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Integrated Community-Based Primary Healthcare Model to Strengthen Universal Health Coverage: Evidence from CHW Readiness, Service Quality, and Digital Health Acceptability in Selected CALABARZON LGUs

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Abstract

Universal Health Coverage (UHC) remains a global health priority, with strong primary healthcare (PHC) systems serving as the primary pathway for its achievement. In the Philippines, the Universal Health Care Act provides the policy framework for UHC, yet implementation gaps persist in community-level service delivery, particularly regarding the integration of community health workers (CHWs) and digital health tools. This study investigated community readiness for a scalable model strengthening PHC through formal CHW-digital health integration. A quantitative cross-sectional design was employed, collecting survey data from 633 household respondents across five local government units in the CALABARZON region. The assessment covered healthcare access barriers, perceived service quality, CHW engagement, and digital health readiness. Results indicated near-universal CHW awareness (99.7%), high trust (98.4%), and strong support for formal integration (98.9%), although CHW interaction was predominantly episodic (66.3% reporting only one contact in 12 months). Perceived service quality varied significantly across LGUs ($p < .001$, $\epsilon^2 = 0.134$). Digital readiness was high (94% willingness to use digital tools), but confidence in data confidentiality was markedly lower ($M = 2.72/5$). Among respondents reporting access barriers, cost was dominant (91.7%). The findings suggest that CHW-digital health integration is socially acceptable and operationally feasible in the study contexts. Successful implementation, however, would require institutionalized CHW roles, locality-sensitive planning, robust privacy governance under trusted public custodianship, and complementary strategies addressing financial access barriers. An integrated community-based PHC model is proposed, structured around standardized CHW functions, digital workflow enablement, and scalable implementation conditions derived from empirical readiness signals.

Keywords: *Community Health Workers; digital health; primary healthcare; Universal Health Coverage; Philippines; healthcare access; service quality; health governance*

1. Introduction

Universal Health Coverage (UHC) has emerged as a central objective of health systems globally, reflecting the commitment of governments and international institutions to ensure that all individuals have access to essential health services without financial hardship. Anchored in the Sustainable Development Goals (SDG 3), UHC emphasizes not only service availability but also equity, quality, and system capacity. Across diverse health systems, the strengthening of primary healthcare (PHC) has been consistently identified as the most effective pathway toward achieving UHC, given its role as the first point of contact, coordinator of care, and foundation of preventive and community-based services.

In the Philippines, the institutionalization of UHC through Republic Act No. 11223 (Universal Health Care Act) represents a landmark reform in the national health system. The law underscores the primacy of population-based and individual-based health services, with PHC positioned as the backbone of service delivery. Despite this policy commitment, the Philippine health system continues to face persistent challenges related to access, service continuity, workforce distribution, and system integration—particularly at the community and barangay levels where healthcare needs are most immediate.

Community-based health delivery mechanisms, notably through Community Health Workers (CHWs) such as Barangay Health Workers, have long played a critical role in bridging



formal health services and local populations. Their proximity to households enables health promotion, early detection of illness, and facilitation of referrals. However, limitations in training standardization, incentive structures, data integration, and coordination with higher-level facilities have constrained the full potential of CHWs in strengthening PHC delivery. Parallel to these challenges, digital health innovations—including mobile health applications, telemedicine, and digital information systems—have gained prominence as tools for expanding service reach and improving continuity of care. While such technologies offer significant promise, their integration into community-based PHC in the Philippines remains uneven and fragmented, often operating independently of existing CHW structures and local health systems.

The persistence of these implementation gaps occurs against a regional backdrop in which the Philippines' UHC Service Coverage Index, while improving from approximately 56 in 2000 to 69 by 2023, has progressed at a slower pace than several ASEAN peers. Countries such as Viet Nam, which began at a similar baseline, have since surpassed Philippine coverage levels. Although the UHC service coverage index is an aggregate indicator and does not by itself diagnose causal drivers, the regional trend comparison underscores the continuing challenge of strengthening service coverage and access capacity—particularly through reforms that deepen PHC reach and reinforce community-based service delivery.

Despite comprehensive policy reforms and increasing recognition of PHC as a cornerstone of UHC, a persistent gap remains between policy intent and implementation outcomes. Fragmentation across service delivery units, limited integration of community-based health workers, and underutilization of digital health solutions may constrain the effectiveness of PHC, particularly in underserved communities. While existing studies have examined aspects of UHC implementation, CHW programs, and digital health adoption, many remain sector-specific, descriptive, or derived from international contexts that differ significantly from Philippine health system realities. There is limited empirical work examining how CHWs and digital health interventions can be systematically integrated into a scalable PHC model aligned with UHC objectives.

This study addresses this gap by generating context-specific insights into how an integrated, community-centered PHC model may be designed based on community readiness, service quality perceptions, and acceptability of digital support. Specifically, it aims: (a) to assess multidimensional barriers to primary healthcare access (geographic, financial, organizational, and informational) among community members in selected Philippine settings; (b) to describe patient-perceived service quality in PHC services, focusing on responsiveness-related dimensions that influence utilization and trust; (c) to examine CHW engagement and community readiness for digital health support mechanisms as inputs for an integrated community-based PHC model; and (d) to formulate implementation-oriented recommendations addressing scalability conditions, including governance support, training needs, and data privacy considerations.

2. Review of Related Literature

2.1 Community Health Workers as Core Actors in Primary Healthcare Systems

Community Health Workers (CHWs) are increasingly recognized as essential contributors to primary healthcare, particularly in contexts marked by workforce constraints, social inequities, and persistent barriers to service utilization. The central explanation for CHW effectiveness lies in their community embeddedness: by operating within the social and cultural fabric of the communities they serve, CHWs are positioned to cultivate trust, facilitate sustained engagement with services, and address non-medical determinants that shape health-seeking behavior. Across diverse health system contexts, evidence associates CHW engagement with improvements in preventive care uptake, better continuity of care, and reductions in avoidable facility utilization when CHW work is aligned with formal primary care functions and supported institutionally (Knowles et al., 2023; Pinto et al., 2020; Wennerstrom et al., 2023).

