

Study Protocol and Statistical Analysis Plan

The Evidence-based Nurse-led Risk-informed Intervention for Community-based Healthy Ageing (ENRICH) Study: A mixed-methods feasibility study of a nurse-led model of care for social frailty in Philippine primary care

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Project title: The Evidence-based Nurse-led Risk-informed Intervention for Community-based Healthy Ageing (ENRICH) Study: A mixed-methods feasibility study of a nurse-led model of care for social frailty in Philippine primary care

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Acronym and Definitions

Acronym	Full term	Definition
CFIR	Consolidated Framework for Implementation Research	Refers to an implementation science framework used to examine contextual and process-related factors that may affect ENRICH implementation.
CONSORT	Consolidated Standards of Reporting Trials	Refers to reporting guidance used to inform the design and reporting of feasibility and pilot studies.
CPD	Continuing Professional Development	Refers to professional learning or training credits that may be awarded to nurses after completion of approved ENRICH training, if applicable.
ENRICH	Evidence-based Nurse-led Risk-informed Intervention for Community-based Healthy Ageing	Refers to the overall study and nurse-led pathway for identifying and responding to social frailty among community-dwelling older adults.
IRB	Institutional Review Board	Refers to the ethics review body of The Hong Kong Polytechnic University responsible for reviewing and approving the study to protect research participants' rights, safety, privacy, and welfare.
MHD	Manila Health Department	Refers to the local health authority from which permission to conduct the study will be sought.
NGO	Non-Governmental Organization	Refers to community or service organizations that may be involved in referral, linkage, stakeholder consultation, or older adult support pathways.
NVivo	NVivo qualitative data analysis software	Refers to software that may be used to organize and analyze qualitative data such as interviews, focus groups, field notes, and process documentation.
PolyU	The Hong Kong Polytechnic University	Refers to the primary and co-investigator's university and the institution involved in study oversight, data management, and hosting or supporting approved study systems.
PRECEDE–PROCEED	Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation – Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development	Refers to the planning and evaluation model used to guide the ENRICH intervention framework.
RE-AIM	Reach, Effectiveness, Adoption, Implementation, and Maintenance	Refers to an implementation evaluation framework used to assess reach, adoption, implementation, fidelity, and related feasibility outcomes.
SFCB	Social Frailty Care Bundle	Refers to the structured nurse-led intervention pathway that includes social frailty screening, domain-based assessment, individualized care planning, referral or linkage support, follow-up, documentation, and fidelity monitoring.
MSF-10	Montayre Social Frailty 10	Refers to the 10-item screening tool used to identify socially pre-frail and socially frail older adults after Filipino translation and cultural

SPSS	Statistical Package for the Social Sciences / IBM SPSS Statistics	adaptation. Refers to the statistical software used for descriptive quantitative analysis of feasibility and pilot study data.
UPMREB	University of the Philippines Manila Research Ethics Board	Refers to the Philippine ethics review board from which study approval will be sought.

Operational definition of terms

Term	Operational definition
ENRICH Study	Refers to the single-arm, single-site, mixed-methods feasibility and pilot implementation study testing a nurse-led model of care for identifying and responding to social frailty among community-dwelling older adults in one primary

	health center in Manila City.
Social frailty	Refers to reduced social resources, diminished social roles, decreased participation in meaningful activities, and related social vulnerabilities that may affect an older adult's well-being, independence, and quality of life.
Socially pre-frail	Refers to older adults who show early signs of social frailty based on the culturally adapted Filipino MSF-10 score and are eligible for light-touch support or preventive care planning. The mean risk score > 3.40 to ≤ 3.90 in the MSF-10.
Socially frail	Refers to older adults who meet the Filipino MSF-10 threshold for social frailty and may require structured care planning, referral/linkage, and follow-up support. The mean risk score > 3.90 in the MSF-10.
Montayre Social Frailty 10 (MSF-10)	Refers to the 10-item screening tool used to identify socially pre-frail and socially frail older adults after Filipino translation, cultural adaptation, and cognitive testing.
Social Frailty Care Bundle (SFCB)	Refers to the structured nurse-led intervention pathway that includes MSF-10 screening, domain-based assessment, individualized care planning, brief education or coaching, referral/linkage support, follow-up, documentation, and fidelity monitoring.
Routine care	Refers to health services that participants may normally receive from the health center regardless of study participation. This may include usual nursing assessment, health education, chronic disease follow-up, referral advice, and other standard services available at the site.
Study intervention	Refers to the structured ENRICH workflow delivered by trained nurses in addition to routine care, including social frailty screening, care planning, referral/linkage support, and follow-up.
Research-only activities	Refers to activities conducted only for study purposes, including informed consent, eligibility assessment, questionnaires, interviews, focus groups, fidelity monitoring, and study-specific data collection.
Service improvement activities	Refers to refinement of the ENRICH workflow, nurse training materials, documentation tools, referral directory, and care-planning procedures to improve feasibility and fit within the health center.
Domain-based assessment	Refers to assessment of participant needs across the four social frailty domains: social resources, self-management abilities, social behavior/activity, and general resources.
Individualized care plan	Refers to a participant-specific plan prepared by a trained nurse based on MSF-10 results, domain-based assessment, participant preferences, safety needs, and available local resources.
Referral/linkage support	Refers to helping participants connect with appropriate existing services, such as health, social welfare, mental health, senior citizens' organization, community, NGO, faith-based, or local government services. The study does not guarantee that external services are available or able to accept referrals.
Case management escalation	Refers to additional nurse-led coordination or follow-up for participants with complex, persistent, or safety-related needs, within available resources and approved study procedures.
Follow-up contact	Refers to planned nurse contact with participants after baseline care planning, which may occur by phone, health center visit, community contact, or other approved mode to review needs, referrals, and care-plan progress.
Intervention dose	Refers to the amount of ENRICH intervention received by each participant during the three-month pilot implementation. In this study, intervention dose includes the number, type, timing, duration, and mode of ENRICH contacts, such as screening,

	assessment, care-planning sessions, follow-up calls or visits, referral/linkage support, and any additional nurse contacts for participants with more complex needs.
Feasibility	Refers to whether the ENRICH pathway and study procedures can be practically delivered, including recruitment, consent, retention, follow-up completion, data completeness, workflow fit, nurse training completion, and use of the paper-based ENRICH documentation forms.
Acceptability	Refers to how suitable, understandable, appropriate, and acceptable the ENRICH intervention and study procedures are to older adults, nurses, carers, and stakeholders.
Fidelity	Refers to the extent to which the ENRICH Social Frailty Care Bundle is delivered as intended by trained nurses. In this study, fidelity includes completing the approved ENRICH workflow, using the Filipino MSF-10 as planned, conducting domain-based assessment, developing an individualized care plan, providing approved education or coaching, offering referral or linkage when indicated, completing follow-up, and documenting activities using fidelity checklists and study logs.
Workflow burden	Refers to the time, effort, staffing demand, documentation load, and practical difficulty of integrating ENRICH activities into routine health center work.
Coded data	Refers to study information labelled with a unique study identifier instead of direct identifiers such as name, address, or contact number.
De-identified data	Refers to data from which direct identifiers have been removed before analysis, reporting, sharing, or cross-border transfer, while recognizing that small-site contextual details may still carry indirect identification risk.
Teach-back consent	Refers to the process of checking whether an older adult understands the study by asking them to explain key information in their own words before consent is accepted. It is used to assess consent comprehension and is not a diagnostic cognitive test.
Participant in distress	Refers to a participant who shows or reports emotional distress, safety concerns, possible self-harm risk, abuse/neglect concerns, unmet urgent needs, or other concerns requiring referral, support, or escalation.
Mandatory reporting / limits to confidentiality	Refers to situations where the study team may need to share minimum necessary information because of immediate danger, self-harm risk, harm to others, suspected abuse or neglect, medical emergency, legal requirement, institutional policy, data breach, or ethics reporting obligation.
Stakeholders	Refers to carers, health center administrators, barangay health workers, senior citizens' organization representatives, local government staff, NGO/community service representatives, faith-based/community representatives, or others with relevant knowledge of older adult care, referral systems, or community support services.
Community-dwelling older adults	Refers to adults aged 60 years or older who live in the community rather than in an institution and who may receive health center or community-based services.
Progression criteria	Refers to predefined feasibility indicators used to decide whether the ENRICH pathway should proceed to a future larger trial, with attention to nurse training completion, consent rate, retention, data completeness, fidelity, safety, and governance issues.

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Brief Summary of the Proposal

The ENRICH Study is a single-arm, single-site, mixed-methods feasibility and pilot implementation study examining a culturally adapted, nurse-led model of care for social frailty among community-dwelling older adults in one primary health center in Manila City, Philippines.

The study comprises four sequential phases: (1) Filipino translation and cultural adaptation of the Montayre Social Frailty 10 (MSF-10); (2) participatory co-design and refinement of the Social Frailty Care Bundle (SFCB); (3) nurse training and competency assessment; and (4) a three-month pilot implementation. It will assess feasibility, acceptability, fidelity, workflow fit, recruitment, retention, follow-up completion, and implementation readiness to inform a future definitive trial.

1. Introduction

1.1 Background

Population ageing is a global phenomenon. By 2050, individuals aged 60 and above will reach approximately 2.1 billion, with 80% of this ageing population residing in low- and middle-income countries (World Health Organization, 2025). In the Philippines, the population aged 65 years or older is projected to reach 7.0% of the total population by 2032 (UNDESA, 2015, Demographic Research and Development Foundation, 2025). This steady increase is bringing both opportunities for healthy ageing and challenges related to frailty, inequality, and long-term care. As people live longer, there is increasing recognition that vulnerability in later life is not only physical or biomedical, but also social, economic, and psychological (Andrew and Keefe, 2014, Wang et al., 2022).

One of the known vulnerabilities among older adults is frailty, a multidimensional geriatric syndrome linked with clinical adverse outcomes (Bunt et al., 2017, Franca Freitas and Salibi, 2023). Frailty has traditionally been discussed in physical or cognitive terms. However, contemporary frameworks increasingly recognize frailty as a multidimensional condition that includes a social dimension (Franca Freitas and Salibi, 2023, Gobbens et al., 2010, Kastner et al., 2024, Venturini et al., 2021). Social frailty refers to reduced social resources, diminished social roles, and decreased participation in meaningful social activities (Bunt et al., 2017, Makizako et al., 2015). It is associated with a range of adverse outcomes, including loneliness, depression, disability, poorer quality of life, hospitalization, and mortality (Gobbens et al., 2007, Makizako et al., 2015, Yamada and Arai, 2018). Importantly, social frailty is not merely a matter of having fewer contacts. It also reflects whether older adults have the practical, relational, and environmental conditions needed to remain connected, supported, and engaged in meaningful everyday life (Li et al., 2024, Huang et al., 2025).

1.1 Social Frailty in the Philippine Context

In the Philippine context, social frailty is especially significant. Ageing is occurring alongside persistent inequality, fragmented service provision, financial insecurity, transport and mobility

barriers, digital exclusion, and increasing pressure on families and communities to support older adults (Carandang et al., 2019b). According to a narrative review by Soberano and Montayre (2026b), later-life social vulnerability among older Filipinos is shaped by the intersection of structural disadvantage and changing informal support systems. Structural determinants or barriers refer to system-level conditions that shape opportunities for social connection and support, including financing, transportation, service availability, health workforce capacity, digital infrastructure, disaster exposure and continuity of health and social care (Holt-Lunstad, 2022, Zhang et al., 2023). In the Philippine context, these structural determinants act as system-level barriers that constrain older adults' ability to use their relationships, participate in community life, and access needed care and support (Reyes et al., 2019). For instance, an older adult may have family support but still become socially frail if transport is unavailable, health services are fragmented, digital communication is inaccessible, or disasters disrupt routines and care. Moreover, family and faith-based networks remain important protective systems, but they are increasingly strained by migration, economic insecurity, caregiving burden, digital exclusion, transport and mobility barriers, service limitations, and environmental disruptions such as floods and typhoons (Garabiles et al., 2017, Jovita et al., 2019, Soberano and Montayre, 2026b). Although policy initiatives have expanded formal coverage and senior-focused programs, catastrophic health expenditures persist, and older adults still report foregone care because of cost, access, transport, and service navigation barriers (Haw et al., 2020, Abrigo et al., 2022). Gaps in implementation, support, and inadequate enabling environment may increase physical and social frailty among older Filipino adults. Local evidence therefore suggests that social frailty in the Philippines cannot be understood simply as an individual social problem; it is also shaped by the conditions in which ageing takes place (Soberano and Montayre, 2026b) .

