FEDERAL MINISTRY OF
HEALTH

**Situational Analysis of Unintentional/Accidental Injuries**
**&**

**Intervention, Implementation, and Evaluation Design for ElderCare - a Model Falls Prevention (Pilot) Initiative for Older Adults in Rural Nigeria.**

Submitted to:

His Excellency
Mr. Bola Ahmed Tinubu
The President of the Federal Republic of Nigeria

CC:
Prof. Mohammed Ali Pate
The Coordinating Minister
Federal Ministry of Health and Social Welfare (FMoHSW)

Prepared by:

Edima Ottoho, Gift Nwanne, Sam Onwubiko, and Maryam Al-Mujtaba

June 10, 2024.

## Table of Contents

## Executive Summary

Unintentional or accidental injuries are a major public health concern in Nigeria, significantly contributing to healthcare and economic costs. They include injuries from road traffic crashes, falls, burns, drowning, and poisoning. Road traffic crashes are the leading cause of unintentional injuries. However, they are managed by multiple other sectors aside from health. ***Falls, on the other hand, are the second leading cause, and severely impact a neglected group - older adults 60 years and above, especially in rural areas with limited healthcare access. This justifies our chosen intervention - ElderCare.*** This proposal details the plan for ElderCare, a 2-year pilot program in Badagry and Epe, Lagos State with a combined population of 37,413 older adults. Our goal is to reduce fall incidence by 50% among older adults in Badagry and Epe through community and facility-based primary prevention. ElderCare budget is $781,182.00. It will be funded by pooled funding within the health ministry and will be a model for national adoption.

## 1.0 Background

### 1.1 Definition, Risk Factors, and Consequences

**Definition:** Accidental injuries, or unintentional injuries, are a major global health concern due to their impact on mortality, disability, and economic costs[1,2]. They are defined as harm resulting from unforeseen events, such as road traffic crashes, falls, burns, drowning, and poisoning[1–4].

**Risk Factors:** The socioecological model (SEM) identifies multiple risk factors for unintentional injuries across different levels[5]. At the individual level, factors like age, driver speed, substance use, and not using helmets or seatbelts increase risks. Older adults are prone to falls due to health declines, while children are vulnerable to poisoning. At the interpersonal level, risks include unsafe chemical storage at home, inadequate caregiver supervision, and improper home treatments delaying medical care. Community-level risks involve poor access to hospitals, poison control centers, and emergency centers, and unsafe infrastructure, especially in rural

areas. At the policy level, factors like weak safety standards, lack of toxic agent policies, poor enforcement of safety and traffic laws, and neglect of older adults contribute to the issue[1–3,6].

**Consequences:** Low-income and middle-income countries (LMICs) account for 91% of deaths and 94% of disability-adjusted life-years (DALYs) lost due to unintentional injuries. Road traffic accidents have caused a nearly 50% increase in healthy life-years lost since 2000. In 2015, over $50 billion was spent globally on treating nonfatal and fatal fall injuries[7]. Falls cause over 38 million DALYs lost annually, more than drowning, transport injuries, poisoning, and burns combined. Unintentional poisoning led to 5 million DALYs lost globally in 2019[8]. Unintentional injuries could lead to disfigurement, disability, prolonged hospital stays, and high medical costs, severely impacting quality of life and loss of life and leading to financial ruin[2].

### 1.2 The Burden of Unintentional Injuries: Global, Region, and Country Levels

**Global Burden:** Globally, unintentional injuries cause about 3.16 million deaths annually, contributing to 4.4 million injury-related deaths[2]. Road traffic injuries are the leading cause, with 1.35 million deaths each year, and are the top cause of death for ages 5-29[1–3]. Falls, the second leading cause, result in 684,000 deaths and 37.3 million severe injuries annually, with the highest rates among those aged 60 and above. Approximately 28-35% of people over 65 fall each year, increasing to 32-42% for those over 70, with serious injuries occurring in 1 in 5 falls[1,2]. Drowning is the third leading cause, with 236,000 deaths annually, particularly affecting children aged 1-4[6]. Burns and unintentional poisoning cause nearly 180,000 and 106,000 deaths respectively each year, with children being especially vulnerable[2,9].

**Regional Burden:** Unintentional injuries disproportionately affect LMICs, especially in regions like Sub-Saharan Africa (SSA). In SSA, road traffic injuries have risen significantly, with 27 deaths per 100,000 as of 2019[10]. While specific mortality rates from falls, burns, and poisoning are not consistently reported, they are also considered as causes of unintentional injury deaths.

**Nigerian Burden:** Nigeria, as the most populous African country, exemplifies the challenges faced by most SSA countries. As of 2019, road traffic accidents accounted for 21 deaths per

100,000 population[10,11]. Among older adults, a fall rate **of 21.4%** and a fall-injury rate of **25%** was documented[12]. Statistics on other unintentional injuries are not readily available.

### 1.3 Rationale for Choosing the Specific Unintentional Injury Type and Target Population

Limited resources and the current federal cutbacks have necessitated the streamlining of the health problem to focus on. While road traffic injuries are the leading unintentional injuries globally and in Nigeria, interventions for these are handled by multiple agencies aside from the Health Ministry, e.g., the Federal Road Safety Commission[13] and the Ministry of Works[14]. However, falls, being the second leading cause, significantly impact older adults, a neglected group. The global population of older adults is rising rapidly, projected to grow from 1 billion in 2020 to 2.1 billion by 2050, with two-thirds of this increase occurring in LMICs. Nigeria had 9.4 million people aged 60 or older as of 2020[15], projected to nearly triple by 2050[16]. Older adults, especially those in rural areas, face limited healthcare access (especially tailored geriatric care), poverty, social isolation, and age-related physical and cognitive declines, increasing their risk of falls[17–19]. Also, despite the high fall incidence, there are limited interventions, and a lack of political will by previous government administrations to address it[16,18]. Moreso, prioritizing falls fits within the Health Ministry's scope, addresses demographic trends, and tackles a long-neglected issue, setting a precedent for more tailored geriatric interventions for older adults.

## 2.0 Past and Existing Evidence-Based Interventions to Address Falls among Older Adults

### 2.1 Global Policies, Strategies, and Guidelines to Address Falls among Older Adults

The World Health Organization (WHO) and the United Nations (UN) have established comprehensive policies focusing on fall prevention among older adults. The UN Decade of Healthy Ageing and Health (2021–2030)[20] builds on the WHO Global Strategy and Action Plan on Aging and Health (2016-2030)[21] and the Madrid International Plan of Action on Ageing (2002)[22]. These initiatives aim to reduce health inequities and improve the lives of older adults through collective action. WHO developed the Integrated Care for Older People (ICOPE)

Guidelines to guide the implementation of the strategy and action plan[23,24]. ICOPE guidelines provide a framework for screening, assessing, and managing intrinsic capacity declines among older adults, with a focus on fall prevention.

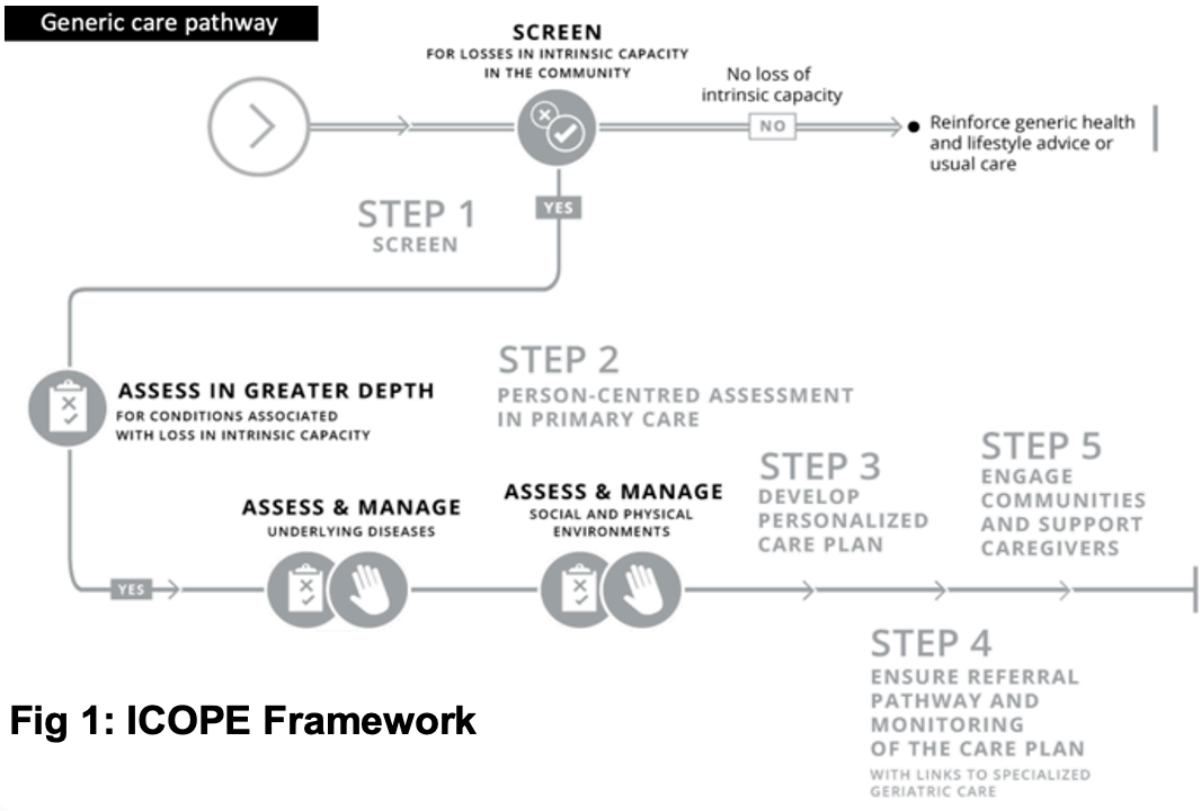



**Fig 1: ICOPE Framework**

ICOPE uses a person-centered, integrated care approach to address fall risks such as muscle weakness, poor balance, impaired vision or hearing, medication use, and environmental hazards. The care pathway involves community-level screening by Community Health Workers (CHWs). This is followed by assessment, management, and development of personalized care plans at primary health care (PHC) facilities; as well as an active effort to engage the communities. ICOPE care pathway is scalable per its framework steps (Fig 1) based on available resources[24].