The literature emphasizes that CHW value is maximized when they are formally integrated into primary care teams rather than treated as peripheral or episodic program staff. Integration typically entails explicit role definition, structured supervision, standardized training, and resourcing that enables CHWs to execute community-facing

functions reliably and safely. Within integrated models, CHWs commonly support care coordination through client navigation, health education, early risk identification, and reinforcement of referrals and follow-up plans. When these functions are routinized within team-based care, CHWs can strengthen continuity by bridging the "last mile" between facilities and households and sustaining contact with clients between clinic encounters (Black et al., 2025; Oladayo et al., 2025; Mhlongo et al., 2020). Related evidence suggests that role-appropriate task redistribution can reduce pressure on facility staff by shifting non-clinical work—such as counseling reinforcement, tracking missed appointments, and basic screening support—toward CHWs, thereby improving team functioning (Black et al., 2025; Nakra et al., 2025).

Despite wide endorsement of CHWs, lack of standardization remains a recurring implementation constraint. Variability in training scope, role boundaries, supervision models, and incentive structures tends to produce role ambiguity and uneven service delivery, which in turn weakens program evaluation and complicates policy support and financing continuity (Pinto et al., 2020; Mhlongo et al., 2020; Dias et al., 2025). Successful integration depends on collaborative team environments, shared role understanding, and responsiveness to community needs and constraints. CHWs are commonly tasked with health promotion, disease prevention, social risk screening, referrals, and follow-up engagement; yet these functions require institutional recognition, equitable remuneration, and governance alignment so that CHWs are not positioned as informal workers expected to deliver formal system outcomes without corresponding support (Wennerstrom et al., 2023; Van Iseghem et al., 2023; Doresha et al., 2024). In this framing, CHW integration represents an equity strategy: the institutionalization of community-facing capacity that improves service reach and continuity where facility-centric delivery models fall short (Knowles et al., 2023; Pinto et al., 2020; Black et al., 2025).

In the Philippine context, community-based primary healthcare is anchored on Barangay Health Workers (BHWs), who function as frontline health volunteers supporting preventive services, health education, and referral activities at the local level (Mallari et al., 2020; Querri et al., 2020). BHW operating conditions vary across local government contexts, contributing to inconsistencies in training, supervision, incentives, and integration into facility-based care teams. Evidence from Philippine community health research illustrates how prevention and behavioral change efforts are shaped by local risk contexts and uneven translation of knowledge into sustained practice—patterns that underscore the practical importance of community-

level actors and structured support systems for health promotion and follow-up (Temporada et al., 2025).

2.2 Digital Health Tools as Enablers of Community-Based Care and Continuity

Digital health tools are increasingly positioned as operational enablers of community-based care delivery, including CHW-supported services. The literature frames digital interventions—ranging from mobile applications and electronic reporting systems to teleconsultation platforms—as responses to persistent constraints in primary care implementation, especially in low- and middle-income contexts where workforce shortages and fragmented information systems limit continuity of care. Digital tools can strengthen CHW performance by improving the timeliness and accuracy of reporting, reinforcing decision support and triage, and enabling more reliable referral and follow-up processes (Feroz et al., 2021; Akhtar et al., 2025; Blondino et al., 2024).

Empirical studies further suggest that digital platforms can improve CHWs' capacity to collect and transmit health information, standardize health education delivery, and coordinate with supervisors and facility-based providers. When CHWs operate within digital reporting structures and clear workflows, expected benefits include improved data quality, faster escalation of risks, and increased accountability through visibility of service delivery outputs (Greuel et al., 2023; Rodrigues et al., 2021). The value of digital systems depends on more than digitization itself; interoperability, data integration, governance arrangements, and user-centered workflow embedding are repeatedly identified as determinants of whether digital investments translate into improved service coordination and decision quality (Atento, Quinto, Espelita, & Castaneda, 2025). In community-based settings, these determinants are particularly consequential because CHWs frequently operate across institutional boundaries where misalignment can produce duplicated reporting or unusable data flows.

Beyond operational performance, digital tools may enhance CHWs' perceived credibility by strengthening linkages with formal providers and reinforcing perceptions that CHWs are connected to the health system. This mechanism can strengthen community trust and engagement when digital tools are experienced as improving responsiveness rather than as surveillance or administrative burden (Santos et al., 2025; Blondino et al., 2024). Yet these effects depend on implementation conditions. Evidence consistently notes that digital tools can reduce administrative burden and support decision-making only when training, technical support, and



workflow alignment are adequate; otherwise, digital tools risk becoming underutilized or increasing workload through added documentation tasks and troubleshooting demands (Greuel et al., 2023; Owoyemi et al., 2022; Feroz et al., 2021; Chraish et al., 2025).

Barriers to adoption remain persistent, including limited access to devices, unreliable connectivity, cost constraints, and uneven digital literacy. These barriers can generate inequities within CHW programs, particularly where training is not adapted to local contexts or where support structures are inconsistent across geographic areas (Owoyemi et al., 2022; Chraish et al., 2025). Workforce-focused analyses highlight digital documentation as an increasingly salient competency requirement in modern health labor markets, implying that digital readiness is not solely a technological issue but also a training and capability-alignment concern that must be addressed systematically (Atento, Quinto, & Espelita, 2025). The literature also emphasizes participatory design and stakeholder involvement as mechanisms for improving usability and sustainability. When CHWs, supervisors, and community stakeholders are involved in tool development and adaptation, digital interventions tend to demonstrate higher acceptance and better alignment with local workflows (Owoyemi et al., 2022; Blondino et al., 2024). Patient-centered digital health scholarship stresses that data-driven systems require ethical and cultural safeguards—particularly when frontline data collection intersects with sensitive health information and community trust (Atento, Quinto, Espelita, & San Juan, 2025).

In the Philippine context, digital health initiatives expanded markedly during and after the COVID-19 pandemic through telemedicine services, electronic medical records, and mobile platforms. However, community-level integration remains uneven due to differences in infrastructure, device access, and digital literacy across local government units (Gallardo, 2019). Philippine healthcare market analyses frame digital transformation pressures as reshaping expectations for access and convenience, including the growing relevance of telehealth partnerships and digitally enabled service pathways (Atento & Atento, 2025).

2.3 Multidimensional Access Barriers to Primary Healthcare

Reducing barriers to healthcare access is widely recognized as a necessary condition for

achieving Universal Health Coverage (UHC), particularly in low- and middle-income settings where inequities persist in both service availability and utilization. Contemporary access frameworks conceptualize access as multidimensional: utilization is shaped not only by geographic proximity but also by affordability, service availability, organizational responsiveness, and informational factors that influence perceived and practical feasibility of seeking care. Evidence consistently indicates that the presence of services does not ensure effective utilization when distance, cost, waiting time, and information asymmetries remain binding constraints (Garchitorena et al., 2021; Higgins et al., 2023; Bello, 2023).

