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Innovative and Interventions Towards a Better Ageing Management

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Abstract
This paper discusses interventional innovation toward a better ageing management. It is a position paper in which phases of ageing was looked into; its characteristics and innovative measures for the management of ageing from various researchers point of view were properly reviewed. All such, observation was drawn from various research paper that with an increasing aged population, cognitive disorders became a major health and social issue. It was concluded that, although cognitive decline is a normal part of ageing, there are interventional innovative measures that could be employed towards a better ageing management. It was recommended that, ageing people should participate in physical exercise, regular medical checkups; government should formulate policies favourable for the ageing people and health education for the ageing people is important.
Keywords: interventional innovations, ageing management, cognitive disorders

Introduction

With an increasingly aged population, cognitive disorders become a major health and social issues. Cognitive decline is among the most feared aspects of growing old; it is a burden to the society to the person and is financially costly, it also leads to the beginning of dementia and illness. Cognitive disorders occur when a person experiences a loss or interruption of normal thought process. In general, there are three types of cognitive disorders, they are, dementia, delirium and, amnesia(WHO,2008). Cognition is important for functional independence as people grow old, it determines if one could live independently, manage finances, take medications correctly, and drive safely. Also, a good cognitive process is essential for humans to freely relate with each other and communicate effectively, these includes communicating, processing information and, respond appropriately to others. Cognitive abilities often decline with age. It is necessary to understand what types of changes in cognition are expected as a part of normal ageing.

It became necessary to understand the effects of age on cognition because of the rapid and increasing number of adults over the age of 65 and the increasing age-associated disorder. Over the past century, there was dramatic increase in the life span of human beings as a result of medical advancement and a breakthrough in technology, (World Health Organization, 2015). (Canadian Institute for Health Information, 2011) Since more people now live longer, the numbers of people with age-associated neurodegenerative disorder will continue to rise and unless there is a development of an effective preventive or treatment strategies, the society at large could be faced with huge age-related health problems. This includes Alzheimer disease, high blood pressure, heart failure, dementia, cognitive impairment, and Parkinson syndrome. Thus, it becomes increasing necessary to understand how ageing affect cognition and the strategies which can use to either prevent or manage these problems in an attempt to preserve cognition into advanced age. Any approache that could delay or slow down neurodegenerative process will have a tremendous impact on the quality of life of older adults. Cognitive disorders belong to the class of psychological disorders caused by physical or medical conditions, characterized by decline or impairment in cognitive abilities and daily functioning.

Cognitive Decline in Non-pathological Ageing

Cognitive decline is a normal part of ageing; it is as a result of brain changes that occurs as humans grow old. Studies show that the weight and volume of human brain (the medial temporal lobe and prefrontal cortex) is reducing by about 2% every decade. (Elizabeth, Kensiger and Suzanna, 2004). The areas of cognition that are seriously affected by ageing include word-finding difficulties and episodic memory impairment.

In the case of word-finding memory, it becomes increasingly difficult for adults to retrieve information from semantic memory. An effort to retrieve such memory is regularly accompanied by a 'tip of the tongue' state: a state in which retrieval failure prevents the generation of words that is just out of reach. Ability to retrieve proper names is weak, and this can be frustrating issue for older adults. Memory impairment is evident among older adults; when asked to retrieve detailed information about a certain event, the source memory appears to have declined (memory impairment). Simply put, older adults are able to retrieve the information but usually forgot its source.

Innovation is an elusive concept; a term that has become a common buzzword but with different interpretations. While innovation is referred to the invention of a new technology or process (Blomqvist and Busby, 2016), Fagerberg (2009) sees innovation as carrying out invention in practice. In general, we can think of innovation to mean a new or better ways of doing things (in terms of products, services, strategies, processes) that add value to an existing strategy. This paper will adopt the definition of innovation in health care proposed

by the Federal Advisory Panel on Healthcare Innovation (the Naylor Panel). Innovation is defined as 'activities that generate value in terms of quality and safety of care, administrative efficiency, the patient experience and patient outcomes' (Naylor et al, 2015). This definition encompasses a broad range of things from technological innovation to social and policy innovation. Literatures exist about the rapid growing ageing population that manages chronic diseases at different stages and levels with unsustainable growth in the cost of health care facility for the older adults. New evidences reveal that technology with innovative health care have the capability to curtail these challenges and create new options for health care delivery for the older adults (Challinor, 2016; Peek et al., 2016). Innovative and interventional towards a better ageing management will be those strategies that help to prevent, detect and, manage the complex health conditions of older adults. These include novel ideas in technology, new ways of using old technology and other means to improve the living conditions of the older adults.