### 2.2 Interventions Implemented to Address Falls among Older Adults

**ICOPE Implementation:** ICOPE has been adopted in many countries since its development in 2017. A narrative review of ICOPE adoption in 18 sites across countries was published in 2022. However, the studies focused on implementation outcomes, including feasibility, fidelity, and adoption, and not clinical outcomes[25]. Refer to the Table below for selected studies.

**Table 1: Selected ICOPE Intervention Studies Addressing Falls Among Older Adults**[25]

| Author | Methods and Finding | Strengths and Limitations |
|---|---|---|
| Alekhina et al., 2021, Voronezh, Russia[25] **(High-income)** | **Facility-focused:** Primary care physicians used the ICOPE app to screen patients aged 65 and older for functional ability. **Findings:** Improved physical activity levels and reduced fall incidents. | **Strengths:** Effective use of mobile technology; **Limitations:** Limited to primary care facility setting. No community components. |
| Mathur et al., 2021[25], Jodphur, Rajasthan, India **(LMIC)** | **Community-focused:** CHWs conducted IC screenings at home for older adults. **Findings:** Identified significant hearing and mobility issues. No care was provided. | **Strengths:** Reached rural and low-literacy populations **Limitations:** Follow-up hindered by COVID-19. |

**Other Recent Interventions Addressing Falls among Older Adults:** While other interventions have not used ICOPE guidelines for fall prevention, most apply similar strategies.

**Table 2: Other (Non-ICOPE) Interventions for Addressing Falls among 60+ Adults**[26]

| Author | Methods and Findings | Strengths and Limitations |
|---|---|---|
| Mackenzie, 2021, Australia [26]**(High-income)** | **Integrated (Facility+Community):** Exercise, medication review, orthostatic hypotension management, home hazard assessment, incontinence, vision, podiatry/ footwear, cognitive decline, and fall prevention strategies. Delivered by general practitioners & project coordinators. **Findings:** Feasibility, penetration, and adoption demonstrated; Satisfaction, experiences, and perspective improved among 60+ adult patients. | **Strengths:** Comprehensive, individualized interventions; **Limitations:** Feasibility and sustainability concerns |
| Gholamzadeh, 2021[26], Iran **(LMIC)** | **Integrated (Facility+Community):** Exercise (strength and balance), medication review, community safety, home hazards, risk behavior, vision, footwear and clothing hazards assessments. Vitamin D, and calcium supplementation. Delivered by clinicians, trainers, and CHWs. **Findings:** Enhanced fall self-efficacy, behavioral change, and reduced falls among older adults. | **Strengths:** Cultural and linguistic tailoring; **Limitations:** Short duration, limited follow-up, and lack of sustainability |

Similar to the ICOPE interventions, the other existing non-ICOPE interventions also had limited clinical effectiveness outcomes, and mostly focused on implementation strategies/outcomes.

### 2.3 Contextual Considerations for Falls Intervention Implementation in Nigeria

**2.3.1 Geographic, Socioeconomic, and Cultural Context:** Nigeria's urban-rural divide impacts fall risk, with rural areas facing more challenges such as poor infrastructure, limited healthcare access, and uneven terrain. Older adults living in rural areas are more likely to live alone in secluded areas and suffer visual impairment, dementia, and other age-related health declines, making them more prone to falls[12,17]. Seasonal changes like slippery environs during the rainy season and high temperatures causing dehydration, and outdoor occupations such as petty trading increase fall risk among older adults in these areas. Other factors include poor housing quality, inadequate lighting, as well as limited access to home modifications, assistive devices, and proper nutrition among older adults due to higher poverty levels[7,12,18]. Against this backdrop, focusing interventions on rural areas would enhance equity and health access.

**2.3.2 Political Context:** Previous administrations showed little political will for older adults and healthcare. Under President Ahmed Bola Tinubu, in office since May 29, 2023[27], significant investments have been made, including appointing technocrats to key health positions. These include the Federal Minister of Health and Social Welfare (August 2023)[28] and the Chief Executive Officer (CEO) of the National Primary Healthcare Development Agency (NPHCDA) in October, 2023[29]. The President's Health Sector Renewal Investment Initiative has increased health budget allocation, boosted Basic Healthcare Provision Fund (BHCPF) funding, and has a huge ambition to double functional PHCs to 17,618 by 2027, retrain frontline healthcare workers, and promote pooled and local procurement of medical equipment and commodities[30].

**2.3.3 The Nigerian Health System Structure (Streamlined to Fall-Related Intervention):** Nigeria's health system operates at three levels: Federal, State, and Local Government Areas (LGAs).

The Federal Ministry of Health and Social Development oversees health issues nationwide, with the Department of Public Health (DPH) leading population health-related intervention efforts[31]. The NPHCDA, under DPH, manages PHC services at the LGA level through its state structure - the State Primary Healthcare Development Agency (SPHCDA)[32]. The National Senior Citizens Centre (NSCC) under the Ministry of Humanitarian Affairs addresses the needs of older adults, promoting their socioeconomic well-being. These agencies collaborate to provide comprehensive elderly care[33]. The Department of Special Projects at FMOHSW and SMOH supports high-priority interventions with technical and funding aid[31]. Non-profits and donor-funded organizations leverage the existing health system structure and partner with the government to implement activities.

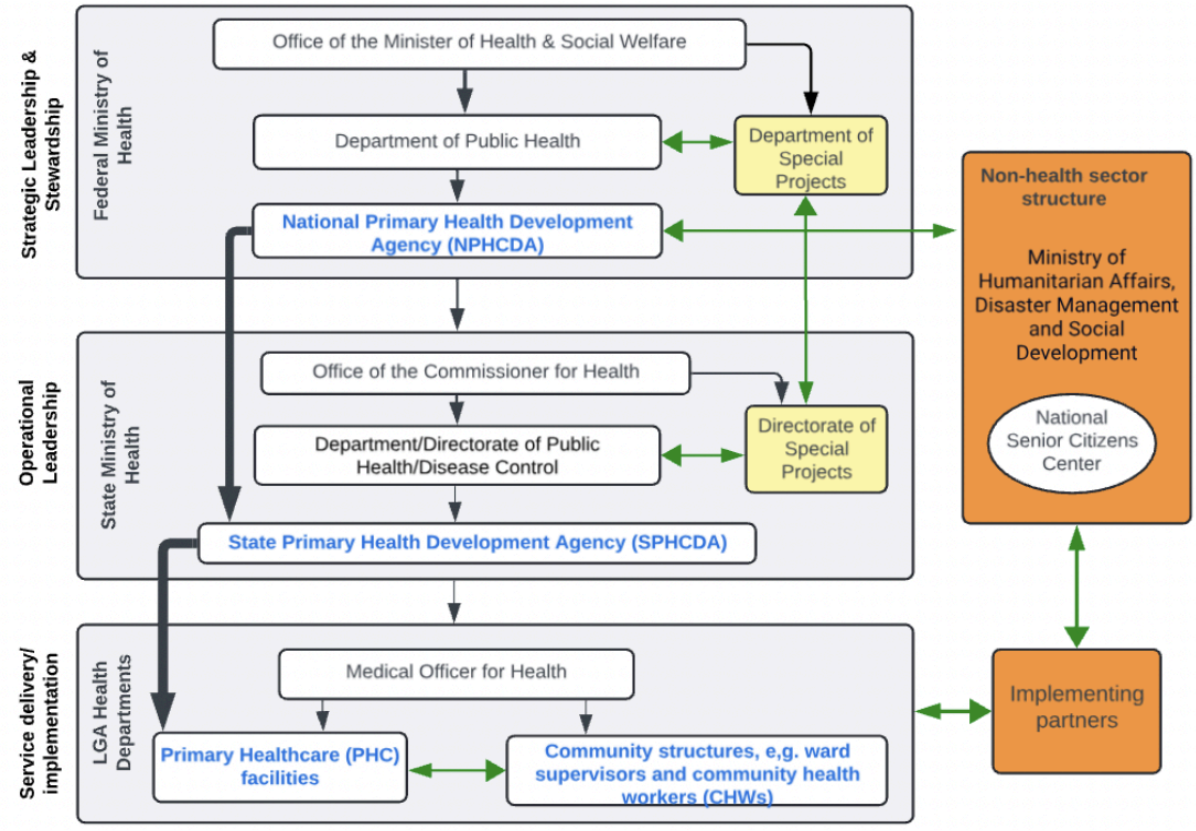



***Fig 2:*** *The Nigerian Health System and Relevant Structures for Implementation of Fall-Related Interventions for Older Adults.*

**Existing Gaps:** Despite the existence of the above structures, policies, and strategic plans, e.g., the National Strategic Road Map on Aging[34], geriatric services remain sub-optimal. No PHCs countrywide offer tailored geriatric services[35,36].

