ORIGINAL ARTICLE

Facility Assessment for the Implementation of the Philippine Package of Essential Noncommunicable Disease Interventions (PhilPEN) in Primary Health Care Centers in Metro Manila

Joyce P. Parco, MPH,[1] Kim Leonard G. dela Luna, RND, MSPH, PhD[2] and Maria Theresa M. Talavera, DrPH[1]

[1]*Institute of Human Nutrition and Food, College of Human Ecology, University of the Philippines Los Baños, Laguna, Philippines*
[2]*Department of Nutrition, College of Public Health, University of the Philippines Manila, Manila, Philippines*

ABSTRACT

Background and Objective. The Philippine Package of Essential Noncommunicable Disease Interventions (PhilPEN) was introduced by the Department of Health through AO 2012-0029. This is anchored to WHO PEN, a prioritized set of cost-effective interventions that can be carried out to provide an acceptable standard of care at the primary health care level, even in low-resource settings. The study aims to evaluate the availability and adequacy of primary health care facilities in providing the PhilPEN package of interventions using the WHO assessment tool.

Methods. A cross-sectional survey was conducted in 25 randomly selected primary health care facilities in Metro Manila. Data were collected through structured interviews with facility staff and direct observation using a standardized questionnaire aligned with PhilPEN and WHO PEN guidelines. The tool assessed PhilPEN inputs (infrastructure, human resources, basic tools and equipment, essential medicines, record-keeping, financing) and services (risk assessment and screening, early diagnosis and monitoring, treatment and follow-up, counseling, referral of patients).

Results. All facilities met the basic standards for infrastructure, human resources, record keeping, and financing. However, only 40% had all essential medicines, and just 16% had complete tools, including urine ketone/protein test strips. Risk assessment and patient counseling were consistently implemented, but early diagnosis and follow-up services were inconsistent due to training and supply gaps.

Conclusion. Primary health care centers in Metro Manila demonstrate partial readiness for PhilPEN implementation. Gaps in tools, medicines, and protocol availability should be addressed to optimize NCD service delivery.

Keywords: primary health care, noncommunicable diseases, delivery of health care, standard of care, cardiovascular disease

INTRODUCTION

Noncommunicable diseases (NCDs) have emerged as the leading cause of morbidity and mortality worldwide. NCDs account for approximately 74% of global deaths, with 17.9 million deaths attributed to cardiovascular diseases (CVDs), followed by cancers, chronic respiratory diseases, and diabetes.[1,2] Low- and middle-income countries (LMICs) bear a disproportionate burden, contributing to more than three-fourths of these deaths due to weak health systems, poor access to services, and persistent socioeconomic inequities.[1,3] These conditions are largely preventable through interventions targeting modifiable behavioral risk factors such as tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol.[2,4] However, the effective implementation of

Corresponding author: Joyce P. Parco, MPH
Institute of Human Nutrition and Food
College of Human Ecology
University of the Philippines Los Baños
Laguna, Philippines
Email: jpparco1@up.edu.ph

such interventions requires system-level readiness, particularly at the primary health care (PHC) level.

In the Philippines, NCDs have overtaken infectious diseases as the primary contributors to disease burden and health system strain. CVDs alone have remained the leading cause of mortality for more than a decade, followed by neoplasms and diabetes mellitus.[5,6] This growing burden is further exacerbated by the increasing prevalence of modifiable risk factors such as obesity, physical inactivity, and unhealthy dietary patterns, particularly in urban and peri-urban settings, where lifestyle transitions and environmental influences contribute significantly to the rise in NCD incidence.[6] The presence of social determinants such as poverty, low health literacy, and limited or no access to healthier food options and affordable healthcare can contribute to poor health outcomes, which further compounds this burden.[6,7] Despite the existing national policies and programs on NCDs, implementation gaps persist at the local level, especially in ensuring the availability of essential services and tools at primary facilities.

To provide a scalable, cost-effective strategy for addressing NCDs in resource-limited settings, the WHO developed the Package of Essential Noncommunicable Disease Interventions (WHO PEN). This package offers standardized protocols for risk assessment, counseling, essential drug therapy, and referral mechanisms that PHC providers, including non-physician health workers, can deliver.[3] Implementation of WHO PEN in LMICs, such as Bhutan, Sri Lanka, Zambia, Uganda, Nepal, and Myanmar, has demonstrated improvements in hypertension and diabetes screening, follow-up compliance, and increased health worker confidence in managing NCDs. However, operational challenges such as medicine stock-outs, incomplete recording of cardiovascular risk scores, low follow-up compliance, limited training, and weak referral pathways have been reported.[8-13] These findings underscore the importance of health system readiness, supply chain reliability, and continuous capacity building to ensure the sustainability and scalability of PEN interventions.