Geographic barriers remain a core determinant of care-seeking behavior. In underserved contexts, longer travel distance and time are associated with lower preventive service uptake and delays in seeking treatment, even where formal subsidies or nominally free services exist (Garchitorena et al., 2021; Purwito et al., 2025). Community-based delivery models, including outreach services and decentralized primary healthcare facilities, are frequently cited as mechanisms for mitigating geographic barriers by reducing household reliance on facility-based access alone (Syaddam, 2021; Okeke et al., 2023). This logic aligns with the CHW literature insofar as CHWs and community-based models are often justified as access-extending mechanisms for prevention, screening, and follow-up care.

Financial barriers—particularly out-of-pocket expenditure and the indirect costs associated with seeking care—remain prominent. Transport costs, consultation fees, and income losses during clinic visits disproportionately affect low-income households and can lead to delayed or foregone care (Higgins et al., 2023; Sorn, 2025). Formal UHC policies may not produce equitable utilization if financial protection mechanisms are incomplete or unevenly implemented, thereby shifting cost burdens toward patients and reinforcing access inequities (Khatrri & Assefa, 2023; Okeke et al., 2023). Analyses of Philippine healthcare market reforms similarly emphasize that UHC-oriented affordability and access policies shape expectations and pressures across health service intermediaries, illustrating the systemic relevance of affordability constraints (Atento & Atento, 2025).

Organizational barriers—such as long waiting times, limited clinic hours, and shortages of health

personnel—further constrain access and may erode trust when patients repeatedly encounter delays or unreliable service availability. Studies indicate that such conditions can discourage continued service utilization and may be particularly consequential for vulnerable groups, including older adults and individuals living with chronic conditions (Zakkar et al., 2025; Ogunyemi et al., 2025). Increasingly, the literature argues that functional access indicators—timeliness, affordability, service responsiveness, and availability of appropriate services—should be treated as co-equal to spatial access measures when assessing inequities (Vaisanen et al., 2025; Wood et al., 2023). Integrated approaches that combine spatial measures with functional indicators are recommended for more accurate identification of underserved populations and for better targeting of access interventions (Wang et al., 2023; Hyuha et al., 2025).

In the Philippines, the adoption of UHC through legislative reforms represents a major policy commitment; nevertheless, access remains uneven across geographic and socioeconomic groups. Rural and remote communities continue to face constraints related to distance, transportation, service availability, and waiting time (Collado, 2024). These conditions mirror international findings that UHC implementation requires strengthening community-level primary care delivery in concrete operational terms rather than relying on policy commitments alone.

2.4 Governance, Data Privacy, and Scalability Conditions for Integrated Models

The integration of CHWs with digital health interventions extends beyond technological availability and requires governance frameworks, ethical safeguards, and institutional capacity to support scalability and sustainability. Across contexts, weak governance can produce fragmentation and parallel reporting systems, limiting uptake and reducing the usability of generated data. In community settings—where infrastructure and digital literacy may be uneven—governance weaknesses can also amplify ethical risks and undermine trust, thereby reducing the legitimacy of digital interventions at the frontline (Kirk et al., 2021; Fennelly et al., 2020; David et al., 2023).

Governance is typically framed as the set of accountability arrangements, policy directions, coordination mechanisms, and operational rules that align digital initiatives with health system priorities while enabling workable local implementation. Evidence suggests that local government engagement, clear policy direction, and inter-organizational coordination are critical for integrating community-level data into broader

health information systems, particularly within decentralized structures (Kirk et al., 2021; Rinawan et al., 2021). Work on integrated health analytics emphasizes that digital systems generate value when data governance, interoperability, and organizational alignment are treated as design conditions rather than as afterthoughts; otherwise, digital tools can exacerbate silos, create duplicated work, and weaken decision support quality (Atento, Quinto, Espelita, & Castaneda, 2025). For CHW-linked systems—where data must move reliably between community and facility contexts—these governance and interoperability conditions are especially relevant.

Data privacy and security are central concerns in CHW-digital health integration. While digital platforms may enhance documentation and communication, they introduce risks related to unauthorized access, surveillance, and misuse of sensitive information. Where formal platforms are unavailable or poorly implemented, frontline workers may default to informal tools (e.g., messaging applications), increasing privacy vulnerabilities when safeguards and protocols are not clearly specified (Thakur et al., 2025). Patient-centered digital health scholarship underscores that privacy, consent, fairness, and interpretability are not peripheral concerns; they are foundational safeguards that sustain trust and ensure that data practices do not undermine human-centered care, particularly when lived experiences and sensitive narratives are treated as data inputs (Atento, Quinto, Espelita, & San Juan, 2025).

Training and capacity-building are repeatedly identified as minimum conditions for effective and ethical implementation. Insufficient training can reduce tool adoption, increase errors, and produce frustration that undermines sustained use (Zaidi et al., 2020; Kirk et al., 2021). Training needs extend beyond operational use to include ethical competencies—confidentiality, informed consent, and appropriate escalation protocols—especially in decentralized and community-facing settings where boundaries between formal and informal information sharing can be blurred (Pyne-Mercier et al., 2025; Rinawan et al., 2021). Workforce-focused analyses imply that digital documentation and technology-mediated coordination are increasingly relevant competencies in health work, reinforcing the need to treat digital readiness as part of structured capability development rather than as a one-time technical orientation (Atento, Quinto, & Espelita, 2025).

Scalability is increasingly conceptualized through implementation science lenses that prioritize acceptability, feasibility, sustainability, and alignment with existing governance and financing structures rather than pilot success alone



(Zaidi et al., 2020; Fennelly et al., 2020). Stakeholder involvement, iterative design, and continuous evaluation are repeatedly emphasized as processes that keep digital solutions responsive to operational constraints and community expectations (David et al., 2023). In the Philippine setting, decentralization to local government units creates a mixed implementation landscape: local governance enables contextual adaptation, yet also produces variability in policy enactment, resource allocation, and data governance practices (Caragay et al., 2018). These conditions reinforce the importance of measuring governance support, privacy concerns, and training readiness at the community level when proposing scalable CHW-digital health integration models.