## 3.0 Intervention Options and Recommendations for Addressing Falls among Older Adults

### 3.1 Intervention Options

Considering the above context**,** 2 intervention options with distinct pathways are proposed:

**Table 3: Intervention Options for Fall Prevention among Older Adults**

| **Component** | **Intervention Option 1: Safe Steps Community Program** | **Intervention Option 2: ElderCare Integrated Program** |
|---|---|---|
| Focus and delivery format | Focus on fall prevention services delivered by Community Health Workers (CHWs) - **Community-centric, grouped care.** | Focus on integrating fall prevention interventions into PHC routine services, with complementing community elements, tailored to each patient's need (**facility + community integrated and personalized care** |
| Who Delivers care | Primarily CHWs | By CHWs (at community-level) and by PHC staff e.g clinicians (at health facility level) |
| Patient Recruitment | In community centers. | CHW care at patient's home, with periodic clinic visits by patient to the PHC facility |
| **Service Delivery/Core Intervention Components**: | | |
| Physical acti-vity program | Group exercises organized at central community centers. | Personalized exercise plan done with clinician at the PHC; follow-up at home by CHW |
| Home & En-vironmental Modifications | Workshops at community centers to educate patients on fall prevention techniques. | - Initial and follow-up patient home and environmental risk assessment by CHWs, reviewed by PHC clinicians for expert advice. |
| Medication Review, Screening, Care, Referral, and Follow-up | - Initial screening for causes and risks of fall with questions per the ICOPE app during community sessions, with one-way referral to PHC. No follow-up by CHW | -Screening for falls risk and causes with using the ICOPE app by CHWs during patient home visits. Simple kits e.g. portable blood pressure kit, thermometer will be used for screening; 2-way referral to PHC for further assessment and personalized care. CHW to follow-up |

Note: Structural interventions such as training, high-level advocacy, and provision of resources would apply to both. ElderCare will require resources for both community and PHC Care.

### 3.2 Program Prioritization

Considering the funding constraints due to federal cutbacks, prioritizing programs is essential. The Peoples-Sheps et al (1996) Model[37] systematically assesses and ranks program options based on specific criteria to identify the most effective solution. Refer to the table below:

**Table 4: Prioritization Matrix for Ranking of the Intervention Option A (Safe Steps) and B (ElderCare) based on the above-listed Range of Criteria Scores and Weights**.

| Option/ Criteria | Impact on fall prevention outcomes(3) | Alignment with global & natio-nal priorities 3) | Resource/costs requirements (3) | Sustainability & Scalability Potential (3) | Total |
|---|---|---|---|---|---|
| SafeSteps | 2x3=6 | 3x3=9 | 3X3=9 | 2x3=6 | 30 |
| ElderCare | 3x3=9 | 3x3=9 | 2x3=6 | 3x3=9 | 33 |
| **Description of Criterion Scores and Weights Breakdown** | | | | | |
| **Impact on Fall Prevention Outcomes:** 1 – Low**;** 2 – Medium**;** 3 - High | | **Alignment with global & national priorities:** 0 = Does not align; 1 = Somewhat aligns**;** 2 = Greatly aligns; 3 = significantly aligns | | **Feasibility:** 0 - Not feasible; 1 - Somewhat feasible**;** 2 – Feasible; 3 - Very feasible | |
| **Sustainability & Scalability potential:** 1-Low; 2 -Medium; 3 -High | | **Weights Breakdown** 1 - Important; 2 - More Important; 3 - Most Important | | | |

ElderCare has a higher impact due to personalized care (home visits by CHWs and care plans at PHCs) and specialized referrals and aligns more closely with WHO and national recommendations, including ICOPE. However, Safe Steps will cost less, but ElderCare offers a lot more for its slightly higher costs (value for money). ElderCare is more sustainable and scalable, integrating fall prevention into routine PHC services, impacting more directly on health outcomes. ElderCare is therefore recommended for its higher impact, better alignment with priorities, and greater sustainability and scalability, despite its slightly higher costs.

### 3.3 Selected Program: ElderCare

#### 3.3.1 Program Theoretical Framework

The Socioecological Model (SEM)[5] and Social Cognitive Theory (SCT)[38] will guide the design and implementation of ElderCare. SEM identifies relevant interventions at individual, interpersonal, community/organizational, and societal levels. SCT informs the specific intervention components needed to achieve desired changes at each SEM level. Figure 3 below illustrates the combined SEM and SCT framework.

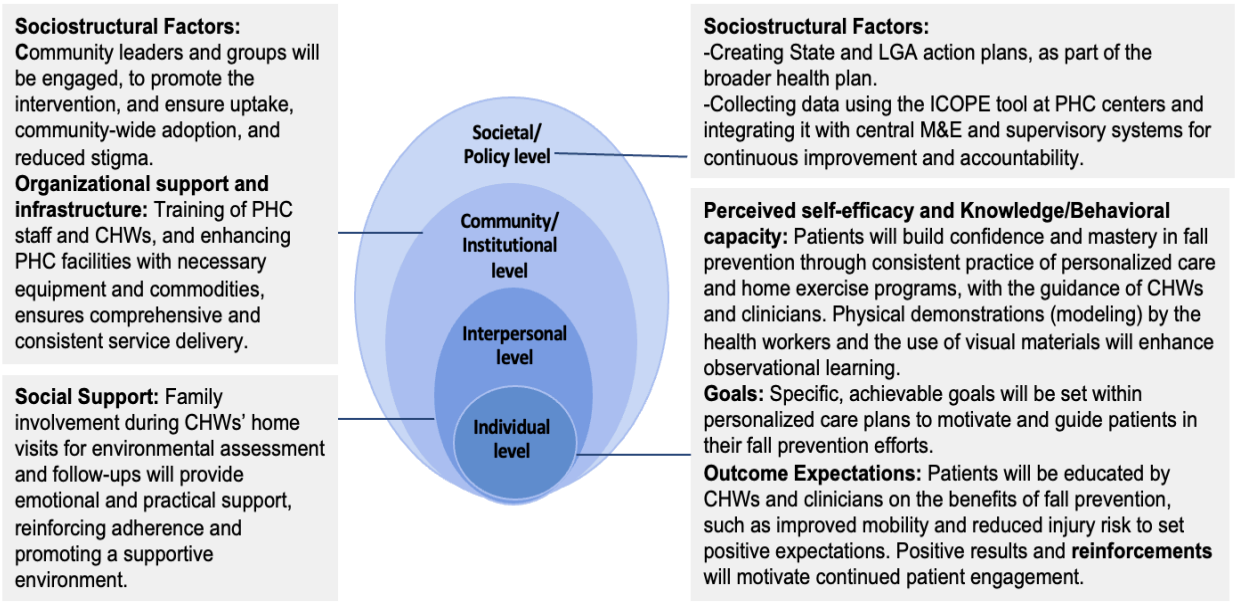



Fig 3: Socioecological Model (SEM) and Social Cognitive Theory (SCT) Program Framework.

#### 3.3.2 Program Location

The project's pilot implementation will be situated in Lagos State. Lagos is chosen for its diverse demographics, including wealth, age, geography, urban and rural mix, and varied religious/ethnic groups. Lagos represents a microcosm of Nigeria's health and socioeconomic landscape, making it an ideal setting for the pilot[39]. Successful implementation in Lagos can serve as a blueprint for adaptation and replication across Nigeria.

**Program Sites:** As earlier highlighted, the best-fit setting for the pilot intervention will be a rural setting, where there is lesser access to healthcare due to geography and socioeconomic

factors. In Lagos, 4 of 20 LGAs are rural: Ikorodu, Epe, Ibeju-Lekki, and Badagry[40]. One comprehensive PHC facility per LGA located centrally will be selected, with 2 as intervention sites and 2 as control sites. For fairness, control sites will be prioritized for implementation during the project's scale-up.

### 3.3.3 Program Beneficiaries/Participants

The primary beneficiaries are older adults aged 60 and over in the selected LGAs. The non-target population includes PHC staff, CHWs, community leaders and groups, the ElderCare project team, and involved government officials and agencies. Refer to the table below.

**Table 5: Program Sites and Population of Older Adults aged 60+ (Target Population)**[41,42]

| PHC and Location | 2024 Population |
|---|---|
| **Intervention site 1:** Ajara PHC (located in Ajara, central Badagry | 17,940 |
| **Intervention site 2:** Epe PHC (located by a major road in Epe). | 19,473 |
| **Control site 1:** Ibeju PHC (located in Ibeju-Agbe, a more central community in Ibeju/Lekki LGA) - matched with intervention site 1 | 26,985 |
| **Control site 2:**Ikorodu/Ita Elewa PHC (located on Oriwu Road, a central area in Ikorodu LGA) - matched with intervention site 2 | 52,811 |
| **Total (Intervention sites = 37,413 + Control sites = 79,796)** | 117,209 |
| **Estimates from 2020 U.S Census Bureau dataset[43] + 2024 growth rate (GR) of 3.7%[42]. A comprehensive dataset is also available for gender (disaggregated).* | |

### 3.3.4 Implementing Organization

Following a comprehensive country-wide assessment of implementing partner organizations, Apin Public Health Initiatives has been selected to implement the project. Apin has extensive expertise in managing local and international grants for non-communicable ailments, primary healthcare (PHC), and community health interventions. Apin has a strong presence and established networks in Lagos, with a deep understanding of the local context[44]. They will leverage existing health system structures and partner with the government for effective

delivery. Our team - Edima Ottoho, Gift Nwanne, Sam Onwubiko, and Maryam Al-Mujtaba will work closely as external consultants to provide technical and strategic support to Apin team.

