UNIVERSITY OF ILORIN

THE TWO HUNDRED AND NINETY-FOURTH (294TH) INAUGURAL LECTURE

"MULTIFACETED COMPLEXITY OF AGEING: THE NEED FOR STRENGTHENING GERIATRIC CARE"

By

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FACULTY OF CLINICAL SCIENCES,
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UNIVERSITY OF ILORIN, NIGERIA

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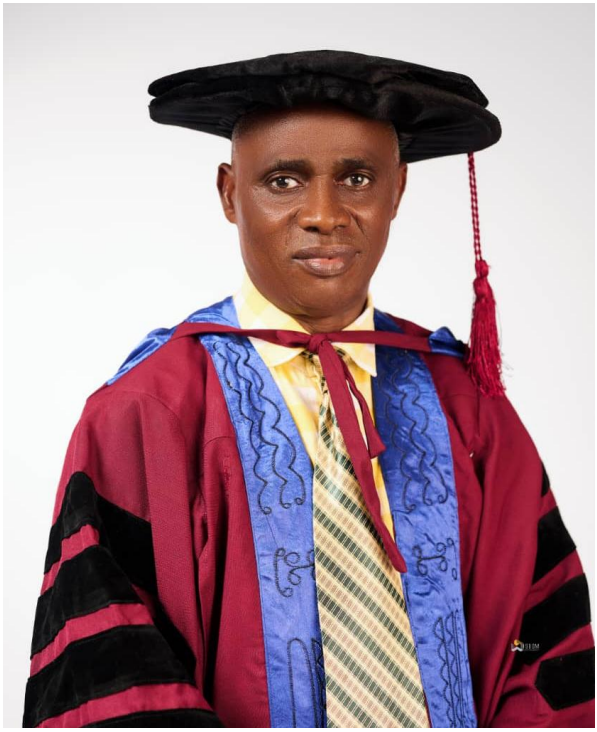

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All Academic and Non-Academic Staff,
Great Students of this *Better by Far* and Noble Institution, especially Students from the College of Health Sciences,
My Lords Spiritual and Temporal,
Gentlemen of the Print and Electronic Media,
Distinguished Ladies and Gentlemen.

Preamble

To the Almighty Allah, the Creator of heaven and earth be the glory and honour for this rare privilege, He has bestowed on me to deliver this inaugural lecture in this great citadel of learning, University of Ilorin. It is instrumental to praise Allah, for His mercies upon me and great things He has done, and still doing in my life. I also thank the Vice-Chancellor, Prof. Wahab Egbewole, the apostle of a new dawn and team work player, by whose permission I stand before all of you to present this lecture, which is 294th in the series of Inaugural Lecture of University of Ilorin. The Vice -Chancellor Sir, I was made to understand that,

traditionally, an inaugural lecture is one of the first responsibilities of a newly promoted University Professor. In this tradition, the professor exercises a singular honour and privilege to formally address the entire University Community on a scholarly topic that has occupied his mind and time, as well as some of his hope for the future. This inaugural lecture is the 4th from the Department of Epidemiology and Community Health of the College of Health Sciences of this great University, and it is my greatest pleasure and honour to present to you this evening my inaugural lecture titled *'Multifaceted Complexity of Ageing: The Need for Strengthening Geriatric Care'*, the first to be given by the 3rd set of medical grandaunts of this citadel of learning, since inception.

The Vice-Chancellor Sir, it may interest you to know how I became interested in aging research and what has propelled a career-long interest in Geriatric Epidemiology. I was a young medical doctor, whose main dream was to become a Consultant in Surgery. Actually, I started my residency training programme in the Department of Surgery, but later switched to Epidemiology and Community Department. My interest in ageing dated back to more than two and half decades ago, while undergoing residency training programme in this great University. I was supervised by eminent Epidemiologists, like Prof. Bayo Parakoyi and late Prof. Adekolu John (of blessed memory). Prof. Parakoyi as my supervisor, directed that I come up with ten possible fellowship Part 2 research topics and draft. This took me a while to submit, only for him to reject seven out of these ten topics within five minutes. He thereafter requested the remaining three should be fine-tuned and modified. However, none of the remaining 3 topics interested him. At this point, frustrations came upon me, and I retorted: "Sir, what do you really want?" He then told me that he wanted a "green and novel research".

He thereafter gave me few minutes lecture on increase in child birth and population aging, and how the current increase in child birth in Nigeria will create future ageing population, with

improvement in health care and lower mortality rate. He warned me that Nigerian doctors know very little about population ageing and geriatric care, less about challenges of ageing. That was my "light bulb" moment. As I started dreaming about his spoken and unspoken words, the large intellectual opportunities to have a Fellowship degree and future specialisation in a "green area" inspired me. I thought about the opportunities of being a pioneer researcher in this area (Geriatric Care) in Ilorin, specifically, and Nigeria generally, though very little study has been done on geriatric care in Nigeria. Since that God-driven encounter with Baba Parakoyi, as we used to call him, more than twenty-three years ago, the seed that grew into an interesting career on ageing was planted. The Vice-Chancellor, Sir, it may interest you to know that since I blazed the trail with my fellowship research on ageing in the Department of Epidemiology and Community Health in 2001, at least ten other fellowship and doctoral theses have been supervised and completed or about to be completed on different aspects of ageing in Nigeria and outside Nigeria; an indication of centrality of the subject matter for present and future geriatric care in Nigeria.

Introduction

The Vice-Chancellor Sir, my field is Public Health while my research focus is on the twin areas of Biological ageing and Geriatric Epidemiology. Biological aging is the type of aging most people are familiar with; since it refers to the various ways the human body naturally changes over time. Geriatric epidemiology deals with the application of epidemiological techniques to the study of elderly persons. It is a branch of epidemiology that focuses on health, diseases, and functional status of older populations. It applies epidemiological methods to study the distribution and determinants of health and disease in elderly individuals, with the goal of promoting healthy ageing and developing effective interventions (Bindawas *et al.*, 2025).

The global population is aging at an unprecedented rate due to significant social and economic changes. By 2030, one in

six people worldwide is projected to be 60 years or older, a figure expected to double to 2.1 billion by 2050, with more than two-thirds residing in low- and middle-income countries (Al-Amoud, 2023; WHO, 2022). In Nigeria, the aging trend is particularly pronounced. Recent statistics from the Nigeria Population Commission (2024) states that current elderly population is around 9.4 million people aged 60 and over or about 3.05% of the total population. Projections show this population is growing rapidly, with the share of those aged 65 and over expected to reach 10.1% by the year 2100. However, available information indicates the elderly population is growing significantly, with projections suggesting the number of people aged 65 and above will increase from 11.5 million in 2025 to 25.5 million by 2050. Nigeria is the most populated nation in Africa, and currently sixth in the world, with an estimated population of over 239 million in 2025, accounting for about 2.9% of the global population. The population is young, with a median age of 18.1, and has one of the highest population growth rates, projected to make it the world's third most populous country by 2050 (Nigeria Population Worldometer, 2025). Despite the fact that the two phenomenona are inextricably linked, with the reduction in birth rate driving the ageing of the population, they are typically viewed quite differently by government planners and policy makers (**Abdulraheem** *et al.*, 2017). In Nigeria, as in most African countries, lower fertility was not only welcomed, but actively encouraged through government supported family planning programmes and related measures. In contrast, population ageing and associated increases in the number of older persons are viewed less favourably, typically as posing growing burdens for economic support and health care (**Abdulraheem**, 2005).

The Concept of Ageing

Aging can be defined as the time-related deterioration of the physiological functions necessary for survival and fertility, and can be classified objectively, subjectively and functionally. Objectively, it is a universal process that begins at birth and is

specified by the chronological age criterion. Subjectively, it is marked by changes in behaviour and self-perception and reaction to biologic changes. Functionally, it refers to the capabilities of the individuals to function in society. Its process is that of growing old or developing the appearance and characteristics of old age. The concept is the process of growing older, involving time-related physical, psychological, and social changes, often leading to a decline in physiological functions necessary for survival.

Ageing begins at conception and ends with death. So, in this sense, we are all aging from the time of birth. The hallmarks of ageing (Figure 1) are a set of fundamental molecular and cellular processes that contribute to the progressive decline in function. In a study on the physiology and physical changes of human aging, **Abdulraheem** (2003) reported that the hallmarks of aging in the elderly consist of a set of fundamental biological mechanisms that contribute to the aging process. Collectively, these processes lead to a decline in cellular and physiological function, increasing the risk of age-related diseases.

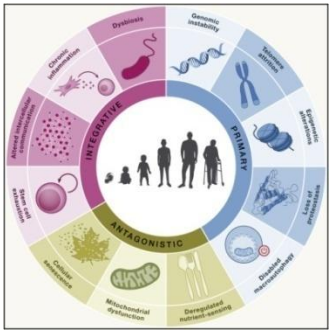


Fig. 1: The Hallmarks of Ageing **Source**: Lopex-Otin *et al.* (2023)

The interdependence of hallmarks of ageing means that the experimental accentuation of one specific hallmark usually affects other hallmarks as well. This underscores the fact that aging is a complex process that has to be conceived as a whole. Accordingly, each of the hallmarks should be considered as a

point-of-entry for future exploration of the ageing process, as well as for the development of new anti-ageing medicines.

