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*Effect of Health Education program on Aging Changes and Problems regarding Acceptance, Adaptation and Coping, among Older Adult People in white Nile state- Sudan*

*A Thesis Submitted For The Requirement Of Phd Degree In  
Community Health Nursing*

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*Dedication*

*I dedicate this research to*

*My beloved mother,*

*My great father,*

*Lovely Wives,*

*kids , brothers, sisters*

## ***Acknowledgement***

*First, I would like to thank the greatest Allah for giving me the strength to complete this study.*

*My thanks and gratitude to the University of Shendi, college of nursing and to the staff of community health nursing department.*

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## Abstract

**Background:** Aging of the population is among the phenomena of greatest impact globally during the 21st century. The increase of people 60 years old and above is partly due to birth control and increased life expectancy at birth. Projections indicate that by 2050, one in every five inhabitants in the planet will be an older adult. Accepting the changes that appears during aging implies a series of adaptations by the older adult, such as modifications of health behaviors and at the same time staying socially connected. Nursing can help older adults to face aging well, particularly those enduring chronic diseases.

**Methodology:** This is an intervention quasi study (pre-/ post test design) , attempts to establish cause – effect relationship between health education program and older adults’s health awareness and practices level regarding activities of daily living and instrumental activities of daily living (IADLs). Was conducted among older people's in Al-Gardood area ,White Nile state. (2017). The sample size consisted of (103) (pre-educational program) and 88 (post-educational program), during the period from April to July 2017. Data was collected using, Katz , Lawton and spices models used for activities of daily living . The collected data was analyzed using Statistical Package for Social Sciences (SPSS).

**Results:** Results showed highly significant statistical association between activities dependent level and the study group (p value= 0.00). The Instrumental Activities of Daily Living (IADL) after educational program showed high statistical significant improvement ( $P \leq 0.010$ ) on overall score. Results found a significant statistical association between Sleep Disorders, Problems with eating or feeding and the study group with high (p value= 0.01, 0.02) respectively. The study found that no significant statistical association between Incontinence, confusion and the study group (p value= 0.98, 0.63) respectively.

The study found that the most common diseases among respondents were cataracts (66%), Osteoarthritis (60.2%), diabetes (43.7%), Benign prostatic hyperplasia (58.3%) and Alzheimer disease and other dementias (15.5%).

## **Conclusion:**

The current findings strongly support the view that a educational programs applied to elderly people and their family members seems to improve their performance on their ADLs and IADLs ,thereby improving the elderly functional independence.

Accordingly the researcher recommended that Ministry of health, social affairs and medical and nursing colleges should conduct community campaign concerning with raising health awareness about aging and elderly care.

## ملخص الدراسة

**المقدمة:** إن عملية الشيخوخة هي بالطبع واقع بيولوجي له ديناميكيته الخاصة، إلى حد بعيد خارج سيطرة الإنسان. ومع ذلك، فإنه يخضع أيضا للبناء الذي يجعل كل مجتمع منطقي من الشيخوخة في العالم المتقدم، والعمر الزمني يلعب دورا بارزا. تعتبر شيخوخة السكان من بين الظواهر ذات التأثير الأكبر على مستوى العالم خلال القرن الحادي والعشرين. الزيادة في عدد الأشخاص كبار السن من العمر 60 عاماً أو أكبر يرجع جزئياً إلى تحديد النسل وزيادة متوسط العمر المتوقع عند الولادة. تشير التقديرات إلى أنه بحلول عام 2050، سيكون واحد من كل خمسة أشخاص في الكوكب من كبار السن. إن قبول التغييرات التي تظهر أثناء الشيخوخة ينطوي على سلسلة من التعديلات من قبل كبار السن، مثل تعديلات السلوكيات الصحية، وفي نفس الوقت البقاء على اتصال اجتماعي مع محيطه. يمكن أن يساعد التمريض كبار السن على مواجهة الشيخوخة بشكل جيد، وخاصة التعامل مع الأمراض المزمنة الدائمة.

**المنهجية:** أجريت هذه الدراسة العملية المجتمعية وسط كبار السن بمنطقة القردود (جنوب الدويم)، ولاية النيل الأبيض (2017). تألف حجم العينة من (103) مشارك (قبلي) و (88) مشارك (بعدي) في الفترة من أبريل إلى يوليو 2017. تم جمع البيانات باستخدام نماذج كاتز، ولونتون واسبايس لقياس النشاطات اليومية لكبار السن، تم تحليل البيانات التي تم جمعها باستخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS).

أظهرت النتائج وجود علاقة ارتباطية ذات دلالة إحصائية عالية بين مستوى اعتماد المسن على نفسه في أداء الأنشطة اليومية الشخصية ومجموعة الدراسة (القيمة الاحتمالية = 0.00). أظهرت الأنشطة الحياتية اليومية (IADL) بعد البرنامج التنقيفي تحسن كبير (القيمة الاحتمالية إحصائياً  $P \leq 0.010$ ) على النتيجة الإجمالية. أيضا أظهرت النتائج ارتباطاً إحصائياً بين اضطرابات النوم ومشاكل الأكل أو التغذية ومجموعة الدراسة (القيمة الاحتمالية = 0.01، 0.02) على التوالي بينما أظهرت الدراسة عدم وجود علاقة ذات دلالة إحصائية بين مجموعة الدراسة والتبول اللاإرادي والاحراج، وجدت الدراسة أن أكثر الأمراض شيوعاً بين المستجيبين، إعتام عدسة العين (الموية البيضاء) (66 ٪)،

هشاشة العظام (60.2%) ، مرض السكري (43.7%)، تضخم البروستاتا الحميد (58.3%) ومرض الزهايمر وأمراض أخرى مثل الخرف (15.5%).

**الخلاصة:** خلصت نتائج الدراسة إلى أن العناية التمريضية اللصيقة بالإضافة إلى برنامج التنقيف الصحي للمسنين وأفراد أسرهم له تأثير واضح على أداء المسنين فيما يتعلق بالأنشطة الحياتية اليومية والأنشطة الحياتية اليومية الجهازية بالإضافة مساعدته في إبطاء التدهور الوظيفي للمسنين واعتماد المسن علي غيره.

وبناءً عليه يوصي الباحث أن تقوم وزارتي الصحة ووزارة الشؤون الاجتماعية وكليات الطب والتمريض بإجراء بحوث وحملات تنقيف وسط كبار السن بغرض رفع الوعي الصحي وتحسين رعاية المسنين.

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*List of Abbreviations*

<b>Abbreviation</b>	<b>Full word</b>
<b>ADL</b>	Activity of Daily Living
<b>BMI</b>	Body Mass Index
<b>CVD</b>	Cardio-Vascular Diseases
<b>GAPNs</b>	Gerontological Advanced Practice Nurses
<b>IADL</b>	Instrumental Activities of Daily Living
<b>OA</b>	Osteo-arthritis
<b>OARS</b>	Older American Resources and Services
<b>SPSS</b>	Statistical Package for Social Science
<b>WHO</b>	World Health Organization

# Chapter One

## 1.1 Introduction

Peoples are living longer as a result of improved health care, eradication and control of communicable disease, use of antibiotic and other medicines and accessibility to a better quality of life for residents. The older population does, however, have higher percentage(80%) of chronic conditions, some of which may limit activities. These chronic illnesses include arthritis, heart diseases, high BP, DM, visual and hearing impairments. Good health in older adults means maintaining the maximum degree possible of physical, mental, and social rigor. It means being able to adapt, to continue to handle stress, and to be active and involved in life and living. In short, healthy aging means being able to function, even when disabled, with a minimum of ordinary help from others.

Wellness among the older population varies considerably. It is influenced by many factors including personality traits, life experiences, current physical health and current societal support some elderly people demonstrate maximum adaptability, resourcefulness, optimism, and activity, however, misconception often arises from negative personal experience, myths shared throughout the ages, and a general lack of information on older people.<sup>[1]</sup>

Health education is the process of providing learning experiences for the purpose of influencing knowledge, practices and attitudes relating to health. It is the part of health care which concerned with promoting healthy behavior. In other words, health education is the instruction that addresses physical, mental, emotional and social dimensions of health; develop health knowledge, attitudes, and skills; and is tailored to each age level. <sup>[1]</sup>

Health education program is a planned and designed to motivate people to maintain and improve their health, prevent disease, and reduce health related risk. Furthermore aids people to find out their health needs and activate them for suitable behavior which necessary for health in any situation.<sup>[2]</sup>

It is required for almost everyone in society and is required on and off, in continuous manner. Further it may be appreciated that health education is needed for all ages and sexes, all classes of community (rich or poor), literate or illiterate. In all parts of the world even in advanced countries health education becomes important with changing condition of life and therefore health education has to be an endless process.<sup>[2]</sup>

Nursing is a dynamic, therapeutic and educative process in meeting the health needs of society. Today education about preventive health practices and health promotion is considered an essential component of comprehensive health care. Education is also a mean of improving health status of the public <sup>[3]</sup>

In 2017, there are an estimated 962 million people aged 60 or over in the world, comprising 13 per cent of the global population. The population aged 60 or above is growing at a rate of about 3 per cent per year. Currently, Europe has the greatest percentage of population aged 60 or over (25 per cent). Rapid ageing will occur in other parts of the world as well, so that by 2050 all regions of the world except Africa will have nearly a quarter or more of their populations at ages 60 and above. The number of older persons in the world is projected to be 1.4 billion in 2030 and 2.1 billion in 2050, and could rise to 3.1 billion in 2100. Globally, the number of persons aged 80 or over is projected to triple by 2050, from 137 million in 2017 to 425 million in 2050. By 2100 it is expected to increase to 909 million, nearly seven times its value in 2017. <sup>[3]</sup>

The elder person must be healthy as a part of his right and to live and enjoy life well. Elderly people may not know sufficiently on health matters and even if they know, their behavior may not be fully conducive to good health, for example the habits of eating, and teeth brushing and activity of daily living(ADL) may be well known to them, but in their life they may not be observing enough to care for <sup>[3]</sup>

So health education for elderly people is to learn what is good for themselves and their health and train them to adopt patterns of behavior and practices which will ensure normal health. Older adults may be aware of what they are suffering from and also about the scope and possibilities of treatment but still they may be neglecting without going for treatment. In such cases health education will be necessary to make them understand the seriousness of their condition, the possibilities of treatment and the need for relief from symptoms and sickness .<sup>[3]</sup>

**1-2 Research problem:**

Older adults 's Health awareness and skills to address their problems and aging changes are less to meet their needs, solve problems, and enhance functional independence .

### **1-3 Hypotheses:**

Practicing activity of daily living(ADLs) can reduce functionality declines related to problems and changes associated with aging .

If an individual could recognize the aging changes as a normal part of life, the individual can usually learn to adapt and cope with changes.

Some functional decline in instrumental activities of daily living (IADLs) may be prevented or ameliorated by prompt and aggressive nursing interventions such as; ambulation, enhanced communication, adaptive to equipment and attention to medication and dosages.

#### **1-4 Justification:**

The activities of daily living (ADLs) , are essential and routine chores that individuals can achieve without the need for assistance. These activities includes the ability to be able to eat independently, dress, walk or transfer from one place to another, bathing , use the bathroom for toileting, and maintain good continence. Older adults Also need to be able to perform other necessary activities of daily living( IADLs) , for example, managing their finances, medications, being able to do their shopping, or prepare their meals . Inability to accomplish these essential activities either due to negligence of the older adults due to aging or lack of health information they have or negligence from their family members or partners by giving less care or attention or fail to give enough care to adults.

This study is going to fill this deficit by raising older adult health awareness and encouraging them to practice basic activities and instrumental activities of daily living. Plus there is no study conducted in the issues of older adult in Sudan specifically ADLs and IADLs..



## **1-5 Objectives of the study**

### **1-5-1 General objective:**

To evaluate the effect of health educational program on aging problems and changes in order to achieve acceptance, adaptation and coping by the elderly people in white Nile state, Sudan.

### **1-5-2 Specific objective:**

- To assess the older adult's concept about health problems and changes related to aging process before and after conduction of health education program.
- Encourage the older adult to practice activity of daily living( practicing bathing, toileting , dressing. And feeding to reach independence and reduce suffering .
- Teach and train older adult how to manage his own medications , finance and shopping issues and other instrumental activities of dialy living ( IADL) .
- To survey prevalence of some Disorders that affect Mainly Older People , which associated with aging .

## Chapter Two

### Literature Review

#### 2-1 Introduction

Aging is a gradual, continuous process of natural change that begins in early adulthood. During early middle age, many bodily functions begin gradually to decline. The process of becoming older, that is genetically determined and environmentally modulated. People do not become old or elderly at any specific age. Traditionally, age 65 has been designated as the beginning of old age. But the reason was based in history, not biology. Many years ago, age 65 was chosen as the age for retirement in Germany, the first nation to establish a retirement program, and it continues to be the retirement age for most people in developed societies, although this tradition is changing.[4]

One more definition about aging ; it is a constant decrease in the capacity to do things, both physically and mentally, and a constant increase in age-related diseases.

Just look at the average young person - full of energy, capable of moving mountains and earn PhDs. Then look at the average elderly person: Fragile, walks with a cane or saddled in a wheelchair, and burdened with a confused mind. Some elderly folks don't remember the most basic things like finding their way home from the local supermarket (5).