2.5 Synthesis and Gaps

The reviewed literature converges on several interrelated themes central to strengthening primary healthcare systems in pursuit of UHC. First, CHWs are consistently framed as vital contributors to primary care delivery, particularly in settings affected by workforce shortages and inequities in service reach. CHWs contribute through community-based prevention, health education, navigation, and follow-up functions that support continuity of care. However, such contributions are most reliable when CHWs are formally integrated into primary care teams with standardized roles, structured supervision, and adequate training. Second, digital health tools are commonly positioned as potential enablers of CHW effectiveness by improving reporting, communication, and referral coordination. Yet implementation conditions—training, infrastructure, workflow alignment, and technical support—shape whether digital interventions reduce administrative burden or instead create new layers of work and inequity. Third, healthcare access is multidimensional and cannot be adequately understood through geographic proximity alone; financial affordability, organizational responsiveness, and service availability operate together to shape utilization patterns. Fourth, governance, data privacy, and institutional capacity emerge as non-negotiable conditions for scaling CHW-digital health integration.

Despite robust support for community-based primary healthcare strengthening, several gaps remain evident. While CHW integration is widely advocated, limited consensus exists on operationalizing integration at the community level;

role definitions, training standards, and supervision models remain heterogeneous across settings. Although digital tools are broadly endorsed as CHW enablers, many studies emphasize technological potential rather than implementation realities, with persistent constraints related to infrastructure, digital literacy, workflow fit, and technical support suggesting a gap between conceptual endorsement and operational feasibility. Access assessments often remain fragmented, with studies emphasizing geographic access while under-capturing functional barriers such as affordability and service responsiveness. Governance and data privacy are frequently identified as prerequisites for scale, yet these conditions are not consistently operationalized through measurable community-based inputs. Finally, the literature often treats CHW integration, digital tool adoption, access barriers, and governance as separate domains; fewer studies integrate these domains into a unified framework explicitly designed for scalable primary healthcare strengthening aligned with UHC objectives—particularly within decentralized systems where variability in implementation capacity is a defining feature.

These gaps support the need for an integrated, context-sensitive assessment of community-based primary healthcare strengthening that simultaneously considers access barriers, service quality, CHW integration conditions, digital readiness, and governance safeguards. The present study addresses this need by empirically linking these components into a coherent framework for strengthening primary healthcare within the Philippine context.

3. Methodology

3.1 Research Design

The study employed a quantitative, cross-sectional descriptive survey design to assess community-level experiences and perceptions of primary healthcare accessibility, perceived service quality, CHW engagement, and readiness for digital health support mechanisms. The design was appropriate for describing patterns and implementation-relevant conditions across study sites at a single point in time.

3.2 Study Locale

The study was conducted in CALABARZON (Region IV-A), a major growth corridor in the Philippines. The locale was narrowed to selected local government units (LGUs) in Laguna and Batangas that are contiguous and functionally linked through commuting patterns and shared service ecosystems. Specifically, the Laguna sites included Santa Rosa City, Cabuyao City, and Calamba City, while the Batangas sites included Tanauan City and the Municipality of Malvar. These sites were purposively selected to support feasible household-level data collection and to capture variation across adjacent urban and peri-urban settings.

3.3 Participants and Sampling

The target population comprised adult community residents (≥ 18 years) who were current or potential users of primary healthcare services within selected barangays of the study LGUs. Inclusion criteria were: (a) age 18 years or above, (b) residence in the selected community, and (c) provision of voluntary informed consent. Exclusion criteria were: (a) age below 18 years, (b) non-residence at the time of survey, or (c) inability to provide informed consent.

A multistage sampling approach was used. First, the five LGUs were purposively selected based on feasibility and relevance. Second, barangays within each LGU were selected in coordination with local stakeholders to facilitate household access. Third, households within selected barangays were approached using a convenience sampling method, prioritizing adult residents available at the time of data collection and willing to participate. The sampling frame was not exhaustive, and response rates could not be calculated because the number of households approached was not systematically recorded—a limitation acknowledged in Section 5.2.

For minimum sample size planning, Cochran's formula for large populations was applied: at 95% confidence ($Z = 1.96$), maximum variability ($p = 0.50$), and 5% margin of error ($e = 0.05$), yielding a minimum n of 385. Following data cleaning, the final dataset comprised 633 valid responses ($N = 633$), exceeding the minimum and improving precision for descriptive estimates at the LGU level. The achieved distribution was: Calamba ($n = 252$, 39.8%), Cabuyao ($n = 151$, 23.9%), Sta. Rosa ($n = 135$, 21.3%), Tanauan ($n = 70$, 11.1%), and Malvar ($n = 25$, 3.9%).

3.4 Research Instrument

Data were collected using a structured questionnaire developed based on literature review and expert consultation. The instrument was encoded in Google Forms and administered at the household level. It consisted of sections covering:

- a. Respondent demographics (age, sex, LGU, length of residence)
- b. Primary healthcare access indicators (distance, travel time, cost-related delay/avoidance, barriers checklist)
- c. Perceived service quality: seven items (courtesy, waiting time, cleanliness, clarity of explanations, medicine availability, confidence in advice, overall satisfaction) rated on a 5-point Likert scale (1 = very poor to 5 = very good)
- d. CHW awareness and engagement: awareness, interaction in past 12 months, interaction frequency, trust, support for formal integration
- e. Digital health readiness: mobile phone access, willingness to use digital tools, perceived feasibility of CHW-digital integration, implementation safeguard preferences (training, privacy rules), confidence in data confidentiality, preferred data custodian

All items were closed-ended. For multiple-response questions, respondents could select all applicable options. The questionnaire was pretested with a small sample ($n = 20$) to ensure clarity and comprehensibility; minor wording adjustments were made.

3.5 Instrument Validation and Reliability

Content validity was assessed by three subject-matter experts in community health and research methodology, who reviewed the questionnaire for clarity, relevance, and alignment with study objectives. Revisions were incorporated based on their feedback.

Internal consistency reliability for the 7-item perceived service quality scale was assessed using Cronbach's alpha based on the final analytic dataset ($N = 633$). The scale demonstrated good internal consistency ($\alpha = 0.88$), supporting its use as a composite Service Quality Index (SQI). No other multi-item scales were used.

3.6 Data Gathering Procedure

Prior to data collection, coordination meetings were held with LGU health officers and barangay captains to explain the study purpose and obtain permission to approach households. Data collection occurred over a four-week period in [month/year]. Trained data collectors visited households during daytime and weekend hours to maximize availability. Eligible respondents were briefed on the study objectives, voluntary participation, and



confidentiality protections. Written informed consent was obtained from all participants. The questionnaire was self-administered with assistance provided upon request. Completed responses were automatically captured in Google Forms and exported to Microsoft Excel for cleaning.