The Multi-complexity of Ageing

Multi-complexity of ageing is the concept that older adults face a complex interplay of multiple health conditions, psychological factors, and social circumstances, rather than a simple, single-disease model. It goes beyond just having multiple chronic illnesses (multi-morbidity) but also include the effects of medications (polypharmacy), frailty, and factors like social isolation and personal values that impact the person's overall health and decision-making. Recognising multi-complexity is crucial for providing effective and holistic care for older adults. The key aspects of multi-complexity of ageing include multi-morbidity, the co-existence of two or more chronic conditions, such as high blood pressure, diabetes, and osteoarthritis, very common in older adults; and polyparmacy, which involves the use of multiple medications to manage chronic conditions can increase the risk of side effects, drug interactions, and a heavier pill burden, potentially leading to poorer health outcomes. National Institute on Aging reports that "among older adults, multimorbidity is associated with depression in approximately half of the cases" (Fuggle *et al*, 2025).

The Epidemiology of Ageing

As global life expectancy continues to rise, the epidemiology of ageing has become a critical area of study, addressing the unique health challenges and disease patterns among older adults. Epidemiology studies disease occurrence and its causes, aiding in illness prevention and patient management. It relies on research observations, utilizing clinical and experimental studies to identify health issues and describe diseases' natural history. **Abdulraheem** and Olatinwo (2003), contend that, the epidemiology of aging is more nuanced than applying general principles to the elderly, influenced by unique biological and social aging processes. As the elderly population expands and medical expenditures increase, modelling aging

trends is essential for planners, policymakers, and healthcare providers dedicated to health promotion and disease prevention.

The epidemiology of ageing studies the distribution and determinants of health and disease in older adults, focusing on chronic conditions like heart disease, cancer, and stroke, and the resulting public health challenges. The complexity of multimorbidity can be overwhelming to manage, because of the interaction between diseases, treatments, the decline in physiological capacity of older adults, and the greater potential of experiencing polypharmacy, which can produce a suboptimal quality of life (Chen *et al*, 2022). As more people live to the advanced old age, these demographic changes imply much more than just an increase in chronic morbidity. The same age related susceptibility that leads to the occurrence of multiple chronic conditions in the same individual causes decrements in functional abilities as well as social and psychologic problems that may have an impact on many facets of their wellbeing and quality of life. Functional status is a core indicator in relation to healthy ageing, which involves older adults developing and maintaining an effective functional status enabling them to age healthily (WHO, 2020)

Population Ageing

Population ageing is defined as an increase in a population's median age as a result of declining fertility rates and rising life expectancy (Bloom & Luca, 2016). **Abdulraheem** *et al.* (2003) sees it as increases in the older population as a proportion of the total population, distinct from increase in the number of older persons. Accordingly, population ageing is a shift in the distribution of a country's population towards older ages, which is typically reflected in an increase in the population's mean and median ages, a decrease in the proportion of the population made up of children, and an increase in the proportion of the population made up of the elderly.

Population ageing is caused by two potentially related demographic effects: rising longevity and declining fertility. Of the two forces, declining fertility is now responsible for the

majority of the global ageing population (Bloom & Luca, 2016). More specifically, the large decline in overall fertility rates over the last half-century is primarily to blame for the world's most developed countries' population ageing. Because many developing countries are experiencing faster fertility transitions, their populations will age faster than those of the developed world. The population's ageing rate is expected to accelerate over the next three decades. However, few countries know whether their elderly population is spending extra years of life in good or poor health (World Health Organization, 2021).

Population Ageing in Nigeria

Population ageing occurs when the growth rate in the number of older persons exceed that of the total population. This is quite different from individual ageing, the latter referring to individual chronological aging. In Nigeria, the number of older people increasing from 8,741,292 in 2013 to 9,622,056 in 2016 has shown that the world's old population is expanding, especially in developing countries like Nigeria (National Bureau of Statistics, 2018). Accordingly, in less developed nations, more than 80% of the world's ageing population is expected to live from 2010 to 2025. In the developing world, the older population will grow from 65% in 2010 to 80% by 2050. This means the number will increase to 16% of the world's population (1.5 billion) by 2050 (Table 1). According to the United Nations Population Fund (2012), Nigeria as Africa's most populous black nation has a very high and rapid growth rate of the older population, which may have significant economic implications including a policy challenge for governments at all levels.

Table 1: Nigeria Population Ageing 1950 – 2050

Indicator	**Age**	**1950**	**1975**	**2000**	**2025**	**2050**
Population (thousands)	**Total**	29,789.7	54,885.8	113,861.8	202,957.2	278,788.3
	0-14	12,426.9	24,714.7	51.299.9	75,575.5	69,847.3
	15-59	15,839.8	27,526.6	57,143.1	115886.6	180,157.8
	60-64	632.5	1,050.0	1,947.9	3,826.1	9,749.7
	65-69	434.7	732.3	1,460.0	3,826.1	7,488.8
	70-74	265.1	480.6	1,012.3	2,214.1	5,276.2
	75-79	132.3	282.9	607.9	1,325.5	3,324.1
	80+	58.5	143.3	390.7	1,112.7	2,944.3
Percentage in Older person						
Total	60+	5.1	4.8	4.8	5.7	10.3
	65+	3.0	3.0	3.0	3.5	6.8
	80+	0.2	0.3	0.3	0.5	1.1
Growth Rate (Percentage)						
Indicator	**Age**	**1950-1955**	**195-1980**	**2000-2005**	**2025-2030**	**2045-2050**
Total		2.2	3.2	2.6	1.6	1.1
	60+	2.5	2.7	2.9	3.1	4.1
	65+	2.5	2.6	3.1	3.2	4.3
	80+	2.9	3.9	4.8	3.4	3.9
Life expectancy at birth						
Total	Birth	36.5	46.1	52.1	62.5	69.3
Survival Rate (Percentage)						

Source: UNDESA, 2011

Population ageing is a human success story, a reason to celebrate public health, medical improvements, economic and social progress over illnesses, injuries, and early deaths that have limited life spans throughout history (United Nations, 2019). In the traditional Nigerian setting, much honour is attached to old age so that the elderly people feel privileged while the younger ones look forward to becoming old. Parents made concerted efforts to educate their children to value old age, respect, and assist the aged. It is a common practice for young people to provide care to the elderly (by running errands for them, fetching firewood, and water, and providing other help when the need arises). The extended family structure and the communal lifestyle of Nigerian society provided a good atmosphere for

elderly care. Sense of brotherhood, coupled with the philosophy that a child is a child of all, further enhanced elderly care. Taking care of old people, therefore was a collective business among the family members.

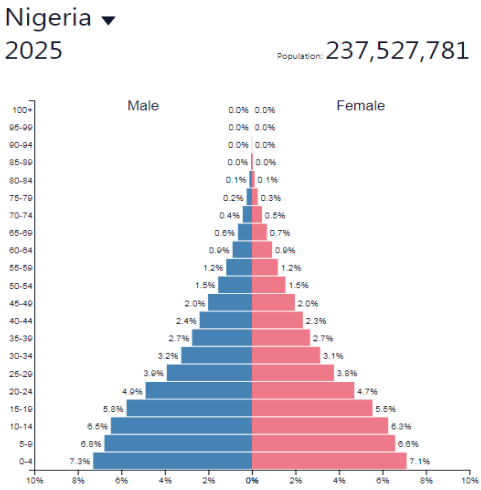


Figure 2: Nigeria Population Pyramid

Source: Nigeria Population Pyramid.Net, 2025

From Figure 2, the broad base of the Nigeria 2025 population pyramid presents a large number of younger people in relation to working age population. Moreover, the United Nations projections based on assumptions of continued moderate fertility decline from 5.3 to 4.9 children per woman by 2030 and further to 3.7 by 2050 is an indication of an increasing number of other age categories which includes older persons.

Implication of Population Ageing on Health Care in Nigeria

By 2050, with 26 million Nigerians and 23 million UK citizens reaching old age, Nigeria will have more older persons than the UK (UNDESA, 2017), yet we are less prepared for the care of our older population. This is a great challenge for Nigeria, a country in which geriatric care is still at infancy. Thus, there is an urgent need for training specialist in geriatric care to

meet this demand as it arises because geriatrists are always in contact with older persons at all levels of care (Oyetunde *et al*, 2013). Today, there is no single geriatrist and gerontological nurse in almost all the geriatric homes in Nigeria (**Abdulraheem**, 2005). Moreover, the majority of our health facilities neither have a geriatric speciality unit nor a geriatric ward to offer specialised care to this population. In view of this the training of health care professionals (e.g Doctors and Nurses in gerontology), is therefore, essential to the successful creation of geriatric specialities across our health facilities. Thus, there is the need for the Medical and Dental Council of Nigeria as well as Nursing and Midwifery Council of Nigeria to review the Bachelor of Medline and Bachelor of Surgery (MBBS) Curriculum and basic nursing school´s curriculum to include geriatric care and gerontological nursing.