1.2 Gap in Primary Care Response

Despite the relevance of social frailty, routine primary care in the Philippines does not yet systematically screen for, classify, or respond to social frailty (Soberano and Montayre, 2026b). This mirrors global concerns that few primary care practices routinely screen for loneliness, social isolation, and social vulnerability (Galvez-Hernandez et al., 2022) and the lack of treatment pathways and clear processes is a concern (Milani et al., 2025, Nan et al., 2022). This gap is challenging for several reasons. First, social frailty is associated with outcomes that are directly relevant to primary care, including functional decline, poor mental health, and reduced quality of life. Second, primary care is often the most consistent point of contact between older adults and the health system, especially in community settings (Del Moral-Pairada et al., 2025, Ploeg et al., 2019, Valaitis et al., 2020). Third, nurses in public primary care are already engaged in prevention, chronic disease monitoring, community linkage, patient education, and family engagement (Leveille et al., 1998, Ploeg et al., 2019). These existing roles suggest that nurses may be well placed to identify socially vulnerable older adults and coordinate appropriate responses, provided they are supported by a feasible and structured intervention model (Del Moral-Pairada et al., 2025, Donelan et al., 2019, Kanne et al., 2023). The absence of a practical screening tool also contributes to this gap. Without a brief, conceptually clear, culturally relevant, and operationally usable instrument, it is difficult to identify socially frail older adults systematically or evaluate whether interventions are making a difference (Montayre et al., 2024, Huang et al., 2025, Hamid et al., 2024). In addition, the intervention literature is limited. Although there is growing evidence on related constructs such as loneliness and social isolation, there are still very few multidomain interventions explicitly designed to address social frailty (Hamid et al., 2024, Huang et al., 2025), particularly in Asian and low-and-middle-income contexts (Kongngern et al., 2025). Overall, these gaps justify the need for a feasibility study to determine whether a nurse-led social frailty pathway can be delivered, accepted, and evaluated in Philippine primary care before moving to a trial.

1.3 Intervention and Conceptual Framework

The Evidence-based Nurse-led Risk-informed Intervention for Community-based Healthy Ageing (ENRICH) study tests a nurse-led model of care for identifying and responding to social frailty among community-dwelling older adults in one primary health center in Manila City, Philippines.

The ENRICH study is driven by two complementary frameworks: an overall conceptual framework for the feasibility study and an intervention framework guided by the PRECEDE–PROCEED model by Green et al. (2022).

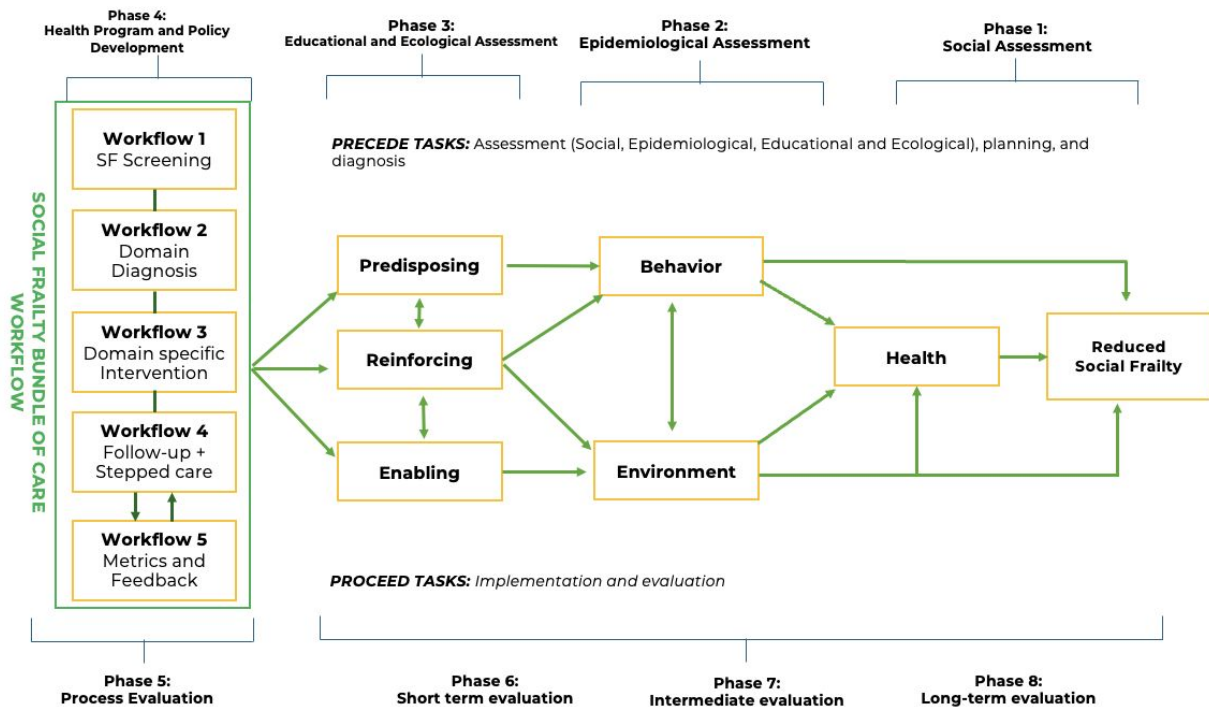
1.3.1 Intervention Framework

Figure 1 illustrates the theoretical basis and operational logic of the ENRICH Study. The PRECEDE component of the model informs the identification of determinants of social frailty, including predisposing, reinforcing, and enabling factors. Predisposing factors include beliefs, motivation, knowledge, attitudes, self-perception, and previous experiences related to social participation and help-seeking. Reinforcing factors include family support, peer interaction, social validation, and encouragement from community members or health workers. Enabling factors include access to services, transport, information, community programs, referral pathways, and primary care system capacity (Ong et al., 2024, Kim et al., 2022). These determinants shape behavioral and environmental factors. Behavioral factors include social participation, help-seeking, communication with family or peers, engagement with health services, and adherence to recommended activities or referrals. Environmental factors include community resources, social opportunities, support networks, neighborhood conditions, and organizational readiness. In social frailty, behavior and environment interact closely, as older adults may need both accessible resources and active encouragement to participate (Barghouth et al., 2024, Townsend et al., 2021, Ayaz-Alkaya and Kulakci-Altintas, 2024).

Overall, the intervention framework represents the theory of change for the model of care for social frailty. It explains how the intervention is expected to work, while the broader feasibility study framework examines whether the intervention can be delivered, accepted, and evaluated in real-world primary care settings.

Figure 1.

Nursing management framework for social frailty intervention.



1.3.2 Core Intervention Logic

The SFCB is a curated bundle of evidence-based interventions organized to address the multiple and interconnected factors that affect social functioning, well-being, and community participation delivered as a nurse-led intervention. Rather than relying on a single activity or service, the SFCB combines interventions that have been supported in the literature and organizes them into a structured bundle across key domains of need. This bundled approach recognizes that social isolation, low self-management capacity, reduced participation in activities, and unmet practical or service needs often occur together and therefore require a coordinated and comprehensive response. The empirical basis for the inclusion of each intervention within the SFCB bundle is extensively discussed in the literature review and explains how these components contribute to the overall intended outcomes. As a bundle, the SFCB works by combining interventions that are individually evidence-based but are expected to have greater impact when delivered in a coordinated manner. Its value lies in the integration of social, behavioral, emotional, and practical supports into one coherent package. Whether addressing a single or multiple dimensions of need at the same time, the SFCB offers a more holistic and potentially more effective approach to improving quality of life, strengthening support systems, and promoting sustained participation.

The SFCB workflow (Figure 2) facilitates patient-centered interventions and actions through a five-step workflow:

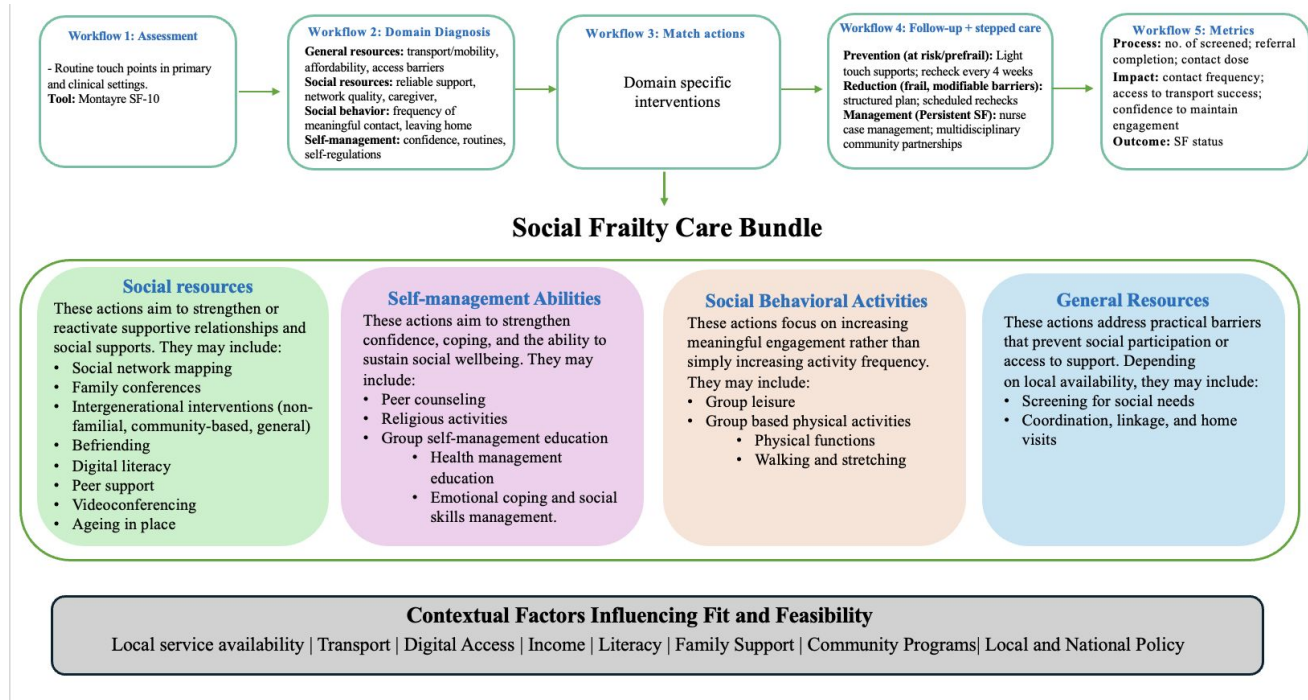
- **Workflow 1. Social Frailty Screening.** Older adults are screened for social pre-frailty or frailty using the culturally adapted MSF-10 within routine primary care to enable early identification and triage. See Appendix 1: MSF-10.
- **Workflow 2. Domain Diagnosis.** Assessment identifies drivers of social frailty to guide individualized care, focusing on four domains (Bunt et al., 2017): (a) general resources (e.g., transport, mobility, affordability, access); (b) social resources (e.g., reliability of support, network quality, caregiver presence); (c) social behavior and activity (e.g.,

meaningful contact, leaving home, community participation); and (d) self-management (e.g., confidence, routines, self-regulation, health management).

- **Workflow 3. Domain-Specific Intervention.** Based on identified needs, nurses match older adults to targeted nursing and interprofessional actions: addressing practical barriers (e.g., transport referral, mobility aids, service navigation); linking to community, caregiver, and intergenerational supports; co-creating meaningful participation plans (e.g., groups, recreation, arts, mind–body or spiritual activities); and providing coaching, reminders, check-ins, or escalation to nurse case management for high-risk cases.
- **Workflow 4. Follow-up and Stepped Care.** Socially pre-frail or lower-risk participants receive light-touch support (e.g., brief calls or visits approximately every 4 weeks). Socially frail participants with modifiable barriers receive structured care plans and proactive monitoring. Persistent or complex cases escalate to nurse-led case management with intensive coordination and service linkage.
- **Workflow 5. Metrics and Feedback.** Ongoing monitoring tracks process (e.g., numbers screened, referrals, plans), dose and reach (frequency/type of contacts, adherence), and impact (changes in social frailty and patient-reported experience).