Understanding the biology/chemistry of aging, and making simple applications, we can change all that and go the distance! A good physical activity program alone is the most effective starting point, and adding more health modalities into the equation makes it even easier to achieve.[5]

**Gerontology** is the study of the aging process, including physical, mental, and social changes. The information is used to develop strategies and programs for improving the lives of older people. [6]

**Geriatrics** is the branch of medicine that specializes in the care of older people, which often involves managing many disorders and problems at the same time. Geriatricians have studied the aging process so that they can better distinguish which changes result from aging itself and which indicate a disorder.[6]

## 2-2 Definition of aging

(A) The aging process is one of progressive and irreversible biological changes that results in a growing risk of chronic disease, cognitive and functional impairment, and an increased likelihood of dying<sup>7</sup>.

(B) Aging is not something that begins at age 55, 65 or 75. It is a process that begins with conception and continues throughout life.

It can be defined as the inevitable accumulation of changes with time that are associated with and responsible for an ever-increasing susceptibility to disease and health. (Smolin Grosrenor, 2008)

(C) The more traditional African definitions of an elder or elderly person correlate with the chronological ages of 50 to 65 years depending on the setting the region and the country<sup>8</sup>

## 2.3 Types of age :

**Chronological age**:- defines age in terms of the number of years a person has lived the undefines older people as those being 60 year and above. In many situations is very limiting. In many countries, especially in rural areas, older people may not know their exact age as births were not registered until relatively recently. If age is not known it may be possible to make an approximation based on events that people remember. (6)

**Biological age**: Biological age refers to changes in the body that commonly occur as people age. Because these changes affect some people sooner than others, some people are biologically old at 40, and others at later ages. However, most noticeable differences in apparent age among people of similar chronologic age are caused by lifestyle, habit, and subtle effects of disease rather than by differences in actual aging.[6]

**Psychological age:** Psychological age is based on how people act and feel. For example, an 80-year-old who works, plans, looks forward to future events, and participates in many activities is considered psychologically young.[9]

**Functional age** is the actual competence and performance a person displays, regardless of chronological age. People age biologically at different rates:

#### **2-4 Classification of age:-**

- Middle adult 45 to 60 years
- Young Old 60-74 years appear physically young for their years
- Old old 75-84 years
- Oldest old 85 and older appear frail and show signs of decline<sup>10</sup>
- 2.5 Life Expectancy:

**Average life expectancy** is the number of years that a person born in a particular year can expect to live. This has to do with nutrition, medical treatment available, and safety. This has changed dramatically since 1900, when the average life expectancy was less than 50 years. Today, a person born in 2000 can expect to live 74 years (M) or 80 years (F). Certain death rates have declined greatly- especially heart disease- has dropped by 50% in the past 30 years due to declines in high blood pressure and smoking risks. [11]

**Variations in life expectancy** relate to gender (women can expect to live 4-7 years longer than men due to the protective factor of the extra X chromosomes.) White people will generally outlive African-American people and Native-American people. This seems related to higher rates of infant mortality, unintentional injuries, life-threatening disease, poverty-linked stress, and higher levels of violent death in low- minority groups. Quality of life can be predicted by a country's health care, housing and social services.[12]

**Active lifespan** is the number of years of vigorous, healthy life a person born in a particular year can expect. Japan is first, and the US is 24<sup>th</sup>. Japan has a low rate of heart disease due to the low-fat diet, along with good health care and positive policies that benefit the elderly. In developing nations the life

expectancy is closer to 50 years, and active lifespan is shorter- 44 in Haiti, 38 in Afghanistan, 26 in Sierra Leone.[7]

**Life expectancy in late adulthood-** in the US, people age 65+ have grown in numbers- in North America, they have increased from 4% to 13%. The fastest growing group of elders is those 85+. The gender difference expands with age- at 65 there are 111 women per 100 men. At 85+ there are 160 women for 100 men. [12]

**Life expectancy crossover** – surviving members of low-SES ethnic minority groups live longer than members of the white majority. Perhaps only the sturdiest males and females of low-SES groups survive into very old age, so they actually can outlive those in more favored groups. After people reach 75 years, heredity is not the same impact that environment is- now lifestyle makes the difference- diet, normal body weight, exercise, little substance use, optimistic outlook, low stress and social support.[12]

**Maximum lifespan** is the genetic limit to length of life free of external risk factors. 85 seems about average, but the oldest verified age is 122.[12]

### **2.5.1 Factors influence life expectancy:**

**Heredity:** Heredity influences whether a person will develop a disorder. For example, a person who inherits genes that increase the risk of developing high cholesterol levels is likely to have a shorter life. A person who inherits genes that protect against coronary artery disease and cancer is likely to have a longer life. There is good evidence that living to a very old age—to 100 or older—runs in families.[13]

**Lifestyle:** Avoiding smoking, not abusing drugs and alcohol, maintaining a healthy weight and diet, and exercising help people function well and avoid disorders.

**Exposure to toxins in the environment:** Such exposure can shorten life expectancy even among people with the best genetic makeup.

**Health care:** Preventing disorders or treating disorders after they are contracted, especially when the disorder can be cured (as with infections and sometimes cancer), helps increase life expectancy[13]

## **2.6 Theories of aging:**

Once upon a time there were many different theories on aging. Several of them have died of old age and others have grown stronger through support from research. I chose three of them because they are integrated and overlap in each other and the theories that have gained support by confirming postulated causes of aging include:[14]

### **2.6.1 The Free Radical Theory on Aging,” by Dr. Denham Harman, University of Nebraska, School of Medicine (1).**

This theory states that aging is due to the damaging effects by “free radicals” on living tissue. Free radicals are very reactive molecules or fractions of molecules that are formed mainly due to faulty nutrition, pollution, or food additives. Antioxidants, known as natural protectors or ‘free radical scavengers’, prevent damage from these free radicals by deactivating them before they can do any damage to vital tissues.[ 14]

Antioxidants are a group of compounds such as vitamins C, E and A, the trace mineral selenium, amino acids containing sulfur, special compounds like carnosine and more. Vegetables and fruits contain many natural substances with anti-oxidant properties.[14]

### **2.6.2The Immunologic Theory on Aging, by Dr. Roy Walford, University of California, Los Angeles (2).**

This theory states that aging is due to decreasing immune functions with age. Strong genes are the basis of a superior immune system. Faulty diet and health practices that depress immune functions - - smoking, too much sugar and fat in the diet, body pollutants, stress for example - - have been shown to decrease life spans of animals and humans. Special nutrients such as vitamins and natural substances activate immune functions and have been shown to

increase life span and prevent cancer. This theory receives a great deal of support from every area of disease research. The most successful newer cancer treatments focus on activating immune function by different means.[14]

### **2.6.3 The *GLYCATION* theory of aging.**

This theory evolved from Dr. Johan Bjorksten's cross-link theory. While Dr. Bjorksten's theory suggested that many of the underlying chemical reactions were based on free radicals (molecules, or fractions of molecules with a highly reactive single electron), glycation occurs due to more basic chemical reactions; it is a key process that causes organs to function aged.

This process, very destructive, is what is going on in your body during glycation, the process in which proteins and sugars are cross-linked with each other, forming AGEs, "Advanced Glycation End products." This happens in literally every organ, from reduced kidney functions, cataracts in they eyes, aged pancreas functions causing diabetes, wrinkling of skin, and more. One of the top glycation risk factors is fructose; it causes 7 times more glycation than glucose (Besides protein glycation, this process can also occur with lipids (fats), causing accelerated aging in people with type 2 diabetes (4). Glycation has also been implicated from kidney disease to Atherosclerosis and Alzheimers [14].

### **2.7 Physical changes:**

Centenarians' secrets – centenarians have increased 10 times in the past 40 years. Women outnumber men by 4/1. 60-70% have disabilities that prevent independent living, but many lead active lives. What do they do differently?

Health and longevity seems to run in families, so there is an inherited aspect to long lived survival. They also haven't had many chronic illnesses. They have efficient immune systems and few brain abnormalities. Most never smoked and were physically active into their late years.

Personality is optimistic, not fear-driven. They score high in independence, hardiness, emotional security and openness to experience. They also cite close family bonds and a long and happy marriage.

Activities include community involvement, work, and leisure activities and continued learning. [15]

**Nervous system** impairments show up more after age 60, as the brain tissue declines due to loss of neurons and larger ventricles within the brain. As many as 50% of neurons may die in the visual, auditory, and motor areas of the brain. The cerebellum, which controls motor coordination, loses about 25% of neurons. Even so, aging neurons can establish new synapses in the wake of lost neurons. So parts of the brain compensate for lost parts. Temperature management is poorer as the autonomic nervous system is less efficient. So elderly are at greater risk during extreme weather. [16]

**Sensory Systems** – there is reduced sensitivity with aging.

Vision is reduced in dim light, and in nearby focus, as well as color perception. The cornea becomes more translucent and scatters light which blurs images. The lens yellows which affects color discrimination. [10]

Cataracts are cloudy areas in the lens which blur vision and can cause blindness if there is no surgery. There is poorer dark adaptation when coming in from the light. Depth perception is also compromised since binocular vision declines, as well as visual acuity.

Macular degeneration occurs when light-sensitive cells in the macula, the central region of the retina break down, resulting in blurry central vision, and eventual blindness. A diet high in anti-oxidants can delay this condition. Driving may need to be curtailed at a certain point, as the older driver has a harder time discriminating the road distractions and signs. This is a hard thing to give up, since it signals physical dependence on others. Elders also are at higher risk of stumbling and serious falls at this point, as they don't see changes in the floor and accommodate smoothly. [16]

Hearing is impaired with reduced blood supply and death of the sense organs in the ear, the cilia, as well as the auditory cortex in the brain. The eardrum also stiffens, so not as much sensation gets to the inner ear. High frequencies are first to go. It is harder to distinguish speech in loud environments, especially after



age 70. Hearing loss can affect safety, especially for pedestrians and drivers. Deafness is isolating, as people lose patience trying to communicate with deaf people. It also links to a certain paranoia, as deaf people fear others are talking about them. Many people learn to read lips as they experience hearing loss, so there are adaptations that can be made, if others will cooperate and help.[17]

Taste and smell declines somewhat, and people may have difficulty recognizing familiar foods by taste alone. It may be due to dentures, smoking, medications or even strokes. If food tastes less, it is also less appealing, so diet may become poorer. Smell is also related to enjoying food, but also protects the person from bad food, gas fumes, or smoke. Smell receptors are lost after age 60, and odor perception often becomes distorted in late adulthood. [17]

Touch perception declines after age 70. There is a loss of touch receptors as well as a slowing of blood circulation in the extremities. [10]

Cardiovascular and respiratory systems are affected by aging as the heart muscle becomes more rigid and some cells enlarge, thickening the left ventricle. Arteries stiffen and accumulate plaque. So the heart pumps with less force, and blood flow slows. So during activity, sufficient oxygen may not be delivered to critical tissues. Lung tissue also loses elasticity, & capacity is reduced by half. The blood absorbs less oxygen and expels less carbon dioxide. People feel more out of breath when exercising. This is more of a problem for people who have smoked, had a high-fat diet, or been exposed to pollutants. Exercise facilitates respiratory function. [18]

**Immune system** declines as T cells become less effective.

Auto-immune response is a problem when the immune system turns against normal body tissues. This puts elders at risk of infectious diseases, CVD, cancers, rheumatoid arthritis, or diabetes. The more impaired the immune system is, the more at risk the person is to a variety of agents.[19]

Sleep is essential for healthy functioning all one's life, but as we age, sleep is harder to come by, as elders sleep less, more lightly, and have more trouble

going to sleep. Men seem to have more sleep problems than women, due to the enlargement of the prostate gland and the need to urinate more often at night. Sleep apnea is a condition where breathing ceases for 10 sec. or more, causing the person to awaken with a start to breathe again. This afflicts more men than women, but overweight people have problems with this condition, as more weight is pressing on the lungs, requiring more effort to keep breathing. Legs also move rapidly during the night- “restless legs” and this can disrupt sleep, too. Unfortunately poor sleep can afflict daytime energy, resulting in a cycle of downward energy, even depression. More prescriptions for sleep aids are given to older adults, but they can have rebound effects later with greater insomnia. [20]

**Physical appearance** and mobility involve changes in the skin, hair, facial structure, and body build. The face most often shows the ravages of aging skin. The only structures to continue to grow are the nose and ears, as cartilage continues to grow. Hair thins and loses pigment. Height declines as the spine collapses with bone loss. Mobility declines as muscle strength declines- 30 – 50% declines after ages 70. Stretching exercises can reduce this decline.[21]

Adapting to physical changes of late adulthood – we can do much more to improve physical and cognitive skills than to delay wrinkling or external signs of aging, but many products are hawked because people are more willing to spend money on products than do the hard work of staying active. [21]

## **2.8 Coping strategies**

Include both problem-centered and emotion-centered coping. The more people take charge of their lives the greater control they feel about their fates. People can use compensating techniques to adapt to sensory losses, if they will make the effort. The more passive people are, the more they report negative adjustment to life.[22]

Assistive technology are devices that permit people with disabilities to improve their functioning. They include computers, phones that can be dialed by voice

command, or print out the speech of the caller allow blind or deaf elders to maintain independence. A computer chip can be placed on medicine bottles to remind elders to take meds on schedule. Smart homes promote safety and mobility. [22]

Stereotypes of aging include the idea that “deterioration is inevitable” and result in younger people talking down to elders, or ignoring them entirely. The more negatively stereotyped elders are, the more negatively their response to stress, producing poorer handwriting, memory, and will to live. The more control seniors are allowed, the longer they live, and the better their quality of life is. The more positive a culture views its elders, the better quality of life those elders sustain.[23]

***Cultural differences in aging*** – in many varieties of culture, elders fare best when they retain social status and opportunities for community participation. The more they are excluded from social roles, aging reduces well-being. A tribe in Botswana treats aging as a marker of wisdom even making the eldest man and wife the village leaders. And as other elders become frail, children are sent to care for them, but it is considered a role of pride and prestige. In cultures where elders are segregated, they tend to dwell more on their disabilities and exclusion from younger, more powerful members of society. There develops resentment between the generations, instead of an integration and enhancement of wisdom due to learning from the elders. [23]

Health, Fitness, and Disability- health is central to well-being in later life. Most elders do rate their health positively, & optimism is related to coping abilities in the area of health. There is possibility of overcoming a disability, especially if the elder has a desire to rehabilitate. African-American and Hispanic elderly are at greater risk for certain health problems, especially since they have more people living below the poverty line. Native-Americans are at even higher risk, health-wise, due to such high poverty rates- over 80%. By very old age, women are more impaired than men, since only the hardiest men have survived to this age. [24]

Compression of morbidity is the goal of reducing the period of disability in old age.