### 3.3.5 Apin ElderCare Project Team

A Project Director will be recruited for overall coordination, supported by other staff with a 100% Level of Effort (LOE). They include 1 Program Specialist, 1 M&E Specialist, 1 Administrative and Finance Coordinator, 1 Procurement & Logistics Coordinator (PLC), and 1 Driver. The team will collaborate with other Apin projects in the State for strategic alignment and will be provided office space within the Apin Lagos office building complex.

### 3.3.6 Program Implementation: Objective and Activities

**Program Objective:** To reduce the incidence of falls by 50% among older adults (60 years and above) in rural Lagos State through integrated community and facility-based interventions.

**Program Duration:** Pilot implementation will be for 2 years in Epe and Badagry LGAs, of which the first 6 months will be for planning activities, 15 months for actual service delivery, and the last 3 months for final evaluation.

**1.0 Planning Phase: 6 months (July to December, 2024)**

*Activity 1.1.* Office setup - An office space will be set up within the Apin Lagos office complex for the ElderCare project team, handled by the Apin Lagos central Administrative team in month 1 **(July 2024)**. Required furniture, fittings, and office equipment and supplies will be provided.

*Activity 1.2.* The ElderCare project team will also be recruited by the Apin Lagos central office team from **July to August, 2024**. The estimated duration for the hiring process is 1 month, and resumption will be in **mid-August 2024**.

*Activity 1.3.* Recruitment of Long-term Consultants: The Apin central office, with the ElderCare Administrative and Finance coordinator, will recruit long-term consultants from August to September 2024. These consultants will provide specialized expertise and ensure intervention fidelity through advanced technical training, supervision, and support. The team will include 1

Technical, 2 Evaluation, 1 Communications & Partnership Development, and 1 Technology Support Consultants. They will embed with the core project team, with hybrid work flexibility.

*Activity 1.4.* Quantification and one-time procurement of commodities and equipment for the project team and for service delivery: These will include mobile tablet for the ICOPE app, blood pressure monitors, scales, vision screening equipment, resistance bands, balance boards, medication review tools, pill organizers, grab bars, non-slip mats for exercise, and supplements (vitamin D, calcium, multivitamins). This will occur from **October to December 2024**. Bi-monthly distributions to PHCs will start in **January 2025**, handled by the Apin ElderCare Procurement and Logistics Coordinator (PLC) in collaboration with the Lagos State Central Medical Store.

*Activity 1.5.* Production of tools: The Apin ElderCare project team, with the consultants' support, will design and produce training modules, toolkits for CHWs and PHC staff (including translations and pretesting), and visual cards for home exercise programs. M&E tools such as fall risk forms and paper data collection forms (for use when the ICOPE app fails) will also be produced. This will take place from **October to November 2024.**

*Activity 1.6* Setup of ICOPE app: The Technology Support Consultant will download and set up the ICOPE app from the WHO website, input contextual entries like facility and CHW profiles, and integrate reporting elements into the central data repository called the District Health Information System (DHIS 2.0). The tablets will be later provided to CHWs **(October 2024).**

*Activity 1.7.* A 3-day non-residential training for 8 facilitators (4 per LGA) will occur in **October 2024.** All consultants (6) will cover their aspects and will be supported by Apin Eldercare Program & M&E specialists (2) - 16 persons total.

*Activity 1.8.* Engagement and training of CHWs and assignment to residential clusters: The 2016 revised WHO recommendations state that a minimum of 4.45 skilled healthcare workers is needed per 1,000 population[45]. Considering this and the population size of 60+ adults in the intervention sites, new and existing CHWs will be engaged (79 CHWs for Badagry; and 87 CHWs for Epe). In each LGA, a 3-day, non-residential training, split into 2 section sizes of less

than 50 participants each, will be held. It will capture all components (Technical, M&E, ICOPE use and reporting, communication/community mobilization). The community town hall which is usually free for government activities will be booked for the training. All Consultants, and LGA facilitators, supported by the Apin ElderCare project team, will facilitate the sessions - 181 persons **(Nov - Dec 2024).** CHWs will be assigned to proximal home clusters.

*Activity 1.9.* All doctors, nurses, pharmacy, and lab personnel at the respective facilities will be trained on-site on fall prevention service delivery, and how to handle two-way referrals from CHWs and one-way referrals to Specialist hospitals. The estimated PHC staff number is 4 staff nurses/midwives + 1 Senior Nurse (matron), 1 visiting doctor, 1 pharmacy technician, 1 lab technician, 1 facility M&E officer in the 2 intervention facilities as per the minimum standards by the Lagos State Health Facility Monitoring and Accreditation Agency (HEFAMAA)[46]. Training will be handled by the 4 LGA facilitators, supported by the Apin Eldercare team and Consultants (20 persons total per facility x 2 = 40) - **November - December, 2024.**

**2.0 Implementation and Service Delivery (15 months - January 2025 - March 2026)**

*Activity 2.1* Community mobilization- Initial and continuous patient recruitment campaign via community events, and meetings of social and trade groups by CHWs, starting Jan 2025.

*Activity 2.2.* Home visits by CHWs: for environmental modification assessment, patient recruitment, initial screening, and referral to proximal PHC facility **(spoke-and-hub)** and periodic post-facility care visits. This is routine and will be captured on the ICOPE app. CHWs will visit each patient at least once per quarter for follow-up after the initial assessment.

*Activity 2.3.* Facility-based care by PHC staff: including medication review, development of personalized care plan, quarterly follow-up clinic appointment, and referral (where necessary) for specialized care. Reminders will be automatically triggered from the ICOPE app as SMS to patients, assigned CHWs, and the responsible hub PHC regarding upcoming appointments. Note that mobile penetration in Nigeria is at 90%, and smartphone penetration - 78% in Lagos.

**3.0 Monitoring and Evaluation (From Inception to end | Final evaluation: April-June 2026)**

*Activity 3.1.* Monthly coordination, data consolidation, and validation meeting: The LGA Health department team usually holds monthly meetings with CHWs and facility M&E staff for all programs handled at that level. Apin ElderCare will provide partial support for the meeting and issues and data on the ElderCare project will be incorporated into the agenda. Discrepancies in data, as well as implementation challenges, updates, and plans, are discussed at the meeting.

*Activity 3.2.* Quarterly Integrated Supportive Supervision (ISS) and Data Quality Assessment (DQA) Visits - This performance management mechanism already exists at the State and LGA level and includes all health interventions. ElderCare components will be integrated and the Apin ElderCare team will participate and provide partial financial support.

*Activity 3.3.* Project-specific Monitoring Visits and Spot Checks- The Program and M&E Specialists will conduct routine site monitoring visits and spot checks at patient homes to ensure activities are implemented as planned and make corrections where needed.

*Activity 3.4.* Recruitment and training of evaluation personnel: The M&E Specialist and Evaluation Consultants will recruit 20 data collectors and 4 data analysts (2 quantitative, 2 qualitative). They will form one evaluation team, receiving a 3-day non-residential training in early Nov 2024 for the baseline evaluation, and another in **Mar 2026** for the outcome evaluation.

*Activity 3.5.* Process evaluation -A baseline process evaluation will occur from **mid-November to mid-December 2024** to prepare for full implementation in January 2025. Additional process evaluations will be conducted in **July 2025, and January 2026,** involving half of the data collectors and all analysts for each quarterly evaluation.