Figure 2

Social Frailty Care Bundle Intervention Logic Model



1.4 Conceptual Framework of the Feasibility Study

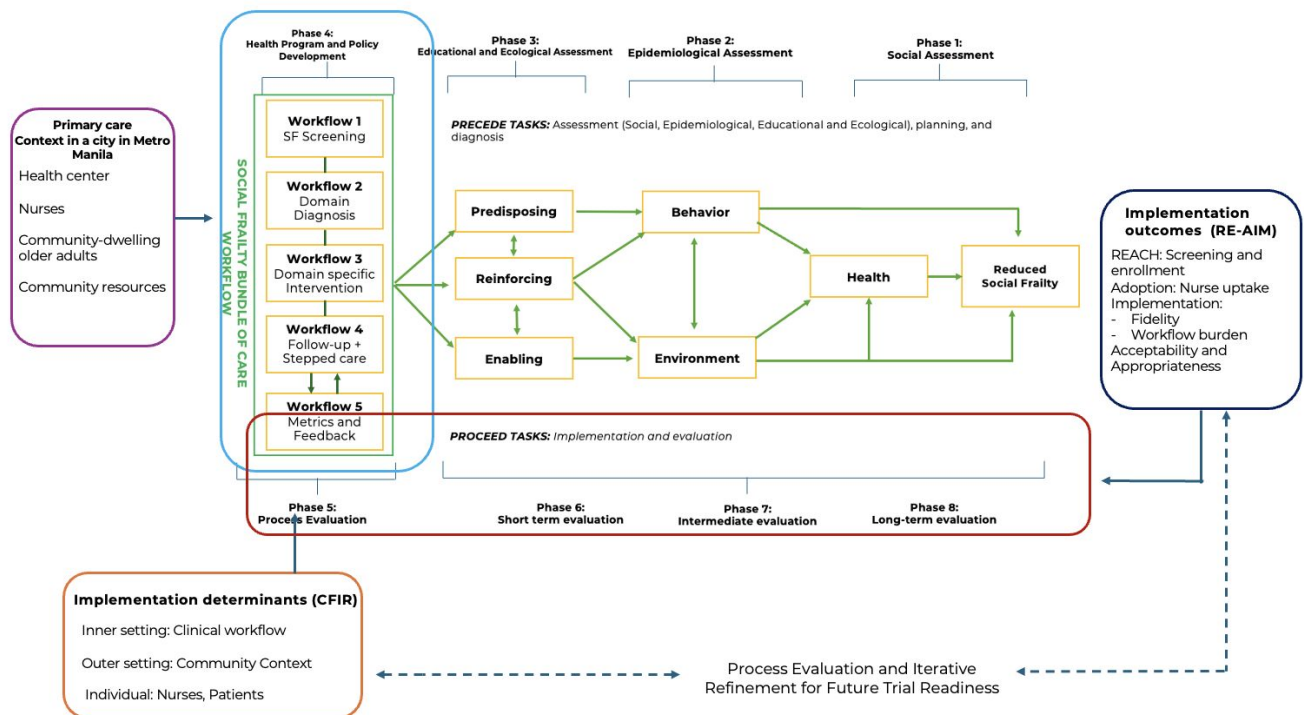
Figure 3 illustrates a conceptual framework that integrates the PRECEDE-PROCEED model with implementation science frameworks to guide the development and evaluation of the ENRICH study SFCB. The PRECEDE phases (social, epidemiological, educational, and ecological assessments) inform the identification of determinants of social frailty, including predisposing, reinforcing, and enabling factors influencing behavior and health outcomes. The SFCB is operationalized through structured nurse-led workflows within a primary care setting.

The PROCEED phases, which focus on implementation and evaluation, are assessed using the RE-AIM constructs, including reach, adoption, implementation fidelity, and acceptability. In parallel, contextual and process-related factors influencing the implementation are examined using Consolidated Framework for Implementation Research (CFIR), including domains related to the inner setting, outer setting, and individuals.

The framework incorporates iterative feedback loops through process evaluation, enabling continuous refinement of the intervention and study procedures. This integrated framework supports both intervention development and implementation evaluation, and provides a foundation for progression to future multi-site or cluster randomized trials.

Figure 3.

ENRICH Study Conceptual Framework for Feasibility Testing of the Nurse-led SFCB in Primary Care.



1.5 Significance of the ENRICH Study

1.5.1 Significance for theory

The ENRICH study is theoretically significant because it translates multidomain social frailty into an operational nurse-led pathway. Rather than treating social frailty as only loneliness, isolation, or living alone, the study contributes by organizing the intervention around social resources, self-management abilities, social behavior activity, and general resources to concrete assessment, care-planning, follow-up, and referral actions. The use of PRECEDE-PROCEED informed nursing management framework further strengthens the study's theoretical contribution. It offers a possible

logic linking assessment, enabling conditions, tailored action, and possible improvement in social functioning and well-being. In this way, the study contributes not only to social frailty research but also to implementation-oriented theorizing about how social vulnerabilities may be addressed in routine care.

1.6.2 Significance for Nursing and Primary care

The study is highly relevant to nursing because it positions nurses as central agents in the identification and management of social frailty. In many primary care settings, nurses already perform assessment, counseling, care coordination, and patient education. The ENRICH study extends these roles by introducing a structured model of care through which social vulnerabilities may be assessed and addressed more systematically.

For primary care, the study will explore whether social frailty care can be integrated into routine workflows rather than treated as a separate specialist function. If feasible, the nurse-led SFCB may offer a practical strategy for expanding primary care responsiveness to older adults' multidimensional needs while remaining grounded in existing service structures.

1.6.3 Significance for Philippine healthy ageing policy

The study is also relevant to healthy ageing in the Philippines. Current policies recognize the needs and rights of older adults, but implementation gaps remain. The ENRICH study may help inform a more organized response to social vulnerability within the health system by showing whether structured social frailty screening and care planning are workable in primary care.

If feasibility is established, the study could support future policy discussions on integrating social frailty into community-based healthy ageing initiatives, primary care strengthening efforts, and local government programming for older adults. It may also help highlight the importance of relational and enabling dimensions of ageing that are often visible in practice but insufficiently formalized in

service delivery models. Findings from this feasibility study will also inform whether a more formalized social prescribing pathway, including possible involvement of barangay health workers or other community-based personnel in linkage roles, would be appropriate for the future definitive trial.

1.6 Aim, objectives, and research questions

1.6.1 Overall Aim

To assess the feasibility, acceptability, fidelity, and implementation readiness of a culturally adapted, nurse-led Social Frailty Care Bundle for socially pre-frail and frail community-dwelling older adults in one primary care setting in Metro Manila, Philippines, in preparation for a future definitive trial.

1.7.2 Objectives

1. To co-design and refine a contextually appropriate nurse-led SFCB for public primary care setting in Metro Manila, Philippines.
2. To assess feasibility and implementation outcomes of nurse-led delivery of the SFCB, including nurse recruitment, training completion, competency, retention, acceptability, appropriateness, fidelity, reach, participant adherence and engagement
3. To evaluate the feasibility of study procedures in preparation for a future definitive trial, including participant screening processes, enrollment and retention, follow-up completion, data completeness, and documentation of usual care.
4. To explore the experiences of older adults, nurses, carers, and stakeholders regarding participation in the study, intervention delivery, barriers and facilitators, and refinement needs.
5. To generate key feasibility and implementation parameters, including progression criteria and candidate outcome measures, to inform the design of a future multi-site or cluster randomized controlled trial.

1.7.3 Research Questions

1. Can the nurse-led SFCB be delivered within a primary care setting with acceptable: recruitment and screening yield, enrollment and retention rates, follow-up completion, nurse training completion, fidelity of delivery, data completeness, and workflow burden?
2. Can older adults adhere to and engage with the core SFCB components, including care planning, follow-up contacts, and referral or linkage activities?
3. How acceptable, appropriate, and practical is the SFCB to older adults and nurses within routine primary care practice?
4. What barriers and facilitators influence implementation of the SFCB in real-world primary care setting?
5. What refinements are needed to optimize the intervention and study procedures in preparation for a future definitive trial?

2. Literature Review

2.1 Care Needs Among Filipino Older Adults

While ageing-related programs and policy initiatives are in place, such as the National Commission of Senior Citizens, Philippine Plan of Action for Senior Citizens, age-friendly local initiatives, and community-oriented service models, many older Filipinos continue to experience inequitable access to health and social care (Reyes et al., 2019, Siongco et al., 2020). A study by Moncatar et al. (2024) reported that in the Philippines, older adults have inequitable access to healthcare, especially those living in poverty. Income, transportation, and information barriers have led to missed pensions, medications, and essential services. The fragmented and poorly coordinated care leads to limited care options and weak referral systems, while the lack of resources and capacity among healthcare workers (e.g., geriatric-trained staff, inadequate facilities, drug shortages, and

insufficient training and guidelines for geriatric conditions) further widens the gap in care (Moncatar et al., 2024, Moncatar et al., 2021, Garcia et al., 2022).

From a health systems perspective, the difficulties experienced by older adults often arise from the interaction of limited household resources and limited-service capacity. Workforce shortages, insufficient geriatric training, inconsistent implementation of programs, limited coordination between health and social sectors, and variable awareness of entitlements can all constrain care access. In this context, older adults may remain nominally covered by policy while still facing substantial barriers in real life. The result is an environment in which care-seeking, participation, and daily functioning become more precarious, particularly for those already vulnerable due to low income, chronic illness, or limited family support (Moncatar et al., 2021, Moncatar et al., 2024, Carandang et al., 2019b).

These realities support the relevance of social frailty in the Philippine setting. When social support is weak, transport is unaffordable, care is fragmented, and participation opportunities are uneven, older adults may be at increased risk of becoming socially frail. Thus, unmet care needs should not be viewed separately from social frailty; they are part of the conditions that shape it.

2.2 Social Frailty: A Complex, Multidimensional Condition

Social frailty is a domain that is distinct and independent from physical or cognitive frailty (Gobbens et al., 2010). A socially frail person is one who has lost the ability to maintain their independence and overall well-being because of a decline in their social functioning. This makes them more vulnerable to serious health problems, like cognitive decline, permanent disability, and death (Sugie et al., 2022, Montayre, 2024).

There are several theories grounded in empirical evidence and theoretical synthesis that explain the mechanisms of social frailty: (1) the Deficit Accumulation Model suggests that accumulating deficits, which can be indicative of an individual's illness, correlates with increased

frailty (Mitnitski et al., 2001); (2) Social Production Function (SPF) Theory suggests that age, physical loss, and changes in subjective well-being affect a person's social needs. Social support and participation are crucial in reducing vulnerability (Steverink and Lindenberg, 2006); (3) Social Ecology Theory, a socio-ecological approach, emphasizes the interconnectedness of individuals and their social environments that greatly influences the likelihood of various health challenges, including physical, mental, psychological, and functional difficulties (Andrew and Keefe, 2014); and (4) Social Needs Fulfillment Theory which describes social frailty as a spectrum influenced by social resources, behaviors, activities, and self-management skills (Bunt et al., 2017).

For the purposes of this study, Social Needs Fulfillment Theory and the broad domains of social frailty proposed by Bunt et al. (2017) will be used to provide the most directly relevant basis due to its close alignment with the social frailty care bundle intervention model. Bunt et al. (2017) identified four broad domains of social frailty: social resources, social behavior activity, self-management abilities, and general resources. The social resources domain refers to the size, frequency, meaningful contact (e.g., family, friends, neighbors), living arrangements, and perceived availability of emotional and instrumental help (Huang et al., 2025, Jia et al., 2024, Bunt et al., 2017). Social behavior activity pertains to social activities like community involvement, volunteering, visiting friends and family (Huang et al., 2025, Hamid et al., 2024, Bunt et al., 2017, Pek et al., 2020). Self-management abilities comprise emotional support, affirmation, status (Huang et al., 2025, Bunt et al., 2017), the sense of belonging or community integration, as well as one's perceived adequacy of support (Hanlon et al., 2024, Pek et al., 2020). Lastly, the general resources domain has an indirect enabling effect on social frailty, as it refers to essential life resources beyond social connections such as income, housing, and access to services (Bunt et al., 2017; Huang et al., 2025).

2.3 Prevalence and outcomes

The reported prevalence of social frailty varies by instrument. In a systematic analysis by Zhang et al. (2022), they reported an estimated pooled prevalence between 18.8% in the community and 47.3% in hospital settings. Moreover, population-based studies suggest that 10–30% of community-dwelling older adults meet criteria for social frailty, with higher rates among women, those with lower socioeconomic status, and those living alone (Makizako et al., 2015, Yamada and Arai, 2018). The relevance of social frailty lies not only in its prevalence but also in its association with adverse outcomes. Longitudinal and observational studies have linked social frailty with higher incidence of disability, severe dependence, eventually leading to physical frailty (Yamada and Arai, 2018, Makizako et al., 2015). Some findings suggest a reciprocal relationship between physical frailty and social frailty (Nagai et al., 2020), where reduced physical capacity limits participation and support-seeking, while social vulnerability contributes to inactivity, poorer coping, and greater overall decline. Cognitive outcomes are also important; poor cognitive health impedes social engagement, and limited support may lead to greater risk of social frailty (Irshad et al., 2024). In addition, depression is an independent risk factor of social frailty (Irshad et al., 2024, Kodama et al., 2022, Kume et al., 2022). Symptoms of depression are worsened by social frailty due to limited social interaction and support (Irshad et al., 2024). These relationships reinforce the need to consider social frailty as clinically relevant and not merely as a descriptive social condition.