Poverty rates and health problems of elderly ethnic minorities

African-American- 23% in poverty- risks of CVD, cancer, diabetes, Hispanic- 20% in poverty- risks of CVD, diabetes

Native-American- 80%+- diabetes, kidney disease, liver disease, TB, sensory impairments[25]

**Nutrition and exercise** – Diet actually needs to be enriched with vitamins and minerals to protect elders' immune system and bones. But many people have a poorer diet than in the past. Supplements can help, as well as weight-bearing exercise. Exercise also improves blood circulation to the brain, which enhances cognitive function and brain tissue. Exercise also contributes to higher sense of physical self-esteem. Unfortunately, those with chronic illnesses tend to think rest and sedentary life style if more healthful.[26]

**Sexuality** – there is a decline in sexual desire and frequency of activity in older people, but desire is often still there. Good sex in the past predicts good sex in the future. Availability of a partner is still a powerful determiner of activity. Often when men have more trouble holding an erection they will refrain to act sexual, fearing embarrassment sexually. Certain illnesses and medications can impact blood flow to the penis- CVD, diabetes, meds for depression or high blood pressure. Unfortunately in our culture, sex among the elderly is viewed with disapproval.[26]

**Physical disabilities** do increase toward the end of the lifespan, especially illnesses such as CVD and cancer. Respiratory diseases also climb in late adulthood- emphysema is caused by loss of elasticity in lung tissue- most result from smoking. As the immune system declines, more people are at risk of pneumonia, severe lung inflammation. Stroke is 4<sup>th</sup> most common killer in the elderly. There is a blockage of blood flow in the brain which leads to death of neural tissue and accompanying loss of function. Osteoporosis rises in late adulthood, as well as arthritis. Adult-onset diabetes and unintentional injuries

also increase in late adulthood. These illnesses are not caused by aging, but are related to age- they occur more often in the aged.[27]

*Arthritis* is a condition of inflamed, painful, stiff or swollen joints and muscles.

There are 2 forms:

Osteo-arthritis is the most common type- due to deteriorating cartilage on the ends of bones- “degenerative joint disease”. Cartilage that cushions the bones in joints deteriorates, so there is more discomfort with movement. Obesity can place abnormal pressure on joints and damages cartilage, too.

Rheumatoid arthritis is an autoimmune disease that involves the whole body. There is inflammation of connective tissue, there is stiffness, inflammation, and aching. Deformed joints develop, reducing mobility.

Disability due to arthritis affects 45% of American men over 65 & 52% of women. Water-based exercise can reduce pain and ensure mobility. Meds are prescribed for pain, but they can affect the stomach lining and cause ulcers, if the person is not careful. [28]

Adult-onset diabetes occurs when the insulin output of the pancreas can't control blood sugar after a meal. High blood sugar damages the blood vessels, increases risk of stroke, heart attack, circulatory problems in the legs, and injury to the eyes, kidneys, and nerves. If there is severe loss of blood flow, it can result in amputations and blindness. It may require oral insulin or even shots to maintain blood sugar in the healthy range. [28]

Unintentional injuries- death rate from injuries increases after age 65- mostly due to car collisions and falls.

Motor vehicle accidents are responsible for ¼ of injury mortality later in life. But older adults have higher rates of traffic tickets, accidents, and fatalities per mile driven than any other age group, except for teens. Deaths due to injury are greater for men than women in late life. Driving is especially impaired as vision is impaired. They also have a slower reaction time, and don't always read and interpret road signs effectively. They are also at risk on foot at intersections when they can't determine when to walk.[28]

*Falls* – 30% of those over 65, and 40% of those over 80 have had a fall within the past year. Serious injury results about 10% of the time- most commonly a hip fracture. This type of break increases 20X from 65 to 85. It associates with a 12 – 20% increase in mortality. Half never regain the ability to walk without assistance again. Unfortunately, once someone falls, s/he will tend to avoid activities that may be associated with instability, so they restrict social contact and exercise.

Prevention may entail corrective eyewear, improved safety in the home or car, and other family members taking on some of the responsibility for the elder's transportation. [29]

*Mental disabilities* are really only shown when there is severe cell death and structural or chemical abnormalities in the brain.

Dementia is a set of disorders that occur mostly in old age in which many aspects of thought and behavior are so impaired that everyday activities are disrupted. Usually the person can no longer live alone. 1% of those 65 have dementia, but that rate increases with age- especially after age 75. It is 50% after 85 years old. There are a variety of causes of dementia, and some are reversible, such as medication interactions. Parkinson's disease happens when neurons in the sub cortical regions deteriorate, leaving symptoms of tremors, shuffling gait, loss of facial expression, rigidity of limbs, poor balance, stooped posture. There are cortical dementias- Alzheimer's disease and cerebrovascular dementia: [30]

*Alzheimer's disease* is the most common form of dementia, in which structural and chemical brain deterioration is associated with loss of thought, behavior, and personality. Alzheimer's disease is responsible for 60% of all dementias. 5% of deaths of the elderly involve Alzheimer's. [30]

Symptoms and course of the disease include memory problems- even for repeated behaviors such as dressing, simple cooking, routes to common places. Short-term memory is first affected, but it gradually affects distant memory, and causes the person to be at risk if living alone. They have poor judgment in the

beginning, allowing them to be taken advantage of by common men. As the personality is affected, there is a loss of affect, increased paranoia and fearfulness, aggressiveness, social withdrawal. Depression is also linked to the illness. Hygiene is unmanageable and the person needs help eating, bathing, dressing and even walking. There may be hallucinations which contribute to the fearfulness. Speech is lost, as well as comprehension of speech. The length of this deterioration can range from 1 year to 15. The average is 6-7 years. Diagnosis is made through excluding other possible causes of the cognitive deficits.[31]

Brain deterioration- Under imaging techniques, the brains of Alzheimer's victims show shrinking of tissue, due to massive degeneration and death of neurons. Blood flow and activity in the brain are reduced. There are also chemical changes- lowered levels of neurotransmitters necessary for communication between neurons. Acetylcholine is especially lost. It is necessary to developing new learning. Serotonin is also lost, and it regulates arousal and mood, relating to sleep disturbances, aggression, impulsivity and depression. Autopsies show 2 major structural changes in the cortex of Alzheimer's victims: neurofibrillary tangles and amyloid plaques. [31]

Neurofibrillary tangles are bundles of twisted threads that occur as neural structures collapse.

Amyloid plaques are deposits of a deteriorated protein called amyloid, surrounded by clumps of dead nerve cells.

Risk factors – Alzheimer's occurs in 2 types- familial and sporadic, which has no heredity history. Sporadic form occurs later in life and progresses faster. There are genes on certain chromosomes that link to familial Alzheimer's. Another chromosomal abnormality has to do with excess levels of ApoE4, and is linked to amyloid plaque formation. Head injuries are linked to later development of Alzheimer's. It also seems to attach once there has been stroke damage in the brain. High-fat diets also seem to relate, since Africans have

lower incidence of Alzheimer's than African-Americans with their high-fat diet.[30]

Protective factors include Vitamin C and E supplements, as well as anti-inflammatory drugs like aspirin. Education and an active lifestyle seem to be protective, as they increase synaptic connections and allow the brain to compensate for losses more effectively. [31]

Helping Alzheimer's Victims and Caregivers – there are some new drugs to increase the levels of acetylcholine and reduce the symptoms of Alzheimer's disease. Spouses and family are heavily burdened with caregiving for these sufferers. It is a tragic disease to watch and stress on caregivers is enormous. There are some community aids- health care workers who come to the house, as well as day care for seniors. The more the environment can be kept the same, the better the person can manage.[32]

Cerebrovascular Dementia is a series of strokes that leave the brain dead in different areas, producing degeneration of mental ability in a step-wise format. Heredity influences susceptibility to high blood pressure, CVD, and diabetes, but many environmental influences such as smoking, alcoholism, high salt intake, low protein, obesity, inactivity and stress also heighten stroke risk. More men have cerebrovascular dementia by their late 60s than women. Women are at higher risk after 75. Symptoms of stroke are weakness, tingling, numbness in an arm, leg or the face, sudden vision loss or blurring, speech problems, dizziness. Once there has been a stroke, there may be paralysis, loss of speech, vision, coordination, memory, and other mental abilities. [32]

Misdiagnosed and reversible dementia – depression can be missed as a cause of dementia. 3% of those over 65 are moderately or severely depressed. Medication and exercise can overcome the cognitive deficits associated with depression. There are also drugs that can mimic signs of dementia. Infections can also contribute to dementia. Severe alcoholism will produce dementia which may not remit if drinking stops.



Interventions for Caregivers of Elders with Dementia (The 36-hour Day)  
Caregiving for those with Alzheimer's is so demanding, that it cuts short the lives of elders who care for spouses, which includes 15 – 25% of the elderly. [30]

Knowledge helps in finding assistance, and in knowing the natural progression of the disease.

Coping strategies include strategies for managing the ill person's behavior, techniques for dealing with resentment, support groups, therapy, and educational groups.

Care giving skills have to do with handling everyday tasks, and managing the person's needs when they can no longer help the caregiver. This includes communication skills, distraction, empathy development and expression of honest feelings.

Respite can help the caregiver survive- just a short break during the week or a few days at a time, while the ill person is in a care facility. Eventually other family members may insist that the Alzheimer's patient be put in a nursing home, because the caregiver's quality of life may be impaired if they do this too long. [32].

## **2.9 Indirect Influences on Health in Older People:**

People who live alone have more health problems than those who live with someone.

Having a limited income can make obtaining adequate, prompt health care difficult. The many changes that occur during old age can lead to or aggravate health problems. Circumstances that may seem unrelated to health can affect the health of older people. [33]

### ***2.9.1 Social relationships:***

Older people who maintain social contact, whether it be with a spouse, with friends, or through outside interests, have fewer health problems. For example, older people who are married or who live with a roommate tend to be in better health than those who live alone. Older people who live with someone also have lower rates of hospitalization and nursing home admissions than those who live alone. [33]

When older people live alone, new problems and symptoms may not be reported because no one notices. These older people may have no one to help them take their drugs as instructed. They may not prepare and eat balanced meals because physical impairments interfere, because they are lonely, or because they cannot drive or walk to a grocery store. Also, older people living alone are more likely to be lonely and depressed. [33]

Occasionally, living with a relative or another person causes problems. Older people may conceal or minimize health problems because they do not want to impose on or inconvenience the relative. If any member of the household is not pleased with the living arrangement, older people may be neglected or mistreated (psychologically or even physically) [33].