In several academic works on the implications of population ageing on health care, primarily focusing on the situation in Nigeria, addressing morbidity patterns, **Abdulraheem** & Rahman (2008), and **Abdulraheem** *et al.* (2017), on determinants of healthy aging, and healthcare-seeking behaviours (**Abdulraheem,** 2025) of the older population. These studies collectively argue for the need for comprehensive reforms, specialised geriatric training for health workers, and the implementation of national aging policies to address the unique health and social needs of Nigeria's growing older population.

Theories of Ageing

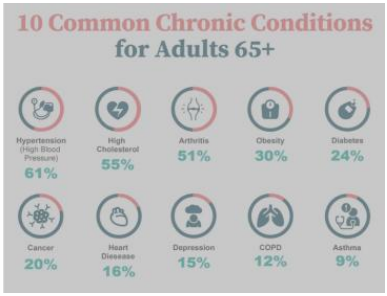
Ageing can be defined as the time-related deterioration of the physiological functions necessary for survival and fertility or a process of growing old or developing the appearance and characteristics of old age. Why do we age? When do we start aging? What is the aging marker? Is there a limit to how we old . Many theories have been proposed to explain the process of ageing, but neither of them appears to be fully satisfactory (Davidovic *et al.*, 2010). The traditional ageing theories hold that ageing is not an adaptation or genetically programmed. Modern biological theories of ageing in humans fall into two main categories: programmed and damage or error theories. The programmed theories imply that aging follows a biological

timetable, perhaps a continuation of the one that regulates childhood growth and development. This regulation would depend on changes in gene expression that affect the systems responsible for maintenance, repair and defence responses. The damage or error theories emphasize environmental assaults to living organisms that induce cumulative damage at various levels as the cause of ageing.

Each theory of ageing attempts to provide a framework in which to understand ageing from different perspectives. It is useful to the clinician because a framework and insight into differences among elderly patients are provided. Ageing can be categorised into two types: intrinsic and extrinsic. Intrinsic aging is a genetically predetermined process that occurs naturally. Extrinsic ageing is a result of outside factors chosen by you, such as where you live, your stress levels, and your lifestyle habits (e.g. smoking). Many different views about the causes of ageing have been proposed.

Health Problems of the Elderly

The elderly frequently experience numerous interconnected health issues, including chronic conditions like heart disease, diabetes, and arthritis; sensory impairments such as hearing loss and vision problems; mental health issues like depression and dementia; and physical challenges like osteoporosis and osteoarthritis, which often result in decreased mobility and increased disability. These physical and mental health conditions are frequently compounded by psycho-social factors, including social isolation, loneliness, and inadequate access to specialised healthcare services, particularly in developing countries. One of the biggest social changes brought about by improved standards of living is population ageing. By 2050, older people will outnumber children under the age of 14 years (WHO, 2012b). Vast numbers of older people live in developing countries where health services are not equitably distributed. Moreover, health in old age is associated with health in earlier years of life, from womb to tomb. Intrauterine growth retardation, for example, increases the risk of diseases of the circulatory system and diabetes in later life.



Box 1: Ten most common chronic conditions in older adults
Source:*https://www.ncoa.org/article/the-top-10-most-common-chronic-conditions-in-older-adults/*

Healthy Ageing

Healthy ageing is a process whereby "older people live well, age well, and have a respectful end of life in age-friendly communities". It takes a life-course approach that seeks to maximise health and wellbeing for all older people. According to WHO, healthy ageing is the process of developing and maintaining the functional ability that enables wellbeing in older age (Michel *et al.*, 2017; Fallon *et al.*, 2019). Functional ability is having the capabilities to enable people to be and do what they value. It is also referred to as the ability: to meet their basic needs, to learn, grow and make decisions, to be mobile, to build and maintain relationships, and to contribute to society (Beard *et al.*, 2016). In studies by **Abdulraheem** *et al.*, (2008 & 2017), healthy ageing is a lifelong process of optimising opportunities for improving and preserving health and physical, social, and mental wellness, independence, and quality of life, while enhancing successful life-course transitions**.** In these studies, it was reported that healthy behaviours in earlier years are important. These include diet, physical activity, avoiding smoking and alcohol, getting adequate sleep, managing weight, and controlling blood pressure. Regular health check-ups are also emphasized for early detection and management of conditions. The studies suggest that health in older age is a reflection of lifelong circumstances and actions.

Challenges in the Study of Geriatric Care and Ageing population in Nigeria

The rapid growth of the elderly population in Nigeria presents new challenges for health and social care systems that are historically underprepared for geriatric needs Although population aging is often celebrated as evidence of progress, it also presents pressing challenges for healthcare systems, particularly in countries with limited resources. In Nigeria, the healthcare system remains underfunded and inadequately structured to meet geriatric needs. Historically, policy and programmatic attention have focused on maternal and child health, leaving older populations underserved (Adebowale *et al.*, 2020). Consequently, elderly Nigerians often face a dual burden of chronic diseases such as hypertension, diabetes, and arthritis, alongside psycho-social challenges like isolation, depression, and economic vulnerability (**Abdulraheem** & Rahman, 2008). However, improvements in survival rates have led to gradual population aging.

Despite this shift, healthcare systems across the region remain poorly equipped for geriatric care. Challenges include inadequate funding, lack of geriatric specialists, weak policy frameworks, and reliance on family- based support systems. In Nigeria, for example, while policy frameworks exist for elderly care, implementation gaps persist due to resource constraints and competing priorities. Healthcare provision is largely skewed toward maternal and child health, with minimal emphasis on geriatrics. The National Policy on Ageing, though articulated, remains weakly implemented (Federal Ministry of Health, 2017). Most elderly Nigerians rely on out-of-pocket payments for healthcare, which limits access, particularly in the absence of comprehensive health insurance coverage (Omololu *et al*., 2021).

Research by **Abulraheem** (2005) highlights critical service gaps in geriatric care and ageing population in Nigeria. For example limited availability of geriatric-friendly infrastructure and specialized staff were reported. **Abdulraheem** and Rahman (2008) also found that elderly Nigerians experience high rates of depression, anxiety, and loneliness, often exacerbated by poor

access to healthcare. According to **Abdulraheem** (2007), key challenges in geriatric care for Nigeria's ageing population include poverty, the burden of chronic diseases with associated costs, and elder abuse. In summary, the challenges in studying Nigeria's aging population include a lack of specialized geriatric education and professionals, insufficient policy frameworks for elder care, and limited data collection and research infrastructure. Other issues involve cultural and socioeconomic factors such as weakened family support systems, increased economic burdens on older adults, and the pervasive effects of ageism, social isolation, and the rising costs of healthcare.

Status of Social Security for the Elderly in Nigeria

Nigeria's formal social security system for the elderly is largely ineffective and inadequate, lacking a national framework for economic support and welfare services, leaving most elderly individuals reliant on informal systems like family support and private businesses to survive. Despite constitutional mandates and the development of national social development policies, these frameworks for the care and protection of older persons have not been effectively executed at the federal level, creating significant gaps in support for a growing aging population. The status of social security for the elderly in Nigeria includes challenges such as inadequate coverage, weak implementation, and insufficient pension payouts, which are causing financial insecurity and impacting their quality of life. Some studies relevant to the status of social security for the elderly in Nigeria include those of **Abdulraheem** (2007) on the health needs and health-seeking behaviors of the elderly in a household survey, and **Abdulraheem** *et al.* (2012), whose findings revealed that some of the challenges faced by the elderly included poor access to social security and healthcare, and their reliance on family for support.

Geriatric Care

Geriatric care is defined as a specialised approach to health care that addresses the unique needs and challenges of older population, focusing on patients functional capabilities and ethical considerations of medical decisions. It has gained

increasing attention in recent years due to the global demographic shift towards an aging population (WHO, 2025). The components of geriatric care include: Specialised Medical Care, Home Care, Geriatric Care Management, Emotional and Social Support, Memory Care and Continuity of Care. Nigeria, Africa's most populous nation and its seventh largest country, in terms of area, lacks data on older adults, with limited empirical studies that could be translated into health and well-being improvements for older adults in the region (Kalu *et al.*, 2022; Gureje *et al.*, 2014; Oguniyi *et al.*, 2016; Cadmus *et al.*, 2017). Thus, geriatric research plays a significant role in advancing understanding of the unique health challenges and needs of older adults (Cadmus *et al*, 2017).

Geriatric care often requires interdisciplinary teams and tailored programmes to manage the complexities of care for diverse elderly patients. Despite these great challenges, Nigeria has made significant progress in care and support for older adults. For example, geriatric centers affiliated to tertiary institutions have been established at the University College Hospital, Ibadan, the University of Port Harcourt Teaching Hospital, the Obafemi Awolowo University Teaching Hospital, and the University of Benin Teaching Hospital, all specialising in health care services and training. As of 2025, the population of Nigeria aged 60 years and above is estimated to be approximately 11 million people**,** which constitutes about 4.6% of the total population (United Nations, 2025). **Abdulraheem** *et al.* (2017) examined the occurrence of multiple chronic diseases in rural elderly populations in Nigeria and its implications for healthcare delivery. The research emphasised that older adults often have multiple chronic conditions (multi-morbidity) and a high prevalence of cognitive impairment, necessitating a specialised approach beyond standard adult medicine.