In response to the growing burden of NCDs, the Department of Health (DOH) institutionalized the Philippine Package of Essential Noncommunicable Disease Interventions (PhilPEN) through Administrative Order No. 2012-0029.[14] PhilPEN functions as the localized adaptation of WHO PEN, to enhance the capabilities of primary care providers to manage CVDs and diabetes using a stepwise, risk-based approach. The service delivery flow includes adult risk assessment starting at 25 years of age, risk screening, risk stratification using WHO/ISH charts, health education, initiation of pharmacological treatment for high-risk individuals, follow-up, and referrals as necessary.[15]

Although it has been adopted by the country for ten years, the implementation of PhilPEN was slow due to logistical and manpower issues.[16] Available evidence points to variation in the implementation of PhilPEN across the country. Facility-level audits in selected municipalities such as Los Baños and Pateros reveal structural and procedural limitations, including the inconsistent use of risk assessment tools, the absence of health education materials, irregular availability of maintenance medicines, and poor documentation of patient data.[17,18] These challenges indicate that while there's a policy on PhilPEN adoption, the preparedness of primary health care facilities to effectively carry out the program has yet to be established. Assessing facility readiness is, therefore, essential, as the successful implementation of PhilPEN depends heavily on the adequacy and operational capacity of primary health care centers, which serve as the frontline in delivering essential NCD prevention, screening, and management services.

This study aims to evaluate the availability and adequacy of primary health care facilities in Metro Manila in implementing the PhilPEN protocol, using a structured facility assessment tool adapted from the WHO PEN. The study focuses on both structural and process-level readiness, examining the presence of essential inputs, staff capacity, risk assessment practices, documentation, and referral mechanisms. By identifying gaps and strengths in the current service delivery, this research seeks to inform policy and programmatic decisions aimed at strengthening the primary care response to NCDs in the Philippines.

MATERIALS AND METHODS

Study Design and Setting

This study employed a cross-sectional descriptive research design. Data were collected through a face-to-face interview using a facility assessment tool adapted from WHO PEN and AO 2012-0029 to determine and assess the service availability and adequacy of primary health care centers to implement PhilPEN successfully. The study was conducted across selected primary health care facilities in Metro Manila, Philippines, a region comprising 16 cities and one municipality. The area was selected due to its high population density, considerable NCD burden, and decentralized healthcare delivery system through local government units (LGUs). Data collection was conducted from October to December 2024.

Population and Sampling Technique

The study population comprised public primary health care facilities in Metro Manila that provide outpatient services for NCD care. The designated respondents at each facility were either the physician or the nurse directly involved in implementing PhilPEN services. A total of 25 facilities were selected through simple random sampling from the 454 PhilPEN-implementing health centers obtained from DOH and Metro Manila LGUs. The sample size was calculated using the formula for finite populations at a 95% confidence level and 5% margin of error, which yielded a minimum required sample of 22 facilities. To allow for representation and non-response, 25 facilities were selected.

Inclusion criteria required that facilities had been implementing the PhilPEN program for at least one year. Facilities were excluded if they were not actively providing

services for NCD risk assessment or management at the time of data collection, or if there was no physician or nurse available for interview on the scheduled visit. All selected facilities met the eligibility criteria and there were no exclusions or replacements during the data collection period.

Data Collection and Research Instrument

The main data collection tool was a structured facility assessment instrument adapted from WHO PEN and AO 2012-0029. It had sections on structure (i.e., characteristics of facility, human resources, tools and equipment, medicines, record keeping, and financial administration) and process (i.e., risk assessment and screening, early diagnosis and monitoring, treatment and follow-up, counseling, and referral of patients). The tool underwent expert validation for content relevance and was pilot-tested in a non-study facility within Metro Manila to ensure clarity and appropriateness. Field data collectors were trained prior to implementation. Permission for these interviews has been secured through communication with City or Municipal Health Officers and local officials. Before the interview, informed consent forms were secured. On-site visits consisted of structured interviews with healthcare providers (physicians and nurses). Along with the interview, the trained data collectors directly validated the answers through document review and direct observation.