Normative cognitive aging

Although determining what changes can be expected as part of the normal aging process is still an active area of inquiry, in general, two patterns of change occur in cognitive functioning during the course of adult development. Some abilities remain relatively stable into old age, while others follow a trajectory of decline (Salthouse, 2006). Verbal abilities, including vocabulary, information and comprehension, are those that typically show minimal decline until very old age. Abilities such as speed of processing, memory, spatial ability and reasoning tend to decline more with aging. Importantly, these declines do not substantially affect the ability of older adults to perform activities of daily living. Older adults who experience normative cognitive changes are able to remain independent in the absence of any other conditions causing physical or mental disability.

Mild cognitive impairment

Mild cognitive impairment(MCI) is an intermediate state between normal cognitive aging and dementia, where individuals experience cognitive deficits that are greater than expected for their age but do not fulfill the diagnostic criteria for dementia (Winblad , Palmer and Kivipelto, 2006). Other terms are also used to describe this state, such as age-associated memory impairment (. Crook , Bartus , Ferris , Whitehouse , Cohen and Gershon, 1986), age-related cognitive decline , age-associated cognitive decline (. Levy, 1994) and cognitive impairment no dementia (. Ritchie , Artero and Touchon, 2001). MCI is associated with a heightened risk of progression to dementia (. Hsiung , Donald and Grand, 2006), although many individuals with MCI remain stable or even revert back to normal status (Ganguli , Dodge, Shen , DeKosky, 2004). The prevalence of MCI varies widely from 3 to 54% depending on the criteria used to define it and how it is put into operation (Decarli,2003). In addition, whether the study was conducted in a clinical or community-based setting can also affect the prevalence, with estimates from community-based studies generally being lower (Farias, Mungas , Reed , Harvy and DeCarli,2006). Recent studies suggest that MCI patients experience subtle deficits in everyday functioning (. Farias , Mungas , Reed , Harvy , Cahn-Weiner and DeCarli.2009) and have mood disturbances (. Butters ,Young ,and Lopez, 2008).

Dementia

Dementia is a chronic syndrome characterized by acquired cognitive deficits in more than one cognitive domain, currently including memory, that are severe enough to affect daily (social and occupational) functioning, do not occur solely in the context of delirium and cannot be fully accounted for by another mental disorder (American Psychiatric Association, 2000). Alzheimer's disease (AD) is the most common subtype of dementia, followed by vascular dementia and mixed dementias with both degenerative and vascular pathology. Approximately 35.6 million individuals are expected to be affected by dementia worldwide in 2010, with the prevalence expected to double every 20 years to over 100 million in 2050 (WHO, 2003). Dementia poses a large burden for families and society owing to the level of care that is necessary throughout the disease process. In the mild stage, those with dementia may need supervision in order to prevent accidents (e.g., leaving the stove turned on) and help with complex activities of daily living such as managing medication and finances. As the disease progresses, individuals lose the ability to perform basic activities of daily living, including dressing, bathing and toileting, are no longer able to speak or comprehend language, and experience personality changes (Sloane , Zimmerman and Suchindran, 2002).