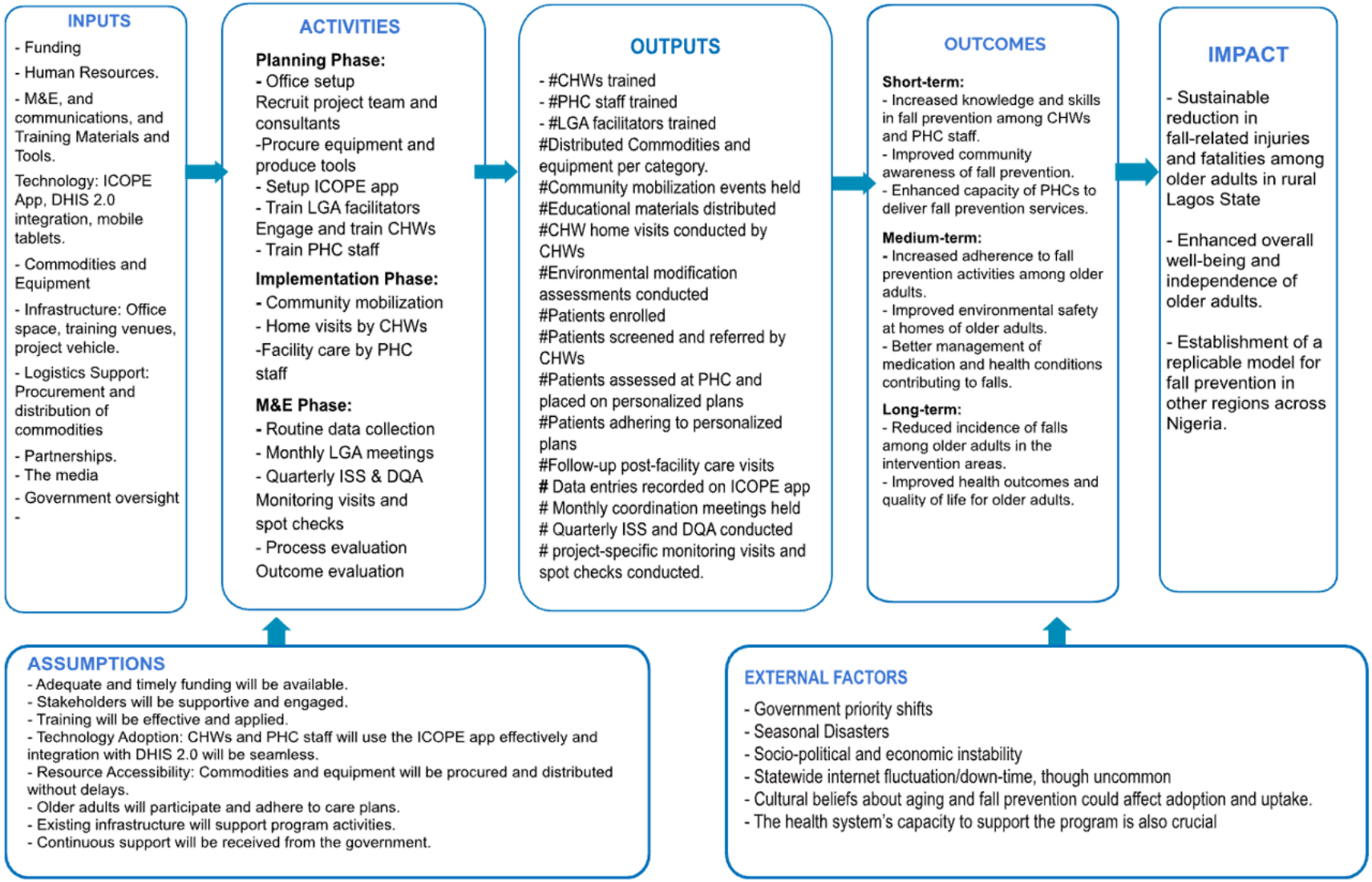
*Activity 3.6.* Outcome evaluation - Outcome evaluation will be at the end of the 15-month implementation period. **3 months (April-June, 2026).** Refer to the evaluation section.

**4.0 Partnerships Development and Advocacy**

*Activity 4.1.* Initial and Follow-up Stakeholder Engagement: At the project's inception, the Apin ElderCare team will pay courtesy visits to stakeholders at different levels to solicit support. They include heads of NSCC, LSMOH, SPHCDA, and the LGA Health Department. They will then

work closely with the LGA Health Department team to visit the political, traditional, and PHC heads, and PHC heads. The media will also be engaged to capture the process in News and Health-focused Blogs. This process will be repeated every 6 months to selected stakeholders and led by the Project Director and Communications & Partnerships Development Consultant to disseminate new project findings and achievements.

### 3.3.7 Program Logic Model



### 3.3.8 Program Timeline for Implementation and Evaluation(Gantt Chart)

| # | Activities | 2024 | | | | | | 2025 | | | | | | | | | | | | 2026 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q3 | | | Q4 | | | Q1 | | | Q2 | | | Q3 | | | Q4 | | | Q1 | | | Q2 | | |
| | | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J |
| **1.0** | **Planning Phase** | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 | Apin ElderCare office setup | x | | | | | | | | | | | | | | | | | | | | | | | |
| 1.2 | Recruit Apin Eldercare project team | x | x | | | | | | | | | | | | | | | | | | | | | | |
| 1.3 | Recruit long-term consultants | | x | x | | | | | | | | | | | | | | | | | | | | | |
| 1.4 | Procurement of commodities and equipment | | | | x | x | x | | | | | | | | | | | | | | | | | | |
| 1.5 | Production of training materials, and M&E communication tools | | | | x | x | | | | | | | | | | | | | | | | | | | |
| 1.6 | ICOPE app setup and integration with DHIS 2.0 | | | | x | | | | | | | | | | | | | | | | | | | | |
| 1.7 | Training of LGA facilitators | | | | x | | | | | | | | | | | | | | | | | | | | |
| 1.8 | Engage and train CHWs, and assignment to proximal home clusters | | | | | x | x | | | | | | | | | | | | | | | | | | |
| 1.9 | PHC staff on-site training | | | | | x | x | | | | | | | | | | | | | | | | | | |
| **2.0** | **Implementation and Service Delivery Phase** | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 | Community mobilization | | | | | | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| 2.2 | Home visits by CHWs | | | | | | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| 2.3 | Facility/PHC-based care by PHC staff | | | | | | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| **3.0** | **Monitoring and Evaluation** | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 | Monthly LGA coordination and data validation meeting | | | | | | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| 3.2 | Quarterly ISS and DQA exercise | | | | | | | | | | x | | | x | | | x | | | x | | | x | | |
| 3.3 | Project-specific monitoring visits and spot checks | | | | | | | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| 3.4 | Recruit and train evaluation personnel | | | | | x | | | | | | | | | | | | | | | | x | | | |
| 3.5 | Process evaluation | | | | | x | x | | | | | | | x | | | | | | x | | | | | |
| 3.6 | Outcome evaluation | | | | | | | | | | | | | | | | | | | | | | x | x | x |
| **4.0** | **Partnership Development and Advocacy** | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 | Initial and follow-up stakeholder engagement | | | | x | | | | | | x | | | | | | x | | | | | | x | | |

*Note: Though service delivery will continue between April and June 2026 while outcome evaluation is ongoing, it will not be accounted for in the outcome evaluation efforts. The focus will be on the 15-month implementation period.*

### 3.3.9 Adoption Plan

ElderCare will be promoted through community mobilization by CHW, partnerships with local leaders, and leveraging existing health networks. The intervention will be championed by the Apin ElderCare project team, supported by LSMOH, SPHDA, the LGA health department, the BHCPF team, and the Special Projects directorate. Other key stakeholders would include the Ministry of Humanitarian Affairs and NSCC, community leaders and groups, the media, PHC management, and other existing nonprofit organizations. Potential objections, such as resource allocation and cultural acceptability concerns would be addressed by demonstrating the intervention's effectiveness and tailoring the program to respect local customs and values. Apin ElderCare team will participate in broader stakeholder meetings e.g., the State Health Partners' forum to provide updates, and this will ensure alignment and address emerging concerns.

## 4.0 Evaluation Plan

The Mixed methods, process, and outcome evaluations will be led by the 2 Evaluation consultants. Timing and frequency of evaluation were earlier stated in Section 3.3.6. Activities.

**4.1 Evaluation Design:** Hybrid Type 2 design [47] will be employed to assess both clinical and cost-effectiveness, and implementation outcomes. This dual and balanced focus will help demonstrate health benefits and understand implementation factors in the context, providing rich insights, validated outcomes, and optimized strategies for scaling and wider adoption.

**4.2 Evaluation Aims:** Based on the chosen design, below are the evaluation aims -

i. To evaluate the implementation processes by examining the reach, adoption, and fidelity of ElderCare, and identifying factors that facilitate or hinder successful implementation within the existing health system structures.

ii. To assess the effectiveness of ElderCare by measuring health outcomes, such as fall-related improvements among older adults 60+ in rural Lagos, and the intervention's cost-effectiveness.

**4.3 Evaluation Framework:** The evaluation will consist of a cross-sectional process evaluation to assess the reach, adoption, and implementation domains of the RE-AIM framework[48]. The

outcome evaluation will assess the program's effectiveness. Maintenance will not be measured since this is a pilot phase, and it would be too early to determine whether or not it is sustainable.

**4.4 Study Design:** A pre-post, quasi-experimental study design will be employed for both process and outcome evaluations. This design allows for a comparison of outcomes between an intervention group and a non-equivalent control group while accounting for potential confounding variables, particularly aligned with the rural Lagos context.

**4.5. Sampling:** For quantitative data collection, stratified random sampling will be used to select intervention and control groups, ensuring demographic balance and representation. Maximum variation (purposive) sampling will be employed for the qualitative aspect to ensure diverse participant representation and perspectives. This applies to process and outcome evaluation.

**4.6 Sample size determination:** To determine the sample size for quantitative data collection, a 50% reduction in fall incidence is set as the project's target. As per evidence, fall incidence in Nigeria is 21.4%[12]. This is used as the baseline value, and the control group rate (p1=0.214). The intervention group is expected to reduce this rate by half, that is, to 10.7% (p2=0.107). Effect size, d = 0.29. A significance level (α) of 0.05, a power (1-β) of 0.80, and a Z-value of 1.96 is used. Using the Clinicalc.com tool (for comparing two proportions)[49]; figures earlier captured in **Table 5** for population sizes of intervention and control sites, and adjusting for non-response (10%), the final sample size = 1,329 total, further proportionally stratified as follows: Intervention sites (PHC Ajara = 204; PHC Epe = 221); and Control sites (Ijebu PHC = 306; Ikorodu/Ita Elewa PHC = 598). For qualitative data collection, 40-60 participants total will be used; some for interviews, and others for focus group discussion (FGD) of 8-12 per session.