Data Management and Analysis

Data collected was field-edited to ensure all required items were appropriately answered. Each item in the questionnaire was assigned an appropriate code. A database was made in Microsoft Excel for data entry. The data entered was cleaned before analysis to avoid errors such as missing data, outliers, and inconsistencies. There were no missing data, as responses were validated through both interview and direct observation during the facility visits. To mitigate the risk of data loss, all data was backed up and securely stored. Descriptive statistics were computed to summarize frequencies and percentages per domain. Results were compared to the PhilPEN standards and the WHO PEN protocol. The analysis aimed to generate actionable findings for health system improvement rather than statistical inference.

Ethical Considerations

This study received ethical approval from the University of the Philippines Manila Research Ethics Board (UPMREB 2024-0215-01). All participating respondents were provided with an Informed Consent Form (ICF), which they read and signed prior to data collection.

RESULTS

A total of 25 PhilPEN implementing primary health care facilities across Metro Manila were assessed in seven core domains: infrastructure, human resources, basic tools and equipment, essential medicines, record keeping, financing, and PhilPEN service protocol. Table 1 summarizes the frequency and percentage of facilities that met selected readiness indicators across these domains.

Infrastructure

All surveyed health centers were operational five days a week and had designated days for NCD management, which in most facilities occurred daily. Every facility had a functional space for conducting risk assessments and consultations, but none had a dedicated room exclusive to PhilPEN service delivery. Facility layout varied widely, with most centers utilizing shared consultation areas or multipurpose rooms for screenings and patient education.

Human Resources

Each health center had at least one physician and one nurse assigned to deliver NCD services. However, physician presence varied, with some facilities reporting attendance only two or three days per week. All sites had midwives and community health workers (CHWs), including Barangay Health Workers (BHWs) and Barangay Nutrition Scholars (BNS). Additionally, 52% of centers had nutritionist-dietitians, 8% had pharmacists, and 32% had medical technologists, though the latter were primarily assigned to other programs (tuberculosis or social hygiene programs) and not to NCD care. Most facilities (76%) had at least one physician or nurse trained in PhilPEN, Forty-eight percent (48%) had trained midwives, while only 16% reported CHWs trained in NCD management.

Basic Tools and Equipment

While 64% of the health facilities had the basic tools required for PhilPEN implementation (excluding urine test strips), only 16% had the complete set of tools, including test strips for urine ketones and protein. Several facilities lacked essential diagnostic tools, such as the PhilPEN implementing guidelines (AO 2012-0029) or manual of operations, WHO CVD risk prediction charts, flowcharts for clinical decision-making, and cholesterol meters with compatible test strips. Blood pressure devices were routinely replaced due to wear and tear, while damaged equipment was returned to the LGU supplies office for replacement.

Essential Medicines

Less than half (40%) of the surveyed facilities had complete stocks of essential medicines for managing hypertension and diabetes, as prescribed in the PhilPEN protocol. Commonly unavailable medicines include thiazide diuretics (hydrochlorothiazide), ACE inhibitors (enalapril), and glibenclamide. Other essential medications that were not available include beta blockers (atenolol, metoprolol), aspirin or clopidogrel, and gliclazide. Essential medicines were supplied by both the DOH and LGUs; however, this batch marked the last national-level distribution following the Mandanas-Garcia ruling. Most medicines were dispensed

Table 1. Structural and Process-Level Readiness of Primary Health Care Facilities for PhilPEN Implementation in Metro Manila (N=25)