The Need for Geriatric Care

The need for geriatric care stems from the unique, complex health challenges faced by an increasing aging global population, including the management of multiple chronic conditions, age-related physiological changes, cognitive decline, and increased risks from medications. Geriatric care provides

tailored, multidisciplinary approaches to improve seniors' quality of life, promote functional independence, offer support to caregivers, and address the psychological, social, and economic aspects of aging. Presently there is a global demographic transition of rapid population ageing due to declines in both fertility and mortality rates. By 2050, 80% of older people, aged 60 years and older, will live in low-income and middle-income countries (Lancet, 2021), and that the rate of increase in the older adult population will surpass that of high-income countries. **Abdulraheem** *et al.,* (2021), reported how older people face significant risks during the pandemic due to physiological changes and emphasised the need for a healthcare system aligned with their specific care needs.

Contributions to Existing Body of Knowledge on Ageing and Geriatric Care

Vice-Chancellor Sir, Geriatric Epidemiology is my research interest where I find intellectually stimulating and always explore further through academic inquiry. It is the foundation of my research work, guiding my focus and influencing the questions I ask, the methods I used, and the contributions I made. Essentially, it is the area I am passionate about and I have dedicated my time and effort to studying. My interest on geriatric epidemiology stemmed from a deep-seated curiosity about ageing and its associated problems as well as the care of the elderly both formal and informal. Additionally, I also conduct research in others areas of Epidemiology and Sub-specialities of public health including Epidemiology of Poliomyelitis, Prevention of Child Abuse and Neglect, Disease prevention, Reproductive health, Primary Health care, Clinico-Epidemiological Pattern of Eye Diseases, Epidemiology of Infectious Diseases, Occupational Health, Malaria, Life expectancy, Healthcare Service, Health Management, Adolescent health, Antibiotic susceptibility, Self-medication and Antibiotics, Infection Prevention and Control, Vaccination, Health education, and Regulation of medical practice (**Abdulraheem** & Akanbi II, 2007a; **Abdulraheem** & Akanbi II, 2007b; **Abdulraheem** *et al*., 2006; Adepoju & **Abdulraheem,** 2005; Onajole *et al*., 2003; Osagbemi & **Abdulraheem**, 2006;

Abdulraheem & Rahman, 2009; Ajekigbe *et al*., 2005; **Abdulraheem** *et al*., 2003; **Abdulraheem**, 2002; Abdulraheem et *al*., 2012a; **Abdulraheem** *et al*., 2012b; **Abdulraheem** *et al*., 2011; **Abdulraheem** & Oladipo, 2011; **Abdulraheem** *et al*., 2010; **Abdulraheem** & Fawole, 2009; **Abdulraheem** & Parakoyi, 2009; **Abdulraheem,** 2006; **Abdulraheem** *et al*., 2006; Ologe *et al*., 2006; **Abdulraheem**, 2005; **Abdulraheem** *et al*., 2020a & b; **Abdulraheem** & Abdulraheem, 2021; Mohammed & A**bdulraheem**, 2012).

Vice-Chancellor Sir, kindly permit me to narrow the focus of my discussion on contributions to knowledge to some specific research works conducted on ageing and geriatric care.

Ageing Classification

In a study conducted by **Abdulraheem** *et al.,* (2008), the above categorization may not be applicable to Nigeria due to obvious reasons like low life expectancy at birth, shorter life span, economic meltdown, poor living conditions, poor quality of life, environmental changes and life style that make people much older than their chronological age. In view of the above reasons that make categorisation of aged difficult as applied generally worldwide, **Abdulraheem** *et al.,* (2008) came up with the categorisation of: old persons within the age bracket 60-69 years as an elderly; those within the age bracket 70 to 79 years as youngest old, majority of whom are very much likely to require support; the "older persons" comprising of persons age 80-89 years as middle aged; as well as the "oldest old persons", who are those made up of persons 90 years and above, mostly secluded, prejudiced and discriminated against (ageism). Experience and reality as found out by **Abdulraheem** *et al.,* (2008) is that age among Nigerians is a controversial issue and one of the falsified variable especially among people in the formal sector, as an average Nigerian understates a minimum of four or five years from his or her actual age purposely to still be in service. This practice, driven by factors like unemployment, poverty, and the fear of inadequate retirement benefits, has detrimental effects on productivity and overall workforce dynamics.

Physiology and Physical Changes of Human Ageing

Ageing brings various physical changes, such as reduced muscle mass (sarcopenia) and bone density (osteoporosis), decreased flexibility in joints, and thinning and less elastic skin. Physiological changes in ageing involve organ systems like the heart, lungs, and kidneys losing functional reserve, a decline in immune response, altered hormone levels, and slower metabolic processes. These changes can lead to increased risks of falls, frailty, cognitive decline, and other age-related health issues. The study by **Abdulraheem** (2003) reported that some of the most obvious changes with ageing are such physical characteristics as graying or loss of hair, wrinkling of the skin, decrease in height and loss of teeth, decreased vision and hearing and slowing of CNS functioning. Organs are not spared in some of these physiology and physical Changes. For example, the heart muscle cells degenerate slightly, and heart valves thicken and become stiffer. Arteries stiffen, blood pressure increases, and the risk of atherosclerosis rises significantly with age. Cardiac output also decreases. Furthermore, the brain and spinal cord lose nerve cells and weight (atrophy), and nerve messages may transmit more slowly. This can be associated with declines in cognitive abilities like memory and reasoning.

Several works published by **Abdulraheem** *et al.,* (2007, 2008, 2011 & 2017), related to population ageing and the elderly in Nigeria, focused on areas such as health needs, morbidity patterns, health-seeking behaviours, and determinants of healthy ageing. These studies collectively highlight the specific health challenges and social factors affecting the ageing population in different regions of Nigeria, contributing to the broader understanding of population ageing in developing countries. **Abdulraheem** *et al.,* (2008) see population ageing as increases in the older population as a proportion of the total population. This is distinct from increase in the number of older persons. The high premium placed on old age made people aspire to attain this age in the olden days. Ageing population calls for concern, as the aged also called senior citizens are known to be undergoing depreciation physiologically, mentally, and otherwise, in addition to being incapable of doing most chores without assistance.

Health Needs Assessment and Determinants of Health-Seeking Behaviour

A health needs assessment is a systematic approach to understanding a population's health needs by considering social, economic, cultural, and behavioural factors, while the determinants of health-seeking behavior among the elderly are the factors influencing their decisions to seek or not seek healthcare when ill. In the last decade the number of elderly citizens in Nigeria has increased and their health needs are becoming popularly recognized. A number of factors have also been recognized to determine health care seeking behaviour in these elderly. In order to provide good quality care for the older citizen, **Abdulraheem** (2007) conducted a study on the health needs assessment and determinants of health-seeking behaviour among elderly Nigerians. Less than one-third (28.7%) of the subjects were aware of their health needs. Receiving treatment when sick was the health needs mentioned by the majority (89.4%) of the elderly. Poverty emerged as a major (50.3%) determinant of health care seeking behaviour followed by nature of illness (28.5%). Findings confirmed assessments of most surveys concerning poly-morbidity of old age, while the leading health problems include body pain, joint pain, generalised body weakness, fatigue and poor sight.

Table 2: Morbidity Pattern by Sex among the Elderly

Type of Illness	**Male (%)**	**Female (%)**	**P-value**
Body Pain	432 (83.5)	544 (89.5	NS
Joint Pain	487 (94.2)	576 (94.9)	NS
Weakness & Fatigue	324 (62.9)	489 (80.4)	p<0.05
Poor Sight	283 (54.9)	457 (75.2)	p<0.05
Fever	194 (37.5)	267 (44)	NS
Irritability	172 (33.3)	305 (50.2)	p<0.05
Depression	131 (25.3)	289 (47.5)	p<0.05
Decreased mobility	443 (85.7	584 (96)	NS

NS = Not Significant

From Table 2, there was a higher prevalence of morbidity in female than male. The increased rate of morbidity reported by women compared to men stems from a complex mix

of biological, psychological/behavioral, and societal factors. Females generally mount stronger immune responses to infections, which help clear pathogens more effectively, but this robust response also predisposes them to a higher risk of autoimmune diseases, where the immune system attacks the body's own tissues. Sex hormones like estrogen and testosterone significantly influence the immune system and disease susceptibility.

The Vice-Chancellor Sir, the health needs of the elderly are primarily related to chronic illnesses and require consistent utilization of both preventive and curative healthcare services. High utilization is driven by the high prevalence of chronic and acute illnesses, but service use is influenced by factors like socioeconomic status, geography, and family support, leading to potential under-utilisation in rural or low-income elderly populations. Effective healthcare for the elderly is crucial for improving quality of life and life expectancy. **Abdulraheeem** (2007) found that health needs in terms of utilisation of health care services showed a poorly organised and inadequate home care, as part of primary health care service. This is an indication that care of the elderly has not been fully integrated into primary health care. This calls for concern and should be addressed by both policy makers and programme implementers.