2.4 Assessment approaches and tools

In a scoping review by Huang et al. (2025) they highlighted that while there is a shared understanding of the mechanism of social frailty, the existing conceptual models vary in scope and application, particularly concerning screening tools. Similarly, the findings of a scoping review by Montayre et al. (2024) highlighted that tools such as Makizako 5-item scale, Social Frailty Scale (SFS-8), HALFT scale, and HALFE scale are the most commonly used measurement tools for social frailty. The recurring themes among the gathered tools are financial status, social resources, social

behavior activity, and sense of purpose. Across broader frailty instruments, the most common covered social components are social activities, support, network size, loneliness, and living alone (Bessa et al., 2018, Jossiana Wilke et al., 2019).

However, these tools have several limitations: (a) there is no consensus definition, indicators and domains widely varied, hence, the measurement is fragmented (Montayre et al., 2024, Huang et al., 2025, Webber et al., 2025); (b) the tools are pragmatic composites from existing data sets, and not grounded in a social frailty model (Webber et al., 2025, Hamid et al., 2024); (c) there is an issue of robustness and the rigor of scale development, where some tools have limited or no validity/reliability testing, especially in Asia, therefore, there is no gold-standard social frailty scale; and (d) although most tools cover resources, roles, and activities, psychological well-being, self-beliefs, and subjective social needs experiences are often under-assessed (Montayre et al., 2024, Huang et al., 2025, Webber et al., 2025). This further underscores the need for a locally grounded and cross-culturally validated social frailty tool, because social constructs are culture-bound and item meaning can shift with language (Hou et al., 2025, Silva et al., 2024).

In the Philippine setting, the recent development of the 6-item SF Index-Philippines (SFI-Phil) is an important advance, shifting from proxy indicators to direct assessment and providing a foundation for future screening and outcomes research in the local setting (Tan et al., 2025). The tool was developed from 5,153 older adults 60 years old above in the nationally representative Longitudinal Study of Ageing and Health in the Philippines cohort. It predicts 4-year all-cause mortality with reasonable accuracy. However, SFI-Phil is validated only for predicting mortality; its performance for disability, hospitalization, health service use, and quality of life has yet to be established, which would strengthen its validity and responsiveness over time (Goto et al., 2024, Hamid et al., 2024). Despite these considerations, the absence of brief, conceptually sound, culturally relevant, and psychometrically validated social frailty tool for routine primary care use remains a key

limitation (Montayre et al., 2024). This gap hinders the systematic identification of socially pre-frail and frail older adults and limits the evaluation of intervention effectiveness.

2.5 Montayre Social Frailty 10 (MSF-10)

The absence of a conceptually grounded and psychometrically sound local tool justifies the use of the locally adapted Montayre Social Frailty 10 (MSF-10) in the ENRICH study. MSF-10 is a theory-driven instrument that aimed to assess social frailty among community-dwelling older adults in Hong Kong, SAR. The scale was developed guided by Social Needs Fulfillment Theory and the broad conceptual domains of social frailty as proposed by Bunt et al. (2017). This instrument underwent a multi-stage process that included conceptual mapping, co-designing, and rigorous psychometric testing. The MSF-10 has good internal consistency, with a Cronbach's alpha of 0.824 (Montayre et al., 2026). The details of co-development and psychometric validation of MSF-10 are published elsewhere (Montayre et al., 2026).

The ENRICH study will use MSF-10 because unlike other tools, MSF-10 reflects a broader conceptualization of social frailty grounded in theory, and it has a good internal consistency which supports its reliability for research use. Although MSF-10 was developed in Hong Kong, this may be relevant in the Philippine context because both are Asian societies where family relationships, social support, and community participation play important roles in the lives of older adults (Yeung and Fung, 2007, Shum, 2023, Soberano and Montayre, 2026a). However, because the Philippines has distinct cultural features, the tool should undergo cultural adaptation and local reliability testing before full use (Beaton et al., 2000).

2.6 Conceptually related constructs

Social frailty overlaps conceptually with several related constructs, particularly with loneliness, social isolation, low social participation and weak support, which have a substantial impact on broader health outcomes (Montayre et al., 2024, Bessa et al., 2018). Concept analyses and

reviews explicitly include loneliness and social isolation as core elements, not just correlates with social frailty (Gheorghe et al., 2024, Hanlon et al., 2024). Notwithstanding, these are typical domains present in different social frailty scales available. For instance, in a narrative review by Gheorghe et al. (2024), they noted that “loneliness and isolation place people at risk of vulnerability or social frailty”, and unlike physical frailty, social frailty “encompasses aspects of loneliness and isolation”. Furthermore, large longitudinal and systematic reviews have consistently reported a link between low social participation and inadequate support and the development or worsening of social frailty over a period of two to twelve years (Sun et al., 2022, Hanlon et al., 2024). Notably, a 130-study review by Hanlon et al. (2024) reported that reduced social participation and low support in addition to loneliness and isolation predict a faster progression of frailty and lower chances of improvement. Panel and cohort studies in China, Singapore, Japan, Europe, and North America show that greater social participation and stronger social support are linked to lower levels and incidence of frailty (Sone et al., 2023, Sun et al., 2022, Abe et al., 2023). In contrast, poor social support roughly doubles odds of becoming frail in a German cohort (Barghouth et al., 2024).

Overall, evidence from multiple countries and large longitudinal dataset supports that loneliness, social isolation, low social participation, and weak social support increase social frailty risk, while sustained, varied, and supportive engagement is protective for frailty, disability, mental health, and mortality in older adults.

Recognizing these overlaps is important for intervention design. It suggests that interventions targeting loneliness alone may not be sufficient if practical barriers, weak support, or low self-management capacity remain unaddressed. It also supports the use of multidomain screening and tailored care planning rather than a narrow single construct approach.

2.7 Evidence from Asia

One of the preliminary works of Soberano et al. (2026) is a scoping review on social frailty interventions and related evidence in Asia. It aimed to (1) map interventions and related modifiable evidence targeting social frailty among older adults in Asian countries; (2) describe the core components, delivery features, target populations, and settings of included intervention studies; (3) summarize the designs, outcomes, and directions of association reported in observational studies examining modifiable factors linked to social frailty; (4) map included studies to Bunt's four broad domains of social frailty; and (5) identify evidence gaps relevant to nursing practice, policy, and future research. The review identified only seven eligible studies published between 2020 and 2025, all from Japan and South Korea, despite the review's broader geographic search. This suggests geographical concentration, or points to a substantive evidence gap across the broader Asian region rather than simply a low review yield.

A central finding was a mismatch between the multidimensional nature of social frailty and the focus of available interventions, the majority of which targeted social behavior activity (e.g., going out, internet use, exercise participation, or routine engagement). Fewer studies addressed enabling conditions such as transport or broader social determinants, and even fewer considered self-management abilities as an explicit target of intervention or maintenance. The intervention literature included in the scoping review did not fully articulate a multidomain strategy; instead they were anchored mainly in exercise, loneliness reduction, or general health promotion. Consistent with global evidence, the domain-mapping results indicate that Asian social frailty interventions operate mainly through social behavior activities and, to a lesser extent, social resources, while general resources and self-management abilities are comparatively under-addressed (Kastner et al., 2024). This pattern is consistent with how social frailty is commonly framed; measured through activity participation, routine engagement, or going out behaviors (Teo et al., 2019). This framing emphasizes older adults' routines rather than the enabling conditions and capacities that make sustained

participation possible. Lastly, most of the reviewed studies were cross-sectional where results may be interpreted as hypothesis-generating rather than practice-confirming evidence. Samples were also skewed toward younger-old and female participants, with underrepresentation of the oldest-old (80+) and men limiting the equity and heterogeneity of the outcomes measured.

2.8 Related vulnerabilities among older adults in the Philippines

Soberano and Montayre (2026) conducted a narrative review using an established four broad domains of social frailty by Bunt et al. (2017), they aimed to (1) map the scope and characteristics of existing studies, (2) identify dominant themes and gaps, and (3) discuss implications for nursing practice, policy, and future research.

The review synthesized thirty-five studies on social frailty and related social vulnerabilities among older adults in the Philippines. The findings suggest that social frailty among community-dwelling older adults in the Philippines is shaped by structural disadvantage, changing family and community arrangements, and limited social participation opportunities. The strongest evidence focuses on general resources and social behavior activities, while fewer studies address social resources and self-management abilities. This suggests the literature has focused on observable social conditions like care access, financing, mobility, participation, and digital engagement, neglecting relational and experiential dimensions of social frailty such as belonging, perceived social worth, reciprocity, and sustaining meaningful social roles. Traditional social protection systems remain relevant but are unstable and insufficient. Family caregiving, kinship networks, and faith-based communities provide practical and emotional support, but they face vulnerabilities from migration, economic insecurity, changing household structures, geographic barriers, and service constraints. This indicates that social frailty in the Philippines is not solely an individual problem but arises when historically protective arrangements become unreliable under structural pressure. A third significant

finding is the state of the evidence base. Most included studies were qualitative or cross-sectional and focused on constructs related to social frailty, such as loneliness, living arrangements, caregiving, social participation, subjective well-being, or access to services.

These findings align with international literature showing that social frailty is linked to adverse outcomes, with social determinants, participation, and support systems crucial for healthy ageing (Lee et al., 2020, Li et al., 2023, Ma et al., 2018). However, the Philippine evidence adds contextual specificity. First, family-centered support functions as both a protective resource and a vulnerability site. Second, intergenerational care and co-residence may buffer social loss but strain when younger family members migrate for work, caregiving intensifies, or household resources are insufficient (Abalos et al., 2018, Carandang et al., 2019b, Estioko et al., 2023). This complexity challenges the notion that strong family norms protect older adults from SF. Third, faith-based communities also serve as more than social contact venues. They provide routine interaction, identity, social recognition, and meaning, contributing to social resources and self-management capacities like belonging and role fulfillment (Sta Maria et al., 2018, Soriano et al., 2016, Salvador and Alqahtani, 2020). This highlights the importance of culturally meaningful connectedness in understanding social frailty, beyond network size or participation frequency. Next, the studies on telehealth, telemedicine, tele-pharmacy, smartphone use, and online participation suggest that digital access is increasingly relevant to later-life social participation, while barriers related to confidence, skills, trust, and access persist (de Guzman and Diño, 2020, Carandang et al., 2024). Finally, financing gaps, workforce limitations, uneven service availability, and disaster-related interruptions can all reduce older adults' capacity to maintain mobility, engagement, and reciprocity (Abrigo et al., 2022, Nakamura et al., 2022, Siongco et al., 2021, Gallardo et al., 2024). In the Philippine setting, where floods and typhoons may disrupt daily routines and access to community support, SF may be intensified by shocks that interrupt care delivery and ordinary social life (Balikuddembe et al., 2024).

This reinforces the view that SF is partly produced by the environments in which ageing occurs, rather than by individual characteristics alone (Cesari et al., 2022, Hanlon et al., 2024).

2.9 Evidence-based interventions for social frailty

The intervention literature on social frailty is still developing with very few trials or meta-analyses explicitly targeting “social frailty” as the primary outcome. Much of the available evidence comes from work on related constructs such as social isolation and loneliness in older adults. Although these are not identical constructs, they substantially overlap with social frailty and may provide guidance for nursing practice.

Systematic reviews have shown that interventions are more likely to be effective when they are group-based, participatory, sustained over time, and responsive to the needs of specific populations (Cattan et al., 2005, Dickens et al., 2011, Fakoya et al., 2020, Paquet et al., 2023). Multiple reviews on loneliness interventions suggest that addressing maladaptive social cognition, confidence, and meaningful engagement may be more effective than those that merely increase the number of social interactions (Patil and Braun, 2024, Duffner et al., 2024, Jarvis et al., 2019). This has an important implication in nursing, particularly for older adults who remain lonely despite living with their families or having nominal social contact (Patil and Braun, 2024, Yu et al., 2023). Emotional meaning (O’Rourke et al., 2018), self-worth, and perceived belonging (Ratcliffe et al., 2025) are therefore important targets of interventions.

