency and accuracy, although concerns regarding training, infrastructure, and transition readiness remained. The study concluded that successful digital transformation in RHUs requires adequate technical support, structured training, organizational readiness, and sustained institutional commitment.

Keywords: *Management Information System, Rural Health Unit, Health Information System, Digital Transformation, Paper-Based Records, Patient Records, Inventory Management, Health Reporting, Narrative Inquiry, Sipocot.*



INTRODUCTION

Health information systems (HIS) are recognized by the World Health Organization as foundational infrastructure of effective health systems, functioning alongside service delivery, workforce, financing, and governance as essential building blocks (Ongkeko, 2024). The global shift from paper-based to digital health data management has been driven by a consistent body of evidence: manual systems are structurally inadequate for the demands of modern healthcare delivery. They produce inaccurate, incomplete, and untimely data, constrain evidence-based decision-making, and impose preventable burdens on health personnel (Epizitone et al., 2023; Stuurman & Mabe, 2025). In resource-limited settings, these deficiencies translate directly into degraded service quality and compromised patient outcomes (Mouk net et al., 2021). In the Philippines, the national direction toward digital health data management has been established through the Philippine eHealth Strategic Framework and Plan, developed by the Department of Health (DOH) and the Department of Science and Technology (DOST), and reinforced by the Universal Health Care Act under Republic Act 11223 (Conjares et al., 2025). Several national platforms have been introduced at different levels of the health system, including the Integrated Hospital Operations and Management Information System (iHOMIS+) for hospital operations, the Community Health Information Tracking System (CHITS) for primary care reporting, and the Online Malaria Information System (OLMIS) for disease surveillance (Francisco, 2024; PCHRD, 2025.; DOH, 2021). Despite this policy infrastructure, national assessments describe the Philippine HIS as an ambivalent transition in which paper-based and digital systems coexist unevenly. Digital tasks are handled only by designated personnel rather than embedded in routine workflow, and persistent barriers — including lack of data standardization, limited system interoperability, and fragmented data management — continue to prevent national goals from translating into ground-level practice (Ongkeko, 2024; Conjares et al., 2025).

This gap between national policy and ground-level practice is most visible in Rural Health Units (RHUs). RHUs are the frontline of the Philippine healthcare system, handling essential services such as maternal care, immunization, disease monitoring, and community outreach for large populations, often in underserved areas. Yet documented studies confirm that many of these facilities continue to operate on entirely paper-based systems. In the Province of Bataan, 58% of RHUs depended on paper-based reporting and the majority of data encoders had received no formal training on the systems they were expected to use (Cortez et al., 2023). In Sorsogon City, the implementation of iClinicSys showed operational promise but exposed persistent gaps in staffing for data encoding, system maintenance, and structured training for health workers (Rocha, 2024). Macabasag et al. (2023) described how Philippine primary care workers develop informal workarounds, alternating between paper and digital tools or delegating digital tasks to colleagues, as adaptive responses to inadequate infrastructure and training. This pattern reflects not individual failure but systemic unreadiness for digital transition. Collectively, these studies point to a structural reality in which the capacity of RHUs to adopt, sustain, and genuinely integrate digital data management has not kept pace with national digital health policy. The Rural Health Unit of Sipocot in Camarines Sur reflects this national reality. The facility serves 46 barangays and relies on manual tools — Individual Treatment Records, logbooks, stock cards, and the Target Client List — as its primary data management infrastructure. Patient



records are stored in filing cabinets organized alphabetically by barangay. Retrieval difficulties and record misplacement frequently lead to the creation of duplicate patient files, directly compromising continuity of care. Medicine and supply inventory is tracked through logbooks and stock cards, a system prone to omission errors at the point of dispensing that produces recurring stock-outs and near-expiry incidents. Health program reports require the manual consolidation of data from 46 barangays by assigned nurse coordinators before submission to higher health authorities, a process marked by delays, inconsistencies, and data loss. Partial individual use of digital tools such as Google Drive exists but is inconsistent, not centralized, and not driven by institutional policy. The consequences of this absence are experienced daily by RHU personnel as operational failures, not as policy gaps.

At the time of this study, RHU Sipocot is in the early stages of a transition toward digital data management. A Management Information System (MIS) is under development and has been partially introduced, with some personnel beginning to use it for patient record encoding in the outpatient department. However, the transition is incomplete. The system is not yet fully functional, formal training has not yet been conducted for all staff, and paper-based processes continue to operate alongside the emerging digital system. This transitional state, in which the old system persists while a new one is being introduced, creates a distinctive set of experiences for frontline health workers who must navigate both simultaneously.