Socio-economic indicators like poverty and lack of education, along with the nature of the illness, are significant determinants of health-seeking behaviour among the elderly. Poverty often leads to seeking care from less qualified providers or self-treatment, while severe or chronic illnesses may prompt more appropriate healthcare seeking, especially if services are affordable or free. Factors like healthcare costs, the quality of available services, and government support programs also play a crucial role. **Abdulraheem** (2007) identified socio-economic indicators and nature of illness as the most pervasive determinants of health care seeking behaviour among the elderly, overriding age and sex, and in terms of health-care expenditure, the nature of illness and quality of service provided ranked the major determinants, as contained in Table 3.

Table 3: Determinants of Health Care Seeking Behaviour among the Elderly

Determinants	**Frequency (%)**
Poverty	566 (50.3)
Nature of Illness	284 (25.2)
Quality of service	121 (10.8)
Attitude of caregivers	40 (3.6)
Waiting time	34 (3.0)
Availability of service	32 (2.8)
Accessibility of service	26 (2.3)
Educational status	22 (2)

Higher education and urban dwelling are linked to better healthcare-seeking behaviour among the elderly, as they correlate with increased health literacy, better access to information and facilities, and the ability to overcome financial barriers. Conversely, lower education and rural or marginalised living situations can lead to poor healthcare-seeking behaviour due to factors like lower health literacy, distance from facilities, and reliance on traditional or informal care. Education influences growing old and dying well by improving health outcomes, promoting healthy behaviours, and providing knowledge about end-of-life care. Higher education is linked to a lower risk of mortality, potentially through better job conditions, higher income, and increased health literacy. Formal education can also increase access to resources and promote active, healthier lifestyles during older age.

In a study conducted by **Abdulraheem** (2007) on determinants of health-seeking behaviour among Elderly Nigerians, educational status proved to have a direct link with likelihood of growing old and dying well. The respondents in the study further confirmed that education is associated with improved knowledge and enlightenment on healthy living. Education significantly impacts both health and longevity. Higher levels of education are consistently linked to improved health outcomes and increased life expectancy. This relationship is multifaceted, with education influencing health directly through knowledge and behaviours, and indirectly through socioeconomic factors like income and access to

healthcare. In the same study, I also found that those who lived in urban or semi urban were more likely to grow old and die well. Physical disability and functional limitation are prevalent among the elderly rural population, increasing with age and affecting women more than men. Key correlates include advanced age, female gender, chronic diseases like arthritis, stroke, and diabetes, poor self-rated health, and lack of education. Living in a rural area itself is associated with higher disability rates, often linked to greater health challenges, and in some contexts, lower economic status.

Physical Disability and Functional Limitation in the Elderly

Physical disability in the elderly is a condition that limits one or more major physical activities, while a functional limitation is the resulting difficulty in performing everyday tasks, such as mobility, self-care, and communication, and can stem from age-related conditions like vision loss, hearing loss, and arthritis, and the resulting functional limitations can significantly impact an older adult's quality of life and independence. Information on disability is very important in responding to the care of the elderly. The pattern and profile of disability that is obtained among the elderly in developed countries differs from those in developing nations. This is expected because of the difference in life expectancy. The prevalence of physical disability in elderly persons with functional limitation are, therefore, important for policy development on care of the elderly be it formal or informal care. In order to improve physical ability and functionality in older persons, it is important to identify the determinants that predict the health outcome**. Abdulraheem** *et. al.* (2011) studied the prevalence and correlates of physical disability and functional limitation among elderly rural population in Nigeria. In the elderly, disability refers to impairments that affect a person's ability to perform activities of daily living (ADLs) and other life tasks, often due to a combination of physical, mental, and sensory limitations.

Common myths about disability in the elderly include that ageing inherently causes decline, that cognitive impairment and dementia are unavoidable, that older adults are no longer

sexually active or interested in relationships, that depression is a normal part of aging, and that elderly people can't learn new skills. These myths ignore the fact that many seniors maintain health, vitality, and independence, and that many conditions, often associated with ageing, like depression and cognitive decline, can be managed or are not an inevitable part of the ageing process. As corollary to the above, **Abdulraheem** *et al.*, (2011) debunked the myths that disability comes with growing old. The study found that, in reality, some older persons remain physically fit and well even than those less than 60s. Some even remain very alert and active in late seventies, eighties and nineties though frail. The findings also debunked another myth that growing old is an economic burden to the family and friends, due to rising cost of living, high cost of medications among others. The study also found that the elderly are capable of learning new skills and adapt to new situations despite growing old, contribute to family income, communities and even many are bread winners in inter-generational households.

In the study of prevalence and correlates of physical disability and functional limitation among the elderly, **Abdulraheem** *et al.*, (2011), found that increased risk of disability was independently associated with female gender prevalence rate (PR) 3.6%, advanced age ≥75 years; PR 22.2%, arthritis PR 3.7%, stroke PR 4.8% and diabetes PR 6.1%. Increased disability risk in the elderly is linked to female sex, arthritis, stroke, advanced age, and diabetes due to a combination of factors including genetic predispositions, the effects of chronic diseases, the interaction between conditions, and societal influences on women's health. Women have higher rates of autoimmune diseases like arthritis and face health disparities and lower socioeconomic status that can impact their ability to receive care, while the accumulation of chronic conditions and age-related physiological changes are major drivers of disability in all populations.

In contrast to physical disability, functional limitation represents an outcome that is free from external factors or environmental influences. This adds clarity to the understanding of the dynamics of the pathway from disease to disability. **Abdulraheem** *et al.*, (2011) in the study of prevalence and

correlates of physical disability and functional limitation among elderly also found that advance in age, female gender, arthritis, and depressive symptomatology were also significantly associated with functional limitation. Increased functional limitations in the elderly are associated with female gender, advanced age, arthritis, and depression due to a combination of factors, including higher prevalence of conditions like arthritis in women, the cumulative effect of aging on the body, and the strong link between chronic pain, depression, and functional decline. Factors like estrogen fluctuations, potential differences in joint anatomy, and a higher prevalence of depression and other diseases in women contribute to their higher risk

The prevalence rates for physical disability and functional limitation are shown in Table 4. More than one-quarter (28.3%) of the respondents signified interest for assistance in at least one of the 10 ADLs in the Barthel index. The prevalence of disability based on at least one item of the six ADL scale was 15.7% and prevalence of disability based on at least one item in the five ADL scale was 12.1%. The prevalence of functional limitation was 22.5%. The overall prevalence of disability (10 items ADL, 6 items ADL, and 5 items ADL) and functional limitation increased with advancing age.

Table 4: Prevalence of Physical Disability and Functional Limitation among Elderly Nigerians

Variable	*N*	Activities of daily living (ADL) dependence			Functional limitation
		10 items	6 items	5 items	
		RR [95% CI]	RR [95% CI]	RR [95% CI]	RR [95% CI]
Overall					
≥60	1824	28.3 (25.2, 31.5)	15.7 (13.4, 19.8)	12.1 (9.8, 15.3)	22.5 (18.1, 24. 4)
≥65	1221	39.1 (35.4, 44.5)	21.4 (17.8, 25.6)	15.6 (12.6, 19.2)	28.2 (25.3, 32.8)
≥70	824	45.5 (42.8, 52.8)	27.3 (22.4, 31.9)	22.2 (17.7, 25.4)	38.0 (32.5, 43.7)
≥75	317	52.8 (43.8, 61.7)	34.6 (28.3, 45.1)	26.6 (19.4, 35.3)	51.5 (43.7, 60.5)
Age group					
60–64	603	11.7 (7.5, 18.3)	10.3 (6.4, 17.30)	8.1 (4.2, 14.36)	12.4 (7.2, 19.2)
65–69	497	72.3 (52.2, 89.5)	31.3 (19.7, 50.5)	22.3 (11.5, 33.7)	38.4 (32.3, 55.2)
70–74	407	78.4 (64.2, 94.3)	37.7 (27.3, 53.2)	29.9 (20.2, 44.5)	48.8 (37.6, 66.4)
≥75	317	98.9 (85.3, 111.7)	59.9 (52.3, 86.2)	50.4 (35.5, 65.7)	98.3 (40.1, 56.6)

Polypharmacy in the Elderly

The number of elderly is increasing worldwide, and among them, polypharmacy is a reoccurring issue. Polypharmacy is simply defined as the use of multiple medications by a patient. This definition excludes topical and herbal medications as they are often not included in the traditional methods of assessing prescription quality. Vitamins and minerals taken as much needed by individual are also generally excluded because of the inconsistent inclusion of these medications in polypharmacy. Polypharmacy is the use of multiple medications, and in the elderly, its importance lies in the significant risks it poses, such as increased adverse drug reactions, drug-drug interactions, cognitive decline, and a higher risk of falls (**Abdulraheem** & Adegboye, 2015)**.** While appropriate polypharmacy can be beneficial, inappropriate polypharmacy is a major concern because the ageing process and multiple chronic conditions make older adults more vulnerable to the negative effects of multiple drugs. Specifically, polypharmacy leads to the following problems: (1). More adverse drug reactions, mostly due to over-the-counter medications. The most consistent risk factor for adverse drug reactions is the number of drugs being taken and the risk rises exponentially as the number of drugs increases. (2). Drug-drug interactions. (3). Decreased medication compliance. (4). Poor quality of life, (5). Unnecessary drug expense **(Abdulraheem** & Adegboye, 2015). While polypharmacy most commonly refers to prescribed medications, **Abdulraheem** (2013) opined that, it is important to also consider the number of over-the-counter and herbal drugs or supplements used by the elderly.