3.7 Ethical Considerations

The study underwent institutional ethics review and was determined to be exempt because it involved anonymous, non-interventional survey procedures. Participation was voluntary, and respondents could withdraw at any time without consequence. No personally identifying information was collected. Data were stored in password-protected files accessible only to the research team. To mitigate privacy risks, no identifiers were linked to responses, and data will be retained for five years post-publication before secure deletion, consistent with institutional data governance policies.

3.8 Statistical Analysis

Data were cleaned by removing duplicate or incomplete records. Categorical variables were summarized using frequencies and percentages. Likert-type items were summarized using means and standard deviations. The Service Quality Index (SQI) was computed as the mean of the seven service quality items (Items 12–18), with higher scores indicating more favorable perceptions.

Each study objective was addressed through specific analyses:

Objective (a) – access barriers: descriptive frequencies of barrier types among respondents reporting any barrier.

Objective (b) – service quality: descriptive statistics for each item and LGU; Kruskal-Wallis tests to compare SQI across LGUs, with Dunn's post hoc tests and Bonferroni correction; effect sizes (ϵ^2) reported.

Objective (c) – CHW engagement and digital readiness: descriptive statistics for awareness, trust, support, interaction frequency, mobile access, willingness, feasibility, and confidentiality confidence.

Objective (d) – scalability recommendations: synthesized from all findings.

For multiple-response items, percentages were calculated based on the number of respondents who

selected at least one option. Statistical significance was set at $p < .05$. Analyses were conducted using SPSS version 27 and Jamovi.

4. Results and Findings

4.1 Respondent Profile and Access Context

A total of 633 household respondents from five CALABARZON localities participated in the survey. The largest share of participants came from Calamba (39.8%), followed by Cabuyao (23.9%), Sta. Rosa (21.3%), Tanauan (11.1%), and Malvar (3.9%). Sex distribution was nearly balanced, with males comprising 50.2% and females 49.8% of the sample.

The sample was concentrated in working-age brackets, with the highest proportion aged 20–29 years (31.0%), followed by 30–39 years (29.2%), over 40 years (26.1%), and below 20 years (13.7%). This distribution indicates that the respondent pool predominantly consisted of adults likely to be active healthcare decision-makers within households. More than half of respondents reported residing in their current community for more than five years (52.3%), suggesting sufficient community exposure to provide informed perceptions regarding local primary healthcare services and CHW visibility.

Regarding geographic access to health facilities, nearly half of participants reported that the nearest health facility was located 1–5 kilometers away (48.3%), while 34.3% reported more than 5 kilometers, and 17.4% reported less than 1 kilometer. Correspondingly, most respondents reported a travel time of 15–30 minutes (55.0%), while 27.6% required more than 30 minutes, and 17.4% reported less than 15 minutes. These figures indicate that while a substantial portion of households had moderate geographic access to health facilities, a meaningful segment experienced distance and travel-time burdens that may influence utilization patterns. All respondents were classified under urban areas, indicating that the findings reflect urban community contexts within the included LGUs.

4.2 Community Health Worker Awareness, Trust, and Support

Near-universal awareness of Community Health Workers was observed, with 99.7% of respondents reporting awareness of CHWs in their

community. Reported engagement was also substantial: 90.5% indicated interaction with a CHW within the past 12 months. Trust outcomes were similarly strong, with 98.4% expressing that CHWs were reliable sources of health information. This trust was reflected in institutional preferences: 98.9% supported the formal integration of CHWs into primary healthcare teams with standardized roles.

Among respondents who reported CHW interaction within the past 12 months ($n = 573$), engagement was predominantly episodic. Approximately two-thirds (66.3%) reported interacting with a CHW only once during this period, while 22.0% reported interaction two to three times. More sustained engagement was less common: 8.9% reported monthly interaction and 2.8% reported weekly interaction. This pattern suggests that while CHWs were widely recognized and trusted, the frequency of contact for most households occurred on a limited or as-needed basis rather than through continuous follow-up. (See Table 1)

4.3 Perceived Health Center Service Quality

Perceived health center service quality varied across the five participating LGUs. Cabuyao recorded the highest composite Service Quality Index (SQI) score ($M = 4.04$, $SD = 0.62$), followed by Calamba ($M = 3.79$, $SD = 0.95$). Mid-range evaluations were observed in Tanauan ($M = 3.49$, $SD = 0.74$) and Sta. Rosa ($M = 3.39$, $SD = 0.87$), while Malvar posted the lowest composite score ($M = 3.25$, $SD = 0.92$).

Across specific service attributes, Cabuyao showed favorable perceptions, particularly for clarity of explanations ($M = 4.20$) and confidence in the advice provided ($M = 4.31$), suggesting stronger ratings for provider communication and perceived credibility. Calamba demonstrated generally stable ratings in the mid-to-high 3 range across domains. Sta Rosa's ratings indicated comparatively lower evaluations for courtesy and professionalism ($M = 2.94$) but moderate-to-strong evaluations for clarity of explanations ($M = 3.67$), availability of medicines ($M = 3.68$), and confidence in advice ($M = 3.73$), suggesting that perceived service experience differed by domain rather than reflecting uniformly low performance.

A cross-LGU pattern emerged in which overall satisfaction tended to cluster at a narrower and relatively lower band ($M = 2.92$ to 3.29) compared with certain process-specific items, indicating that respondents differentiated between particular service attributes and their holistic evaluation of satisfaction. (See Table 2)

4.4 Digital Readiness, Acceptability, and Privacy Concerns

Strong digital readiness and acceptability for community-based digital health strategies were observed. Nearly all respondents reported access to a mobile phone (97.9%). Willingness to use digital tools for health-related purposes—such as receiving reminders, accessing information, or facilitating referrals—was also high (94.0%). Perceived feasibility of integrating CHWs with digital health tools was similarly strong (94.0%), suggesting that respondents viewed such integration as practical within their community contexts.

Respondents expressed high agreement that CHWs should receive formal training prior to using digital health systems, with a mean of 4.48 ($SD = 0.50$) on a 5-point scale. They similarly affirmed that implementation should proceed only when privacy rules are clearly explained to users ($M = 4.51$, $SD = 0.50$). Support for implementing a CHW-digital health model in the community was likewise high ($M = 4.49$, $SD = 0.50$), indicating broad acceptability of a digitally enabled CHW approach.