The existing literature on HIS in the Philippines documents the technical, infrastructural, and policy dimensions of digital health transition at national and regional levels. What is absent is research that captures the first-person accounts of frontline RHU personnel as they navigate this transition. Studies on HIS adoption at the Philippine RHU level have focused predominantly on quantitative assessments of implementation status, acceptability ratings, and barrier inventories (Cortez et al., 2023; De Mesa et al., 2024). None hav

II. METHODS

The study utilized a qualitative Narrative Inquiry research design to examine the lived experiences of RHU Sipocot personnel during the transition from a paper-based data management system to an emerging digital MIS. Sixteen purposively selected participants, including nurses, midwives, medical technologists, and administrative staff, participated in the study. Data were gathered using open-ended questionnaires and follow-up interviews. Thematic analysis following Braun and Clarke's framework was used to analyze the narratives. Member checking was conducted to ensure credibility and trustworthiness.

RESEARCH METHODOLOGY

This chapter presents the research methodology of the study. It covers the research design, the methods and procedures followed in data collection and analysis, the respondents of the study and their selection, the research instruments used and how they were developed and validated, the ethical considerations observed throughout the research process, the data analysis techniques applied, and the trustworthiness measures employed.

Research Design



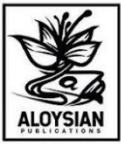
This study employed a Narrative Inquiry research design. Narrative Inquiry is a qualitative methodology that investigates human experience through the collection and analysis of stories, specifically the accounts that people give of events, processes, and transitions in their working and personal lives (as cited in Lim, 2024; Braun et al., 2022). It is grounded in a constructivist epistemological stance, recognizing that reality is not objectively given but is actively constructed through the meaning-making processes of individuals within their social and institutional contexts (Creswell & Creswell, 2018).

Narrative Inquiry was selected because the phenomenon under investigation, the utilization experiences of RHU Sipocot personnel with the paper-based data management system and the emerging digital MIS, was fundamentally experiential and meaning-laden. It could not be adequately captured through quantitative measurement, descriptive enumeration, or variable-based analysis. What the study sought to understand was not how many respondents rated their experience positively or negatively, but what the experience of navigating between an inadequate manual system and an incomplete digital one actually felt like from the inside, what challenges it created, what meaning it carried, and what conditions health workers identified as necessary for the transition to succeed.

Narrative Inquiry was particularly appropriate for three reasons. First, the phenomenon was transitional in nature. RHU Sipocot was in the midst of an unresolved shift from one system to another, and narrative methods are especially well-suited to capturing experiences of change, attending to how experiences unfold over time, how a past condition shapes the present, and how a future possibility is imagined (as cited in Lim, 2024). Second, the phenomenon was embedded in an institutional context shaped by the governance demands, resource constraints, and professional expectations of Philippine primary health care. The combination of Narrative Inquiry with the TAM and NPM theoretical lenses of this study allowed individual accounts to be read simultaneously as personal stories and as expressions of structural conditions. Third, the frontline RHU personnel who participated in the study were the only people who could provide authentic, first-person accounts of what the transition involved, and Narrative Inquiry centered these voices as the primary evidence of the study, consistent with the qualitative principle that those closest to a phenomenon hold the most valid knowledge of it (Creswell & Creswell, 2018). The study did not employ mixed methods, descriptive quantitative components, or system design procedures. It was a wholly qualitative study grounded in a single research objective and a single analytical tradition. Respondent profile information, specifically position and length of service, was treated as contextual participant description that enriched the interpretation of narrative accounts rather than as a supplementary data strand subject to quantitative analysis.

Methods and Procedures

The study was conducted in two phases. The first phase involved primary data collection, and the second phase involved follow-up data collection to deepen the narrative accounts generated in the first phase.