In a study conducted by **Abdulraheem** (2013), it was found that older adults should seriously be focused at regarding polyphamacy because of the following reasons: Older individuals are at greater risk for adverse drug events due to metabolic changes and decreased drug clearance associated with ageing; this risk is compounded by increasing numbers of drugs used; Poly-pharmacy increases the potential for drug-drug interactions; Polypharmacy is an independent risk factor for hip fracture; Polypharmacy increases the possibility of "prescribing

cascades. A prescribing cascade develops when an adverse drug event is misinterpreted as a new medical condition and additional drug therapy is then prescribed to treat this medical condition; Use of multiple medications can lead to problems with medication adherence, compounded by visual or cognitive compromise in many older adults.

Drug therapy is an important component of care in the elderly. The concern here, according to **Abdulraheem** (2013), is that drug prescription is a complex process and includes: deciding that a drug is indicated; choosing the best drug; determining a dose and schedule appropriate for the patient's physiologic status; monitoring for effectiveness and toxicity; educating the patient about expected side effects; and indications for seeking consultation when drug side effects occur or appear. Several times, poly-pharmacy results into a problem, especially when many drugs are given to patients by multiple healthcare providers working independently of each other. Inappropriate drug prescription results into avoidable adverse drug reaction. Drug prescription in the elderly is a serious challenge and, therefore, the possibility of adverse drug reaction should always be considered when prescribing for older adults.

Vice-Chancellor Sir, **Abulraheem** (2013) reported also in his study on polypharmacy that many medications need to be used with special caution (Table 5) because of age-related changes in pharmacokinetics (absorption, distribution, metabolism, and excretion) and pharmacodynamics (the physiologic effects of the drug). A number of factors in older individuals contribute to their increased risk for developing a drug related problem. These include frailty, coexisting medical problems, memory issues, and use of multiple prescribed and non-prescribed drugs. The role of the pharmacists in the reduction of poly-pharmacy in the elderly cannot be over-emphasised. It is hereby recommended that Pharmacists should evaluate the aspects concerning the use of adequate medications; reduction of medication doses without affecting treatment efficiency; adjustment of doses beyond the drug safety margin; and correct use of the medication by elderly patients.

Table 5: Key Drugs to Use with Caution in the Elderly

Drug Class	Specific Examples	Reasons for Caution in the Elderly
Benzo-diazepines & Hypnotics	Diazepam, chlordiazepoxide, flurazepam, zolpidem, eszopiclone	Increased body fat leads to a larger volume of distribution and a prolonged half-life for these fat-soluble drugs, increasing the risk of sedation, cognitive impairment, delirium, and falls/fractures.
Nonsteroidal Anti-inflammatory Drugs (NSAIDs)	Ibuprofen, naproxen, indomethacin, ketorolac	Reduced renal function decreases clearance, leading to higher drug levels and an increased risk of gastrointestinal bleeding/ulcers, kidney damage, and cardiovascular events.
Digoxin		Decreased total body water reduces the volume of distribution, leading to higher serum concentrations. Reduced renal function further decreases clearance. It has a narrow therapeutic index, increasing the risk of toxicity (nausea, bradycardia, falls).
Anticoagulants	Warfarin, rivaroxaban, dabigatran	Increased sensitivity to anticoagulant effects and age-related changes in metabolism/excretion increase the risk of major bleeding. Careful monitoring and dose adjustment are crucial.
Antidiabetics (Sulfonylureas)	Glyburide, glimepiride, chlorpropamide	Reduced renal clearance of the drugs and their active metabolites increases the risk of severe, prolonged hypoglycemia.
Opioids	Morphine, codeine, meperidine, tramadol	Reduced renal or hepatic clearance of the parent drug and/or active metabolites can lead to accumulation, causing excessive sedation, respiratory depression, and increased fall risk.
Antihistamines (First-generation)	Diphenhydramine, hydroxyzine	Strong anticholinergic effects, combined with decreased clearance, increase the risk of confusion, dry mouth, constipation, urinary retention, and falls.

Source: *https://www.healthinaging.org/tools-and-tips/learn-more-ten-medications-older-adults-should-avoid-or-use-causion*

COVID-19 Impact on the Elderly

Since 2020, COVID-19 has affected millions of people around the world, not only due to its impact on health, but also on the economy, education, and society in general. The disease has become one of the greatest challenges in global public health, and the population age 60 and over has been especially affected by the pandemic. Due to their age and the presence of co-morbidities, this population has had a higher risk of developing severe forms of COVID-19 and higher mortality rates than other age groups. Older adults are vulnerable to COVID-19 and efforts have been made to protect them. However, one protective mechanism, isolation of older adults, has resulted in unintended physical, mental, emotional, social, and financial consequences. As a result of the impact of COVID-19 on the elderly, in 2021, a study was conducted on the vulnerability and assessment of needs of older People in the midst of COVID-19 pandemic. In this study, **Abdulraheem** *et al.*, (2021) identified some basic needs for the elderly in the midst of COVID-19 to include: provision of adequate supplies of food and prescription medications, make a backup plan for caregiver in case he or she falls sick, practice daily preventive measures such hand washing, cleaning of home to remove germs, pay attention to the local news and follow the advice of local health officials, avoid visiting sick people and know when to get medical help if ill and encourage elderly to practice healthy habits (e.g. cover coughs and sneezes with a tissue or the inside of the elbow, then wash hands, avoid touching eyes, nose and mouth with unwashed hands.

Opinion about Ageing

Presently in Nigeria, ageing is being viewed with a negative lens, and to some, it is considered as a curse rather than blessing, contrary to what was obtainable many years back in traditional Nigerian society, where it is being prayed for, to be blessed to grow old. This current perception is not surprising, because this category of people (elderly) that requires support from both family and government are hardly included in development plans due to harsh economic conditions and failure

by government to develop a sustainable social security for the ageing population. In addition, there is a growing denial by people stating their actual age. Stating one's actual age can have various implications, ranging from potential ageism in certain contexts to a more accurate understanding of health and development. In some situations, stating one's age can trigger ageist attitudes and potentially lead to discrimination, particularly in employment, healthcare, or social interactions. For example, older individuals might face prejudice in hiring or be subjected to harmful stereotypes.

On a lighter mood, I would like to mention two examples of age denial among friends. (1) There is a male colleague who likes to dress and behave like less than 30 years. I always laugh and crack jokes anytime I see him. One day he called me, Abdulraheem, why are you always cracking joke with my dressing anytime you see me, and I replied by saying you always look very much younger than your age with this type of dressing, and he then replied by thanking me and appreciating my comments. In fact, what I actually had in mind for cracking joke and laughing every time I see him was his refusal to accept that he is old and in actual fact he is a *Grand-pa*. The day I steered the honest net by telling him that he is old and stop deceiving people, he was annoyed and quarrelled with me for one week before we settled. Another older female colleague warned me one day to stop calling her Mama Tosin, but call her by her first name because she is still young. Any day I called her by her first name and also added that she looked take-way she felt elated and would give me thumb up. . Frankly speaking, society must accept the realities of ageing, and it will surely come when we reach the age. May we all live long and healthy---*Ammena ya Rabi.*

Attitude to Care of the Aged

Concerning elderly caregivers, few studies have evaluated the factors that influence their attitudes. In a study by **Abdulraheem** *et al.,* (2005) on the attitude of caregivers towards the elderly in Ilorin metropolis, Nigeria, it was indicated that there is a generally positive attitude among caregivers towards the elderly. Attitudes were overall positive, and some carer

factors such as education contributed to the variance in attitudes toward the elderly. The study also highlighted the potential of health education in enhancing these positive attitudes. Nevertheless, the negative attitude of caregivers to institutional care may be difficult to change through health education intervention because care of the elderly at home is still being greatly valued in this country as it is seen as a responsibility of children and other family members. Institutional care was also considered as an abomination and irresponsibility by some caregivers.

Religious teachings are often used to reinforce and support the cultural imperatives of caring for the elderly. Islamic cultural values strongly support and emphasize kindness towards elderly people. For example, The Holy Quran emphasizes kindness and respect towards parents, particularly when they reach old age, in Surah Al-Isra (17), verses 23-24 and Surah Al-Baqarah (2), verse 83. Specifically, Surah Al-Isra verses 23-24 state:

> *"Your Lord has decreed that you worship none but Him, and that you be kind to parents. If either or both of them reach old age with you, say not to them a word of contempt, nor repel them, but address them in terms of honour".*

Caregiver opinions about caring for the elderly are mixed, with many feeling positive and motivated by duty or faith, while also reporting significant physical, emotional, and financial burdens, particularly when caring for those with chronic illnesses. Many caregivers experience stress, burnout, and social isolation, often feeling overwhelmed by a lack of skills, training, and support. The Vice-Chancellor Sir, **Abdulraheem** *et al.*, (2005), surveyed the opinion of caregivers concerning caring for the elderly in Ilorin metropolis, Nigeria. The study was prompted by the paucity of institutions, facilities and specialist manpower for taking care of elderly and this leads to greater reliance on caregivers whose opinions were either inadequately or poorly explored. Some of the crucial issues in care of the elderly include the attitude of caregivers towards care of the elderly, where caregivers would prefer to care for the

elderly, the types of care being provided by caregivers, and the effects of caring for the elderly on caregivers.