However, confidence in the confidentiality of personal health data within a digital health system was comparatively lower and more variable ($M = 2.72$, $SD = 1.20$), with a median of 3 and a wide interquartile range (2–4). This pattern suggests that although households strongly supported implementation and demanded safeguards, they expressed meaningful uncertainty about data confidentiality.

Regarding data governance preferences, respondents most frequently preferred Health Centers or Facilities as the primary custodians of CHW-related digital health data (35.5%), followed by the LGU (28.3%) and the Department of Health (23.5%). Only a minority selected an Authorized Health Partner (12.6%). This pattern suggests a preference for public-sector and facility-anchored data governance, reflecting expectations that accountability structures formally responsible for patient care should manage health data.

4.5 Barriers to Healthcare Access

Among respondents who identified at least one access constraint ($n = 144$), cost emerged as the dominant barrier, reported by 91.7% of this subgroup. Secondary barriers were reported far less frequently: transportation cost (20.1%), lack of available health personnel (16.0%), long waiting time (10.4%), and limited clinic hours (10.4%). Unavailability of medicines was reported by 6.3% of barrier-reporting respondents.

No respondents selected lack of information about available services or other barriers, suggesting



that perceived access constraints among those reporting difficulties were concentrated on economic and operational factors rather than informational limitations. This distribution indicates that interventions aimed at improving access should prioritize mechanisms that reduce direct and indirect costs while addressing practical service constraints.

4.6 Services Provided by Community Health Workers

Among respondents who reported receiving at least one CHW-provided service ($n = 190$), the most frequently reported service was referral to health facilities (54.2%), suggesting that CHWs were commonly perceived as facilitators of linkage between households and formal health services. Nearly half of respondents also reported receiving health education or advice (43.2%), indicating that CHWs played a substantial role in community-level health information dissemination.

Other services were reported less frequently. Approximately 23.7% reported assistance with health programs, while 18.4% reported chronic disease follow-up, suggesting moderate CHW contribution to program navigation and continuity of care for longer-term conditions. Follow-up or home visits were least common among the listed service types (16.8%), implying that sustained household follow-up may have been less consistently experienced relative to referral and education functions.

4.7 LGU-Level Comparisons of Service Quality

A non-parametric Kruskal-Wallis test was used to compare the Service Quality Index across LGUs because normality assumptions for parametric ANOVA were not met. The Service Quality Index differed significantly across LGUs ($\chi^2 = 85.0$, $df = 4$, $p < .001$). The effect size ($\epsilon^2 = 0.134$) suggested that the observed LGU differences were meaningful in magnitude, indicating that perceived service quality was not uniform across study sites.

Post hoc testing using Dunn's pairwise comparisons with Bonferroni adjustment indicated that Cabuyao and Calamba were consistently higher than Sta. Rosa, Tanauan, and Malvar on the Service Quality Index. Specifically, significant differences were observed between Sta. Rosa and Cabuyao ($p < .001$), Sta. Rosa and Calamba ($p < .001$), Tanauan and Cabuyao ($p < .001$), Tanauan and Calamba ($p < .001$), Malvar and Cabuyao ($p < .001$), and Malvar and Calamba ($p = .006$). No significant differences

were observed among Sta. Rosa, Tanauan, and Malvar, and Cabuyao did not significantly differ from Calamba after adjustment. The post hoc results suggested a clustering pattern: higher SQI in Cabuyao and Calamba, and lower-to-moderate SQI in Sta. Rosa, Tanauan, and Malvar.

Overall satisfaction ratings also differed across LGUs ($\chi^2 = 11.4$, $df = 4$, $p = .023$). However, the effect size was small ($\epsilon^2 = 0.018$), suggesting that while a statistically detectable difference existed, the magnitude of variation in overall satisfaction across LGUs was limited. Post hoc analysis using Dunn's test with Bonferroni correction showed no statistically significant pairwise differences in overall satisfaction between specific LGU pairs (all adjusted p -values $> .05$). This pattern—significant omnibus test but non-significant adjusted pairwise results—is consistent with the small effect size and modest between-group separation. Substantively, this suggests that overall satisfaction was relatively similar across LGUs, even though more detailed service-quality dimensions captured by the SQI composite showed clearer LGU differentiation.

4.8 Discussion of Findings

4.8.1 Interpretation of Findings

Social Legitimacy of CHWs and Support for Formal Integration

The findings demonstrated near-universal awareness of CHWs (99.7%) and exceptionally high levels of trust (98.4%) and support for formal integration into PHC teams (98.9%). These results indicate that within the urban CALABARZON LGUs studied, CHWs are widely recognized as legitimate community health actors. This pattern suggests that community resistance is unlikely to be a barrier to integration; rather, implementation challenges are more likely institutional—clarifying standardized roles, establishing accountable supervision, ensuring adequate resourcing, and addressing training gaps. This aligns with literature emphasizing CHW community embeddedness as a source of trust and effectiveness (Knowles et al., 2023; Pinto et al., 2020) and extends Philippine evidence on Barangay Health Workers (Mallari et al., 2020; Querri et al., 2020).

Nature and Intensity of CHW Engagement

While 90.5% of respondents reported CHW interaction in the past 12 months, the frequency pattern was predominantly episodic: 66.3%

interacted only once, and only 2.8% weekly. This suggests that CHWs currently function primarily as on-demand support (referrals, health education) rather than as routine continuity-of-care providers for most households. The service types reported—referrals (54.2%) and health education (43.2%) being most common, while follow-up visits (16.8%) and chronic disease follow-up (18.4%) were less frequent—corroborate this interpretation. Formal integration and digital tools may offer mechanisms to strengthen continuity by enabling structured follow-up schedules, reminders, and documentation routines, but realizing this potential would require institutional capacities such as training, supervision, and privacy protections (Zaidi et al., 2020; Kirk et al., 2021).

Perceived Health Center Service Quality and LGU-Level Variation

Service quality ratings varied significantly across LGUs ($p < .001$, $\epsilon^2 = 0.134$), with Cabuyao and Calamba clustering at higher perceived quality and Sta. Rosa, Tanauan, and Malvar at lower-to-moderate levels. This variation has implications for CHW-digital integration: where facility-based service quality is perceived as stronger, digital tools may be viewed as efficiency enhancers; where quality is lower, digital augmentation may be met with skepticism if households perceive broader systemic weaknesses that technology alone cannot resolve (Zakkar et al., 2025; Ogunyemi et al., 2025). The findings support a differentiated implementation logic: integration models may require tailoring based on baseline service experience.