Innovations

The awareness of urgency around the matters of ageing is already being felt highly in the western nations of the world, where the rapidity of societal ageing continues to gain, and the stress on social safety nets has begun to be felt. It was estimated that by 2050, at least a quarter of the individuals in the developed countries will be over 65 – half of whom will be over 75 (UN, 2013). The aforementioned has given rise to great concern about how these nations will be able to cope with a proportionately large population of older adults with sui generis and

occasionally significant health, social and financial needs. Nevertheless, inevitability and advancement have given rise to a vast number of global creators of new ideas, individuals and organisations that work out plans to designing solutions to many of the challenges being faced by the rapid societal ageing, initially thought to be insurmountable. This begs the question of whether chronological age is the appropriate measure for ageing, and whether the population that is experiencing ageing, in terms of progressive health and functional loss. This even makes more than ever the need for holistic health coverage to ensure that every older adult has the access they need to live more healthily as they age. New innovations and discoveries in medicines, assistive devices, home-based care and community-based support will be needed in order to ensure that longer lives are lived comfortably and as independently as possible. In spite of this, there is need to unravel important health and welfare needs of older people in the world to ensure that innovations are acceptable, appropriate, suited and affordable for the way they choose to live their lives.

Community and home-based care

In societies and environment with rising numbers of ageing adults, policy-makers often face immense and continuous concerns about the health system's ability to deliver adequate-quality care for growing numbers of older individuals, while keeping costs at an affordable rate and at the same time keeping the health system's finances sustainable(Alleyne,2015). However, innovations to enable health systems to make adequate and quick adjustments to the ways that they care for older adults may also be important in the long run. It also provides the autonomy by giving older individuals the power and opportunity to make their own decisions over their health and daily living. The community and home based care also offers the opportunity of reducing the costs of caring for patients in a hospital setting when they could otherwise receive appropriate support in nursing homes, or better still in their own homes. The innovations in community and home-based care offer current and latest approaches to delivering care, and still keeping the cost curve, and supporting ageing in balance. These structured activities focus on preventive care and health promotion of the older adults. Medical Doctors and community- based health practitioners can make routinely home checks, which can ensure that all home-based older adults have access to, and can receive primary care. Specifically, this may be important for mentally and physically fragile, cognitively impaired and other homebound adults, who might not have the opportunity to assess health care services in hospitals.

Fall prevention and mobility

One of major challenges to the health and independence of older adults as they age is falls. This is backed up by WHO (2013) who stated that One third of all adults over the age of 65 fall at least once a year, and that risk increases with age as physical and cognitive capacity depreciate, coupled with varieties of other risk factors associated with older age. Falls is very common and are the leading cause of injury among older adults; they also result in extremely poor health outcomes. Falls have different consequences which includes health loss. in addition, falls may also have a social cost; which may result in social isolation, from lost mobility or phobia of another fall. Early identification of fall risk provides an avenue of opportunity to intervene with a number of innovative solutions to reduce risk. Innovations offer a variety of approaches for training the body and the mind to prevent falls. Some approaches to be employed include the use of instructional videos to allow users to do exercises in their own home particularly tailored to improve balance and prevent falls. Additional new approaches are work to train the body and mind concurrently, to build both strength and multitasking capability. Making available a favorable environment that enables physical activity for people of all ages, including the elderly, can be an effective prevention strategy for physical and cognitive decline, as well as preventing social isolation. The current suite of mobility solutions include walking assistance devices such as the use of canes or walkers, and seated mobility devices such as wheelchairs.

Sensory impairment

Most of the common conditions associated with aging, such as vision loss or hearing impairment, are both highly treatable and disproportionately. Although, vision and hearing loss are not majorly the result of biological ageing, sensory impairment is pervasive in the older population. Older adults account for 65% of all distance vision impairment, 82% of all blindness and 50% of the population living with hearing loss (WHO, 2013). The predominance of vision and hearing loss among the older population in the world is overwhelming, and yet much of it is preventable or treatable. Nearly three quarters of the global incidence of distance vision impairment is avoidable. The reasons for such great unmet need are manifold. Screening services in low resource settings and rural areas are largely unavailable. Accessing right treatment for these disabilities in these contexts is also difficult, commodities– like corrective lenses and hearing devices. Even when services and commodities are available, affordability is also a critical issue. Treatments and assistive devices can be expensive investments for a household. Frequently replacing batteries, repairing broken eyeglasses and other maintenance only adds to the cost and accessibility concerns. Nevertheless, innovative solutions to solve these issues is social enterprises and

public–private collaboration with innovative approaches to increasing access, affordability, acceptability and sustainability of interventions dealing with sensory impairments. accessing screening and treatment services in low resource settings is largely a function of the availability of trained personnel and health infrastructure.