These were issues that informed this study. These issues are particularly important in our culture because care of the elderly has been undertaken by the nuclear and extended family system for many years. Current trends at all levels suggest an increasing demand and emphasis on care of the elderly. This is because of the increasing number of elderly people in our population and the high level of migration of young people from rural to urban areas or outside the country to seek employment due to economic recession and poor remuneration. Our study also show that the attitudes are more negative in young people and become positive during the course of life, while in others, negative perceptions and attitudes appear in old age; and it is therefore, suggested that there a need for more research in order to understand this relationship.

Multi-morbidity Characteristics of Older Adult

At present geriatrics has not been fully established as a specialty in Nigeria and there is little information about the multi-morbidity pattern of the elderly to form the basis of any meaningful plan of action to improve the quality of life of this section of the population (Adebusoye *et al*., 2011). Compared with single diseases, multimorbidity is more likely to be associated with ageing, more hospital visits, a longer course of treatment, high risk of death, complex care needs, multiple drug use, and excessive medical treatment. Furthermore, patients with more multimorbidity tend to undergo more intensive treatments and poorer overall quality of life. With the increase in life expectancy all over the world, multimorbidity has become a more noticeable public health problem, causing its prevalence to be positively correlated with age and it is associated with poorer life quality, premature death, and an increased need for health care (Ben *et al.*, 2022). Like other countries in the world, Nigeria is facing a growing burden of chronic diseases and the prevalence of multi-morbidity and implications for the healthcare system and there has been a little research on these burdens.

In view of the forgoing, **Abdulraheem** *et al.,* (2017), conducted a study on the prevalence and pattern of multi-morbidity among elderly in rural Nigeria. This study was the first to explore multi-morbidity prevalence and pattern in Nigeria, and its results are now of importance to health managers and policy makers in adapting medical education curricula, clinical case management guidelines and the structure of the health system in general to respond to the emerging multi-morbidity among the elderly currently taking place in Nigeria.

The study revealed that the prevalence of multi-morbidity for 2 or more chronic health problems was 68.4% in female and 57.3% for male. The higher prevalence of multi-morbidity in elderly females compared to males is linked to a combination of factors including their longer life expectancy, higher rates of non-life-threatening chronic conditions, and socioeconomic and lifestyle disparities. Women often take on greater care giving roles, which can lead to neglect of their own health, and they may have less financial independence and educational opportunities than men.

The high prevalence of multi-morbidity among the elderly requires a re-think in the management of geriatric age group in Nigeria; and there is a need for primary health care policy direction to reflect this obvious reality. The highest levels of multi-morbidity were identified among some vulnerable groups: the aged, oldest old, the less educated, unemployed and the pensioners/retirees, which make them the target audience to be considered in terms of public policies in the fields of health promotion and disease prevention. Interventions for addressing multi-morbidity should target strategies that are appropriate for patients with multiple diseases rather than individual diseases. The study also provided information on the pattern and associated factors of multi-morbidity in Nigerian elderly and its implications for health care system, research and medical education. The high prevalence of multi-morbidity in Nigeria revealed the social inequities that are challenging the health services and health professional training to the adequate management of multi-morbidity and its complications.

In order to overcome the challenge of multi-morbidity, the current non existing or fragmented health care system for the elderly in Nigeria should be looked into and serious consideration should be given to develop one and possibly advance it to a more comprehensive and multidimensional care. However, the delivery of primary healthcare in Nigeria is principally built around the management of single diseases, and therefore a greater focus on the development of contextualised treatment protocols for the management of co-morbid conditions is needed

Prevalence and Risk Factors for Fall in Older Adults

Falls are a major problem for the aging population, leading to injuries, decreased independence, fear of falling, institutionalisation, and even death, with common contributing factors including muscle weakness, poor balance, visual and cognitive impairments, medication use, and hazardous home environments like clutter and poor lighting. Falls are important issues to be addressed in the elderly population because they are a leading cause of injury-related death, hospitalisation, and loss of independence. Falls can lead to serious injuries like broken hips and fractures, which often require hospitalisation and can result in a decrease in physical function, a fear of falling, and long-term complications such as institutionalisation. Preventing falls is crucial to maintaining the health, independence, and quality of life for older adults.

Vice-Chancellor Sir, **Abdulraheem** *et al.,* (2020), determined the prevalence and risk factors for fall in older adults in a Nigerian urban community using Ilorin Metropolis as a case study. In this study, the prevalence of fall among the population of elderly in Nigeria was found to be 24.2%. This result is very similar to some of the results found by Reyes-Ortiz *et al.,* (2005), who reported 27% for Uruguay, 28.5% for Argentina. The fall prevalence rate in our study is high when compared with reports from other community studies from Japan and China (Yoshida & Kim, 2006; Chu *et al.*, 2008). The fall rate in our study is, however, low when compared with fall rates reported from studies in the United States (Ganz *et al.*, 2002), Australia (Gill *et al.*, 2005) , Brazil and Iran (Perracini *et al.*, 2002; Siqueira,

2007; Abolhassani *et al*., 2006), which all reported rates closer to a third of their studied population. The reason for these differences is not clear, but may be related to socio-cultural or ethnic factors such as lifestyle and level of physical activity, body build and gait.

Fall rates in the elderly vary significantly across countries due to complex factors like age-specific health, gender differences, living environments, and lifestyle, though studies are inconsistent in terms of design and sometimes use different methodologies. A study by **Abdulraheem** *et al.,* (2020), identified muscle weakness, poor balance, impaired vision, and chronic health conditions such as arthritis, diabetes, and heart disease, medications, especially those causing dizziness or drowsiness, poor lighting, and slippery floors as potential risk factors for falls in a representative population-based sample of older adults in Nigerian urban community. It is therefore recommended that these risk factors should be addressed in public health policies through awareness and fall prevention programme. The fall prevention program must focus on females and those with chronic health conditions.

Elderly Abuse and Neglect

Population aging is a global phenomenon, with the number of older adults (aged 60+) projected to double by 2050. This demographic shift necessitates urgent attention to elderly well-being and protection. Older adults are particularly vulnerable due to physiological and anatomical changes associated with aging, chronic illnesses, retirement, reduced social activities, the loss of relatives and friends, separation from children, and residence in care facilities. This vulnerability exposes them to risks such as psychological disorders, social isolation, substance abuse, and elder abuse. Among these risks, elder abuse is especially concerning due to its serious and lasting effects on physical and mental health, reduced quality of life, and even premature death.

Elder abuse is defined as ‘a single or repeated act, or lack of appropriate action, causing harm or distress to an older person’, manifests in physical, psychological, financial, and

neglect forms (World Health Organisation, 2022). Elder abuse can be inform of physical, psychological, financial, and sexual abuse, neglect, occurring within family, care-giving, and institutional settings . Several risk factors have been reported to predispose older adults to abuse, these include, family violence, dependency on caregivers, substance abuse, low socioeconomic status, limited income, low educational attainment, memory problems, decreased functional independence, and specific marital or socio-cultural conditions (Pillemer, *et al*., 2016). Abdulraheem with other researchers conducted a study in 2023 on prevalence, correlates, and gendered dimensions of elder abuse in Ilorin among 301 elderly participants using a mixed method analysis. Majority of respondents (53.5%) were aged between 60 and 65 years, with a decreasing number of participants in older age groups, suggesting either lower life expectancy or reduced survey participation among the oldest elderly. There was also a sex imbalance, with 89.4% of the respondents being female, which may reflect the higher life expectancy of women or their greater willingness to participate in the study.