### **2.9.2 Education:**

In people with higher levels of education, disorders tend to be detected earlier, and health outcomes tend to be better, even when a disorder is not detected early. [34]

### **2.9.3 Finances:**

Poverty is more common among older people than among the general population, despite the help provided by ministry of health and nongovernmental organizations in the program of health insurance and other

health and social services has made drug costs more manageable for many older people with a low income one-quarter, despite these programs, some older people do not have adequate health insurance and have difficulty paying for health care that is not covered, including drugs. When paying for drugs is difficult, otherwise treatable disorders often are untreated or are treated at a late stage. [34]

#### **2.9.4 Response to age-related changes:**

Older people may have difficulty coping with the many changes that occur with aging, such as retirement, loss of loved ones, and development of disorders. In response, older people may feel lonely, useless, powerless, or sad. They may lose their self-esteem. They may worry about becoming a burden to their family. They may become depressed, especially if they have a disorder that leads to temporary or permanent loss of independence or when they see their friends and loved ones die. These feelings may make older people less likely to see a health care practitioner, possibly delaying the diagnosis of a serious disorder. [35]

Age-related changes and older people's responses to them can make treating disorders in older people complicated. Thus, older people often benefit from interdisciplinary care—care provided by a team of health care practitioners working together. This team may consist of doctors, nurses, social workers, therapists, pharmacists, and psychologists. Usually led by the person's primary care doctor, the team evaluates the person's needs and plans, coordinates, and implements care—including social services. Team members actively look for possible problems and take measures to correct or prevent them. [35]

Certain disorders have the some of the same effects as aging. Scientists' study what happens in these disorders try to learn what causes aging. For example, they identify the genes that are defective in these disorders and compare them with the same genes in older people. [35]

## ***2-10 Progeroid syndromes***

*Progeroid syndromes are rare disorders that cause premature aging and shorten life expectancy.* In progeroid syndromes, the aging process is greatly accelerated. Affected children develop all of the external signs of old age, including baldness, hunched posture, and dry, inelastic, and wrinkled skin. However, in contrast to normal aging, the ovaries or testes are inactive, resulting in sterility. Females have no menstrual periods. Affected children are unusually short. Thus, progeroid syndromes are not an exact model of accelerated aging. [36]

There are several progeroid syndromes. In Hutchinson-Gilford syndrome and Werner syndrome, the central nervous system and therefore the ability to do many daily activities are largely unaffected unless a stroke occurs. [36]

### ***2-10-1 Hutchinson-Gilford syndrome (progeria):***

This syndrome begins in early childhood. It is caused by a genetic abnormality but is usually not inherited. That is, the genetic abnormality (mutation) occurs on its own. It causes inelastic and wrinkled skin, baldness, and other problems usually associated with aging (such as disorders of the heart, kidneys, and lungs and osteoporosis). The body does not grow normally and thus appears too small for the head. Most children die in their teens. The cause is usually a heart attack or stroke. The mutation that causes this disorder has been identified, and a clinical trial of an inhibitor of the faulty gene has had encouraging results. [37]

### ***2.10.2 Werner syndrome:***

This hereditary syndrome begins in adolescence or early adult life. It causes inelastic and wrinkled skin, baldness, and problems associated with aging, including atherosclerosis, cataracts, diabetes, osteoporosis, muscle wasting, and cancer (including some types that are rare in other people). [38]

### **2.10.3 Down syndrome**

Down syndrome is much more common than progeroid syndromes. It also causes problems typical of old age in younger adults:

- Glucose intolerance
- Blood vessel disorders
- Cancer
- Hair loss
- Degenerative bone disease
- Premature death

In contrast to progeroid syndromes, Down syndrome greatly impairs the central nervous system. It usually causes intellectual disability and, later in life, symptoms of Alzheimer disease. [39]

Some disorders occur almost exclusively in older people. They are sometimes called geriatrics syndromes . Other disorders affect people of all ages but may cause different symptoms or complications in older people. The following are some examples:

**Underactive thyroid gland (hypothyroidism):** Usually, younger people gain weight and feel sluggish. In older people, the first or main symptom may be confusion[40].

**Overactive thyroid gland (hyperthyroidism):**

Usually, younger people become agitated and lose weight. In contrast, older people may become sleepy, withdrawn, depressed, and confused. [40].

**Depression:** Usually, younger people become tearful, withdrawn, and noticeably unhappy. Sometimes older people do not seem unhappy. Instead, they become confused, forgetful, and listless, lose interest in their usual activities, or seem lonely[40].

**Heart attack:** Usually, younger people have chest pain. Older people may not have chest pain but may have difficulty breathing or abdominal pain. They may sweat profusely, suddenly feel tired, pass out, or become confused. [40].

**Abdominal perforation:** An organ in the digestive tract, such as the stomach or intestine, occasionally tears (perforates), causing widespread serious infection in the abdominal cavity. Usually, younger people have severe abdominal pain and fever, and the abdomen feels tight. In contrast, older people may have none of these symptoms. Instead, they may become confused or feel very weak. The confusion that these disorders cause in older people is often mistaken for dementia. [41].

Older people often have more than one disorder at a time. Each disorder may affect the other. For example, depression may make dementia worse, and an infection may make diabetes worse. However, disorders no longer have the same devastating or incapacitating effects that they once had in older people. Disorders that were once likely to result in death for older people, such as heart attacks, hip fractures, and pneumonia, can often be treated and controlled. With treatment, many people with chronic disorders, such as diabetes, kidney disorders, and coronary artery disease, can remain functional, active, and independent. [41].

## 2-11 Some Disorders That Affect Mainly Older People[42].

<b>Disorder</b>	<b>Description</b>
Alzheimer disease and other dementias	Memory and other mental functions are progressively lost
Benign prostatic hyperplasia	The prostate gland enlarges, blocking the flow of urine out of the bladder
Cataracts	The lens of the eye clouds, impairing vision
Glaucoma	The optic nerve is damaged because pressure in part of the eye is elevated. Vision is progressively reduced, and blindness can result. Glaucoma usually begins during middle age.
Prostate cancer	Cancer develops in the prostate gland and eventually interferes with the flow of urine
Stroke	A blood vessel in the brain is blocked or ruptures. A stroke causes symptoms such as weakness or loss of sensation on one side of the body, problems with vision in one eye, difficulty speaking or understanding, loss of balance or coordination, or sudden severe headache.
Urinary incontinence	The flow of urine cannot be controlled, resulting in leakage
Parkinson disease	Nerve cells in the brain degenerate slowly and progressively, causing tremor, stiff (rigid) muscles, and difficulty moving and maintaining balance
Diabetes	The body does not respond to the insulin it

	produces. This disorder may begin during middle age. Treatment with insulin may not be required
Osteoarthritis	The cartilage that lines the joints degenerates, causing pain. Osteoarthritis usually begins during middle age
Pressure sores	The skin breaks down because prolonged pressure reduces blood flow to the affected area.

## **2.12 Comprehensive functional assessment and the terminology related to functional assessment.**

A variety of instruments and methods are available for conducting functional assessment on the older adult: Katz Activities of Daily Living index (ADL), the Barthel Instrumental Activities of Daily Living index (IADL), PULSES Profile, SPICES, and the Older American Resources and Services (OARS) assessment. [43]

- a. *Functional Assessment* is a comprehensive evaluation of the physical and cognitive abilities required to maintain independence. Assessment tools provide objective measures of physical health, activities of daily living (ADLs), instrumental activities of daily living (IADLs), and psychological and social functioning. In a more narrow sense, function can be defined as “the ability to function in the arena of everyday living”. [43]
- b. *Activities of Daily Living (ADLs)* are the basic daily activities of bathing, dressing, toileting, continence, transfer / mobility, grooming, and feeding. The Katz ADL Index has been the most reliable and easy to use. It gathers information by observation on bathing, dressing, toileting, eating, transferring, continence, and grooming. [44]
- c. *Instrumental Activities of Daily Living (IADLs)* are the basic daily activities



needed to live independently in the community – shopping, food preparation, cooking, using the telephone, doing laundry, housekeeping, managing medications, managing finances, maintaining a home and property, performing duties of employment or volunteer work, and traveling (driving or using public or private transportation systems).

- d. *Psychological Function* is assessed by measuring cognitive mental and affective functions independently (See Module 5).
- e. *Social functioning* includes social interactions and resources, subjective well-being and coping, and person-environment fit [44].

### **2.12.1 Co-morbid conditions that might impact negatively on the functional status of an older adult.**

- A. Acute illness
- B. Alteration in nutrition and / or hydration
- C. Chronic illness
- D. Delirium
- E. Dementia
- F. Economics
- G. Environment
- H. Medications
- I. Psychiatric co morbidities, especially depression
- f. Psychological / social stressors [45]

### **2.12.2 Assess function using validated tools.**

A. The Katz ADL Index has established reliability and is easy to use. It was first developed in 1963 by Dr. Sidney Katz, who wanted to find a way to measure function and how it changed over time in older people who had progressive chronic illnesses. It has been modified and simplified and different approaches to scoring were used from categorical scoring (yes/no), to point scaling (independent, some assistance, or dependent). There were no formal reliability and validity reports in the literature; however, it is used extensively to assess functional capabilities of older adults at home and in the clinical setting. The Katz inventory is useful in creating a common language about a patient's function for all care givers involved, evaluating older adults according to levels of independence. A number of adapted versions are in use today. [46]

### Katz activities of daily living[21]

Activities	<b>Independence</b> <b>(1 point)</b> <b>NO supervision, direction or personal assistance</b>	<b>Dependence</b> <b>(0 points)</b> <b>WITH supervision, direction, personal assistance or total care</b>
BATHING Point: ____	(1 POINT) Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area, or disabled extremity.	(0 POINT) Needs help in bathing more than one part of the body getting out of the tub or shower. Requires total bathing.
DRESSING Point: ____	(1 POINT) Gets clothes from closets and drawers and puts on clothes and other garments complete with fasteners. May have help tying shoes.	(0 POINTS) Needs help with dressing self or needs to be completely dressed.
TOILETING Point: ____	(1 POINT) Goes to toilet, gets on and off, arranges clothes, cleans genital area without help.	(0 POINTS) Needs help transferring to the toilet, cleaning self or uses bedpan or commode.
TRANSFERRING Point: ____	(1 POINT) Moves in and out of bed or chair unassisted. Mechanical transferring aides are acceptable.	(0 POINTS) Needs help in moving from bed to chair or requires a complete transfer.
Continence Point: ____	(1 POINT) Exercises complete self control over urination and defecation.	(0 POINTS) Is partially or totally incontinent of bowel or bladder.

FEEDING Point: _____	(1 POINT) Gets food from plate into mouth without help. Preparation of food may be done by another person.	(0 POINTS) Needs partial or total help with feeding or requires parenteral feeding.
Total points =	6 = <i>High(patient independent)</i>	0 = <i>Low (patient very dependent)</i>

### **Lawton Instrumental Activities of Daily Living (IADL)**

#### **Responsibility for Own Medication**

1. Is responsible for taking medication in correct dosages at correct time.
2. Takes responsibility if medication is prepared in advance, in separated dosages.
3. Is not capable of dispensing own medication.

#### **Ability to Handle Finances**

1. Manages financial matters independently (budgets, writes checks, pays rent and bills, goes to bank); collects and keeps track of income.
2. Manages day-to-day purchases but need help with banking, major purchases, controlled spending, and so on.
3. Incapable of handling money.

Scoring: Circle one number for each domain. Total the numbers circled. The lower the score, the more independent the older adult is. Scores are only good for individual patients. It is useful to see the score comparison over time.

Figure 1. The Lawton Scale for Instrumental Activities of Daily Living (IADL) of M.P. Lawton, "Functional Assessment of Elderly People".

IADLs are those activities whose accomplishment is necessary for continued independent residence in the

community. The instrumental activities of daily living are more sensitive for subtle functional deficiencies than the ADLs. It differentiates among task performances including the amount of help and amount of time needed to accomplish each task. [47]

### ***B .PULSES Profile. [21]***

This instrument measures general functional performance in mobility and self-care, medical status, and psychosocial factors. The acronym is useful for remembering the components:

**P** = Physical Condition

**U** = Upper Limb Function

**L** = Lower Limb Function

**S** = Sensory Components

**E** = Excretory Functions

**S** = Support Factors

### **B. SPICES :**

is an acronym for the common syndromes of the older adult requiring nursing intervention: **S** is for Sleep Disorders; **P** is for Problems with eating or feeding; **I** is for Incontinence; **C** is for Confusion; **E** is for Evidence of Falls; and **S** is for Skin Breakdown. Developed by Terry Fulmer, PhD, RN, FAAN, at New York University, Division of Nursing, SPICES is an appropriate instrument for obtaining the information necessary to prevent health alterations[48]

### **Fulmer SPICES: An Overall Assessment Tool of Older Adults**

<b>Patient Name</b>	<b>Date</b>
SPICES	EVIDENCE
Sleep Disorders	
Problems with eating or feeding	
Incontinence	
Confusion	
Evidence of Falls	
Skin Breakdown	

**D .The Older American Resources and Services (OARS)** assessment for physical function is similar in scope of measurement to the Katz scale, including bathing, dressing, grooming, and continence. However, unlike the Katz instrument, OARS relies on self report, therefore, this tool may be less valid than observations of performance. [48] .

*Timed “Get-Up and Go” Test* measures the ability to walk. This is a simple, validated, and practical assessment of balance function, yielding information on independence in ambulation with efficiency and ease of use.. Subjects are asked to rise from a chair, stand still momentarily, then walk toward the wall and turn around, walk back to the chair, turn around and sit down. Undue slowness, hesitancy, abnormal movements, staggering, and stumbling are considered abnormal and indicate that the patient is at risk of falling. Other investigators have categorized this test by time requirement (<20 seconds; 20 – 39 seconds; >40 seconds). Physical performance tests have some advantages over self-report measures such as the ADLs and IADLs) including better reproducibility, greater sensitivity to change and ability to predict pre-clinical impairment. [49]

### **2.13 Roles and responsibilities of geriatric nursing:**

- Integrate advanced knowledge and experience in delivering safe, effective quality care to geriatric clients in primary care.
- Demonstrate competence in managing the health/illness status of geriatric clients in primary care.
- Manage and negotiate within the health care delivery system on behalf of geriatric clients in primary care.
- Monitor and ensure quality health care for geriatric clients in primary care.
- Incorporate an understanding of trends in aging in planning and providing primary health care for clients.