Domain	Frequency	Percentage
Infrastructure		
Open five days per week	25	100
Has a schedule dedicated to NCD management	25	100
With a room dedicated to NCD management	1	4
Human Resources		
Facilities with at least one physician	25	100
Facilities with nurse	25	100
Facilities with midwife	24	96
Facilities with community health workers (BHWs, BNSs)	25	100
Facilities with nutritionist-dietitian	13	52
Facilities with pharmacist	2	8
Facilities with medical technologist	8	32
Physicians trained in PhilPEN	19	76
Nurses trained in PhilPEN	19	76
Midwives trained in PhilPEN	12	48
Community health workers trained in PhilPEN	4	16
Basic Tools and Equipment		
PhilPEN AO or Manual of Operations	12	48
NCD Risk assessment and screening forms	25	100
WHO CVD Risk prediction charts	20	80
Evidence-based clinical protocols (flow charts, etc.)	21	84
Stethoscope	25	100
Blood pressure measuring device (non-mercurial)	25	100
Measuring tape	25	100
Weighing scale (adult)	25	100
Height measuring scale	25	100
Glucometer with test strips	25	100
Cholesterol meter with test strips	20	80
Test strips for checking urine protein	12	48
Test strips for checking urine ketones	12	48
Glass containers or test tubes for urine	12	48
Facilities with basic tools (excluding urine test strips)	16	64
Facilities with a complete set of tools	4	16
Essential Medicines		
Thiazide diuretics (hydrochlorothiazide)	10	40
Beta blockers (atenolol, metoprolol)	18	72
ACE inhibitors (enalapril)	13	52
Angiotensin receptor blocker (losartan)	25	100
Calcium channel blockers (amlodipine, nifedipine)	25	100
Aspirin or clopidogrel	24	96
Metformin	25	100
Glibenclamide	10	40
Gliclazide	23	92
Statins (simvastatin, lovastatin)	25	100
Facilities with complete essential medicines	10	40
Record Keeping		
Records are kept for all visits	25	100
Records are retrieved and consulted at each facility visit	25	100
Uses paper and electronic records	18	72
Uses paper records only	4	16
Uses electronic records only	3	12
Facilities with stock cards or logbooks for inventory	25	100
Financing		
Facilities providing medicines for free	25	100
Facilities providing consultations for free	25	100
Facilities providing diagnostic tests for free	15	60
PhilPEN Service Protocol		
Facilities conducting a risk assessment interview	25	100
Facilities determining obesity by computing for BMI	25	100
Facilities determining central adiposity by measuring waist circumference	25	100
Facilities measuring blood pressure	25	100
Facilities conducting screening for blood glucose	24	96
Facilities conducting screening for blood cholesterol	18	72
Facilities conducting screening for urine ketones	8	32
Facilities conducting screening for urine protein	8	32
Facilities using WHO CVD risk prediction charts	20	80
Facilities implementing a protocol for monitoring	25	100
Facilities initiating treatment based on standardized protocols	22	88
Facilities conducting patient follow-ups	25	100
Facilities conducting patient counseling (health education)	25	100
Facilities with at least one IEC materials on NCD	24	96
Facilities capable of referral to higher-level facilities	25	100
Facilities with own ambulance	6	24

directly at the health center, though one LGU had a centralized dispensing unit at the city hall.

Record Keeping

All facilities maintained records for each patient visit and used them during subsequent consultations. Patient records were stored in both individual files and registry systems. A majority (72%) used a combination of paper-based and electronic records, 16% relied solely on paper, and 12% exclusively used digital systems. Electronic systems were primarily used as secondary backups. All facilities maintained updated inventories of medicines, equipment, and supplies.

Financing

Free consultations and medicines provision were subsidized by LGUs across all sites. However, only 60% of the surveyed facilities provided free diagnostic tests, which were typically delivered either through LGU-managed hospitals or diagnostic clinics. Budget allocation for PhilPEN logistics, including diagnostics and education materials varied depending on LGU prioritization and resource availability.

PhilPEN Service Protocol

All surveyed facilities conducted the initial steps of the PhilPEN service protocol, including risk assessment interviews, BMI and waist circumference measurement, and blood pressure monitoring. Risk screenings (i.e., measuring blood glucose and cholesterol) were also performed in most facilities; however, the availability of cholesterol strips varied. Complete risk screening procedures were carried out in only 32% of the facilities. While 68% did not perform urine ketone or protein tests, some of these facilities reported having the necessary test strips but not utilizing them.

A minority (20%) of the facilities did not use the WHO CVD risk prediction charts, citing a lack of copies or training. In terms of service delivery, 80% of health centers reported providing comprehensive PhilPEN services, including diagnosis, monitoring, treatment, and follow-up. All facilities provided health education and had at least one information, education, and communication (IEC) material on NCDs. All were capable of referring patients to higher-level facilities. Only 24% of health centers had their own ambulance; the remaining facilities depended on city or barangay service vehicles. Referral tracking was present in all facilities, with follow-ups routinely conducted.