The SFCB, under the ENRICH study, comprises a collection of interventions or strategies. However, the final SFCB will be determined during the co-design phase of the study, which will be discussed in detail in the methods section. The following are the initially outlined interventions or strategies that are supported by evidence and may be suitable for the Philippine context.

2.9.1 Social resources domain

2.9.1.1 Social network mapping

This intervention is explicitly referred to as mapping, reflecting on current support, connecting to tailored local opportunities; and visualization helps in mobilizing support and engaging in new activities (Kennedy et al., 2016). In a narrative review by Hussain et al. (2023), they argued that social network theory and methods can underpin interventions to reduce loneliness and isolation among older rural adults. In the Philippines, a qualitative study by Sta Maria et al. (2018) among older Filipino church members mapped support qualitatively across levels of closeness and found distinct patterns of instrumental support, emotional care, and social connectedness. Aside from family and community services, village programs are also important sources of support because they are associated with mental resilience; hence, local, community-level programs and integrated informal and formal support are essential (Ocsan et al., 2025). Together, global and local evidence indicates that a social network mapping intervention should be community-based and older-adult-friendly, supporting continuity and meaningful engagement among Filipino older adults.

2.9.1.2 Family conferences

This is a structured meeting where the older person, family, and professionals jointly discuss needs, options, and plans. This is usually used to clarify goals, share information, resolve conflicts, and mobilize existing family support, which may improve caregiver tolerance and satisfaction (Zhang et al., 2024, Glajchen et al., 2022). Additionally, family conferencing shifts the power to the older adult and their family or network to co-create support plan that aims to strengthen social networks and self-mastery (Metze et al., 2019). Although there is no available Philippine evidence on the use of family conferences as an intervention for social frailty, it can be argued that several features strongly resonate with the local context. The Philippines, similar to other Asian countries, has strong family caregiving norms in which children are primary caregivers bound by filial obligation and intergenerational reciprocity (Jahangir et al., 2025).

2.9.1.3 Intergenerational intervention

In Philippine context, a conceptual paper by Oropilla and Guadana (2021) on intergenerational learning and “*Sikolohiyang Pilipino*” argues that in the Philippines intergenerational learning “thrives in family and community settings”, and that an intergenerational strategy should be intentional, relational, and culturally grounded, using Filipino values as a design framework. Therefore, an intergenerational program in the Philippines must be family-based intergenerational support, while non-familial programs should be designed to complement, not to replace, family roles (Yoon and Hendricks, 2018). Additionally, a review by Sab-it (2025) on intergenerational mental-health coping in the Philippines highlights the centrality of support networks, faith, and traditional practices. Therefore, this evidence may be taken into consideration in designing an intergenerational intervention. Nevertheless, intergenerational program is relevant in the Philippine setting because many communities still depend on family, neighborhood support, and policy discussions actively portray older adults as contributors to community life, rather than just care recipients (Soberano et al., 2021, Parial, 2024).

2.9.1.4 Digital literacy training

The Philippines is becoming more digital, yet access and skills remain uneven and internet at home cost remains a major barrier (Abd Rashid et al., 2025). In a 2019 National ICT Household Survey, the Philippine Institute for Development Studies (PIDS) reported that only 18% of Filipinos aged 65 and above had at least one of the six basic ICT skills and the digital skills are the weakest among the older adults that needs a serious enhancement (Albert, 2021). When it comes to Telehealth, Filipino older adults view it as convenient and potentially beneficial. However, many of them remain skeptic and mostly constrained by skills, awareness, device and internet access, and cost (de Guzman and Diño, 2020, Carandang et al., 2024, Gallardo et al., 2024). Therefore, digital literacy training is a relevant intervention in the Philippines.

2.9.1.5 Videoconferencing

Generally, videoconferencing between family members and their established contacts has a positive impact on loneliness and social connectedness among older adults (Damant et al., 2017, Poscia et al., 2018). Locally, these are increasingly relevant because PhilHealth, the national health insurance is expanding primary care access and provider networks, which creates a stronger base for remote follow-up and tele-support (Pineda, 2025). However, this is still a moderate-fit intervention in the context of the social frailty care bundle, because more complex health interventions are adopted faster in better-resourced urban sites, while rural and remote settings may lag (Panganiban et al., 2024).

2.9.1.6 Ageing in place

Available evidence suggests that participation in senior center activities is generally beneficial for older adults: (1) attending more frequently and longer periods reported lower levels of loneliness and better mental health, especially among older-old (Xie et al., 2025); (2) linked to higher life satisfaction by reducing social disconnection and loneliness (Jiang et al., 2024); (3) associated with positive social, psychological, and behavioral outcomes (Ellen et al., 2017); and (4) improved social connections, mood, and overall quality of life (Orellana et al., 2020). Meanwhile, home visits and home-based intervention programs conducted for more than three months have significantly reduced loneliness and depressive symptoms, while also increasing social engagements (Chua et al., 2024). Similarly, programs that specifically targeted social needs were effective in reducing social isolation and loneliness (Paquet et al., 2023).

2.9.1.7 Befriending schemes and peer support groups

Group-based social support groups and activities tend to be more often effective than purely didactic formats (Morrish et al., 2023, Ellard et al., 2023). For instance, a non-randomized controlled trial by Carandang et al. (2020) where Filipino older adults tested three-month interventions: peer counseling through one-to-one home visits by trained senior peers, social engagement through

weekly group events, and a combination versus the usual care. They found significant improvements in depressive symptoms, psychological resilience, and perceived social support of those from the intervention group as compared to the control group receiving the usual care. Notably, loneliness improved only slightly, indicating that peer and social programs may need an additional component targeting isolation (Giebel et al., 2022, Carandang et al., 2020).

2.9.2 Self-management abilities domain

2.9.2.1 Peer counseling

Peer counseling and peer support groups along with social engagement, and a combination of both in Filipino older adults have significantly improved depressive symptoms, psychological resilience, and perceived social support and were found to be feasible at community level (Carandang et al., 2020). A 40-contact hours training for sixty Filipino older adults as peer counselors was conducted by Carandang et al. (2019a) which showed significant improvements in knowledge and skills, with better subjective well-being and fewer depressive symptoms after three months. This suggests that organized peer counseling schemes may benefit not only the older adults receiving support but also the counselors' own well-being.

2.9.2.2 Religious Activities

The preliminary work of Soberano and Montayre (2026a) reports that religious activity participation is a protective factor among Filipino older adults. For instance, in a structural equation modeling by Buco et al. (2018), their findings suggest that among those chronically ill, spirituality and disease self-management both independently improved quality of life, with spirituality as the strongest predictor, and when combined with self-care programs, this may lead to increased motivation and improved health behaviors. Moreover, in a qualitative study by Loa et al. (2023), for those living independently, praying, going to church, and helping others are crucial as these provide

meaning, hope, and purpose. These activities also contribute to a sense of control that supports self-directed decisions and serve as a source of resilience and endurance (Laguilles-Villafuerte, 2025).

2.9.2.3 Group self-management education

Several community-based group self-management courses are linked to primary care or community referral systems (Mays et al., 2021). For example, a small-group workshop in the community to teach action planning, problem-solving, decision-making, symptom management and communication skills (Ory et al., 2013) or group sessions to build self-management, health literacy, and social capital (Blancafort Alias et al., 2021).

Additionally, a meta-review reported that group social activities, support groups with educational elements were among the most effective for loneliness and social isolation (Paquet et al., 2023). Also, group psychosocial programs using guided discussions, reminiscence, arts, storytelling, and folk dance intentionally build social skills, mutual trust, empathy, and belonging, which led to a significant reduction in loneliness (Suriyawong et al., 2025).

2.9.3 Social behavior activity domain

2.9.3.1 Group leisure and physical activity

Available scientific evidence reports that Filipino older adults prefer light physical activity, done every day, outdoors, in the morning, greater than 30 minutes and preferably in group rather than alone (de Guzman et al., 2015). In a study in rural Philippines, many older adults participate in stretching and walking exercises organized by their senior citizens' organization (Fabillar et al., 2025). In a phenomenological study by Dino et al. (2025), guided group exercise sessions using a virtual-coach were described by the older adults as enjoyable and health enhancing physical activity. Given this, the physical activity preferred by Filipino older adults are light exercises such as walking and gentle stretching, outdoors, done in the morning for more than 30 minutes, and done in group with peers. The preference of doing activities with peers may mean that physical activity is also a

social or leisure event and more than exercise (de Guzman et al., 2015). This is congruent with a meta-analysis where physical activity in group-based formats was especially effective for reducing loneliness (Szeto et al., 2026). Additionally, a community-based wellness support program centered around Zumba, physical fitness, and laughter yoga has helped strengthen the social connectedness of older adults (de Guzman, 2024).

2.9.4 General resources domain

2.9.4.1 Screening for social needs

This assessment is an important first step to systematically identify the unmet general resources of the older adults to target low-cost preventive supports (Weaver and Burley, 2020). Multiple studies stress the need for referral pathways and partnerships with community ageing services; otherwise, many who screen positive never connect to resources (O’Sullivan et al., 2024, Trochez et al., 2023, Bretsch et al., 2024).

2.9.4.2 Coordination, linkage, and home visits

These are commonly used strategies within multicomponent interventions designed to reduce social isolation and strengthen social support. These interventions are often tailored to address practical and psychosocial needs, including transportation assistance, meal provision, housing support, and caregiver assistance (Hernández-Ascanio et al., 2023). Such approaches are typically combined with structured assessments such as social needs screening alongside referral and linkage to community services and psychosocial support delivered over multiple sessions (Norman et al., 2018, Chen and Hsu, 2020, Moreno et al., 2021).

2.10 Nurse-led interventions in primary care for older adults

Nurse-led interventions in primary care have demonstrated effectiveness in managing chronic diseases, improving preventive care uptake, and supporting self-management among older adults. Nurses’ role at the primary and secondary interface is associated with fewer hospitalizations and

readmissions, better symptoms management and lifestyle management, supporting continuity of care for chronic disease (Davis et al., 2021). Also, community nurse-led interventions for older adults with multimorbidity enhance self-management capacity, medication adherence, knowledge, and perceptions of coordination; they also reduce readmissions and use of home-care services (Rahmat et al., 2025).

A preliminary report on a nurse-coordinated post-stroke home care rehabilitation program in the Philippines which involved nurses doing collaborative planning, evidence-based treatments, active patient-family engagement, and nurse-performed selected therapies demonstrated initial success but further intervention trial is needed (Blaquera et al., 2024). This nurse-led interventions in the community setting, can adequately support and adapt to local perspectives, alleviates the pressure on inpatient care services and resources (Espinel-Jara et al., 2025, Dunn et al., 2021). However, available empirical evidence suggests that there are very few interventions that explicitly target social frailty as a primary goal (Kastner et al., 2024), and even rarer in low- and middle-income countries (Adekpedjou et al., 2023).

In the Philippine context, nurses in public primary care already engage in many functions that overlap with social frailty care, including assessment, health education, care coordination, and community outreach (Parial and Locsin, 2024, Tamayo and Moncatar, 2025). This supports the possibility of a nurse-led SFCB, provided that the intervention is practical, contextually adapted, and feasible within existing workflow constraints.

The referral and linkage component of the SFCB also shares features with social prescribing models, in which people with predominantly social needs are connected to community-based activities, services, and sources of support. In many social prescribing systems, this connecting function is performed by a dedicated non-clinical link worker. In contrast, the ENRICH model of care locates identifications, assessment, care planning, and linkage within the nurse role, consistent

with the scope of practice and staffing realities of Philippine public primary care. Positioning the SFCB in relation to this literature situates the study within a growing international evidence base on non-medical, community-oriented responses to social need, while retaining social frailty as the organizing construct rather than adopting social prescribing as the model itself.

2.11 Synthesis and research gap

The literature identifies five linked gaps: (1) a conceptual gap, because social frailty is multidimensional but often reduced to loneliness or social isolation; (2) a measurement gap, because available tools vary in domains and are not yet routinely adapted for Philippine primary care; (3) an intervention gap, because few studies explicitly target social frailty as a multidomain construct; (4) an implementation gap, because primary-care workflows rarely include structured social frailty screening, care planning, and follow-up; and (5) a Philippine health-system gap, because older adults face persistent barriers related to cost, transport, fragmented services, digital exclusion, and strained family support. The ENRICH study responds to these gaps by testing whether a nurse-led pathway can be implemented and evaluated in routine health centers.

Overall, the literature shows that social frailty is a meaningful and multidimensional form of vulnerability associated with important adverse outcomes in older adults. In the Philippines, social frailty and related vulnerabilities are shaped by structural disadvantage, changing support systems, and uneven participation opportunities. However, routine primary care does not yet use a coherent framework or practical screening tool to identify and respond to social frailty.