**4.7 Ethical Considerations:** Ethical approval will be obtained from the Lagos State Ministry of Health's ethical review committee. Informed consent will be sought from all participants, ensuring they understand the purpose, risks, benefits, and their voluntary participation rights, with the option to refuse or withdraw without consequences. Confidentiality and data security will be strictly maintained, with only authorized individuals accessing identifiable data.

## 4.8 Evaluation Questions, Data Collection Methods, Indicators, and Data Sources:

**Table 7: Process and Outcome Evaluation Matrix**

| Evaluation Question & RE-AIM construct | Quantitative measures | Qualitative domains | Data Sources |
|---|---|---|---|
| **Reach:** To what extent was the target population reached with the intervention? | -Proportion of 60+ adults participating in the intervention (by age, gender, etc) | Barriers and facilitators to access; perceived inclusiveness ***Context** | Patient records; Interviews; Focus Groups; Surveys with patients and providers |
| **Adoption:** To what extent was the intervention adopted by patients, CHWs, and PHC staff? | -Adoption rate: % of patients, PHC staff, and %CHW who have adopted the initiative | -Facilitators and barriers to adoption<br>-Perceived readiness and acceptance<br>***Context** | Facility/LGA records on service delivery; Program progress reports; Interviews; FGDs with patients |
| **Implementation:** To what extent was Elder Care delivered as planned? ***Fidelity** | -% deviations from plan and intervention protocol (weighted scoring) | -Adaptations made during service delivery and reasons | -Implementation monitoring and supervision reports, Provider interviews |
| **Implementation:** To what extent were the planned activities delivered? ***Dose delivered** | Resource utilization rate; %clinic visits; %CHW visits and assessments; %training and site visit | - Reported challenges and facilitators with implementation | - Program, financial, and logistical reports.<br>- Quarterly ISS/DQA reports; Interview with PHC staff and CHWs |
| **Implementation:** To what extent were participants engaged, and satisfied?***Dose received** | - Engagement rate (number of clinic visits/sessions versus total expected per period) | - Patient satisfaction with care received; Patient perceived benefits and barriers to engagement. | -Patient feedback surveys; FGD, Interviews,<br>-Program reports; Service registers |
| **Effectiveness:** To what extent did patients demonstrate changes in knowledge, attitudes,self- efficacy? | Observable and documented changes in knowledge levels and self-efficacy levels. | - Patients' self-reported changes in knowledge, attitudes, and self-efficacy as a result of ElderCare | - Patient records (e.g. trend chart on ICOPE app); Patient interviews, FGDs, and surveys |
| **Effectiveness:** To what extent did the intervention impact actual clinical outcomes such as fall incidence among 60+? | - Change in fall incidence rate);<br>- Change in physical activity levels and injury severity scores. | - Patient experiences and perceived health benefits;<br>-Satisfaction with health outcomes. | Patient records; patient and provider surveys; Reports from baseline, midterm, and end-of-program analysis. |
| **Effectiveness:** To what extent is the intervention cost-effective in preventing falls among 60+? | Cost per fall prevented; Cost per Quality Life Adjusted Year (QALY) gained; | Patients, healthcare workers, and other stakeholders' perceived cost versus benefits of ElderCare | Financial records, patient records, program reports, FGDs, Interviews |

**4.9 Data Analysis:** For the quantitative component of the ElderCare evaluation, quantitative indicators will be actively tracked during service delivery efforts. This will be documented in patient records, and facility and program progress reports. Data analysis will involve calculating proportions, means, and changes in key indicators such as fall incidence rates, adoption rates, and resource utilization rates. Statistical tests (e.g., t-tests, chi-square tests) will be employed to compare baseline and follow-up data, and between intervention and control groups. For the qualitative components, content analysis of interviews and focus group discussions (FGDs) will be conducted. This will involve a structured approach: familiarization, identification of a thematic framework, indexing, charting, mapping, and interpretation. Themes will be identified a priori as per the interview guides and additional themes that emerge during the analysis. Coding will be performed using qualitative data analysis software to ensure systematic and comprehensive analysis. A key advantage of the evaluation's mixed methods approach is the triangulation of qualitative and quantitative data to help draw objective and holistic inferences from its findings.

**4.10 Dissemination Plan:** To disseminate evaluation findings, various tailored channels will be used. Key stakeholders such as the health ministry, partners' forum, and policymakers will receive executive summaries via emails and high-level meeting presentations. PHC staff, CHWs, and community leaders will get visual summaries. Seminar and conference audiences will see presentations and posters. Patients and community members will receive pamphlets during clinic visits, informational sessions, and community mobilization activities. Findings will be published in academic journals for researchers and public health professionals. The general public will be informed through social media, local newspapers, and TV shows.

## 5.0 Sustainability Plan

To ensure sustainability, ElderCare activities will be integrated into the Lagos State Ministry of Health (LSMoH) Annual Operational Plan (AOP) and budget, developed annually between July and August from 2026, to ensure long-term funding. The AOP uses a sector-wide approach (SWAP) for financing activities. Program components will also be included in the State's ISS

and DQA process. Service delivery data will be tied to the health ministry's standard indicators and fed into the DHIS 2.0. ElderCare is designed to integrate into the routine PHC service delivery. The strategic effort from my office (Office of the Minister of Health and Social Welfare) will be to prioritize ElderCare in the ongoing presidential health sector renewal initiatives. E.g., prioritize ElderCare medical equipment supplies in the pooled procurement, local manufacturing, the Basic Healthcare Provision Fund (BHCPF), and the expanding National Health Insurance Scheme (NHIS), PHC renovations, and frontline health workers' training.

## 6.0 Scale-Up Plan

The scale-up plan aims to extend the program's reach and impact beyond the pilot phase and to other locations. Following a robust evaluation of the pilot program's implementation and clinical outcomes, insights will be gained for improvements and scale-up to other states. The scale-up will involve a phased approach, starting with adjacent regions and eventually expanding to a national level. This will ensure manageable growth and allow for iterations based on lessons learned during implementation. ElderCare will use similar health system care delivery and financing structures for scale-up efforts. Apin will continue to manage the project in States where they have a presence. However, another local partner would be engaged, if otherwise.

## 7.0 Program Budget and Budget Narrative

**Budget Summary:** The total project budget sums to **$781,182** (which is also equivalent to the naira, **N902,583,746**). Refer to the detailed budget below. The proportion spent on each line item are Salaries - 10.7%; Benefits - 2.6%; Consultants - 26.6%; Actual program implementation and evaluation - 25.5%; Other direct costs - also 19.3%; and Overhead costs - 15.3%.

**Budget Narrative:**

This budget narrative explains the budget line items and their cost estimates, derived through consultations with key personnel from Apin Public Health Initiatives. The estimates are based on standard rates for Apin's projects in Lagos and Abuja. Pilot funding will come from the Special Projects and Disease Control directorates, and the BHCPF **as a pooled grant sum to Apin**.

**Inflation:** A 33% inflation rate in Nigeria (as of May 2024) is applied to program implementation, evaluation costs, and other direct costs to maintain financial feasibility despite market price fluctuations. Salaries are not adjusted for inflation as it is not the statutory practice.

**Annual Salary Increment:** A 5% increment is applied to annual salaries, and benefits, in line with Apin's HR policy. This is not applied to consultants as their contracts are fixed.

**Foreign Exchange Rate:** The budget is calculated in both Naira and USD for the benefit of foreign partners, using an exchange rate of 1,420.50 Naira to 1 USD (as of May 2024).

**A. Salaries - $83,703:** The budget allocates annual net salaries for a variety of full-time positions, including technical and support staff, to ensure effective program implementation.

**B. Benefits - $19,921:** Fringe benefits are 23.8% of annual salaries, covering health insurance and retirement plans. Consultants and contractors do not receive fringe benefits.

**C. Consultants - $208,023:** Fees will be provided for 4 long-term consultants with at least a Master's degree and 5-10 years of experience, providing specialized expertise. Note that hiring long-term consultants saves costs on benefits.

**D. Program Implementation and Evaluation: $199,485**

**D1.0 Program Implementation:** This includes costs for training workshops, meetings, and CHWs' and facilitators' stipends. CHW stipends are the project's contribution to their existing government payment, in alignment with the new increase by the Federal government[50].

**D2.0 Program Evaluation:** Evaluation will require funds for personnel recruiting, training, allowances, tool production, dissemination, and report writing.

**E. Other Direct Costs- $150,887:** These will include costs for procurement of a project vehicle (and its maintenance), laptops, tablets, furniture, recruitment, medical and office consumables, and equipment, media fees, postal fees, among other items directly used on the project.

**Overhead Costs - $119,163:** 18% of total direct costs, will be meant for overhead costs. The project will contribute toward rent, facility management, utility bills, general office supplies, and certain shared equipment maintenance since the team will be embedded in Apin's building.