Notably, overall satisfaction showed only modest LGU variation ($\epsilon^2 = 0.018$) with non-significant pairwise differences after adjustment, indicating that global satisfaction ratings may mask domain-specific variation captured by the multi-item SQI. This underscores the value of multi-domain service quality measures for comparative assessment.

Digital Readiness and the Privacy Confidence Gap

High digital readiness was observed: 97.9% mobile phone access, 94.0% willingness to use digital tools, and 94.0% perceived feasibility of CHW-digital integration. Respondents strongly endorsed implementation safeguards (training, privacy rules). However, confidence in data confidentiality was markedly lower ($M = 2.72/5$) and highly variable, indicating a critical trust gap. This aligns with literature emphasizing privacy as a foundational safeguard for digital health trust (Atento, Quinto, Espelita, & San Juan, 2025; Thakur et al., 2025). Governance preferences favored public-sector custodianship (health center/facility

35.5%, LGU 28.3%, DOH 23.5%) over authorized health partners (12.6%), suggesting that perceived legitimacy is tied to public accountability. Implementation designs emphasizing facility-anchored governance and transparent oversight may be more trust-enhancing.

Access Barriers: Cost as Dominant Constraint

Among barrier-reporting respondents ($n = 144$), cost was dominant (91.7%), followed by transportation cost (20.1%) and personnel availability (16.0%). This is consistent with international evidence that economic friction often becomes the decisive access constraint even when services exist (Higgins et al., 2023; Sorn, 2025). CHW-digital integration may reduce indirect burdens (e.g., unnecessary travel, repeated visits) but cannot fully address direct financial barriers without complementary policy measures (Khatri & Assefa, 2023; Okeke et al., 2023).

4.8.2 Limitations

Several limitations should be considered. First, the cross-sectional design captures perceptions at a single time point and cannot establish causal relationships. Second, the sample was drawn from urban/peri-urban LGUs in CALABARZON; findings may not generalize to rural or remote areas. Third, self-reported data are subject to recall and social desirability biases. Fourth, the convenience sampling approach precludes response rate calculation and may introduce selection bias (e.g., overrepresentation of digitally connected households, given 97.9% mobile access). Fifth, the small sample for Malvar ($n = 25$) limits precision. Sixth, the study assessed readiness and acceptability, not actual implementation; stated preferences may not perfectly predict behavior. Seventh, perspectives of CHWs, facility staff, and policymakers were not included. Eighth, item provenance relied on expert consultation rather than validated scales, though reliability was acceptable ($\alpha = 0.88$). Finally, the absence of a sampling frame and non-response data limits external validity claims.

4.8.3 Integrated Interpretation: Readiness Signals for a Scalable CHW-Digital Health Model

The evidence supports three overarching readiness signals: (1) strong social legitimacy of CHWs, indicating that institutionalizing their roles would build on existing community trust; (2) meaningful LGU-level variation in service quality, underscoring the need for locality-sensitive implementation; and (3) high digital acceptability coupled with a privacy confidence gap, highlighting governance design as a critical success factor. These findings suggest that a CHW-digital health integration model is socially acceptable and operationally feasible in the study contexts, but its



scalability would depend on institutionalizing CHW roles through formal training and competency assurance, establishing clear data governance under trusted public custodianship, and designing systems that address practical access constraints—particularly cost.

5. Conclusions and Recommendations

5.1 Conclusions

Based on the findings, the following conclusions are drawn:

1. Social legitimacy of CHWs is strong. Near-universal awareness (99.7%), high trust (98.4%), and strong support for formal integration (98.9%) indicate that community environments are favorable for institutionalizing CHWs through standardized roles and formal linkage to local health systems.
2. CHW engagement is widespread but episodic. Although 90.5% reported interaction, most (66.3%) interacted only once in 12 months. CHWs are primarily experienced as linkage and information intermediaries (referrals, health education) rather than consistent follow-up providers. Strengthening continuity of care will require structured workflows and digital tools to enable routine follow-up for priority conditions.
3. Perceived service quality varies significantly across LGUs. The Service Quality Index differed markedly ($p < .001$, $\epsilon^2 = 0.134$), with Cabuyao and Calamba clustering higher. This variation supports locality-sensitive implementation planning rather than one-size-fits-all approaches.
4. Digital readiness is high, but confidentiality confidence is low. Mobile access (97.9%) and willingness to use digital tools (94.0%) are strong, yet confidence in data confidentiality is notably lower ($M = 2.72/5$). Respondents prefer public-sector data custodianship (health centers, LGUs, DOH). These findings indicate that successful digital integration will depend on trusted governance, transparent privacy practices, and accountability anchored in formal health institutions.
5. Cost is the dominant access barrier. Among respondents reporting barriers, cost (91.7%) far exceeded other constraints. CHW-digital integration may alleviate indirect burdens but

cannot substitute for financial risk protection measures.

5.2 Recommendations

Based on the conclusions, the following recommendations are proposed for LGUs, health facilities, CHW programs, and policymakers:

1. Institutionalize CHW roles through standardized integration within PHC teams. Establish formal role descriptions, referral protocols, and reporting requirements that define CHWs as recognized PHC team members. Anchor integration on existing functions (referrals, health education) while progressively strengthening continuity roles (follow-up visits, chronic disease monitoring) supported by structured supervision and incentives.
2. Strengthen structured follow-up using targeted workflows and digital tools. Adopt structured follow-up workflows for priority health concerns (maternal-child health, immunization, chronic diseases). Assign CHWs case rosters with schedule-based check-ins, facilitated by digital reminders and tracking systems, to transform episodic contact into planned continuity.
3. Implement locality-sensitive service quality improvements. Use SQI results to guide differentiated implementation: LGUs with lower service quality perceptions should prioritize facility responsiveness improvements (patient flow, communication, staffing) alongside CHW integration; LGUs with higher SQI may focus on optimizing efficiency and referral coordination through digital tools.
4. Provide comprehensive CHW digital training before deployment. Train CHWs in basic digital literacy, data entry, referral documentation, and ethical competencies (confidentiality, informed consent). Use competency-based assessments to ensure reliable use and reduce implementation variability.
5. Establish robust privacy governance and consent routines. Institutionalize privacy protocols including clear consent procedures, data minimization, role-based access controls, and accountability for breaches. Communicate privacy rules in accessible language to

households prior to implementation, addressing the identified confidence gap.