DISCUSSION

The results of this facility-based assessment provide an important lens through which to examine the operational readiness of primary health care centers in Metro Manila in implementing the PhilPEN program. Despite nationwide endorsement and rollout of the PhilPEN protocol, significant disparities in service readiness remain, particularly across critical domains such as equipment availability, trained human resources, essential medicines, and risk assessment protocol adherence.

Infrastructure

All surveyed health facilities are reportedly open five days a week, indicating that they follow the mandate of DOH, which indicates the standard operating hours of primary care facilities of eight hours a day or 40 hours a week.[19] However, depending on the needs of its catchment population, the facility has the option to extend or modify its operating hours. The absence of dedicated space for PhilPEN service delivery in all surveyed facilities raises concerns about the quality and privacy of patient consultations. Privacy is especially important during counseling sessions on behavioral risks such as smoking and alcohol use (sensitive areas that require discretion and trust between health workers and clients). This mirrors earlier assessments in Pateros and Los Baños, where facility constraints were noted to affect patient participation and service uptake.[17,18] Lack of private, structured consultation spaces has been associated with lower patient disclosure of risk behaviors, reduced satisfaction with services, and compromised health education quality, especially in chronic disease management where trust and continuity of care are central to outcomes.[20,21]

Human Resources

Although all facilities had the basic staffing requirements, the varied presence of physicians and the training coverage among midwives and CHWs underscore the challenges of ensuring service continuity. Only 16% of facilities had CHWs trained in PhilPEN, despite their frontline role in promoting risk reduction behaviors and facilitating follow-ups. This gap not only limits the reach of NCD interventions but also places disproportionate workload burdens on nurses and physicians. Comparable trends have been reported in other low-resource settings implementing WHO PEN, where insufficient training led to poor patient outcomes and fragmented NCD care delivery.[8,9,11,13]

Basic Tools and Equipment

A low proportion of facilities were equipped with the complete set of basic tools and equipment required for the implementation of the PhilPEN program, highlighting the gaps in logistical support and readiness. The lack of urine test strips, cholesterol meters, risk prediction charts, and updated manuals, despite being specified in the national guidelines, is indicative of either weak procurement systems or poor integration of logistics planning at the local level. Evidence-based clinical protocols are used when delivering a minimum set of interventions that are essential when addressing the four major NCDs. These protocols provide health workers with clear referral criteria and treatment steps. Like other tests included in the protocol, testing for cholesterol levels and urine test strips is essential in determining the patient's risk of developing CVD.[3,22] The absence of urine dipsticks

impedes screening for microalbuminuria and diabetes-related complications, while the unavailability of cholesterol meters limits comprehensive CVD risk stratification, particularly for patients without obvious symptoms but with underlying metabolic abnormalities.[3,8] Without these diagnostic aids, frontline health workers are forced to rely on incomplete clinical information, increasing the risk of underdiagnosis or inappropriate management. Studies from other low-resource settings implementing WHO PEN have likewise reported that missing essential diagnostic tools result in delayed intervention and poorer health outcomes due to the inability to properly categorize patients by risk and initiate preventive treatment.[9,12]

Essential Medicines

The inconsistent availability of essential medicines further threatens the efficacy of facility-level interventions. While anti-hypertensive drugs were generally available, the absence of medications such as hydrochlorothiazide, enalapril, and gliclazide compromises the ability to manage patients according to evidence-based guidelines. The absence of statins and antiplatelet therapy (e.g., aspirin, clopidogrel) is particularly concerning given the central role these play in secondary prevention of cardiovascular events. Also, the absence of thiazide diuretics, ACE inhibitors, and oral hypoglycemics undermines protocol-based management and limits the effectiveness of lifestyle counseling. Studies in similar contexts have shown that medication stockouts are associated with treatment non-adherence and higher rates of complications, including stroke and renal disease.[23,24] With the recent devolution of funds under the Mandanas-Garcia ruling, LGUs now face the full responsibility for procurement, highlighting the urgent need to strengthen local health financing and supply chain planning. In addition to essential diagnosing and monitoring tools and equipment, having access to effective and affordable medicines to treat NCDs, particularly at the primary level, is critical for NCD prevention and control.[25]