## Detailed Program Budget

| | LINE ITEMS | YEAR 1 UNIT COST(₦) | MEASURE | #MEASURE | # UNITS | YEAR 1 TOTAL(₦) | YEAR 2 TOTAL(₦) | YEARS 1 & 2 TOTAL(₦) | YEARS 1 & 2 TOTAL (USD) |
|---|---|---|---|---|---|---|---|---|---|
| A. | **SALARIES (ANNUAL)** | | | | | | | | |
| 1.0 | **Technical Staff** | | | | | | | | |
| 1.1 | Program Director | 16,000,000 | LOE | 100% | 1 | 16,000,000 | 16,800,000 | 32,800,000 | 23,090 |
| 1.2 | Program Specialist | 13,000,000 | LOE | 100% | 1 | 13,000,000 | 13,650,000 | 26,650,000 | 18,761 |
| 1.3 | Monitoring & Evaluation Specialist | 13,000,000 | LOE | 100% | 1 | 13,000,000 | 13,650,000 | 26,650,000 | 18,761 |
| 2.0 | **Support Staff** | | | | | | | | |
| 2.1 | Administrative & Finance Coordinator | 9,500,000 | LOE | 100% | 1 | 4,750,000 | 4,987,500 | 9,737,500 | 6,855 |
| 2.2 | Procurement & Logistics Coordinator | 9,500,000 | LOE | 100% | 1 | 4,750,000 | 4,987,500 | 9,737,500 | 6,855 |
| 2.3 | Driver | 6,500,000 | LOE | 100% | 1 | 6,500,000 | 6,825,000 | 13,325,000 | 9,380 |
| | **Subtotal-Salaries (Annual)** | | | | | **58,000,000** | **60,900,000** | **118,900,000** | **83,703** |
| B. | **BENEFITS** | | | | | | | | |
| 1.0 | Fringe Benefits | 23.8% of Salaries - Annual, | | | | 13,804,000 | 14,494,200 | 28,298,200 | 19,921 |
| | **Subtotal-Benefits** | | | | | **13,804,000** | **14,494,200** | **28,298,200** | **19,921** |
| C | **CONSULTANTS** | | | | | | | | |
| 1.1 | Technical Consultant | 12,000,000 | Fee/year | 100% | 1 | 12,000,000 | 12,000,000 | 24,000,000 | 16,895.46 |
| 1.2 | Evaluation Consultant | 12,000,000 | Fee/year | 100% | 2 | 24,000,000 | 24,000,000 | 48,000,000 | 33,790.92 |
| 1.3 | Comms & Partnership Consultant | 12,000,000 | Fee/year | 100% | 1 | 12,000,000 | 12,000,000 | 24,000,000 | 16,895.46 |
| 1.4 | Technology Support Consultant | 12,000,000 | Fee/year | 100% | 1 | 12,000,000 | 12,000,000 | 24,000,000 | 16,895.46 |
| | **Subtotal-Consultants** | | | | | **60,000,000** | **60,000,000** | **120,000,000** | **208,023** |
| D | **IMPLEMENTATION & EVALUATION** | | | | | | | | |
| 1.0 | **Program Implementation** | | | | | | | | |
| 1.1 | Training workshops | 17,000 | Person/day | 7 | 198 | 23,562,000 | | 23,562,000 | 16,587.12 |
| 1.2 | CHW stipends + transport | 35,000 | person/yr | 18 | 166 | 104,580,000 | 139,091,400 | 243,671,400 | 171,539.18 |
| 1.3 | LGA facilitators stipends | 15,000 | Person/day | 3 | 8 | 360,000 | | 360,000 | 253.43 |
| 1.4 | Meetings | 10,000 | Person/day | 20 | 20 | 4,000,000 | 5,320,000 | 9,320,000 | 6,561.07 |
| 2.0 | **Program Evaluation** | | | | | | | | 0.00 |
| 2.1 | Recruitment of evaluation personnel | 80,000 | event | 1 | 1 | 80,000 | | 80,000 | 56.32 |
| 2.2 | Training of evaluation personnel | 17,000 | person/day | 3 | 26 | 1,326,000 | 1,763,580 | 3,089,580 | 2,174.99 |
| 2.3 | Production of evaluation tools | 120,000 | per bundle | 1 | 1 | 120,000 | 159,600 | 279,600 | 196.83 |
| 2.4 | Dissemination and report writing | 75,000 | bundle | 1 | 1 | 75,000 | 99,750 | 174,750 | 123.02 |
| 2.6 | Allowances of M&E/Data personnel | 15,000 | person/day | 3 | 27 | 1,215,000 | 1,615,950 | 2,830,950 | 1,992.93 |
| | **Subtotal-Activity costs** | | | | | **135,318,000** | **148,050,280** | **283,368,280** | **199,485** |
| E | **OTHER DIRECT COSTS** | | | | | | | | |
| 1.1 | Project vehicle procurement | 42,000,000 | item | 1 | 1 | 42,000,000 | | 42,000,000 | 29,567.05 |
| 1.2 | Vehicle maintenance | 500,000 | item | 1 | 1 | 500,000 | 525,000 | 1,025,000 | 721.58 |
| 1.3 | Laptops | 250,000 | item | 1 | 6 | 1,500,000 | | 1,500,000 | 1,055.97 |
| 1.4 | Tablets for ICOPE app &integration | 60,000 | item | 1 | 166 | 9,960,000 | | 9,960,000 | 7,011.62 |
| 1.5 | Furniture and fittings | 6,000,000 | bundle | 1 | 1 | 6,000,000 | | 6,000,000 | 4,223.86 |
| 1.6 | Equipment - office & service delivery | 15,000,000 | bundle | 1 | 3 | 45,000,000 | 47,250,000 | 92,250,000 | 64,941.92 |
| 1.7 | Medical consumables/supplies | 15,000,000 | bundle | 1 | 2 | 30,000,000 | 31,500,000 | 61,500,000 | 43,294.61 |
| 1.8 | Personnel hiring costs | 100,000 | event | 1 | 1 | 100,000 | | 100,000 | 70.40 |
| | **Subtotal- Other Direct costs** | | | | | **135,060,000** | **79,275,000** | **214,335,000** | **150,887** |
| | TOTAL DIRECT COSTS | | | | | 402,182,000 | 362,719,480 | 764,901,480 | 662,019 |
| | OVERHEAD | (18% of Total Direct Costs) | | | | 72,392,760 | 65,289,506 | 137,682,266 | 119,163.41 |
| | GRAND TOTAL | | | | | **474,574,760** | **428,008,986** | **902,583,746** | **781,182** |

## 8.0 Program Strengths and Limitations

Strengths: ElderCare's comprehensive design integrates community and PHC components and targets a vulnerable group (older adults in rural areas), thereby promoting access and equity. It uses evidence-based frameworks (SCT + SEM) and aligns global priorities (population aging) and recommendations (ICOPE guidelines). It leverages existing health system structures and strengthens local HR and institutional capacity. The evaluation uses the robust RE-AIM framework and mixed methods, with a plan to track changes over time.

Limitations: Although plans are in place for diversified funding, ElderCare will require a relatively significant amount of resources to implement at scale. The choice of rural implementation could pose logistical challenges, and the use of technology (ICOPE app) could pose proficiency and system failure hitches (though there is a backup plan to use paper tools). For the evaluation, potential biases exist with self-reported data. Also, if many patients drop out, it could affect results (attrition). Certain findings may not be generalizable due to contextual peculiarities. The quasi-experimental study design introduces specific threats to validity e.g., selection bias due to lack of random assignment, and confounding variables influencing outcomes.

## 9.0 Conclusion

ElderCare aims to reduce the high incidence of falls and improve health outcomes and quality of life for older adults 60+ through integrated community and facility-based interventions. The focus on falls, rather than other unintentional injuries, is driven by the significant burden of falls and the limited existing geriatric care interventions. Additionally, its primary care prevention approach saves potential future health system costs from specialist care. ElderCare's activities include community mobilization, home visits by CHWs, facility-based care, and capacity-building efforts, ensuring a holistic and sustainable intervention. The program's design, using evidence-based frameworks, alignment with global health priorities and recommendations, and thorough evaluation plan provide a strong foundation for success. The pilot effort in Lagos will serve as a proof-of-concept and blueprint for nationwide replication.

## References


1. WHO. Unintentional Injuries. World Mortality Database. Published 2024. Accessed June 7, 2024. https://platform.who.int/mortality/themes/theme-details/topics/topic-details/MDB/unintentional-injuries

2. WHO. Injuries and Violence - Key Facts. Published 2024. Accessed June 7, 2024. https://www.who.int/news-room/fact-sheets/detail/injuries-and-violence

3. Venkatashiva RB, Pundhir A, Gupta A. Unintentional Injury and its Determinants among Adolescents. *J Public Health Res*. 2021;10(4):jphr.2021.2359. doi:10.4081/jphr.2021.2359

4. McKinzie JP. *Understanding Global Health - Injury and Global Health.* 2nd ed. The McGraw-Hill Companies; 2014. Accessed June 8, 2024. https://accessmedicine.mhmedical.com/content.aspx?bookid=710&sectionid=46796914

5. Agency for Toxic Substances and Disease Registry. Models and Frameworks for the Practice of Community Engagement. Published 2015. Accessed June 7, 2024. https://www.atsdr.cdc.gov/communityengagement/pce_models.html

6. WHO. Fact Sheet - Drowning. Published 2023. Accessed June 8, 2024. https://www.who.int/news-room/fact-sheets/detail/drowning

7. Oduoye MO, Adedayo AE, Javed B, et al. Falls among older adults in Nigeria; public health implications and preventive measures. *International Journal of Surgery: Global Health*. 2023;6(5). doi:10.1097/GH9.0000000000000305

8. Khan NU, Khan U, Khudadad U, et al. Trends in mortality related to unintentional poisoning in the South Asian region from 1990 to 2019: analysis of data from the Global Burden of Disease Study. *BMJ Open*. 2023;13(2):e062744. doi:10.1136/bmjopen-2022-062744