- Demonstrate leadership and competence in implementing the role of the primary care nurse practitioner
- Engage in counseling, communication, collaboration and teaching in a manner that reflects caring, advocacy, ethics and professional standards.
- Conceptualize one's individual role as a primary care nurse practitioner and one's personal philosophy of primary care practice. [50]

### **2.13.1 Geriatric Staff Nurse:**

Nurses who work in the field of geriatrics, also known as gerontology, focus on caring for older adults. This is a high-demand practice area, because older people are more likely to require health services. Half of all hospital admissions are for patients over age 65, but only 1% of nurses are certified in geriatrics [51]

In addition, geriatric nursing is a fast-growing career, especially in the first world countries for example in Americans are living longer. Geriatric nurses are educated to understand and treat the often complex physical and mental health needs of older people. They try to help their patients protect their health and cope with changes in their mental and physical abilities, so older people can stay independent and active as long as possible. [51]

In working with an older patient, a geriatric nurse will:

- Assess the patient's mental status and cognitive (thinking) skills
- Understand patient's acute and chronic health issues
- Discuss common health concerns, such as falls, incontinence, changing sleep patterns and sexual issues
- Organize medications
- Educate the patient about personal safety and disease prevention
- Explain and recommend adjustments to the patient's medication regimen to ensure adherence
- Link the patient with local resources as needed

Many older people have health conditions that do not require hospitalization, but must be treated with medication, changes in diet, use of special equipment (such as a blood sugar monitor or walker), daily exercises or other adaptations. Geriatric nurses help design and explain these healthcare regimens to patients and their families. They often function as “case managers,” linking families with community resources to help them care for elderly members. [52]

### **2.13.2 Working Conditions**

Geriatric nurses work in a variety of practice settings such as hospitals, nursing homes, rehabilitation facilities, senior centers, retirement communities, and patients’ homes. They often work as part of a care team that includes physicians, social workers, nursing aides, physical and occupational therapists and other caring professionals [53].

In hospitals, geriatric nurses tend to work with treatment teams that have large older patient populations, such as outpatient surgery, cardiology, rehabilitation, ophthalmology, dermatology and geriatric mental health (treating older patients with psychiatric conditions, such as Alzheimer’s, anxiety and depression) [53].

In rehabilitation and long-term care facilities, geriatric nurses manage patient care from initial assessment through development, implementation and evaluation of the care plan. They may also take on administrative, training and leadership roles. [53]

### **2.13.3 The role of gerontological advanced practice nurses in geriatric care.**

GAPNs have a significant role to play in the care of older people. They provide focused health screening, counseling, crisis intervention, and comprehensive care to this population. They serve as important advocates in directing appropriate utilization of resources and making referrals that promote continuity of care geared to the needs of older adults. GAPNs provide essential educational services to older clients, their families, and other nursing and health care



professionals involved in their care. They are innovators in the field of gerontological nursing and geriatric care and initiate or collaborate in research aimed at improving the health status of older persons. GAPNs are true providers of geriatric care, with great potential for serving an increasingly [54]

#### **2.13.4 The nurse practitioners in gerontological interdisciplinary team**

Gerontological nurse practitioners are able to do the following:

- Elicit a comprehensive health history from the client and/or caregivers, including an evaluation of developmental maturation, physiological/psychosocial/functional status, cultural orientation, perception of health, health-promoting behaviors, risk factors for illness, response to stressors, activities of daily living (instrumental and functional), service utilization, and support systems
- Complete a comprehensive functional assessment, mental status assessment and psychoemotional assessment.
- Perform a complete physical examination on the older adult, employing techniques of observation, inspection, palpation, auscultation, and percussion.
- Discriminate among normal findings, normal changes of aging, pathological findings and abnormal findings which require collaboration with a physician.
- Use pertinent screening tools to determine health status.
- Order and/or perform pertinent diagnostic tests.
- Analyze the data collected in collaboration with the health care team to determine health status and need for consultation with or referral to other agencies or resources.
- Formulate a problem list.
- Develop and implement, with the client, caregiver(s) and/or significant other(s), and health care team, a plan of care to promote, maintain, and rehabilitate health.

- Evaluate the client's response to the health care provided and the effectiveness of the care with the client.
- Collaborate with other health professionals and agencies involved in the client's care.
- Modify the plan and intervention as needed.
- Record all pertinent data about the client, including the health history, functional assessment, physical examination, problems identified, interventions planned and/or provided, results of care, and plans for consultation or referral.
- Coordinate the services required to meet the client's need for primary health care and/or long-term care and monitor outcomes.
- Act as an advocate for the older adult to improve his/her health status.
- Provide for continuity of care over time and in a variety of settings. PT/family centered care.
- Participates in life long learning, peer review. [55]

In addition to the above areas, gerontological nurse practitioners that have completed the Geriatric Interdisciplinary Team Training Program will be able to:

- A) Define the gerontological nurse practitioner's role in various health care settings.
- B) Identify and implement assertiveness and leadership strategies to strengthen the gerontological nurse practitioner's role in various health care settings.
- C) Identify complex geriatric clients that would most benefit from collaboration of other health care team members.
- D) Demonstrate sensitivity to cultural and economic issues of clients in planning care as a team.
- E) Identify team dynamics that promote collaboration among disciplines.
- F) Develop skills in communicating and networking with health care teams members.

G) Demonstrate knowledge of conflict management techniques for resolving conflict among health care team members.

H) Demonstrate skills in leading and coordinating health care team meetings.

I) Develop and implement strategies that have a positive effect on the advancement of knowledge, political and regulatory processes, and systems affecting the health and welfare of older adults, gerontological nurse practitioners, and the health care system. [55]

## **2.14 Role of a Gerontological Nurse**

Gerontological nursing is gaining more popularity in the field of nursing profession. Moreover, demand for quality nurses in gerontology is more likely to increase in the coming years, thanks to the increasing number of baby boomers in the world and the rapid development in qualitative health care services. Also referred to as geriatric nursing in some parts of the world, this specialized field involves providing adequate care and assistance to the aged/old people, more specifically, those who are aged 65 years and above. [56]

Most of us might have experienced or aware of the problems that accompany the older adults, having seen or interacted with our own grandparents, other relatives aged above 65 and even our own parents who undergo changes as every year passes by and old age appears nearer. [56]

It becomes imperative on the part of the gerontological nurse to understand the challenges that come with taking care of the older results. The complex nature of older adults requires special care and attention.

The gerontological nurse will be responsible for providing adequate specialized care to the aged people, irrespective of the environment or setting. They may be expected to take care of the aged people in a hospital, or in an old-age home, or in a home environment Not only will the setting will be a challenging one, the symptoms from older patients will also challenging and might complicate treatment and diagnosis aspects of patient care. [56]

The nurse is expected to have thorough knowledge and adequate experience in the treatment of diseases, including the atypical symptoms, disease processes and syndromes that typically accompany an aged person. While providing care and assistance to the older patients, the nurse should be aware of the various possible complications and risk factors in the treatment. [56]

In addition to nursing care and assistance, a gerontological nurse has some additional responsibilities as well. He or she has to take up the role of teaching to the aged persons, especially in connection with the slight modification in the life style to counter the consequences of atypical symptoms that accompany the old age. The nurse should teach the older persons about the importance of weight maintenance, indulging in some sort of physical activities as exercises and stress management to deal with the old age with cheer and happiness. The risk for diseases such as heart attack, stroke, and even cancer are more in old persons than the younger ones. The gerontological nurse should educate the aged / old age patients about the ways and means to lessen the risk of such diseases. [57]

A gerontological nurse is expected to have some additional traits or qualifications. He or she should act as a manager for the patient, displaying managerial qualities in connection with day-to-day activities of the patient. The family responsibilities of an aged person invariably might be more, and as such, it becomes the responsibility of the nurse to schedule the routine activities of the patient in such cases, so that there will not be any complications for health. [56]

The gerontological nurse, entrusted with the responsibility of providing health care and assistance to an old person, should ensure that the autonomy or individualism of the patient is not affected. The nurse should, at times, act as an advocate for the patient, and ensure that the patient's independency and dignity are not diluted or encroached. [57]

### **2.14.1 Typical Responsibilities of a Geriatric Nurse**

As a geriatric nurse, I can expect that my job will almost completely revolve around the physical and mental care of elderly patients. I will be required to support the care efforts of physicians, and often provide care directly to patients. My work will often take place in a long term care facility, hospital, hospice, assisted living center, community health centers, or even private homes of patients. [56]

Geriatric nursing requires a lot of work with physicians, and a good deal of my job will be in a support role to the physicians that serve my patients. One of the ways I will provide support to physicians through assistance with examinations. Additionally, I will frequently be required to carry out treatments, including administering prescribed drugs and other remedies. I will also be responsible for preparing patients for treatments and setting up equipment. I will be expected to maintain an organized, updated chart for patients in my care so that physicians will have an accurate record on which to base their recommendations for care. [57]

Much of my job as a geriatric nurse will also involve progress reporting. I can expect to spend a good deal of my day preparing reports on patient conditions, behaviors and reactions. I will also perform routine and prescribed tests to measure respiration, pulse, temperature, blood pressure, and other indicators of health. Doing so will help diagnose diseases and ailments, as well as monitor the progress of existing conditions affecting my patients. [57].

### **2.15 Nursing care for the normal aging**

Normal aging begins at birth, it is a process that continues through life. It is natural and it happens to everyone. It is not an illness, not poor health and it is inevitable.

Remember the body ages at different rates for different people in all age groups .aging affects all body systems : [58].

### **2.15.1 Nervous system:**

As we age nerve impulses slow down. the blood flow to certain parts of the brain decreases and we have fewer nerve cells which react more slowly .how can this affect the older adult :

Unsteady on their feet or less able to perform house hold tasks. Vision and hearing may be impaired. Forgetful and ask for the same information several times .sensitivity to external pain or pressure is decreased. [58]

### **2.15.2 Care:**

When we understand these changes, we will recognize the strong need for more patience .Older adult can still do many things and these should certainly be emphasized but understand, empaphize and be patient. [58]

### **2.15.3 Circulatory system:**

As we grow up, the heart pumps with less force and has to work harder .Blood vessels thickens and become less elastic causing an increase in blood pressure and decreased blood flow to various parts of the body, this can affect older adults .they may get dizzy if they change positions quickly .Minimal exertion can produce labored breathing and exhaustion .they will chill quickly and will require warmer environments.

**Care:** take your time with any activity to ascertain the physical tolerance an individual may have. Don't over exert any person/s you are assisting. Keep sweaters and comfortable clothes nearby .be sure to provide warm towels immediately after bathing or showering. [58]

### **2.15.4 Respiratory system:**

**Changes:** the lungs become more rigid. It becomes more difficult to take deep breaths. There is actually a decrease in the amount of air that is inhaled, leading to shortness of breath.

**Care:** keep older adult inside if it is cold or windy. Keep them away from smoke and pollution. There is strong possibility they will tire easily so be careful not to over exert them. [58] .

### **2.15.5 Digestive system:**

**Changes:** Tooth and /or gums diseases may make chewing difficult. Swallowing is slower as is the digestion of food. There is a decrease in the saliva and digestive juices.

**Care:** excellent oral hygiene becomes even more important .Be aware that it takes older adults longer to eat .be sure to take the necessary time. Offer fluids on a frequent basis as dehydration is a real problem, which can lead to urinary tract infection and other problems [58].

### **2.15.6 Skeletal system:**

There is a loss of muscle cells and flexibility. Bones become brittle and people actually become shorter. Joints become worn and stiff .There is a loss of strength.

**Care:** be very careful that older adults don't fall .Gentle exercise of joints and muscles becomes even more important, so helps is often needed. Personal care, dressing or even opening medications become more difficult [58].

### **2.15.7 Urinary system:**

**Changes:** The kidneys actually become smaller and urine is not produced as quickly. The bladder shrinks and losses muscle tone. Incontinence due to muscle weakness can ensue.

**Care:** encourage drinking fluids to help avoid infections. Be aware that often older adults don't drink the water they need, as it causes increased urination which they can perceive as a problem. provide assistance after going to the bathroom and be aware of bowel or bladder accidents as they occur [58]

### **2.15.8 Endocrine system:**

**Changes:** The body become less effective in fighting diseases .Likewise the production of hormones is dramatically decreased. Older adults find it much more difficult to regulate body temperature and they have a loss in their ability to conserve body heat.

**Care:** Try to avoid any stressful situations .If you or anyone who cares for older adult has a cold or flu, stay away .Don't take the risks of spreading the disease. Make sure you and the older adults frequently wash his or her hands especially after going to the bathroom [59].

### **2.15.9 Reproductive system:**

**Changes:** The body decreases or actually stops producing sex hormones. All natural secretions decrease and there is an inability to have sexual relation as before.

**Care:** encourage people to talk about any problems if they wish. Understand that often off color jokes are a way of dealing with this loss of sexual abilities .recognize that some characteristics of gender will disappear .Women may grow facial hair for example, or men and women may lose genital hair [59].