Mitigating cognitive decline

According to latest research, dementia affects at least 35 million people worldwide, and this number is projected to double every 20 years, yielding well over 100 million people with dementia by 2050 (WHO Global Observatory, 2013) cost-effectiveness. The first response must necessarily be to prevent the disease from taking hold for as long as possible. Research shows that as much as 50% of all dementia cases are attributable to modifiable risks (WHO Global Observatory, 2013). An emerging body of evidence indicates that education or cognitive training is protective against dementia. Recent declines in age-specific risk for dementia point to a new class of increasingly educated older adults. Evidence shows that even in older adults, cognitive training continues to be useful against neurological decline. There is also evidence that physical activity and managing cardiovascular health are protective against dementia as we age. Although education and physical activity are familiar approaches to public health, they are highly scalable, powerful tools that pay health and societal dividends beyond the scope of dementia prevention.

e-Health and robotics

Most older adults would want to live in their own home as long as possible, and to manage their own independence and health as they choose. Ageing in place and home-based care have become rising innovation sectors, with the design of tools and systems to support older adults and their caregivers. Older adults would prefer to age at home on their own terms, and e-Health technologies have the potential to play an important role in enabling them to do so. Fundamentally, e-Health for older adults is an important mechanism for communication, both for human interaction and for sending and receiving information. With these technologies, older adults could have a video call with their physician without leaving their home. Similarly, the same capability would allow someone to connect with friends and family, and could help to prevent less mobile individuals from social isolation. E-Health systems can work seamlessly with standard health monitoring devices such as blood pressure cuffs or glucose meters, and can pass this information along to a physician.

m-Health

One of the key barriers to supporting the health and independence of older adults is relatively poor access to the correct and appropriate health information, health personnel and services. This has important implications for many ageing-related health conditions, which may go undiagnosed, undetected or untreated without accessible information and services. Sensory impairment disabilities in older adults such as distance vision impairment could have been avoided with appropriate diagnosis and treatment. New innovations supported by mobile telephony (m-Health) may o er some solutions to these problems. With more than 80% of the world's population using mobile phones (UN Population Division 2013), it is quickly becoming feasible to use mobile phones as a means to reach many individuals without access to appropriate health information, personnel and services. More sophisticated applications of these devices are being developed, so that even simple phones can become powerful and useful tools for health.

Social innovation for ageing and health

As we discuss new data, technologies and devices to improve the health and welfare of older adults, it is far too easy to lose the human dimension of the conversation because it is also important. Human relationships and our capacity to give and care for one another could be a critical innovation sector to enable health and autonomy for older people. There are perhaps many labels for this kind of social innovation, but at its core it values older people as instrumental in their own successful ageing. Older adults have a great deal to o er their communities, and there are compelling reasons to believe that enabling older adults to contribute and exchange with their community could improve health outcomes. This will help to mental and physical engagement stimulating the brain and building the physical tools to prevent decline.

Conclusion

Sequel to the review of related literature, this paper concludes that aged people are faced with many problems such as Mild cognitive impairment, dementia and normative cognitive aging and this problems could be mitigated through innovation such as community and home-based care, e-health and m-health.

Recommendations

In corollary to the conclusion, the following recommendations were made;

1. Ageing people should be encouraged to participate in physical exercise to reduce the risk of dementia

2. Individuals should regularly go for medical checkup.
3. Uniformly affordable, accessible, acceptable innovative programs and gadgets should be made available for the ageing people.
4. Government should formulate new policies patterning to the improvement of ageing people's welfare and non-governmental organizations should be engaged in order to identify synergies and opportunities across different sectors (public–private partnership).
5. WHO and its partners should be engaged to fill in the evidence gaps and to build tools and other infrastructure necessary to catalyse innovations of the ageing people.
6. M- health and e-health should be encourgeed and adopted in Nigeria, particularly in the rural areas.

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