Record Keeping

All facilities maintained records for every patient visit. These records are retrieved and consulted on every visit. Having individual patient medical records is essential in tracking the progress of treatment (as well as referrals and back referrals) to be able to properly carry out long-term NCD care.[8] Although all facilities maintained patient records, the coexistence of paper-based and electronic formats without proper integration hampers efficiency and real-time reporting. Disjointed data systems not only reduce efficiency but also hinder monitoring, evaluation, and continuity of care. Previous analyses have shown that robust electronic health records can improve chronic disease tracking, medication refills, and patient recall systems, especially when integrated into national health information systems.[26]

Financing

Financing remains a variable factor, particularly for diagnostics and IEC materials. While medicine provision and consultations were uniformly subsidized, only 60% of facilities offered free laboratory tests. Budgeting for diagnostics is often not prioritized, making it difficult for health centers to meet the full screening requirements of the PhilPEN protocol. Inconsistent budgeting for PhilPEN-related supplies and services is concerning, as it increases out-of-pocket costs and likely deters patients from completing full screening protocols. Lack of diagnostic subsidies has been shown to significantly reduce NCD screening rates in vulnerable populations, as financial barriers to basic tests like blood glucose or lipid deter early detection and engagement with services.[3,9,12] Without institutionalized financing mechanisms, service delivery becomes contingent on LGU discretion, further exacerbating inequalities across regions.[27]

PhilPEN Service Protocol

Lastly, while 80% of facilities reported providing comprehensive PhilPEN services, only 32% completed full risk screening as outlined in the protocol. This is a critical gap as incomplete screening not only delays risk stratification but also affects the timely initiation of pharmacologic and non-pharmacologic interventions. The underutilization of the WHO CVD risk prediction charts, despite their availability in some sites, reveals a lack of confidence or familiarity in their application, an issue also reported in other LMICs' PEN assessments.[9,11,13]

These findings are consistent with previous assessment of PhilPEN readiness in other Philippine localities. Earlier evaluations in Los Baños, Laguna and Pateros, Metro Manila likewise reported gaps in diagnostic tools, inconsistent availability of essential medicines, and limited PhilPEN-related training among health staff, suggesting these implementation challenges are not unique to the study sites.[17,18] A national assessment of NCD service delivery similarly noted that variation in LGU procurement capacity and prioritization contributes to uneven readiness across primary health care centers.[6] International experiences with WHO PEN implementation in Bhutan, Zambia, Uganda, and Myanmar have also documented comparable issues, including incomplete screening, limited use of CVD risk charts, and supply chain challenges that impede the delivery of standardized NCD care.[8-13] Together, these findings indicate that the gaps observed in Metro Manila reflect broader health system constraints common in decentralized primary care settings.

Despite these gaps, the presence of functioning referral systems and routine follow-ups in all facilities is encouraging. It suggests that, at a minimum, health workers recognize the importance of continuity of care and patient monitoring, two pillars of chronic disease management. However, these processes are still largely informal and undocumented, indicating the need for standardization and stronger feedback

loops. Without structured referral tracking systems and feedback loops, continuity of care suffers, especially for high-risk patients requiring further management.

These findings identify that while the PhilPEN framework is well-integrated into policy, its operationalization is uneven. Facility readiness remains a key determinant of successful implementation, and systematic support is needed to ensure that primary health care centers are adequately equipped, trained, and funded to deliver quality NCD services.

Limitations

The study is limited to public primary health care facilities in Metro Manila and may not represent health facilities in rural or geographically-isolated areas. The assessment relied on structured interviews and document verification, which may introduce reporting or social desirability bias. To mitigate this, responses were cross-validated with direct observation and review of facility records to ensure consistency and accuracy. Additionally, as this was a cross-sectional assessment, the findings reflect the situation during the data collection period and do not capture temporal changes in supply availability or service readiness. These findings are therefore most applicable to similarly urbanized local government units with comparable health system structures and resource environments.

CONCLUSION

This study highlights substantial gaps in the readiness of PhilPEN-implementing primary health care facilities across Metro Manila. While integration of PhilPEN into routine operations is evident, the varying degrees of implementation across essential domains (infrastructure, trained human resources, diagnostic tools, medicine availability, financing, and adherence to protocols) reflect persistent challenges in operationalizing national NCD guidelines at the facility level.

The absence of dedicated service spaces, inconsistent supply of essential tools and medications, and limited training coverage among key health personnel continue to hamper the delivery of comprehensive NCD care. Although risk screening and health education are routinely offered, incomplete implementation of the full PhilPEN service protocol and low utilization of standardized tools, such as the WHO CVD risk charts, point to the need for more systematic capacity-building and supportive supervision.