With an overall prevalence rate of 38.9%, the data suggests that elder abuse is a pressing issue in Ilorin, with psychological (64.9%) and financial abuse (46.2%) being the most prevalent (Ameen *et al.*, 2023). Financial abuse, a major concern in this study, often involved coercion, fraud, and unauthorized use of the elderly property or funds. This pattern mirrors the increasing economic dependency of the elderly on family members, particularly in the context of high youth unemployment and a weakened pension system (Atoyebi *et al*., 2024). Key predictors of elder abuse in our study included older age (71–75 years), female gender, low educational attainment, unemployment, and disrupted marital status (Tables 6). Qualitative findings revealed caregiver burden, economic strain, and sociocultural factors as underlying contributors. Neglect (40.2%) was a significant concern, possibly due to changing family structures and reduced care-giving support. Physical (26.5%) and sexual abuse (20.5%) were less frequent but remain serious issues requiring further intervention (Figure 4)

Table 6: Socio-demographic Predictors of Elderly Abuse

Variables	**β**	**p-value**	**AOD**	**95 % CI**
Age group				
60-65	RC			
66-70	-0.611	-228	0.543	0.201-1.465
71-75	1.695	0.031	0.184	0.039-0.855
76-80	1.794	0.074	6.015	0.838-14.136
>81	-0.192	0.831	0.825	0.141-4.825
Marital status				
Single	RC			
Married	2.276	0.035	9.741	1.177-80.644
80.644Separated	3.410	0.022	30.265	1.625-56.693
Widowed	0.502	0.662	1.652	0.174-15.659
Religion				
Christianity	RC			
Islam	2.492	0.001	0.083	0.028-0.243
Employment status				
Employed	4.783	0.001	0.008	0.001-0.098
Unemployed	5.058	0.001	0.002	0.001-0.039
Retired	RC			
If employed				
Employed fulltime	2.875	0.001	0.056	0.009-0.364
Employed part time	2.180	0.026	0.113	0.017-0.769
Self employed	RC			
Occupation				
Farming	1.834	0.028	6.261	1.218-32.180
Training	2.495	0.001	12.124	2.775-52.959
Artisan	0.679	0.464	1.971	0.320-12.150
None	3.461	0.004	0.031	0.003
Others (Civil servant, contract worker, surveyor	RC			0.322
Highest level of education				
No formal education	3.045	0.001	0.048	0.010-0.218
Primary education	-0.868	0.304	0.420	0.080-2.198
Secondary education	-0.051	0.954	0.950	0.168-5.377
Tertiary education	-0.991	0.254	0.371	0.068-2.037
Postgraduate	RC			

AR=Adjusted; RC= Reference Category

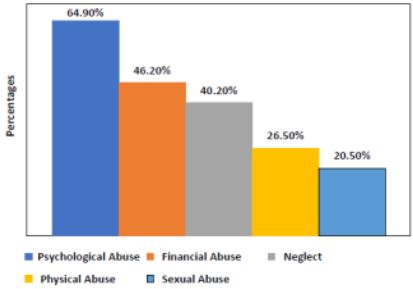


Fig. 4: Prevalence of Elderly Abuse Types

The gendered disparities in this study, with women experiencing higher rates across all categories, reflect deeper societal structures. Elderly women, particularly widows, are often stigmatised or accused of witchcraft, heightening their vulnerability to emotional, financial, and sexual abuse (Cadmus, 2023; Imudia & Ukponahiusi, 2023). This is consistent with prior findings in Nigeria, where widowhood and traditional beliefs were associated with social ostracism and neglect (Imudia & Ukponahiusi, 2023). Additionally, women's limited access to resources and legal protections compounds their risk (Cadmus, 2020). This study concludes that, abuse in Ilorin is multifactorial, rooted in both systemic inequities and shifting familial relationships. Addressing it requires a multisectoral approach, integrating legal reforms, caregiver support programs, community education, and accessible social welfare schemes. Importantly, future research should explore intervention models that are culturally grounded and community-driven, ensuring both the protection and dignity of Nigeria's ageing population.

Contributions to Manpower Development in Nigeria and Internationally

1. *Training of hundreds of Medical Doctors at University of Ilorin*: Many of these doctors are now specialists in their chosen sub-specialists and working all over the globe especially in Europe, Australia, Middle East and North America.

2. *Training of Public Health Professionals at International Organisation Level:* Many of them are now working in WHO, UNICEF, UNFPA, CDC-AFNET (Dr. Hassan Isiaka, Dr. Ibrahim Mohammed, Dr. Abdulganiyu Giwa, Dr. Abdulhameed Oyawoye, Dr. (Mrs.) Ajayi, Dayo Ogunlade).
3. *Supervision and Co-Supervision of 10 Fellows:* (Dr. S.K. Salami, Dr. (Mrs.) C.F. Kolawole, Dr. (Mrs). D.A. Belabo, Dr. Y.F. Issa, Dr. K. Ahmed, Dr. A. Ahmad, Dr. A.O. Tijani, Dr. F.A. Ayodele)
4. Supervion of candidate for Doctoral Degree award of the National Postgraduate Medical College - (Dr. Y.F. Issa)
5. Served as External Examiner (Undergraduate and Postgraduate Levels) at universities of Ibadan, Port-Harcourt, Ahmadu- Bello University, Babcock University, Ladoke Akintola University, Maiduguri, Al-Hikmah
6. Assessor to a number of universities in Nigeria for appointment to Professorial cadre
7. Assessor to a number of National and International journals
    - (Africa Journal of Medicine & Medical Sciences, (Nigeria)
    - International Journal of Health and Equity (UK)
    - International Journal of Sociology & Anthropology (USA)
    - African Journal of Primary Health Care & Family Medicine (South Africa)
    - Journal of Geriatrics and Gerontology International (Japan).
    - British Journal Medicine and Medical Research (UK).
8. Supervision of Ph.D. Candidates (Olayiwola Olanike, Amudalat Temitope Kuranga, Adepoju Mujidat)
9. Ph.D. Assessor –Texila American University, Al-hikma University

Community Service

1. **University of Ilorin Teaching Hospital**

a. Head, Department of Epidemiology and Community Health (2022- 2025)
b. Hospital Consultant Public Health Physician (2001 - date)
c. Deputy Chairman, UITH Library Committee (1996-1998)
d. Member, Economy and Revenue Generation Committee of the Association of Resident Doctors, University of Ilorin Teaching Hospital (1997)

2. **University of Ilorin**

a. Head, Department of Epidemiology and Community Health (2022- 2025)
b. Senate representative on UNILORIN Development Committee, University of Ilorin
c. COBES Coordinator (2008-2009), COBES Unit, University of Ilorin.
d. Team Leader, Community Education Based Service Programme (COBES) posting at University of Ilorin (1981-1982)

3. **National (Federal Government of Nigeria)**

a. Member, NUC Accreditation team to Private University (Godfrey Okoye University, McPherson University)
b. Member, Technical Aid Corps of Federal Ministry of External Affairs
c. Member, Reviewers of Integrated Disease Surveillance and Response (IDSR) guideline- National Programme on Immunization, FMOH
d. Consultant - National Epidemiological Review, Federal Ministry of Health

4. **State**

a. Chairman- White Paper Committee on Kwara State Social Assessment of Vulnerable Indicators on Environmental Health.

b. Member, Al-Hikmah MB;BS Curriculum Development Committee

5. **International**

a. WHO State Coordinator On Polio Eradication Programme in Niger, Nassarawa and Katsina States
b. Site Coordinator, University of Washington Programme on Leadership in Health and Management
c. Ph.D. Supervisor- Texila American University (2022-Date)

Conclusion

Vice-Chancellor Sir, the global population is ageing rapidly, with the number of people aged 60 and over projected to increase significantly in the coming decades. This trend is particularly pronounced in Nigeria, highlighting the need for proactive planning and adaptation to ensure the well-being of older adults and sustainable development. Increase in elderly population with attendant challenges is now a global public health problem. The challenges facing the elderly are multidimensional and call for policy makers' attention and seriousness. These challenges speak to the complexities of ageing as well as the need for geriatric care that are multidisciplinary and integrated where older adults are at the centre of care models that consider social, psychological, mental and physical health needs together. This lecture offers valuable evidence and suggestions that will help develop future healthcare policies or programmes to improve healthcare delivery and health outcomes for older adults with multi-morbidity associated multi-complexity of ageing. Older adults often have multiple chronic illnesses (multicomplexity) and take several medications (polypharmacy). Geriatric care, often involving interdisciplinary teams, is crucial for coordinating care, preventing harmful drug interactions, and managing these complex conditions effectively to minimise complications. While the number of elderly in Nigeria is projected to increase in the coming decades, there is an urgent need to develop a comprehensive national ageing policy and safety net services.

Recommendations

To promote and improve geriatric care, several key areas require attention, including the following:

1. **Public Awareness Creation and Improvement:** Improving public awareness is crucial for enhancing geriatric care and promoting healthy aging
2. **Multidisciplinary Team Treatment Approach:** A multidisciplinary approach is crucial in geriatric care and healthy ageing because it recognizes that older adults' needs are multifaceted and require the expertise of various healthcare professionals.
3. **Establishment of Training Centre for Geriatric Care:** Geriatric training centers play a crucial role in promoting healthy aging and educating healthcare professionals on the unique needs of older adults.
4. **Incorporation of geriatric curriculum in Medical and Healthcare Training:** To ensure healthcare systems have the ability to care for ageing populations, specialised knowledge in geriatrics must be increased via educational strategies to encourage careers in gerontology, such as targeted curricula that improve understanding of the field, develop skills, and assuage common concerns of medical and nursing students.
5. **Institutionalise Collaborative Care Models:** The multi-morbidity and complexity of need that characterise the older adult population require collaborative care models, particularly bridging health and social care. Greater integration of health-care sectors increases consistency and quality of patient care.
6. **Promotion of Preventive Care Strategies:** Preventive care strategies play a crucial role in geriatric care and promoting healthy ageing by proactively addressing potential health issues and reducing the risk of chronic diseases.

7. **Policy Formulation and Improvement of Social Support System:** Nigeria's policy and social support system for the elderly is currently inadequate. Nigeria government should develop and implement effective policies that address the complex needs of the elderly, including economic, security, access to healthcare, and social support services.

8. **Vaccination Promotion:** Vaccination promotion in the elderly involves multi-faceted strategies to overcome common barriers like cost concerns, accessibility issues, and a lack of awareness or provider recommendation.

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