### **2.15.10 Integumentary system:**

**Changes:** The skin becomes less elastic causing wrinkles. It also thins considerably and bruises and breaks down easily .The skin also produce less oil and the hair thins.

**Care:** be cautious with showering or bathing. Older adults should not bathe every day .Tight fitting clothing is not comfortable. Frequent use of lotions and gentle massage is helpful .Style their hair to make the most of what is remaining.

### **2.15.11 Sensory system:**

**Changes:** It is these changes that can most easily be seen when caring for an older adult .These are the changes that affect a person daily living activities to the greatest extent. Changes frequently lead to feeling of loneliness and isolation. More often they involve:

changes in vision and hearing: Object become blurry, less clear or sharp .Greens and blues are more difficult to see but reds and oranges are the same .It is more difficult to see in the dark or poorly lit areas .Bright lights may actually hurt the eyes .High pitches sounds or voices sound muffled or cant be heard at



all .Balance is not as good .Clean his or her eye glasses more frequently .Keeps light on to assist them to see .Speak slowly and don't mumble. Have hearing tested and obtain aids if necessary [59].

**Changes in taste and smell:** There is a decrease in the ability to taste salty and sweet food. There is also a decrease in the ability to identify or detect odors.

**Care:** Check the smoke alarm frequently and make sure it is in working condition .Fix small nutritious and appetizing meals .Watch how much salt is used on the food.

Changes in sensation and pain: There is decreased sensitivity of the skin especially in the hands and feet. It becomes difficult to feel how hot or cold an object is.

Care: Keep legs and feet covered .Help identify objects that can no longer be detected. A soft hug or touch is often treasured [59].

## **2.16 . Home Care for older adults with cataract :**

A cataract is a condition in which the lens of the eye becomes increasingly opaque, causing cloudy or blurred vision. Most cataracts form gradually, but will eventually affect one's eyesight. Cataracts typically distort the light passing through the eye's lens. Cloudy vision from cataracts can make it difficult to read, drive and manage everyday functions at work and around the home. Leisure activities that rely on close-up eyesight such as needlework and fine woodworking can become challenging. Seeing fading or yellowing colors and halos around lights are other signs of cataract impairment. [60].

All older adults be sure to follow these instructions :

- have a comprehensive, dilated eye exam at least every two years. Adjusting the lens strength or shape of glasses and contact lenses can help with the vision limits of cataracts.
- Confirm that elders get regular medical checkups. Cataracts can form from illnesses such as diabetes or the long-term use of steroids. Surgery from glaucoma and other vision disorders can also cause cataracts.
- Restrict driving, particularly at night. Older adults with cataracts may find their night vision significantly reduced and should plan accordingly for safety on the road.
- Use non-glare lighting throughout the home. Minimize exposure to bright lamps and direct sunlight. Adjustable window blinds and shades help reduce sensitivity to light and glare.

When outdoors, wear anti-glare, UV-protection sunglasses and a brimmed hat to block ultraviolet sunlight. Extended exposure to sunlight is linked to eye damage, including cataracts and macular degeneration.

- Maintain a healthy weight and diet. Obesity can heighten the risk for cataracts. Eat daily amounts of fruits and vegetables high in antioxidants. [60].

### **Care after cataract surgery:**

Surgery is the only effective way to remove a cataract. The surgery involves the removal of the lens and implanting a replacement lens. With technology advances, the successful rate is high with more than 90% of patients regaining good vision. Most cataract surgeries are performed as day surgical procedures without the need for hospital admission. Typically, the patient is given appointment to see his eye doctor the next day after surgery and one week following the procedure. Post-operative consultations are extremely important for the doctor to check the healing progress . [61].

Usually complications from cataract surgery are rare. The most common risks are bleeding, infection, and changes in eye pressure, which are all treatable when caught early. Surgery slightly raises the risk of retinal detachment, which requires emergency treatment. Sometimes, lens tissue left after surgery and used to support the IOL can become cloudy, even years after surgery. This "after-cataract" is easily and permanently corrected with a laser .

Follow the instructions given by your doctor after cataract surgery. If the person is discharged with an eye pad over his operated eye, the pad should be in place until his appointment with the doctor the next day.

The following are general instructions his family members can be observed:

- Use the eye drops as prescribed. They are usually for preventing infection and controlling eye pressure. Note that some eye drops need to be kept in the refrigerator.
- Wash hands before and after assisting the person in any procedure such as applying eye drops or cleaning the eye.
- If more than one type of eye drops is prescribed for the same eye, wait 5 minutes before instilling the second type of eye drop.
- If the person is receiving both eye drops and ointment, apply the eye drops first.

- If drug allergy develops, stop the eye medication immediately and consult your doctor.
- Do not use eye baths or irrigations unless they have been prescribed.
- Usual medication for pre-existing illness such as diabetes, high blood pressure or heart disease, should be continued after surgery. Please consult your doctor if you are doubtful.
- Mild pain is expected. Over-the-counter pain killers such as Paracetamol can be used to relieve the pain, provided the person has no allergy to the medicine.
- Reading or watching television can be resumed soon after the operation, as long as the person feels comfortable.
- Normal physical activities may be resumed one day after surgery unless advised otherwise.
- Strenuous activities such as jogging, lifting weights, swimming, gardening, aerobics, contact sports etc. should be avoided for 1-2 months.
- Sleeping in any position is acceptable, but the person should avoid direct pressure on the operated eye.
- A protective eye shield should be worn during sleep or nap for at least the first week after surgery. This helps to prevent accidental injury to his eye during sleep.
- Usual diet may be continued after surgery. Avoid constipation by taking high fiber diet and plenty of fluids. Constipation causes unnecessary strain which may affect the operated eye.
- Remove any discharge from the operated eye with either a clean cotton-swab moistened with cool boiled water or clean piece of soft tissue paper. Ask the person to close his eyes, clean his eye lids using a sweeping motion from inner to outer corner of the eye, using a fresh swab for each stroke to prevent contamination.

- To remove crusted secretions around the eye, let someone or you can close the eye and place a gauze pad moistened with cool boiled water over it for 1 or 2 minutes. Reapply if the secretions are not softened enough to be removed. Do not attempt to use force or apply pressure to remove the dried-up secretions, you may injury the eye.
- As far as possible, vigorous coughing and sneezing should be avoided because this can cause an increase in eye pressure. Notify your doctor if the cough not stop.
- Avoid crowded and/or dusty places to prevent accidental injury or contamination to the operated eye.
- Avoid carrying children who may accidentally hurt the operated eye.
- Avoid bending over or lift anything heavy.
- Sunglasses may be worn during the daytime, especially outdoors, to avoid any discomfort caused by the bright light and also to prevent any injury to eye.
- Do not rub, press or squeeze the operated eye. If there is any discomfort, consult your doctor.
- Do not allow water or soap to enter the operated eye during the first 2 weeks after surgery.
- Instead of splashing water directly, use a clean, soft, wet towel to wipe face.
- Wash hair the salon way, that is the head tilted backwards to avoid any water splashing into the eye.
- Bathing can be resumed after the first day, but should be done below the neck.
- After surgery, the person may use his existing pair of eye glasses if he finds them useful and comfortable. The eyes are usually tested 4 to 6 weeks after surgery and then, if necessary, a prescription for glasses will be given. [61].

The following symptoms are common after surgery and not a cause for alarm.

They may remain to some extent for 6-8 weeks:

- Mild discomfort, mild tearing, slight redness, scratchy sensation, glare and slight drooping of upper eyelid in the operated eye.
- The person may feel that there is something in his eye. This is normal and is due to the stitches. This feeling may last up to six weeks.
- The vision may be blurry until eye glasses prescription is given or changed. [62].

Contact the hospital immediately if any of the following symptoms is presented:

- Severe or increasing pain in the operated eye
- Decrease in vision, floaters or flashes of light in the operated eye
- Excessive discharge and redness in the operated eye
- Headache, nausea and/or vomiting . [63].

### **Tips to Prevent Cataracts:**

Things you can do that may lower risk of developing cataracts: [63].

- Don't smoke.
- Always wear a hat or sunglasses in the sun, also helps preventing trauma .
- Keep diabetes well controlled.
- Limit alcohol consumption.

## **2.17 Care for Diabetic Older Adults:**

Diabetes is a common problem in older adults. Approximately 20% of individuals over 65 years of age have diabetes mellitus, and almost half of these individuals have not been diagnosed. However, there are widespread misconceptions about possible consequences of uncontrolled hyperglycemia, the rate at which diabetic complications develop, and the role of multidisciplinary management.

Overall, management strategies for diabetes in older adults are no different from those of diabetes in younger groups, with some exceptions. Unlike younger people with type 2 diabetes, who are often overweight, obesity is not that common among older diabetes patients. In nursing homes, the problem of being underweight is as common as that of being overweight. Thus, nutritional management should focus on weight gain for underweight elderly patients as much as it is focused on weight loss for obese patients (64).

In addition to diet and exercise, pharmacological therapy is often required for optimizing blood glucose control. Target blood glucose ranges should be individualized. In frail patients, fasting plasma glucose levels should range from 100 to 140 mg/dl, and postprandial values should be <200 mg/dl. Older subjects may require extra educational support to become proficient in self-monitoring of blood glucose.

### **2.17.2 Exercise**

Potential benefits of exercise in diabetic subjects are multiple and include increased insulin sensitivity and possibly glucose tolerance and improved cardiovascular fitness, sense of well-being, agility, and lipid profile. Exercise may also help develop stronger muscles and bones, possibly reducing the risks of falls and fractures.<sup>65</sup>

However, potential risks should be borne in mind. These include fluctuations in blood glucose levels, soft tissue or bone injury, arrhythmias, MI or sudden death, and possibly vitreous hemorrhage or retinal detachment with strenuous isometric exercises. The latter is of concern in those with proliferative diabetic retinopathy or those with a history of retinal bleed.

Thus, safety guidelines should be strictly followed. Complete medical evaluation with electrocardiograms and exercise tolerance testing is recommended. The patient should be told to start slowly and advance as tolerated. At least 10 minutes of warm up and 10 minutes of cool down periods should be included.

Blood glucose levels should be monitored before and after exercise to establish blood glucose response patterns to the exercise regimen. If blood glucose is >250 mg/dl, the patient should delay the exercise session. If blood glucose is <120 mg/dl, then a snack may be appropriate. To avoid hypoglycemia, patients should avoid exercising during peak insulin action and should use the abdominal area for insulin injections for consistency of insulin absorption. It is also advisable to carry a CHO source and personal identification, and, if any discomfort occurs during exercising, to stop the activity and notify the physician (66).

### **2.17.3 Pharmacotherapy**

When changes in lifestyle, such as diet and exercise, are not sufficient for achieving glycemic goals, then drug therapy should be instituted. The choice of a particular agent for a given subject depends on the severity of hyperglycemia, coexisting medical problems, and concomitant use of other medications, as well as safety, pharmacodynamic, and economic considerations.<sup>31,50,51</sup>

Currently, there are five classes of oral antidiabetic agents. These include sulfonylureas, biguanides (e.g., metformin), alpha-glucosidase inhibitors (e.g.,



acarbose or miglitol), thiazolidinediones (e.g., troglitazone), and meglitinide analogs (e.g., repaglinide).

Clinical experience with troglitazone is very limited, and the cost may be prohibitive for some patients. In addition, the clinical efficacy may not be appreciated for up to 2 months of treatment, making it an unsuitable agent for those who would require more prompt blood glucose control. Patients on troglitazone should have their liver enzymes monitored closely. Monotherapy indication for troglitazone was recently withdrawn.

The clinical advantage of repaglinide compared to short-acting sulfonylureas is not established.

There is a wealth of clinical experience with sulfonylureas, and the cost of some preparations is very affordable. With the exception of chlorpropamide, the clinical efficacy and safety of various sulfonylurea agents are comparable. However, some pharmacokinetic and pharmacodynamic considerations may favor the use of glipizide in older patients. The clinical significance, however, of the differences in the pharmacology of these agents is not known. Because of the very long half-life and antidiuretic hormone-potentiating effects, chlorpropamide should not be used in the older patient population. The potential concerns with sulfonylureas and repaglinide include increased incidence of hypoglycemia, weight gain, and hyperinsulinemia.

The other two classes of agents, biguanides and alpha-glucosidase inhibitors, are not associated with hypoglycemia when used as monotherapy. However, the two agents currently available, namely metformin and acarbose respectively, often require multiple administration schedules, and both are associated with high incidence of gastrointestinal discomfort. Thus, dosing should always start at low levels (such as metformin 500 mg once or twice a day or acarbose 25 mg once a day with the first bite of a meal), and dose escalation should be gradual and slow. Of concern is that the multiple coexisting diseases and impaired renal

function commonly found in elderly subjects may increase the risk of metformin-associated lactic acidosis. In addition, the drop in plasma vitamin B12 level, although not of clinical significance in the majority of patients, should be monitored considering the increased propensity of older patients to vitamin B12 deficiency.<sup>67</sup>

With the availability of antihyperglycemic agents that do not cause hypoglycemia when used as monotherapy, it is now possible to lower blood glucose levels in many frail, elderly patients without undue risk of hypoglycemia.