9. Yin B, He Y, Zhang Z, et al. Global burden of burns and its association with socio-economic development status, 1990–2019. *Burns*. 2024;50(2):321-374. doi:10.1016/j.burns.2023.02.007

10. World Bank. Mortality caused by road traffic injury (per 100,000 population) - Sub-Saharan Africa. Published 2024. Accessed June 8, 2024. https://data.worldbank.org/indicator/SH.STA.TRAF.P5?locations=ZG

11. Trading Economics. Nigeria - Cause Of Death, By Injury (% Of Total). Published 2024. Accessed June 8, 2024. https://tradingeconomics.com/nigeria/cause-of-death-by-injury-percent-of-total-wb-data.html

12. A. Atoyebi O, Elegbede O, A. Babatunde O, Adewoye K, Durowade K, B. Parakoyi D. Prevalence and risk factors for falls in urban and rural older adults in Ekiti State, Nigeria. *Ghana Med J*. 2021;55(4):265-272. doi:10.4314/gmj.v55i4.6

13. Federal Road Safety Commission. What We Do. Accessed June 8, 2024. https://frsc.gov.ng/about-us/

14. Federal Ministry of Works. About Us. Published 2024. Accessed June 8, 2024. https://fmw.gov.ng/home/About%20Us/2

15. Statistica. Elderly population aged 60 years and older in Nigeria in 2020, by gender. Published 2024. Accessed June 8, 2024. https://www.statista.com/statistics/1260768/elderly-population-in-nigeria-by-gender/#:~:text=Nigeria's%20population%20amounts%20to%20about,which%20reached%204.3%20million%20people.

16. Mbam KC, Halvorsen CJ, Okoye UO. Aging in Nigeria: A Growing Population of Older Adults Requires the Implementation of National Aging Policies. *Gerontologist*. 2022;62(9):1243-1250. doi:10.1093/geront/gnac121

17. Ojembe BU, Ebe Kalu M. Describing reasons for loneliness among older people in Nigeria. *J Gerontol Soc Work*. 2018;61(6):640-658. doi:10.1080/01634372.2018.1487495

18. Tanyi PL, André P, Mbah P. Care of the elderly in Nigeria: Implications for policy. *Cogent Soc Sci*. 2018;4(1):1555201. doi:10.1080/23311886.2018.1555201

19. WHO. Ageing and Health. Published 2024. Accessed June 8, 2024. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health

20. WHO. WHO's work on the UN Decade of Healthy Ageing (2021–2030). Published 2024. Accessed June 8, 2024. https://www.who.int/initiatives/decade-of-healthy-ageing

21. WHO. Global strategy and action plan on ageing and health. Published 2024. Accessed June 8, 2024. https://www.who.int/publications/i/item/9789241513500

22. WHO. Health of the elderly - Madrid Plan of Action on Ageing, 2002. Published online 2024. Accessed June 8, 2024. https://www.emro.who.int/elderly-health/elderly-events/madrid-plan-of-action-on-ageing-events.html

23. Tavassoli N, Piau A, Berbon C, et al. Framework Implementation of the INSPIRE ICOPE-CARE program in collaboration with the World Health Organization (WHO) in the Occitania region. *Journal of Frailty & Aging*. Published online 2020:1-7. doi:10.14283/jfa.2020.26

24. WHO. Integrated care for older people (ICOPE): guidance for person-centred assessment and pathways in primary care. Published 2024. Accessed June 8, 2024. https://www.who.int/publications/i/item/WHO-FWC-ALC-19.1

25. Sum G, Lau LK, Jabbar KA, et al. The World Health Organization (WHO) Integrated Care for Older People (ICOPE) Framework: A Narrative Review on Its Adoption Worldwide and Lessons Learnt. *Int J Environ Res Public Health*. 2022;20(1):154. doi:10.3390/ijerph20010154

26. Vecino-Ortiz AI, Jafri A, Hyder AA. Effective interventions for unintentional injuries: a systematic review and mortality impact assessment among the poorest billion. *Lancet Glob Health*. 2018;6(5):e523-e534. doi:10.1016/S2214-109X(18)30107-4

27. BusinessDayNG. Bola Tinubu sworn-in as 16th President of Nigeria. Published 2023. Accessed June 8, 2024. https://businessday.ng/news/article/bola-tinubu-sworn-in-as-16th-president-of-nigeria/

28. Nigeria Health Watch. Dr Muhammad Pate: The New Minister for Health Returning to Serve. Published 2023. Accessed June 8, 2024. https://articles.nigeriahealthwatch.com/dr-mohammed-pate-the-new-minister-for-health-returning-to-serve/

29. Nairametrics. President Tinubu appoints Muyi Aina as CEO NPHCDA, Kelechi Ohiri as CEO NHIA . Published 2023. Accessed June 8, 2024. https://nairametrics.com/2023/10/20/president-tinubu-appoints-muyi-aina-as-ceo-nphcda-kelechi-ohiri-as-ceo-nhia/

30. State House. President Tinubu Unveils Plan for Massive Investments in Health Sector, Says Healthcare Back on Front Burner. Published 2023. Accessed June 8, 2024. https://statehouse.gov.ng/news/president-tinubu-unveils-plan-for-massive-investments-in-health-sector-says-healthcare-back-on-front-burner/

31. The Federal Ministry of Health and Social Welfare. About Us. Published 2024. Accessed June 8, 2024. https://www.health.gov.ng/Source/1/About-Us

32. National Primary Healthcare Development Agency. Services. Published 2024. Accessed June 8, 2024. https://nphcda.gov.ng/services/

33. National Senior Citizens Centre. About. Published 2023. Accessed June 8, 2024. https://nscc.gov.ng/about

34. AARP International. National Strategic Road Map on Aging (2022-2032). Published 2024. Accessed June 8, 2024. www.aarpinternational.org/file%20library/healthy%20aging/nigeria-_-strategic-roadmap-ageing.pdf

35. JBS Gerontology Centre. Addressing the Lack of Geriatric Services in Nigeria: The Vital Role of Geriatricians in Elderly Care. Published online 2023. Accessed June 8, 2024. https://www.linkedin.com/pulse/addressing-lack-geriatric-services-nigeria-vital/

36. Ogunyemi AO, Balogun MR, Ojo AE, et al. Barriers and facilitators to the delivery of age-friendly health services in Primary Health Care centres in southwest, Nigeria: A qualitative study. *PLoS One*. 2024;19(3):e0288574. doi:10.1371/journal.pone.0288574

37. Peoples-Sheps M, Farel A, Rogers M. *Assessment of Health Problems*.; 2001. Accessed June 8, 2024. https://www.shepscenter.unc.edu/wp-content/uploads/2013/07/Assessment-of-Health-Status-Problems.pdf

38. Boston University. Behavioral Health Models - Social Cognitive Theory. Published 2022. Accessed June 8, 2024. https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/behavioralchangetheories5.html

39. Prime Business Africa. Lagos, Nigeria – A City Of Diversity And Vibrancy. Published online 2024. Accessed June 8, 2024. https://www.primebusiness.africa/lagos-nigeria-a-city-of-diversity-and-vibrancy/

40. Oyeyemi A, Ogunnowo B, Odukoya O. Response of patent medicine vendors in rural areas of Lagos state Nigeria to antimalarial policy change. *Afr Health Sci*. 2015;15(2):420. doi:10.4314/ahs.v15i2.15

41. Scribd. List of Primary Health Care Centers (PHCCS) in Lagos State. Published 2022. Accessed June 8, 2024. https://www.scribd.com/document/557793440/LIST-OF-PHCCs-4

42. Macrotrends. Lagos, Nigeria Metro Area Population 1950-2024. Published 2024. Accessed June 8, 2024. https://www.macrotrends.net/global-metrics/cities/22007/lagos/population#:~:text=Chart%20and%20table%20of%20population,16%2C536%2C000

43. United States Census Bureau. Subnational Population Data by Geographic Area. Published online 2024. Accessed June 8, 2024. https://www.census.gov/geographies/mapping-files/time-series/demo/international-programs/subnationalpopulation.html

44. Apin Public Health Initiatives. This is Apin. Accessed June 8, 2024. https://apin.org.ng/

45. Ajisegiri WS, Abimbola S, Tesema AG, Odusanya OO, Peiris D, Joshi R. "We just have to help": Community health workers' informal task-shifting and task-sharing practices for hypertension and diabetes care in Nigeria. *Front Public Health*. 2023;11. doi:10.3389/fpubh.2023.1038062

46. Health Facilities Monitoring and Accreditation Agency. Home. Published 2023. Accessed June 8, 2024. https://hefamaa.lagosstate.gov.ng/registration/public-primary-health-centers/

47. Landes SJ, McBain SA, Curran GM. An introduction to effectiveness-implementation hybrid designs. *Psychiatry Res*. 2019;280:112513. doi:10.1016/j.psychres.2019.112513

48. Holtrop JS, Estabrooks PA, Gaglio B, et al. Understanding and applying the RE-AIM framework: Clarifications and resources. *J Clin Transl Sci*. 2021;5(1):e126. doi:10.1017/cts.2021.789

49. ClinCalc. Evidence-based clinical decision support tools and calculators for medical professionals. Published online 2024. Accessed June 9, 2024. https://clincalc.com/

50. BBC. Nigeria Workers' Day: Civil servants get pay rises up to 35%. Published May 1, 2024. Accessed June 9, 2024. https://www.bbc.com/news/world-africa-68920701