As the burden of NCDs continues to grow, strengthening the operational readiness of primary health care centers is imperative. Efforts should focus on ensuring that health facilities are equipped with adequate resources, updated clinical tools, trained personnel, and sustainable financing mechanisms. Regular facility assessment, targeted investments, and stronger collaboration between national and local governments will be critical in closing the implementation gap and enhancing the quality and equity of NCD service delivery in the country.

Acknowledgments

The authors gratefully acknowledge the support of the Metro Manila LGUs and health officers, as well as the healthcare personnel who participated in the study. Appreciation is also extended to Dr. Francisca Cuevas and Ms. Pauline Perez for their valuable assistance in field data collection and coordination as part of the study team.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

The study was funded by the authors.

REFERENCES

1. World Health Organization. Noncommunicable diseases [Internet]. 2023 [cited 2023 Sep 21]. Available from: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases
2. Budreviciute A, Damiati S, Sabir DK, Onder K, Schuller-Goetzburg P, Plakys G, et al. Management and prevention strategies for non-communicable diseases (NCDs) and their risk factors. Front Public Health. 2020 Nov 26;8:574111. doi: 10.3389/fpubh.2020.574111. PMID: 33324597; PMCID: PMC7726193.
3. World Health Organization. Package of Essential Noncommunicable (PEN) Diseases Interventions for Primary Health Care in Low-Resource Settings. Geneva: World Health Organization; 2010.
4. Guevarra JP, Zuñiga YMH, Uezono DR, Go JJL, Granada CN, Manese DT. Developing an interpersonal communication material for primary health-care workers for the prevention and control of noncommunicable diseases: experience from case in Manila, Philippines. J Health Res. 2022;36(4):685-95. doi: 10.1108/JHR-07-2020-0283.
5. World Health Organization. Mortality Database Philippines [Internet]. 2019 [cited 2025 Jun 30]. Available from: https://platform.who.int/mortality/countries/country-details/MDB/philippines
6. Ulep VGT, Uy J, Casas LD. Primary health care for noncommunicable diseases in the Philippines [Internet]. Quezon City: Philippine Institute for Development Studies; 2020 [cited 2023 Nov 27]. (PIDS Discussion Paper Series No. 2020-39). Available from: https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2039.pdf
7. Manderson L, Jewett S. Risk, lifestyle and non-communicable diseases of poverty. Global Health. 2023;19:13. doi: 10.1186/s12992-023-00914-z.
8. Mendis S, Al Bashir I, Dissanayake L, Varghese C, Fadhil I, Marhe E, et al. Gaps in capacity in primary care in low-resource settings for implementation of essential noncommunicable disease interventions. Int J Hypertens. 2012 Nov 29;2012:584041. doi: 10.1155/2012/584041. PMID: 23251789; PMCID: PMC3517842.
9. Mutale W, Bosomprah S, Shankalala P, Mweemba O, Chilengi R, Kapambwe S, et al. Assessing capacity and readiness to manage NCDs in primary care setting: Gaps and opportunities based on adapted WHO PEN tool in Zambia. PLoS One. 2018 Aug 23;13(8):e0200994. doi: 10.1371/journal.pone.0200994. PMID: 30138318; PMCID: PMC6107121.
10. Rogers HE, Akiteng AR, Mutungi G, Ettinger AS, Schwartz JI. Capacity of Ugandan public sector health facilities to prevent and control non-communicable diseases: an assessment based upon WHO-PEN standards. 2018 Aug 6;18(1):606. doi: 10.1186/s12913-018-3426-x. PMID: 30081898; PMCID: PMC6080524.