In the first phase, the researcher administered an open-ended written questionnaire to twelve purposively selected RHU Sipocot personnel between December 2025 and February 2026. The questionnaire was organized into three thematic sections corresponding to the three guiding questions of the study. Section A addressed respondents' experiences with the paper-based data management system, including patient record management, inventory tracking, and health program reporting. Section B addressed their experiences with and perceptions of the emerging digital MIS, including the impact of its absence, the features they identified as most needed, and the benefits they anticipated. Section C addressed the conditions they identified as necessary for the digital transition to succeed, including implementation barriers and training needs. Written responses were collected, transcribed into a consolidated tabulation, and subjected to initial coding and thematic analysis following the six-phase framework of Braun and Clarke (2021). In the second phase, the researcher conducted follow-up audio-recorded interviews with four additional RHU Sipocot personnel between March and April 2026, in response to

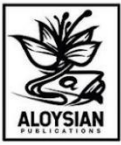
III. RESULTS

The findings revealed that RHU personnel experienced major operational challenges with the paper-based system, including slow retrieval of patient records, duplication of files, inventory discrepancies, delayed reporting, and inefficient data consolidation. Participants recognized the potential of the MIS to improve efficiency, accessibility, and reporting accuracy. However, they also identified barriers such as limited training, insufficient infrastructure, internet instability, and anxiety regarding adaptation to new technologies.

ANALYSIS AND INTERPRETATION

This chapter presents the findings of the Narrative Inquiry conducted at the Rural Health Unit of Sipocot, Camarines Sur. The findings are drawn from the thematic analysis of data collected across two phases: the written open-ended questionnaire responses of twelve RHU Sipocot personnel (R1–R12), and the audio-recorded follow-up interviews of four additional participants (R13–R16), for a total of sixteen participant accounts. All data were analyzed following the six-phase reflexive thematic analysis framework of Braun and Clarke (2021), with themes derived inductively from the full data corpus through iterative coding, theme development, review, and refinement.

The chapter is organized around the single research objective of this study: to describe the utilization experiences of RHU Sipocot personnel with the paper-based data management system and the emerging digital Management Information System, capturing the challenges, meaning, and conditions they associate with navigating the transition between the two. The findings are presented across three narrative domains corresponding to the three guiding questions of the objective. Narrative Domain 1 presents the themes derived from participants' accounts of their experiences with the paper-based data management system. Narrative Domain 2 presents the themes derived from participants' accounts of their experiences with and perceptions of the emerging digital system. Narrative Domain 3 presents the themes derived from participants' accounts of the conditions they identify as necessary for the digital transition to succeed.



Each theme is discussed following the PAIL format to ensure that the discussion moves beyond description toward analytical depth and theoretical connection. Verbatim excerpts from participant accounts are used as direct evidential grounding for each theme, with participant codes (R1–R16) used in place of names to protect identity in accordance with Republic Act No. 10173 (Data Privacy Act of 2012). The themes and their supporting codes, subthemes, and example statements are presented in Tables 2, 3, and 4 at the opening of each narrative domain. The member checking conducted following the derivation of themes confirmed their accuracy and resonance with participants' experiences, as documented in the appendices.

Narrative Profile

Before any thematic interpretation could begin, it became necessary to pause and acknowledge that the findings of this study did not emerge from abstract variables, isolated responses, or detached institutional observations. They emerged from people. The sixteen health workers who participated in this inquiry carried with them the daily realities of RHU Sipocot's data management system long before this study attempted to describe it. They participated not merely as respondents tasked with answering questions, but as individuals situated within the lived institutional life of a rural health unit, negotiating the unfinished transition from paper-based routines to emerging digital systems.

Located within a modest municipality on the outskirts of Camarines Sur, RHU Sipocot is not simply a clinical facility where information is stored and retrieved. It is a working environment shaped by long years of manual documentation, improvised workflows, delayed reporting, inventory uncertainties, and professional adaptation. Within its walls, records are not merely records. They are the physical traces of consultations, immunizations, medicine dispensing, maternal care, sanitation monitoring, and community health work scattered across forty-six barangays. Every misplaced folder, every rewritten logbook, every delayed report, and every reconstructed patient history reflects the labor of particular individuals attempting to sustain healthcare delivery despite infrastructural limitations.

This narrative profile, therefore, does not seek to present the participants as demographic entries or coded thematic units. Rather, it attempts to portray them as a professional community living through a shared institutional story. Although the study was not designed as a full biographical investigation, the narratives gathered through questionnaires and interviews revealed enough continuity, tension, and emotional texture to illuminate how these health workers understood themselves, their labor, and the changing technological landscape of RHU Sipocot.