Advanced age should not preclude the use of insulin. The choice of the type of insulin depends on the desired onset and duration of action. Insulin administration should match food intake schedule. It should be kept in mind that up to 20% error in insulin dosage may occur and that premixed insulin are alternatives.<sup>52</sup> The latter preparations, however, should not be given at bedtime or used in a sliding scale or in supplemental insulin regimens. Many insulin injection aids are now available to help achieve more independence and self-management of diabetes in older adults with visual impairment or poor dexterity.

As stated earlier, the initial choice of antidiabetic agents should be individualized. A general algorithm of drug therapy in elderly patients is suggested in Figure 1.<sup>67</sup>

Patients with IGT, namely those with fasting plasma glucose (FPG) of <140 mg/dl and postprandial plasma glucose (PPG) of >200 mg/dl may benefit from dietary and exercise recommendations tailored to individual capabilities. If PPG is persistently >200 mg/dl, then acarbose or miglitol treatment can be initiated unless there is a contraindication. If FPG levels are consistently >300 mg/dl, initiation of insulin therapy is appropriate, along with diet and exercise. Many

of these patients may be able to have their insulin discontinued and have their blood glucose levels maintained on diet with or without an oral agent.

If the patient is symptomatic and there is clinical evidence of dehydration or hyperosmolarity, then insulin therapy should be initiated in a hospital setting. Otherwise, outpatient education and initiation of insulin is appropriate.

If FPG is consistently  $<300$  mg/dl, then the options are insulin, sulfonylurea, alpha-glucosidase inhibitors such as acarbose or miglitol, and metformin if no contraindications to its use can be identified. Certain individuals may be better candidates for specific agents. For example, metformin may be a better choice for an obese individual, while patients with predominant postprandial hyperglycemia are good candidates for acarbose. However, more studies are needed to define the drug of choice in various patient subgroups.

If monotherapy does not achieve the glycemic goals, then combination therapy should be considered. The likelihood of achieving and maintaining near-normoglycemia with a single agent is small. However, the increased cost and possibly increased adverse events as a result of drug-drug interactions during combination therapy are of concern.

The goals of management should be individualized. Coexisting cardiac risk factors, such as hypertension, hyperlipidemia, and cigarette smoking, must be addressed. The principal goal of therapy is to enhance quality of life without undue risk of hypoglycaemia. In general, it is desirable to achieve FPG of  $<140$  mg/dl and PPG levels of  $<200$  mg/dl.

In the frail elderly, especially those in nursing homes, it is best to avoid FPG or bedtime plasma glucose levels of  $<100$  mg/dl if the patient is on insulin or sulfonylurea therapy. In this population, the life expectancy of the individual is an important determinant of the glycemic goals.<sup>69</sup>

#### **2.17.4 Patient education, nursing care and monitoring**

Diabetes education is an integral aspect of all diabetes management, regardless of the patient's age. Diabetes education should be recognized as a lifelong commitment, for both patients/families and the interdisciplinary diabetes team.

Effective education starts with an assessment of educational needs and readiness to learn. Just as diabetes treatment needs to be individualized, so do educational needs. Many people with diabetes have had no formal diabetes education, often despite years of living with diabetes. There may be many misconceptions, fears, and/or myths that need to be explored or acknowledged. Health beliefs, culture, and religious beliefs may also influence adherence to diabetes treatment and management plans.

It is important to utilize principles of adult learning when providing education to older adults with diabetes. These principles include recognizing previous experiences, using a variety of teaching methods, adapting teaching materials to accommodate learning (i.e., large print, additional time for practicing skills), using a variety of teaching materials, making the education relevant, and actively including the person in the learning process.

Breaking more complicated skills/information into smaller, simpler steps may assist with retention and mastery. Providing opportunities to practice skills and ask questions, as well as providing positive feedback, are all important.

One-on-one and group classes can provide needed socialization and support for older adults. Other factors that may influence learning include the aging process, other medical conditions/medications, and emotions. Including the family/caregivers in the assessment and education process is essential since they may be providing the care as well as reinforcing education/monitoring practices. Utilization of community resources (i.e., Meals on Wheels, Red Cross for transportation, local diabetes organizations for education and support groups, home care nurses/aides) is also important.

Follow-up is important to clarify questions and concerns, as well as to encourage and motivate patients. Phone follow-up may be more realistic due to transportation problems and can be helpful in providing education in conjunction with regular follow-up appointments or in using community resources.

Appropriate tools or aids should be provided to circumvent some of the limitations associated with poor vision and poor dexterity. The glucose meters provided should be easy to use, have large display screens, require no cleaning, and have memory capabilities.

Older adults with diabetes are often incorrectly stereotyped as being slow and unmotivated in managing their diabetes. In fact, many older adults with diabetes are enthusiastic, motivated learners actively involved in all aspects of their diabetes treatment plan. When older patients are appropriately educated, they are capable of carrying out self-monitoring of blood glucose as accurately as do younger people.<sup>67</sup> The frequency of monitoring should be individualized based on the type of diabetes treatment and frequency of dose adjustment and financial resources of the individual.

**Conclusions:**

Diabetes in older adults is often undiagnosed and undertreated. Prevalent myths and misconceptions have interfered with optimal management. Achieving individualized glycemic goals is an important quality-of-life issue.

The older diabetes population is a highly heterogeneous group. Nutritional, psychosocial issues, and coexisting medical problems further complicate diabetes management. Therefore, management should begin with a comprehensive assessment and should be individualized.

With the availability of new antihyperglycemic agents, it is now possible to control blood glucose levels without the risk of hypoglycemia. More studies as to the cost-benefit ratio of each pharmacological agent would be helpful.

Given the complexity of the disease itself and the multiple complicating factors, an interdisciplinary team working in conjunction with community resources is needed for optimal management of diabetes in older patients.

## **Chapter Three**

### **3. Methodology**

#### **3-1 Study Design:**

This is an intervention quasi study (pre-test/ post design) , attempts to establish cause – effect relationship between health education program and older adults’s health awareness and practices level regarding activities of daily living and instrumental activities of daily living (IADLs). Was carried out to raise the health awareness and improve practices of older adult after implementation of health education program.

#### **3-2 Study Area:**

The area of the study is Al-Gardood area,( it lays about 23km south of Elduweim city) White Nile state . it composed of three small villages , it has one primary health center , four high schools and eights basic schools . most its people are farmers .

#### **3-3 Population:**

Older people in White Nile state - Sudan and they were both sexes.

##### **3-3-1 Inclusion criteria:**

- **Age:** 65 years and above.
- **Sex:** Both sexes.
- **Status:** married, divorced and widowed .
- **Education level:** illiterate, primary, secondary and graduate.

##### **3-3-2 Exclusion criteria**

- Older deaf and severely debilitated people.
- Travelling people (people who moves out of the area during the time of the study).

### **3-4 Sample size and sampling technique:**

The sample size was consisted of all older people in the study area (total coverage).

### **3-5 Data collection:**

The tool was used in this study include three models which are ; Katz, Lawton and Fulmer spice models . Katz tool has been modified and simplified and different approaches to scoring have been used. it has consistently demonstrated its utility in evaluating functional status in the elderly population.. Lawton Instrumental Activities of Daily Living (IADL) which include more complex activities related to independent living in the community (e.g. managing finances and medications), SPICES is an appropriate model for obtaining the information necessary to prevent health alterations.

The researcher uses these as (pre- and- post test) to collect the:

- Demographic data such as (age, sex, social status, and family health history).
- Questions about participants knowledge, health beliefs and practice regarding activities of daily living (ADLs) ,and instrumental activities of daily living (IADLs) .aging problems and physical changes . The questionnaire sheet filled by the researcher himself.

The study was conducted in four phases, which took a period of 4 months from April 2017 to July 2017.

1. Assessment phase.
2. Planning phase.
3. Implementation phase.
4. Evaluation phase.

#### **1- Assessment phase:**

Including personal interview and questionnaire sheets. All older adults are interviewed to assess their knowledge and practices regarding aging changes and problems acceptance, adaptation and coping .older adults were asked about their activities of daily living (bathing and toileting, eating patterns



and physical exercises, sleeping, confusion and incontinence, and also about instrumental activities of daily living as pre-test, each sheet will be filled by clients and by the researcher as well in case of personal interview.

## 2- Planning phase

Health education program was planned and designed by the researcher based on the result of the assessment phases..

The table below shows the health education sessions and other measures that the researcher has implemented:

<b>Lecture /session</b>	<b>Target group</b>	<b>Place</b>	<b>Time</b>
Aging process and its changes.	Older adults	Basic school theater	
Risk factors of Falls and older adults	Older adults and family members	Basic school theatre Home visit	
Older adult Polypharmacy	Older adult and family members	Home visit	
Common infections and injuries among older adults .	Older adults/family members /community	Public at the basic school theater .	
Environment and home safety	Family members of older adults	Home visits	
Activities of daily living	Older adults / family members	Basic school / home visit .	
Dementia , delirium and depression	Older adult / family members	Basic school theater / home visit	
Hypertension and diabetes , cataract	Community /older adults .	Basic school / social clubs .	

Older adult abuse	Older adults/ family members	Home visits	
Skin and oral care.	Older adults / family members	Home visits	
Checking vital signs	Older adults	Home visits	
Checking blood sugar	Older adults	Home visits	
Older adults psycho-social needs	Older adults / family members	Home visits / basic school classes / picnic	

### **3- Implementation phase:**

The health education program was implemented through sessions and activities carried out in the Al-Garadood area ´s schools , mosques and social , cultural and club and mostly in home visits . The research held public lectures in the schools and the social and cultural club, the Audience were invited through announcements and phone calls . other small sessions were held in the mosques because of the short time . Topics like medications , home safety , personal hygiene and physical exercises were explained during home visits to the elders and family members .

### **4. Evaluation phase.**

After program implementation, a post test was done for older and their family members immediately to evaluate effect of the program.

### **5. Pilot study (pretest):**

A pilot study was done on a sample of 15 clients. The aim was to test the feasibility and legibility of the study instruments. According to the results obtained, some questions were restructured and rephrased to give the most accurate response.

### **3-6 Ethical consideration**

Before conduction of the study, a written letter explaining the aim of the study was sent from the College of Nursing- Shandi University to the director of Al-Gardood popular committee leaders in order to obtain their cooperativeness and permission to collect necessary data. Ethical considerations and human subject issues

- Formal approval was obtained from the local authorities.
- Informed verbal consent was obtained from study subjects before participating.
- Confidentiality is maintained throughout the study.
- It was voluntary to participate in the study.

### **3-7 Statistical analysis:**

Collected data is entered into a database file. Statistical analysis was performed by using the (SPSS 21) computer software statistical package. Data was compared by using Chi-2 test for qualitative variables while independent t-test was used for quantitative variables. One-way ANOVA is used for comparing quantitative and parametric variables into more than three groups of qualitative variable. In case of non-parametric variables, Statistical significance is to be considered.

### **3-8 Limitations of the study:**

1. Non-responders and time of family and friends visit make interruptions during the health education programs represented a major problem, and some lessons and activities interferes with working time for some others, but it was overcome through personal contacts with the family members and home visit .An exclusion was applied for some who did not attend more than 3 sessions or five home visit activities of daily living.

## Chapter Four

### 4. Results

This chapter presents the descriptive and inferential statistic results of the study. The descriptive results mainly present the demographic characteristics of the study sample, while the inferential statistic (cross-tabulation and Chi-square tests) results highlight the observed correlations and associations between various variables and the studied group pre and post educational program.

#### 4.1 Socio-demographic characteristics of the study population

The social and demographic characteristics are presented in Table 4-1

**Table (4-1) Distribution of respondents according to socio- demographic characters information:**

Variable	Frequency	Percentage
<b>Gender</b>		
Male	48	46.6%
Female	55	53.4%
	103	100.0%
<b>occupation</b>		
farmer	18	17.5%
self-employed .	12	11.7%
housewife	40	38.8%
jobless	28	27.2%
employee	5	4.8%
Total	103	100.0
<b>Educational level</b>		
illiterate	32	24.3
primary	18	17.5%
secondary	25	31%
graduate	28	27.2%
Total	103	100.0

Results of table (4-1) showed that 53.4% of respondents were females, with mean of age (69.93), while more than third (38.8%) were housewives, and most of them with good level of education (58.2%) were either graduate or finished their secondary school.