11. Aryal BK, Daud M, Thapa A, Mahotra A, Ale Magar S, Malla CK. Assessment of health facilities for implementation of non-communicable disease package. J Nepal Health Res Counc. 2018 Jul 3;16(2):149-55. PMID: 29983428.
12. Aye LL, Tripathy JP, Maung Maung T, Oo MM, New ML, Thu HMM, et al. Experiences from the pilot implementation of the Package of Essential Non-communicable Disease Interventions (PEN) in Myanmar, 2017-18: a mixed methods study. PLoS One. 2020 Feb 18;15(2):e0229081. doi: 10.1371/journal.pone.0229081. PMID: 32069323; PMCID: PMC7028297.
13. Wangchuk D, Virdi NK, Garg R, Mendis S, Nair N, Wangchuk D, et al. Package of essential noncommunicable disease (PEN) interventions in primary health-care settings of Bhutan: a performance assessment study. WHO South East Asia J Public Health. 2014 Apr-Jun;3(2):154-60. doi: 10.4103/2224-3151.206731. PMID: 28607301.
14. Department of Health (Philippines). Implementing guidelines on the institutionalization of Philippine Package of Essential NCD Interventions (PhilPEN) on the integrated management of hypertension and diabetes for primary health care facilities. Administrative Order No. 2012-0029 [Internet]. Manila: DOH. 2012 Dec 4 [cited 2023 Oct 1]. Available from: https://app.doh.gov.ph:1024/Rest/GetFile?id=336917
15. Department of Health (Philippines). Operations Manual on the Philippine Package of Essential NCD Interventions (PhilPEN) on the Integrated Management of Hypertension and Diabetes for Primary Health Care Facilities [unpublished manual]. Manila: DOH. 2023.
16. Martinez RE, Quintana R, Go JJ, Villones MS, Maquez MA. Use of the WHO package of essential noncommunicable disease interventions after Typhoon Haiyan. Western Pac Surveill Response J. 2015 Nov 6;6 Suppl 1(Suppl 1):18-20. doi: 10.5365/WPSAR.2015.6.3.HYN_024. PMID: 26767129; PMCID: PMC4710075.
17. Bagabaldo PAA, Nguyen-Orca MFR, Parco JP, Hurtada WA. Preparedness of health care units in adopting the Philippine Package of Essential Non-communicable Diseases Interventions (PhilPEN) in Los Baños, Laguna Philippines. J Hum Ecol. 2016;5:134-55.
18. Parco JP, Martinez REC, Bullecer ER. Assessment of the capacity to prevent and manage major non-communicable diseases in primary health care centers in Pateros, Metro Manila, Philippines. Phil J Health Res Dev. 2015;19(3):20-30.
19. Department of Health (Philippines). Manual of Standards for Primary Care Facilities [Internet]. Manila: Department of Health. 2020 [cited 2025 Jun 30]. Available from: https://drive.google.com/drive/u/1/folders/1jvtV4F9KNFUSp2-ug1kIzAPKLOQmuvee
20. O'Donnell O. Access to health care in developing countries: breaking down demand side barriers. Cad Saude Publica. 2007 Dec;23(12):2820-34. doi: 10.1590/s0102-311x2007001200003. PMID: 18157324.
21. World Health Organization. Innovative care for chronic conditions: building blocks for action. Geneva: World Health Organization; 2002.
22. World Health Organization. Hearts: technical package for cardiovascular disease management in primary health care. Geneva: World Health Organization; 2016.
23. Mendis S, Johnston SC, Fan W, Oladapo O, Cameron A, Faramawi MF. Cardiovascular risk management and its impact on hypertension control in primary care in low-resource settings: a cluster-randomized trial. Bull World Health Organ. 2010 Jun;88(6):412-9. doi: 10.2471/BLT.08.062364. PMID: 20539854; PMCID: PMC2878142.
24. van Mourik MS, Cameron A, Ewen M, Laing RO. Availability, price and affordability of cardiovascular medicines: a comparison across 36 countries using WHO/HAI data. BMC Cardiovasc Disord. 2010 Jun 9;10:25. doi: 10.1186/1471-2261-10-25. PMID: 20534118; PMCID: PMC2898673.
25. Robertson J, Macé C, Forte G, de Joncheere K, Beran D. Medicines availability for non-communicable diseases: the case for standardized monitoring. Global Health. 2015 May 7;11:18. doi: 10.1186/s12992-015-0105-0. PMID: 25947094; PMCID: PMC4427979.
26. Fraser HS, Blaya J. Implementing medical information systems in developing countries, what works and what doesn't. AMIA Annnu Symp Proc. 2010 Nov 13;2010:232-6. PMID: 21346975; PMCID: PMC3041413.
27. World Health Organization. Developing a national health financing strategy: a reference guide [Internet]. Geneva: WHO. 2017 [cited 2025 Jul 2]. Available from: https://iris.who.int/bitstream/handle/10665/254757/9789241512107-eng.pdf?sequence=1