6. Anchor data stewardship in trusted public institutions. Place CHW-related digital health data management under facility-based stewardship with LGU/DOH oversight. If technology partners are involved, define their role as technical support, not primary custodianship, through formal agreements preserving public accountability.
7. Address economic barriers through complementary policies. Complement CHW-digital integration with strategies to reduce direct and indirect costs: targeted subsidies for vulnerable households, streamlined processes to minimize repeated visits, and enhanced financial risk protection. Digital tools can contribute by reducing travel and improving coordination but cannot replace financial protection.
8. Directions for future research. Extend research to rural/remote areas; include CHW, facility staff, and policymaker perspectives; employ longitudinal designs to track changes over time; evaluate actual implementation of integration models; and examine mechanisms through which privacy governance influences sustained trust.

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7. Tables

Table 1. CHW Awareness, Interaction, Trust, and Support for Formal Integration (N = 633)

Indicator	Response	n	%
Aware of CHW in community	Yes	631	99.7
	No	2	0.3
Interacted with CHW in past 12 months	Yes	573	90.5
	No	60	9.5
Trust CHWs as reliable sources of health information	Yes	623	98.4
	No	10	1.6
Support formal integration of CHWs into PHC teams with standardized roles	Yes	626	98.9
	No	7	1.1

Table 2. Frequency of Interaction with CHWs in Past 12 Months (n = 573)

Frequency	n	%
Once	380	66.3
2–3 times	126	22.0
Monthly	51	8.9
Weekly	16	2.8

Note: Percentages based on respondents who reported any interaction.

Table 3. Health Center Service Quality Ratings by LGU (Items 12–18) and Composite Service Quality Index

Values are Mean (SD). Scale: 1 (very poor) to 5 (very good).

LGU	n	A	B	C	D	E	F	OS	SQI
Cabuyao	151	3.89 (0.93)	3.93 (0.98)	3.97 (0.89)	4.20 (0.91)	3.97 (0.95)	4.31 (0.82)	3.28 (0.77)	4.04 (0.62)
Calamba	252	3.73 (1.18)	3.72 (1.22)	3.71 (1.20)	3.86 (1.21)	3.73 (1.16)	3.96 (1.17)	3.29 (0.90)	3.79 (0.95)
Malvar	25	3.44 (1.16)	2.92 (1.08)	3.28 (1.28)	3.16 (1.31)	3.04 (1.17)	3.64 (1.25)	2.92 (0.64)	3.25 (0.92)
Sta. Rosa	135	2.94 (1.11)	3.04 (0.92)	3.48 (0.79)	3.67 (0.82)	3.68 (0.80)	3.73 (0.73)	3.15 (0.43)	3.39 (0.87)
Tanauan	70	3.33 (1.15)	3.37 (1.12)	3.59 (1.04)	3.30 (1.05)	3.56 (1.03)	3.77 (1.07)	3.00 (0.54)	3.49 (0.74)

A – Courtesy & professionalism

B – Waiting time

C – Cleanliness & adequacy

D – Clarity of explanations

E – Availability of medicines

F – Confidence in advice

OS – Overall satisfaction

SQI – Service Quality Index

Table 4. Differences in Service Quality Index by LGU (Kruskal-Wallis Test; N = 633)

Outcome Variable	Test	χ^2	df	p	ϵ^2
Service Quality Index	Kruskal-Wallis	85.0	4	< .001	0.134



Table 5. Post Hoc Pairwise Comparisons for SQI by LGU (Dunn Test with Bonferroni Correction)

Pairwise comparison	z	p (adjusted)	Interpretation
Sta. Rosa vs Tanauan	-1.17	1.000	Not significant
Sta. Rosa vs Malvar	0.07	1.000	Not significant
Sta. Rosa vs Cabuyao	-7.76	< .001	Significant
Sta. Rosa vs Calamba	-6.63	< .001	Significant
Tanauan vs Malvar	0.80	1.000	Not significant
Tanauan vs Cabuyao	-5.16	< .001	Significant
Tanauan vs Calamba	-3.95	< .001	Significant
Malvar vs Cabuyao	-4.33	< .001	Significant
Malvar vs Calamba	-3.44	.006	Significant
Cabuyao vs Calamba	2.06	.391	Not significant

Table 6. Differences in Overall Satisfaction by LGU (Kruskal-Wallis Test; N = 633)

Outcome Variable	Test	χ^2	df	p	ϵ^2
Overall satisfaction (Item 18)	Kruskal-Wallis	11.4	4	.023	0.018

Post hoc pairwise comparisons for overall satisfaction showed no significant differences after Bonferroni adjustment (all adjusted $p > .05$).

Table 7. Digital Readiness and Acceptability for CHW-Digital Health Integration (N = 633)

Indicator	Response	n	%
Has access to a mobile phone	Yes	620	97.9
	No	13	2.1
Willing to use digital tools for health information, reminders, or referrals	Yes	595	94.0
	No	38	6.0
Believes integrating CHWs with digital health tools is feasible in the community	Yes	595	94.0
	No	38	6.0

Table 8. Implementation Safeguards and Acceptability (5-point Likert scale, N = 633)

Item	Mean	SD	Min–Max	Md	IQR
CHWs should receive formal training before using digital health systems.	4.48	0.50	4–5	5	4–5
I am confident that my personal health data would be kept confidential in a digital health system.	2.72	1.20	1–5	3	2–4
Digital health implementation should proceed only if clear privacy rules are explained to users.	4.51	0.50	4–5	5	4–5
I support implementing a CHW–digital health model in my community.	4.49	0.50	4–5	5	4–5

Table 9. Preferred Data Manager for CHW-Related Digital Health Data (N = 633)

Preferred entity	n	%
Health Center / Facility	225	35.5
LGU	179	28.3
Department of Health	149	23.5
Authorized Health Partner	80	12.6



Table 10. Barriers Limiting Access (multiple responses, n = 144)

Barrier	n	%
Cost	132	91.7
Transportation cost	29	20.1
Lack of available health personnel	23	16.0
Long waiting time	15	10.4
Limited clinic hours	15	10.4
Unavailability of medicines	9	6.3

Table 11. Services Provided by CHWs (multiple responses, n = 190)

Service	n	%
Referral to health facilities	103	54.2
Health education or advice	82	43.2
Assistance with health programs	45	23.7
Chronic disease follow-up	35	18.4
Follow-up or home visits	32	16.8