At the same time, intervention evidence remains limited. International and Asian studies suggest that group-based, participatory, supportive, and multidimensional approaches may be helpful, but very few interventions have explicitly targeted social frailty as a multidomain construct. Existing studies are geographically concentrated, often activity-focused, and underdeveloped in relation to self-management and general resources. There is also a lack of feasible, culturally relevant social

frailty tools suitable for routine primary care use in the Philippines. These gaps justify the need for the present study: a feasibility and pilot implementation of a nurse-led Social Frailty Care Bundle in a primary health center in Manila City, Philippines.

3. Methods

3.1 Study Design

Informed by Lancaster and Thabane (2019) guidelines for non-randomized pilot and feasibility studies (adapted from the CONSORT extension for pilot and feasibility trials), this study will use a single-arm, single-site, mixed-methods feasibility and pilot implementation design. There will be no randomization, no comparator group, and no control site in this feasibility study. The single-site design is intended to allow close monitoring of intervention delivery, participant safety, data governance, workflow fit, and refinement of study procedures before any multi-site or cluster randomized trial.

The study includes four linked preparatory and pilot implementation activities: (1) translation and cross-cultural adaptation of the MSF-10; (2) co-design and refinement of the SFCB; (3) nurse training and competency checks; and (4) three-month pilot implementation of the ENRICH pathway, and qualitative evaluation of feasibility and acceptability. These activities will be conducted sequentially, with findings from each activity informing the next stage.

3.2 Setting

The study will be conducted in one primary health center in Manila City, Philippines. The site will be selected based on administrative support, availability of nurses involved in older adult care, older adult service volume, feasibility of implementing the ENRICH workflow, and readiness to participate in research activities.

Preparatory activities, such as co-design consultations, stakeholder interviews, may involve participants from relevant community, professional, health-service, senior-citizen, local government, non-government organizations, or faith-based settings connected to older adult care.

3.3 Participants

The study will involve community-dwelling older adults, registered nurses, family carers or informal caregivers, health center administrators, barangay health workers, senior citizens' organization representatives, local government or community service representatives, and other stakeholders involved in older adult care, referral systems, or community support services. Each group will provide separate informed consent when they contribute research data.

3.3.1 Inclusion criteria

3.3.1.1 Older Adults

Older adult participants will be eligible if they are aged 60 years or older, Filipino, able to understand Filipino either in written form or when read aloud, community-dwelling, able to provide informed consent after explanation and teach-back, and willing to participate in the relevant study activity. For pilot implementation (Phase 4), participants must additionally be screened as socially pre-frail (mean risk score of >3.40 to 3.90) or socially frail (mean risk score of > 3.90) (Montayre et al., 2026) using the culturally adapted Filipino MSF-10.

3.3.1.2 Nurses

On the other hand, nurse participants are included if they are registered nurses working in the participating primary health center and have completed the ENRICH training before delivering the SFCB. Regardless of employment status, all nurses are eligible if they will remain assigned in the participating site during the study period. Nurse supervisors may be eligible to participate in training, co-design, interviews, or implementation planning if their role is relevant to workflow or service delivery.

3.3.1.3 Other stakeholders

Other stakeholders will be eligible if they are 18 years or older, have relevant knowledge of older adult services, referral systems, community resources, local government services, health center operations, or social support pathways, and are willing to join an interview, focus group, or co-design activity.

3.3.2 Exclusion criteria

Older adults will be excluded if they are institutionalized, receiving palliative or end-of-life care where the intervention would not be appropriate, unable to demonstrate basic understanding of the study after explanation and teach-back, have known moderate-to-severe cognitive impairment or dementia documented in clinical or health center records, or have a current condition that prevents meaningful participation such as severe illness, severe hearing or vision barrier, severe communication difficulty, or distress that makes participation unsafe.

3.4 Sample Size and Sampling

As this is a feasibility study, the sample size will not be based on statistical power to detect effectiveness outcomes; instead, the sample will be intended to provide useful estimates of feasibility and implementation parameters (Teresi et al., 2022).

3.4.1 Phase 1: Translation and cultural adaptation

Expected sample size. Approximately 15 community-dwelling older adults will participate in cognitive interviews.

Recruitment and sampling. Participants will be recruited in person through the participating health center and approved community partners. Purposive sampling will support variation in age, sex, educational attainment, familiarity with written Filipino, and community background.

Eligibility criteria. Participants must be Filipino, aged 60 years or older, community-dwelling, able to understand Filipino in written form or when read aloud, able to provide informed consent after

explanation and teach-back, and willing to complete the pre-final Filipino MSF-10 and a cognitive interview. The general exclusion criteria for older adults in Section 3.3.2 will apply.

3.4.2 Phase 2: Participatory co-design

Expected sample size. Approximately 6-12 co-design participants will be recruited across relevant participant groups. The final number may be adjusted according to the adequacy and diversity of feedback required for feasibility refinement.

Recruitment and sampling. Purposive sampling will be conducted through the participating health center and relevant community, senior citizens' organizations, local government, non-government, faith-based, and service organizations. Recruitment will seek diverse perspectives relevant to older adult care, referral pathways, community resources, caregiving, and health-center workflow.

Eligibility criteria. Eligible participants may include older adults, family carers or informal caregivers, registered nurses, health-center administrators, barangay health workers, senior citizens' organization representatives, local government or community-service representatives, and other relevant stakeholders. Older adults must meet the criteria in Section 3.3.1.1. Other stakeholders must be aged 18 years or older, have relevant knowledge or experience of older adult services, referral systems, community resources, health-center operations, caregiving, or social-support pathways, and be willing to participate in a co-design activity.

3.4.3 Phase 3: Nurse training and competency checks

Expected sample size. Up to five registered nurses will be recruited, depending on the number of eligible nurses and staffing availability at the participating site.

Recruitment and sampling. Total population sampling will be used by inviting all registered nurses at the participating site who are expected to deliver the ENRICH intervention. Recruitment will be conducted by the primary and/or co-investigator and separated from supervisory processes where feasible to minimize perceived employment pressure.

Eligibility criteria. Nurses must be registered nurses working at the participating primary health center, expect to remain assigned to the site during the pilot period, be willing to complete ENRICH training and competency checks, and provide informed consent for the collection of research-related training data. Nurses who will not participate in intervention delivery, do not expect to remain at the site during implementation, or decline research participation will not be enrolled in Phase 3 research activities.

3.4.4 Phase 4: Pilot implementation and qualitative evaluation

Expected sample size. Approximately 30 older adults will be recruited for the single-site pilot implementation. This target is justified against feasibility progression criteria rather than statistical power. A total of approximately 10-20 participants across older adults, nurses, carers, and stakeholders will also be purposively selected for post-implementation interviews or focus groups, subject to feasibility and data adequacy.

Recruitment and sampling. Older adults will be identified through Filipino MSF-10 screening at the participating health center and approved community outreach activities. If eligible participants exceed the feasible recruitment target, stratified purposive sampling may be used to include both socially pre-frail and socially frail participants and to support variation in age, sex, education, living arrangement, and referral needs. Qualitative evaluation participants will be purposively selected based on their involvement in the pilot and their ability to comment on acceptability, feasibility, workflow fit, burden, safety, and refinement needs.

Eligibility criteria. Older adults must meet the general criteria in Section 3.3.1.1, screen as socially pre-frail (MSF-10 mean risk score >3.40 to 3.90) or socially frail (mean risk score > 3.90), provide informed consent after explanation and teach-back, and be willing to participate in the three-month intervention and follow-up. Nurses and other qualitative participants must meet the applicable criteria

in Sections 3.3.1.2 and 3.3.1.3 and have participated in, delivered, supported, or observed relevant ENRICH activities.

3.5 Intervention development and preparation

The ENRICH pathway will be developed and refined through linked preparatory phases designed to ensure that the intervention is culturally acceptable, operationally feasible, and deliverable within the routine Philippine primary care conditions.

3.5.1 Phase 1: MSF-10 translation and cultural adaptation

The MSF-10 will be translated and culturally adapted into Filipino using the cross-cultural adaptation process guided by Beaton et al. (2000). First, MSF-10 will undergo forward translation by two independent translators (one nurse and one non-medical professional). Second, the two translated versions will then be synthesized into one Filipino version. Third, a back translation into English will be completed by a translator who has not seen the original questionnaire to assess whether the meaning of the items and the overall tool remain consistent. Fourth, expert reviewers will review all versions to assess meaning, cultural relevance, clarity, and equivalence. Fifth, the pre-final Filipino MSF-10 will be tested through cognitive interviews with approximately 15 community-dwelling Filipino older adults. Participants will be selected to reflect variation in age, sex, educational attainment, familiarity with written Filipino, and community background. Participants will first complete the pre-final Filipino MSF-10 and then take part in a brief cognitive interview lasting approximately 20-30 minutes. Think aloud techniques and probing questions will be used to identify unclear, confusing, culturally inappropriate, or difficult-to-answer items. The primary investigator and the co-investigator will review the feedback and revise items as needed while preserving the intended meaning of the original MSF-10. Lastly, since the primary investigator and co-investigator are members of the original MSF-10 development team (Montayre et al., 2026) and to mitigate potential conflict of interest, the expert review panel will include at least one independent reviewer

with no involvement in the development of the MSF-10, and all adaptation decisions will be documented transparently. Documentation will include approved version, date of review, reviewers involved, and changes made to preserve conceptual equivalence.

Since there will be no psychometric validation in this feasibility pilot study, the eligibility cut-offs (>3.40 and >3.90) derived from the Hong Kong validation sample will be applied provisionally; the associated risk of misclassification is acknowledged, and pilot score distributions will inform local calibration of thresholds for the future definitive trial. Therefore, the pilot will only describe the MSF-10 administration time, item-level missingness, response distributions, floor and ceiling effects, participant comprehension issues, and nurse-reported administration difficulties to inform future psychometric validation and local threshold calibration. See Appendix 2: Cognitive Interview Guideline.

3.5.2 Phase 2: Participatory co-design of the Social Frailty Care Bundle

A participatory co-design approach will be used to refine the Social Frailty Care Bundle. Co-design activities may include focus group discussions, participatory workshops, small-group consultations, one-to-one feedback sessions, and iterative review of draft intervention materials. These sessions may be conducted in person or online depending on participant availability, accessibility, and site conditions. The co-design process will explore the acceptability of the intervention components, practicality for nurses, care-planning procedures, referral and linkage pathways, follow-up procedures, documentation tools, anticipated barriers and facilitators, participant-facing materials and fidelity monitoring procedures.

The SFCB will be a structured nurse-led pathway rather than an open-ended package of study-delivered services. The core study-delivered procedures will include MSF-10 screening, domain-based social frailty assessment, individualized care planning, brief education or coaching using approved ENRICH materials, referral or linkage support, follow-up contact, documentation,

and fidelity monitoring. These procedures will be delivered by study-trained nurses according to the approved site workflow. Some components will not be delivered directly by the nurse and will instead involve referral, signposting, or linkage to existing family, community, health, social welfare, religious, senior citizens' organization, non-government organization, or local government services. Components will only be activated when relevant to the participant's identified needs, preferences, safety, and available local resources.

Family members, carers, peers, community organizations, religious groups, non-government organizations, local government offices, and other third parties will only be involved with the participant's permission. See Appendix 3 Co-design Workshop Guide; Appendix 4 Focus Group Discussion Guide (English); Appendix 5 SFCB Delivery Boundaries Table.

3.5.3 Phase 3: Nurse Training and Competency Checks

Nurses involved in intervention delivery will complete the ENRICH training before pilot implementation. Training feasibility will be evaluated using mixed methods (training completion, competency-check results, and nurse feedback) to assess whether the training package is acceptable, practical, and sufficient to prepare nurses to deliver the SFCB consistently, safely, and with fidelity.

The training will include self-paced online modules and in-person workshops. The online component will cover topics on social frailty and healthy ageing, the ENRICH workflow, use of the Filipino MSF-10, domain-based assessment, SFCB components, care planning, referral and linkage, sensitive communication, documentation, and fidelity monitoring. The in-person component will include guided simulations, case discussions, skills demonstration, coaching, and reflective debriefing.

Nurses will receive an ENRICH manual with the Filipino MSF-10 clinician's guide, domain-based assessment guide, care-planning templates, referral pathway guide, follow-up tools, fidelity checklist, and quick reference materials.