The participants occupied positions spanning both the clinical and administrative dimensions of primary healthcare. Among them were seven Nurses II, six Midwives I or II, two Sanitation Inspectors, and one facility physician. Together, they performed the invisible yet indispensable work of data generation, organization, retrieval, consolidation, and reporting. One participant might be the individual opening filing cabinets during registration hours to retrieve an old Individual Treatment Record while a queue of waiting patients slowly grows nearby. Another might b



IV. DISCUSSION

The study highlights the complex human and organizational dimensions of digital health transformation in primary healthcare settings. Consistent with the Technology Acceptance Model (TAM), participants' acceptance of the MIS was influenced by perceived usefulness and ease of use. From the perspective of New Public Management (NPM), the transition reflected institutional efforts to improve efficiency, accountability, and service delivery. The findings underscore the importance of adequate training, leadership support, and resource allocation in ensuring successful implementation of digital systems in RHUs.

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of findings, the conclusions, and the recommendations arising from the Narrative Inquiry conducted at the Rural Health Unit of Sipocot, Camarines Sur. The study was guided by the single research objective: to describe the utilization experiences of RHU Sipocot personnel with the paper-based data management system and the emerging digital Management Information System, capturing the challenges, meaning, and conditions they associate with navigating the transition between the two. The findings, conclusions, and recommendations are organized around the three narrative domains corresponding to the three guiding questions of the research objective.

Summary of Findings

Narrative Domain 1: Experiences with the Paper-Based Data Management System

Thematic analysis of accounts from sixteen RHU Sipocot personnel revealed four themes. The first established that paper-based record keeping through Individual Treatment Records, logbooks, family folders, and the Target Client List is the facility's deeply normalized way of operating. Some staff use Google Drive individually, but this is inconsistent and not institutionally mandated.

The second theme found that record retrieval failure is the most consequential daily problem of the paper-based system. Eleven of sixteen participants described difficulty finding patient records, with records frequently misplaced, damaged, or lost. This leads health workers to create duplicate records for returning patients, directly compromising continuity of care. R13's account of the Serranzana Street and barangay Serranzana confusion showed how address-based filing ambiguity creates systematic retrieval failure that individual diligence cannot fix.

The third theme found that medicine and supply inventory is tracked entirely through logbooks and stock cards, with no real-time monitoring, no automated alerts, and no visibility into approaching stock-outs or expiry dates. The system is reactive by design: discrepancies are discovered after the fact, and preventable stock failures remain unpreventable under manual conditions.



The fourth theme found that health program reporting is a manual aggregation process handled by a small number of nurse coordinators who consolidate data from 46 barangays before submission to the Municipal Health Office, Provincial Health Office, and Department of Health. This structural bottleneck produces delays, inconsistencies, and degraded health data quality up the reporting chain. The unifying finding of this domain is normalization: the paper system's failures have become ordinary conditions of daily work rather than exceptional disruptions.

Narrative Domain 2: Experiences with the Emerging Digital Management Information System

Three themes emerged from participant accounts about the emerging digital system. The first established that the absence of a centralized MIS is felt not as an abstract gap but as a daily, personal constraint whose shape is defined by specific operational failures at identifiable moments in the workday. All sixteen participants described this absence independently and with consistent specificity, from triage failures to fragmented records to wasted spending on paper materials.

The second theme documented the features participants identified as most needed: electronic health records, automated inventory monitoring, automated report generation and dashboards, and mobile data entry. These are not aspirational preferences but precise descriptions of what the paper system lacks. Every requested feature maps directly onto a documented failure: EHR addresses record loss; automated inventory addresses invisible stock levels; automated reports address the reporting bottleneck; mobile entry addresses the barangay-level data gap.

The third theme documented the early, partial, and institutionally unresolved experiences of participants already using the emerging MIS. R13 described electronic retrieval as faster and less error-prone, supervisory data consolidation as easier, and inventory tracking with expiry alerts as newly possible. R14 confirmed the MIS is in active development and that the facility is in an incomplete transition, with paper and digital processes coexisting without a clear resolution timeline. The unifying finding is informed aspiration: wanting grounded in professional experience of what the absence costs and what the emerging system has already begun to offer.

Narrative Domain 3: Conditions for Successful Transition as Identified by Participants

Three themes emerged from participant accounts about what the digital transition needs to succeed. The first documented the barriers participants identified as still unresolved. Eleven of sixteen cited limited funding and inadequate infrastructure as primary structural barriers. Seven cited staff resistance to change and six cited digital literacy gaps, particularly among older permanent employ.