Competency checks led by the primary investigator and co-investigator will assess whether nurses can administer and interpret the Filipino MSF-10, conduct domain-based assessment, develop an individualized care plan, select appropriate bundle actions, communicate sensitively about social-frailty concerns, identify referral or escalation needs, document intervention delivery, and complete fidelity documentation. Nurses who require additional support will receive coaching before intervention delivery. All screening, assessment, care-planning, referral, follow-up, and fidelity documentation will be completed using the structured paper-based forms provided in the ENRICH manual, with completed forms stored securely at the site and transcribed into the coded study dataset in accordance with the data management plan. See Appendix 6 Instructional Design.

3.5.4 Phase 4: Pilot implementation procedures

Phase 4 will commence after the preliminary preparations from Phase 1 to Phase 3. The primary and co-investigator will ensure the site's readiness through an assessment, obtain administrative approvals, and prepare a site-specific referral directory (developed in Phase 2) and safety procedures before the pilot implementation begins.

Older adults will be screened using the Filipino MSF-10. Those who are socially pre-frail or socially frail and meet the eligibility criteria will be invited to provide informed consent. After baseline data collection, enrolled participants will receive the SFCB in addition to usual care over a three-month period. Follow-up data collection will occur at three months. Qualitative interviews and focus group discussions will be conducted with selected older adults, nurses, carers, and stakeholders to explore acceptability, feasibility, workflow fit, burden, safety, and

recommendations for refinement. Quantitative and qualitative findings will then be integrated to inform progression decisions and future study design.

3.6 Primary Feasibility and Implementation Outcome Measures

The primary outcomes of this feasibility study will focus on feasibility and implementation rather than effectiveness. Outcomes will be organized according to the RE-AIM framework: Reach, Effectiveness, Adoption, Implementation, and Maintenance (Glasgow et al., 1999). The Consolidated Framework for Implementation Research (CFIR) (Reardon et al., 2025) will be used alongside RE-AIM to explain contextual barriers and facilitators affecting implementation.

3.6.1 RE-AIM

3.6.1.1 Reach. Reach will be assessed by documenting the number and proportion of older adults approached, screened, eligible, consented, enrolled, retained, and lost to follow-up. Reasons for ineligibility, refusal, withdrawal, and loss to follow-up will be recorded where available. Participant adherence and engagement will be assessed by documenting completion of core intervention contacts, participation in care planning discussions, receipt and uptake of referral or linkage actions, completion of agreed follow-up contacts, and reasons for non-completion or non-uptake where available.

3.6.1.2 Effectiveness. Effectiveness will not be tested as a primary outcome because this is a feasibility pilot study and is not powered to determine intervention effects. Instead, social frailty will be collected as a candidate clinical outcome using the Filipino MSF-10. The purpose is to assess practicality, variability, acceptability, responsiveness, and data completeness for a future larger study.

3.6.1.3 Adoption. Adoption will be assessed by documenting the number and proportion of eligible nurses invited, trained, completing competency checks, and participating in ENRICH delivery throughout the three-month pilot implementation. Also, nurse withdrawal, reassignment,

inability to continue delivery, or incomplete participation will be documented, including reasons where available.

3.6.1.4 Implementation. Implementation will be assessed by examining whether the ENRICH pathway can be delivered as intended. Measures will include completeness of baseline and follow-up data, proportion of missing data, time required for screening, assessment, care planning, documentation, and follow-up, fidelity to the SFCB workflow, number and type of referrals or linkages offered, participant uptake of referrals or signposting, and intervention dose. Implementation will also include workflow burden, perceived ease of delivery, acceptability of study procedures to nurses and older adults, and perceived relevance of the intervention. Privacy concerns, documentation problems, protocol deviations, and adverse events will be documented. Fidelity will be assessed using a structured SFCB fidelity checklist completed by the delivering nurse after each participant encounter and reviewed by the primary and co-investigator. Key fidelity elements will include completion of MSF-10 screening, domain-based assessment, individualized care plan, approved education and coaching content, referral or linkage action when appropriate, follow-up documentation, and safety or escalation documentation as needed. In addition, a random sample of at least 20% of participant records will be audited against the fidelity checklist by the primary and/or co-investigator. Fidelity concerns may entail supportive feedback or refresher coaching and will be documented as feasibility findings.

3.6.1.5 Maintenance. Maintenance will be assessed in a preliminary way by exploring whether the ENRICH pathway could be continued, adapted, or scaled after the pilot. This will include nurse and stakeholder views on sustainability, staffing requirements, training needs, workflow fit, referral capacity, documentation burden, technology requirements, and changes needed before a future larger study.

3.6.2 Consolidated Framework for Implementation Research (CFIR)

CFIR will guide qualitative and process data collection to explain the RE-AIM findings. It will help identify why ENRICH was or was not feasible by examining intervention characteristics, the health center setting, external referral environment, participant and nurse characteristics, and the implementation process.

3.7 Data Collection

As described in Phase 4, enrolled participants will receive the SFCB in addition to usual care over three months, with follow-up data collection at approximately three months after baseline. Each participant will receive at minimum: baseline screening and assessment, individualized care planning, at least one planned follow-up contact, referral or linkage support when indicated, and three-month follow-up assessment. Participants with lower-intensity needs may receive brief calls or visits approximately every 4 weeks. Participants with more complex or safety related needs may receive additional nurse contacts or referral coordination, within available resources and approved procedures.

Additional contacts will be documented as intervention dose and will not be considered evidence of differential treatment unless outside the approved stepped-care path. To support the interpretability of findings, usual care at the participating health center such as routine consultations, chronic disease monitoring, health education, and existing senior citizen services will be documented and described before implementation begins.

3.8 Data analysis

3.8.1 Quantitative data analysis

Quantitative analysis will be descriptive and feasibility oriented. Using IBM SPSS Statistics Version 25 (IBM Corp., 2017) categorical variables will be summarized using frequencies and percentages. Continuous variables will be summarized using means and standard deviations where

approximately normally distributed, or medians, interquartile ranges, and ranges where non-normally distributed.

Feasibility outcomes will be summarized according to the RE-AIM framework. Reach will include the number and proportion of older adults approached, screened, eligible, consented, enrolled, retained, and lost to follow-up. Effectiveness will not be formally tested; Filipino MSF-10 scores will be summarized descriptively as a candidate clinical outcome. Adoption will include nurse invitation, training completion, competency check completion, and participation in ENRICH delivery. Implementation will include data completeness, missing data, fidelity, intervention dose, referral/linkage frequency and uptake, time required for key procedures, and workflow burden. Maintenance will be explored through nurse and stakeholder views on readiness for continuation, resource needs, workflow fit, and requirements for a future larger study. Feasibility proportion such as consent, retention, follow-up completion, and data completeness will be presented with 95% confidence intervals to indicate uncertainty, but these estimates will not be used as definitive evidence of feasibility or effectiveness. See Appendix 7 Quantitative Data Analysis Matrix.

3.8.2 Qualitative data analysis

Qualitative data will be managed in NVivo Version 14 (Lumivero., 2023) and analyzed using framework analysis, with CFIR providing the initial deductive coding framework and inductive codes added for content not captured by CFIR. A subset of transcripts will be independently double-coded, discrepancies will be resolved through discussions, and an audit trail of coding decisions will be maintained to support trustworthiness. CFIR will guide coding and interpretation across innovation, outer setting, inner setting, individuals, and implementation process. Analysis will focus on acceptability, cultural fit, practicality, workflow fit, perceived burden, referral feasibility, safety and privacy concerns, barriers, facilitators, and suggested refinements. See Appendix 8 Qualitative Data Analysis Matrix.

3.8.3 Mixed methods integration

Mixed methods integration will occur during interpretation. Quantitative feasibility findings will be examined alongside qualitative accounts to explain why procedures worked or did not work and what refinements are needed. Formal hypothesis testing will not be conducted. Missing data will be described by amount, timing, variable, and reason. Formal imputation is not planned. See Appendix 9 Mixed Methods Analysis Matrix.

3.9 Progression criteria

Progression to a future larger trial will be guided by traffic-light criteria (Lewis et al., 2021, Avery et al., 2017, Mellor et al., 2023). A green rating will indicate that progression may be appropriate with minor refinements if at least 70% of eligible nurses complete training, at least 60% of eligible older adults consent, at least 75% of enrolled participants complete three-month follow-up, fidelity is acceptable (at least 80% of required core SFCB components documented as delivered across participant encounters), and at least 80% of key feasibility data fields are complete. For each criterion, denominators are pre-specified as follows: nurse training completion is the number of nurses completing training divided by eligible nurses invited; the consent rate is the number of participants consenting divided by eligible older adults approached; retention is the number of participants completing three-month follow-up divided by participants enrolled; data completeness is the number of key feasibility data fields completed divided by fields expected; and fidelity is the number of core SFCB components documented as delivered divided by the number required across all participant encounters.

An amber rating will indicate that progression may be considered after modification if one or more criteria fall below the green threshold without meeting a red condition, if recruitment, retention, fidelity, or data completion is feasible but needs improvement, or if qualitative data identify manageable barriers related to training, workflow, documentation, or referral.

A red rating will indicate that the progression should not occur without major redesign if recruitment is not feasible, nurse training completion is low, participant retention is poor, fidelity is not achievable, data completeness is unacceptable, or ethical, privacy, or data-governance concerns remain unresolved.

3.10 Recruitment and consent

Written informed consent will be obtained from all participants before enrollment and any research data collection; brief verbal consent will be used only for MSF-10 eligibility screening, as described in Section 3.10.2. Consent procedures will emphasize that participation is voluntary, refusal will not affect routine care, services, benefits, employment standing, or relationship with the health center or community organizations, and participants may withdraw at any time without penalty. All participant recruitment will be done in-person and consent will be sought from all study participants by the primary and/or co-investigator. See Appendix 10 Informed Consent Forms.

3.10.1 Nurse participants

For nurse participants, recruitment and data collection will be arranged to minimize perceived pressure from supervisors. Recruitment will be conducted by the primary and co-investigator, not by direct supervisors where feasible. Supervisors will not receive individual nurse responses, competency scores, or coaching notes. Nurses may decline research interviews or surveys without employment consequences.

3.10.2 Older adults

The older adults will be recruited through the participating primary health center and relevant community partners, including senior citizens' organizations, outpatient clinics, church groups, non-government organization-run senior programs, and community-based organizations. Recruitment materials will use plain language and will clearly state that the participation is voluntary. Community leaders, health workers, and site staff may help distribute approved study

information or refer interested persons with permission, but they will not directly persuade individuals, screen for eligibility criteria, or be informed about who refused participation.

Consent will also be addressed at the screening stage, before enrollment. Older adults will provide brief verbal consent for MSF-10 screening after a plain-language explanation of its purpose, voluntariness, and how screening information will be handled. Individual-screening data from those who do not enroll will not be retained for research analysis unless separate consent is obtained. However, anonymous aggregate screening counts, including numbers screened, screened socially pre-frail or frail, eligible and declining enrollment, may be retained to assess recruitment and screening feasibility.

Screening data from individuals who screen negative, or who screen positive but decline enrollment, will not be used for research analysis, and securely destroyed in accordance with data management plan. Individuals identified as socially pre-frail or frail who do not enroll will still be offered signposting or referral to appropriate services, consistent with the study's duty of care to persons identified through screening.

Before the consent is signed, the primary and/or co-investigator will explain the study in plain language and will allow time for questions. The participant may use usual hearing or vision aids, may request rest breaks, and may request for the information to be read aloud. A companion may be present if requested by the participant, but the participant must be the one to answer the consent comprehension questions. The study team will use a teach-back approach to assess understanding (Gilbert et al., 2017, Glaser et al., 2020, Sudore et al., 2006). The participant will be asked six questions: (1) Can you tell me, in your own words, what this study is all about? (2) What will you be asked to do if you join? (3) What are some possible discomforts or risks? (4) Do you have to join this study? (5) What can you do if you want to stop participating? (6) Will saying "No" affect your health care, services, benefits, or relationship with the health center or the community

organizations? If the participant has difficulty answering, the study team will explain the information again in simpler language and repeat the teach-back check.

The teach-back process is not intended to diagnose cognitive impairment instead it is a method to confirm whether the participant understands the study well enough to provide informed consent. If the participant still cannot demonstrate basic understanding of the study purpose, procedures, voluntary nature of participation, risks, and right to withdraw, the older adult will not be enrolled. The study will not use guardian consent or legally authorized representative consent. Older adults who lack capacity to provide informed consent will be excluded from all study phases.

Additionally, audio recording will be optional and will require separate consent. Participants may take part in interviews, focus groups, workshops, cognitive interviews even if they decline audio recording. If recording is declined, written notes will be taken instead. Participants may ask for recording to stop at any time. Consent forms will include separate options: “I agree to audio recording” and “I do not agree to audio recording but agree to notes being taken.” Refusal to be recorded will not affect participation, care, services, employment, or relationship with the study team. Furthermore, participant information will not be shared with family members, carers, companions, community leaders, or other third parties without participant permission, except where disclosure is required for safety, emergency care, or mandatory reporting under law or institutional policy.

3.11 Data Management and Confidentiality

Each participant will be assigned a unique study identifier. Identifiable information will be stored separately from research data, and linkage files will be access restricted. Electronic files will be stored in PolyU’s encrypted, password-protected institutional storage, and paper files will be stored in locked cabinets at the participating site.

Local government units, barangay officials, community organizations, church groups, NGOs, and senior citizens’ organizations will not be given access to individual-level research

responses, refusal status, interview data, survey data, or social frailty results unless the participant gives permission for referral or disclosure is required for safety, emergency care, mandatory reporting, ethics reporting, or institutional audit.

Nurse supervisors will not receive individual nurse survey responses, interview responses, competency scores, coaching notes, or training performance data. Nurse training data will be used for study readiness and support only, not employment evaluation. Reports to employers, supervisors, sites, or institutions will be aggregate or de-identified whenever possible.

Given the small number of nurse participants at a single site, complete anonymity cannot be guaranteed, as colleagues or supervisors may be able to infer identities from context. This limitation will be stated plainly in the nurse participant information sheet. To reduce inference risk, published quotations will not include role descriptors or demographic identifiers, and nurse participants will be offered the opportunity to review quotations attributed to them before publication. Identifiable data (signed consent forms, contact details, and linkage files) will remain in the Philippines. Only coded or de-identified data will be entered into PolyU's encrypted institutional storage, in accordance with the Philippine Data Privacy Act of 2012 (Republic Act No. 10173) and PolyU data governance requirements.

The expected retention period of data collected is 5 years after study completion or final publication, whichever is later, and then securely destroyed. Paper records will be shredded or destroyed through confidential disposal. Audio recordings will be deleted after transcription and verification. Identifiable linkage files will be destroyed once follow-up, withdrawal handling, safety reporting, and audit needs are complete. De-identified transcripts, coded datasets, training records, referral logs, adverse event logs, and protocol deviation logs will be retained only for the approved retention period and then securely deleted or destroyed. A destruction record will

document the type of data destroyed, date, method, and responsible person. See Appendix 11 Data Management Plan; Appendix 12 Data Destruction Record.

4. Ethical Considerations

Ethical approval has been obtained from The Hong Kong Polytechnic University Institutional Review Board (IRB) (Reference No. HSEARS20260525001) and will be sought from the University of the Philippines Manila Research Ethics Board (UPMREB). Permission to conduct the study will also be sought from the Manila Health Department (MHD).

4.1 Referral pathways, urgent concerns, and linkage follow-up

During screening, assessment, interviews, care planning, follow-up, or other study contact, participants may disclose urgent or significant concerns. These may include emotional distress, possible risk of self-harm, suspected abuse or neglect, unmet medical needs, food insecurity, lack of transport to essential services, unsafe living conditions, financial or social welfare needs, or other safety concerns.

A site-specific referral directory will be prepared during Phase 2 and finalized before participant recruitment begins. The directory will identify available referral options for each participating site, including contact persons, operating hours, referral procedures, emergency contacts, and documentation requirements. The referral directory will be reviewed with the nurses during training and updated as needed during implementation.

At minimum, the site-specific referral directory will include pathways for:

- Mental health distress, including emotional distress, severe loneliness, depressive symptoms, or possible self-harm risk.
- Suspected abuse, neglect, exploitation, or unsafe living conditions.
- Unmet medical needs, including urgent symptoms, medication access problems, or worsening health concerns.

- Social welfare needs, including financial hardship, benefit access, housing concerns, or need for social assistance.
- Food insecurity or lack of basic needs.
- Transport or mobility barriers affecting access to health care, social services, or essential activities.
- Emergency concerns, including immediate danger, acute medical symptoms, or safety threats.

When a referral need is identified, the nurse will first discuss the concern with the participant in a private and respectful manner where feasible. For non-urgent concerns, referral will normally be made only with the participant's permission. The participant may choose whether to accept referral information, whether the study team may help contact the service, and what information may be shared.

For urgent safety concerns, including immediate danger to the participant or another person, suspected abuse or neglect requiring reporting, risk of self-harm, or medical emergency, the nurses and the study team will follow the approved distress, emergency, and mandatory reporting procedures. In such cases, confidentiality may be limited as described in the consent form.

Referral actions may include one or more of the following:

- Providing written or verbal information about available services.
- Helping the participant identify an appropriate service.
- With participant permission, contacting a health, social, community, or emergency service.
- With participant permission, informing a designated family member, carer, or support person.

- Escalating the concern to the site nurse, primary and co-investigator, health center physician, social worker, barangay or local government service, emergency service, or other appropriate professional, depending on the nature and urgency of the concern.
- Documenting the concern and referral action in the study referral log. The study team will document referral needs and actions using a referral log. The log will record the participant study ID, date, type of concern, urgency level, referral option offered, participant permission, action taken, person responsible, and follow-up status. Direct identifiers will be kept separate from research data.

For non-urgent referrals, the nurses and the study team may follow up with the participant at the next scheduled study contact to ask whether they were able to access the service and whether further assistance is needed. Also, it will not be guaranteed that external services are available or that referral will result in service acceptance. Follow-up will be limited to confirming whether linkage was attempted or completed, identifying barriers, and offering additional signposting where appropriate.

For urgent referrals or safety concerns, follow-up will occur according to the site-specific referral plan and institutional policy. The primary and/or co-investigator will review urgent referral cases to ensure that required documentation, escalation, and reporting have been completed. Referral and safety procedures will apply to all participants in the current study. Any participant who discloses urgent distress, abuse, neglect, serious unmet needs, or safety concerns during research or intervention contact will receive the same safety response and referral procedures, regardless of study activity.

4.2 Mandatory Reporting and Limits to Confidentiality

Confidentiality will be protected to the maximum extent allowed by law and institutional policy. However, confidentiality may be limited when the study team identifies immediate danger,

risk of self-harm or harm to others, suspected abuse, neglect, exploitation, medical emergency, serious unmet safety needs, data breach, ethics audit requirements, or other mandatory legal or institutional reporting obligation.

All events will be documented in study logs, reviewed by the primary investigator, classified by severity and relatedness, and followed by corrective and preventive action where needed. Serious or unexpected events will be reported to the relevant ethics board and institution within required timelines. Minor events and minor deviations will be logged and summarized in continuing review or progress reports unless immediate reporting is required. See Appendix 13 Reporting Timeline.

4.3 Adverse Event, Protocol Deviation, and Data Breach

The study will maintain procedures for documenting and reporting adverse events, serious adverse events, unanticipated problems, protocol deviations, and data breaches. The primary investigator will be responsible for safety oversight and reporting. Serious adverse events, urgent safety concerns, major protocol deviations, and data breaches will be reported internally to the primary and/or co-investigator as soon as possible, preferably within 24 hours. External reporting to UPMREB, The Hong Kong Polytechnic University, participating sites, local government units, privacy offices, or emergency/social welfare services will follow applicable ethics, institutional, site, and legal requirements.

Adverse events include any unfavorable physical, psychological, social, privacy-related, or operational occurrence during the study. Serious adverse events include death, life-threatening risk, hospitalization, serious psychological harm, urgent safety concern, or emergency intervention. Unanticipated problems are unexpected events related or possibly related to the study that suggest increased risk. See Appendix 13 Reporting Timeline.

4.4 Risks and Mitigation

The study is expected to pose minimal risk to most participants. However, some social, emotional, privacy, referral, and employment-related risks may be more significant for certain participants based on their individual circumstances. Consequently, the protocol categorizes the overall risk as minimal to low-moderate and implements enhanced safeguards for older adults, nurses, carers, and stakeholders.

Older adults may feel uncomfortable, embarrassed, tired, or distressed when discussing loneliness, family support, finances, unmet care needs, social isolation, possible neglect or abuse, emotional distress, or safety concerns. Participants may skip any question, take breaks, stop an interview or assessment, request privacy, decline audio recording, or withdraw. Given these possible occurrences, the nurse and study team will offer a brief private check-in before sensitive questions, especially when a family member or companion is present. Furthermore, the nurse and the study team will follow the approved distress, referral, and mandatory reporting procedures if serious distress or safety concerns arise.

Possible risks for nurses include time burden, discomfort during role-play or competency checks, concern about performance evaluation, and documentation burden. These will be mitigated through supportive training, non-punitive coaching, scheduling coordination with health center operations, confidentiality of individual feedback, and quick-reference materials. Additionally, there is also a risk of dual-role conflict to those nurses who provide routine clinical care to older adults who are also study participants. To reduce this, participation will be voluntary and clearly separated from routine care, nurses will use a standard script to avoid perceived pressure, consent will be obtained by the primary and/or co-investigator, and any concern about coercion, undue influence, or role conflict will be documented and reported to the primary and/or co-investigator for review.

4.5 Benefits

There may be no direct clinical benefit to participants. However, older adult participants may contribute to the development of a culturally appropriate Filipino MSF-10 and a nurse-led pathway for identifying and addressing social frailty in primary care.

Nurses may benefit from increased knowledge of social frailty, improved confidence in screening and assessment, strengthened communication skills, and greater familiarity with individualized care planning and referral pathways.

The study may benefit future service delivery by generating evidence on the feasibility, acceptability, and implementation requirements of a culturally adapted nurse-led social frailty pathway in Philippine primary care.

4.6 Compensation and Reimbursement

Participants will not be paid for participation. However, reasonable transportation reimbursement, light refreshments, or a small token of appreciation may be provided, depending on the activity. The amount will be modest to avoid undue influence, especially for economically vulnerable older adults. Reimbursements will be provided when participation requires travel or phone calls and will be modest with the intention to only offset participation related expenses. The amount and form of reimbursement are stated in the participant information sheet. Participants may keep reimbursement for activities already completed or started, even if they later withdraw.

The nurse participants will not receive research payments for activities conducted as part of normal paid working hours; if research activities occur outside working hours, the approved reimbursement or token approved by the ethics board will apply. Furthermore, their participation will not be linked to any employment evaluation. However, they may receive Continuing Professional Development (CPD) units after successfully completing the ENRICH study training, subject to CPD accreditation of the training; units will still be awarded even if the nurse withdraws from the study at any given time after training completion.

4.7 Estimated time commitment by participant group and study activity

Participants will be informed of the expected time commitment before consent is obtained. Time estimates will be presented in the participant information sheet and reviewed verbally during the consent process. The study team will monitor participant fatigue, particularly among older adults, with rest breaks offered, shorter sessions, or split sessions when needed. See Appendix 14 Estimated time commitments.

4.8 Withdrawal Criteria

Participants may withdraw at any time without penalty or loss of services, employment standing, or access to care. The study team may also withdraw participants if they become distressed or fatigued, are unable to complete study procedures, lose capacity to provide informed consent, no longer meet eligibility criteria, or if continued participation may affect safety, well-being, or data integrity.

If a participant withdraws, the study team will ask whether previously collected data may still be used. The participant's decision will be respected in accordance with ethics approval and data management procedures.

4.9 Research-Related Injury

Although the risk of physical harm in this study is minimal, any participant who experiences a research-related injury or serious distress will receive immediate assistance in accessing appropriate care, and the event will be managed and reported under the adverse event procedures described in Section 4.3. Arrangements for the management of research-related injury will follow the requirements of UPMREB and The Hong Kong Polytechnic University IRB and will be described in the participant information sheet.

4.10 Complaints and Independent Contact

Participants who have questions, concerns, or complaints about the study that they do not wish to raise with the study team may contact the UPMREB Panel Chair or the PolyU Institutional Review Board (IRB). The relevant contact details will be provided in the participant information sheet and recruitment materials.

4.11 Conflict of Interest

The primary investigator and co-investigator are members of the team that developed the MSF-10 (Montayre et al., 2026). This is declared as a potential conflict of interest and is mitigated through the inclusion of an independent reviewer in the cultural adaptation panel, transparent documentation of adaptation decisions, and descriptive reporting of all feasibility outcomes regardless of direction.

4.12 Funding Declaration

This project is self-funded.

5. Declaration of Language Editing

Microsoft 365 Copilot was used for grammar, spelling, flow, and style editing of the proposal. The proponent conceptualized the study, selected and interpreted literature, made final methodological decisions, reviewed all AI supported edits, and accepts full responsibility for the accuracy, integrity, and originality of the proposal.

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