## 4-2 Activities of Daily Living (ADLs)

These are the basic self-care tasks that we initially learn as very young children. They are sometimes referred to as “Basic Activities of Daily Living” (BADLs). They include:

### (4-2-1) (Bathing – study group):

<b>group</b>		<b>Frequency</b>	<b>Percent</b>
<b>pre-test</b>	Independent	18	17.5
	Dependent	85	82.5
	Total	103	100.0
<b>post-test</b>	Independent	66	75.0
	Dependent	22	25.0
	Total	88	100.0

### (4-2 -2) Dressing – study group:

<b>Group</b>	<b>Dependency</b>	<b>Frequency</b>	<b>Percent</b>
pre-test	Independent	49	47.6
	dependent	54	52.4
	Total	103	100.0
post-test	Independent	69	78.4
	dependent	19	21.6
	Total	88	100.0

**(4-2-3) Toileting – study group:**

<b>Group</b>	<b>Dependency</b>	<b>Frequency</b>	<b>Percent</b>
<b>pre-test</b>	Independent	63	61.2
	dependent	40	38.8
	Total	103	100.0
<b>post-test</b>	Independent	68	77.3
	dependent	20	22.7
	Total	88	100.0

**(4-2 -4) Transferring – study group:**

<b>Group</b>	<b>Dependency</b>	<b>Frequency</b>	<b>Percent</b>
pre-test	Independent	73	70.9
	Dependent	30	29.1
	Total	103	100.0
post-test	Independent	68	77.3
	dependent	20	22.7
	Total	88	100.0

**(4-2-5) Continence – study group:**

<b>Group</b>	<b>Dependency</b>	<b>Frequency</b>	<b>Percent</b>
pre-test	Independent	81	78.6
	dependent	22	21.4
	Total	103	100.0
post-test	Independent	69	78.4
	dependent	19	21.6
	Total	88	100.0

**(4-2-6) Feeding – study group:**

<b>Group</b>	<b>Dependency</b>	<b>Frequency</b>	<b>Percent</b>
pre-test	Independent	89	86.4
	dependent	14	13.6
	Total	103	100.0
post-test	Independent	70	79.5
	dependent	18	20.5
	Total	88	100.0

Table (4-2) shows the dependence level of participants when practicing their daily routine home activities pre and post participating in the educational program.



Table (4-2-7) Association between the study group and daily home activities dependent level:

Title		Activities dependent level			Total	p-value
		dependent (0-2)	Moderate (3-4)	independent (4-6)		
Group	pre-test	6	88	9	103	0.87
		3.1%	46.1%	4.7%	53.9%	
	post-test	20	3	65	88	0.00
		10.5%	1.6%	34.0%	46.1%	
Total		26	91	74	191	
		13.6%	47.6%	38.7%	100.0%	

Results showed a significant statistical association between activities dependent level and the study group (p value= 0.00) where association considered significant when  $p \leq 0.05$

### 4-3 Instrumental Activities of Daily Living (IADL)

Instrumental Activities of Daily Living (IADLs) are the basic daily activities needed to live independently in the community – shopping, food preparation, cooking, using the telephone, doing laundry, housekeeping, managing medications. Instrumental activities of daily living (IADLs), was assessed by the researcher using Barthel Instrumental Activities of Daily Living index (IADL) (appendix 1).

**Table (4-3-1) Responsibility for Own Medication – in the study group:**

Group	Title	Frequency	Percent
Pre-test	Partially responsible	19	18.4
	Incapable	84	81.6
	Total	103	100.0
Post test	Responsible	51	58.0
	partially responsible	19	21.6
	Incapable	18	20.5
	Total	88	100.0

**Table (4-3-2) Ability to Handle Finances – in the study group:**

Group	Title	Frequency	Percent
Pre-test	Partially able	29	28.2
	Incapable	74	71.8
	Total	103	100.0
Post-test	Able	49	55.7
	Partially able	19	21.6
	Incapable	20	22.7
	Total	88	100.0

**Table (4-3-3) Ability to Telephone – in the study group:**

Group	Title	Frequency	Percent
Pre-test	Capable	1	1.0
	Partially capable	9	8.7
	Incapable	54	52.4
	Not applicable	39	37.9
	Total	103	100.0
Post-test	Capable	50	56.8
	Partially capable	5	5.7
	Incapable	11	12.5
	Not applicable	22	25.0
	Total	88	100.0

**Table (4-3-4) Shopping – in the study group:**

Group	Title	Frequency	Percent
Pre-test	Shops independently for small purchases.	14	13.6
	Needs to be accompanied on any shopping trip	37	35.9
	Completely unable to shop	52	50.5
	Total	103	100.0
Post-test	Takes care of all shopping needs independently	49	55.7
	Shops independently for small purchases.	5	5.7
	Needs to be accompanied on any shopping trip	12	13.6
	Completely unable to shop	22	25.0
	Total	88	100.0

**Table (4-3-5) Food Preparation – in the study group:**

<b>Group</b>	<b>Title</b>	<b>Frequency</b>	<b>Percent</b>
Pre-test	Prepares adequate meals if supplied with ingredients	4	3.9
	Heats and serves prepared meals, or prepares meals but does not maintain adequate diet.	29	28.2
	Needs to have meals prepared and served	70	68.0
	Total	103	100.0
Post test	Plans, prepares, and serves adequate meals independently	48	54.5
	Prepares adequate meals if supplied with ingredients	6	6.8
	Heats and serves prepared meals, or prepares meals but does not maintain adequate diet.	8	9.1
	Needs to have meals prepared and served	26	29.5
	Total	88	100.0

**Table (4-3-6) Housekeeping – in the study group:**

<b>Group</b>	<b>Title</b>	<b>Frequenc y</b>	<b>Percent</b>
Pre-test	1Maintains house alone or with occasional assistance (e.g. h	4	3.9
	2.Performs light daily tasks such as dishwashing and bed making .	99	96.1
	Total	103	100.0
Post test	1Maintains house alone or with occasional assistance (e.g. h	50	56.8
	2. Performs light daily tasks such as dishwashing and bed making .	31	33.2
	Total	81	92.0

**Table (4-3-7) Association between the study group and Instrumental Activities of Daily Living (IADL) dependent level**

group	Instrumental Activities of Daily Living (IADL) dependent level			Total	p-value
	independent	partially dependent	dependent		
Pre-test	2	17	84	103	0.089
	1.0%	8.9%	44.0%	53.9%	
Post-test	50	16	22	88	0.00
	26.2%	8.4%	11.5%	46.1%	
Total	52	33	106	191	
	27.2%	17.3%	55.5%	100.0%	

Results showed a highly significant statistical association between Instrumental Activities of Daily Living (IADL) dependent level and the study group (p value= 0.00) where association considered significant when  $p \leq 0.05$

#### 4-4 Spices

The researcher assessed some Psychological Function by measuring cognitive mental and affective functions independently these includes five items which is known briefly as SPICES (Sleep Disorders, Problems with, eating or feeding, Incontinence, Confusion, Evidence of Falls, Skin Breakdown).

**Table (4-4-1) Sleep Disorders – in the study group (Fulmer spices model):**

<b>Group</b>	<b>Option</b>	<b>Frequency</b>	<b>Percent</b>
Pre-test	Yes	78	75.7
	No	25	24.3
	Total	103	100.0
Post test	Yes	24	27.3
	No	64	72.7
	Total	88	100.0

**Table (4-4-2) Problems with eating or feeding – in the study group (Fulmer spices model):**

<b>Group</b>	<b>Option</b>	<b>Frequency</b>	<b>Percent</b>
<b>Pre test</b>	Yes	67	65.0
	No	36	35.0
	Total	103	100.0
<b>Post test</b>	Yes	17	19.3
	No	71	80.7
	Total	88	100.0

**Table (4-4-3) Incontinence – in the study group (Fulmer spices model):**

<b>Group</b>	<b>Option</b>	<b>Frequency</b>	<b>Percent</b>
Pre test	Yes	13	12.6
	no	90	87.4
	Total	103	100.0
Post-test	yes	19	21.6
	no	69	78.4
	Total	88	100.0

**Table (4-4-4) Confusion – in the study group (Fulmer spices model):**

<b>Group</b>	<b>Option</b>	<b>Frequency</b>	<b>Percent</b>
Pre test	Yes	25	24.3
	No	78	75.7
	Total	103	100.0
Post-test	Yes	25	28.4
	No	63	71.6
	Total	88	100.0



**Table (4-4-5) Evidence of Falls – in the study group (Fulmer spices model):**

<b>Group</b>	<b>Option</b>	<b>Frequency</b>	<b>Percent</b>
Pre-test	Yes	48	46.6
	No	55	53.4
	Total	103	100.0
Post-test	Yes	28	31.8
	No	60	68.2
	Total	88	100.0

**Table (4-4-6) Skin Breakdown – in the study group (Fulmer spices model):**

<b>Group</b>	<b>Option</b>	<b>Frequency</b>	<b>Percent</b>
Pre-test	Yes	11	10.7
	No	92	89.3
	Total	103	100.0
Post test	Yes	22	25.0
	No	66	75.0
	Total	88	100.0

**Table (4-4-7) Association between the study group and Sleep Disorders:**

		Sleep Disorders		Total	p-value
		Yes	No		
Group	Pre-test	78	25	103	0.121
		40.8%	13.1%	53.9%	
	Post test	24	64	88	0.02
		12.6%	33.5%	46.1%	
Total		102	89	191	
		53.4%	46.6%	100.0%	

Results showed a highly significant statistical association between Sleep Disorders and the study group (p value= 0.02) where association considered significant when  $p \leq 0.05$

**Table (4-4-8) Association between the study group and Problems with eating or feeding:**

		Problems with eating or feeding		Total	p-value
		Yes	No		0.073
group	Pre-test	67	36	103	
		35.1%	18.8%	53.9%	
	Post-test	17	71	88	0.013
		8.9%	37.2%	46.1%	
Total		84	107	191	
		44.0%	56.0%	100.0%	

Results showed highly significant statistical association between Sleep Disorders and the study group (p value= 0.013) where association considered significant when  $p \leq 0.05$

**Table (4-4-9) Association between the study group and Incontinence:**

		Incontinence		Total	p-value
		Yes	No		1.21
Group	Pre-test	13	90	103	
		6.8%	47.1%	53.9%	
	Post-test	19	69	88	0.98
		9.9%	36.1%	46.1%	
Total		32	159	191	
		16.8%	83.2%	100.0%	

Results showed no significant statistical association between Incontinence and the study group (p value= 0.98) where association considered significant when  $p \leq 0.05$

**Table (4-4-10) Association between the study group and Confusion:**

		Confusion		Total	p-value
		Yes	no		0.77
<b>Group</b>	<b>Pre-test</b>	25	78	103	
		13.1 %	40.8 %	53.9 %	
		25	63	88	0.63
	<b>Post-test</b>	13.1 %	33.0 %	46.1 %	
<b>Total</b>		50	141	191	
		26.2 %	73.8 %	100.0 %	

Results showed no significant statistical association between Confusion and the study group (p value= 0.63) where association considered significant when  $p \leq 0.05$

**Table (4-4-11) Association between the study group and Confusion evidence of falls:**

Title		Evidence of Falls		Total	p-value
		Yes	No		
Group	Pre-test	48	55	103	0.33
		25.1%	28.8%	53.9%	
	Post-test	28	60	88	0.33
		14.7%	31.4%	46.1%	
Total		76	115	191	
		39.8%	60.2%	100.0%	

Results showed no significant statistical association between Evidence of Falls and the study group (p value= 0.33) where association considered significant when  $p \leq 0.05$

**Table (4-5-1) Some common older diseases**

Item	Yes		No		Total	
	F	%	F	%	F	%
Alzheimer disease and other dementias	16	15.5	87	84.5	103	100.0
Benign prostatic hyperplasia	28	58.3	20	41.7	48	100.0
Cataracts	68	66.0	35	34.0	103	100.0
Glaucoma	9	8.7	94	91.3	103	100.0
Prostate cancer	1	1.0	47	99.0	48	100.0
Stroke	3	2.9	100	97.1	103	100.0
Urinary incontinence	11	10.7	92	89.3	103	100.0
Parkinson disease	2	1.9	101	98.1	103	100.0
Diabetes	45	43.7	58	56.3	103	100.0
Osteoarthritis	62	60.2	41	39.8	103	100.0
Pressure sores	5	4.9	98	95.1	103	100.0

In the above table, the most common diseases among respondents were cataracts (66%), Osteoarthritis (60.2%), benign prostatic hyperplasia (58.3%), diabetes (43.7%), and Alzheimer disease and other dementias (15.5%)

## Chapter Five

### Discussion, Conclusion and Recommendations

#### 5.1 Discussion:

The general adaptation defined as “the process and result through which people with the capacity to think and feel optimum consciously to become integrated with their environment”,<sup>6</sup> was represented by active aging. Active aging comprised physical independence, interaction with their environment, cognitively alert, free of symptoms of depression, and good or excellent health perception in spite of suffering from chronic disease.

Regarding demographic data of participants, results of the current study revealed that the majority (53.4%) of respondents were males, with mean age of (69.93), while more than third (38.8%) were housewives, and most of them with good level of education (58.2%) were either graduate or finished their secondary school.

Regarding daily home activities of respondents, Results showed a significant statistical association between activities dependent level and the study group ( $p$  value= 0.00) , practicing of different daily activities was clearly increased after attending the educational program which was designed by researcher for both elderly and their family members, most of them became highly independent specially when regarding bathing and dressing. Comparing this results with another quasi- experimental study carried in Sweden , in 2011, with (n=74) with difficulty in bathing ; reported ability of clients to wash hands, face, hair and combing hair, walking in and out, getting cloths from wardrobe , showed a significant statistical association between activities dependent level and the study group ( $p$  value= 0.017) , that clearly support the current study. In another similar intervention study implemented in south Africa in the year 2015,(n=80) older , (post stroke survivors) , to measure activities of daily living and return to work rate(The intervention was workplace intervention program tailored according to the functional ability and workplace challenges of each



stroke survivor ). It showed significant statistical association between activities of daily living and the study group( p value =0.05) .

Instrumental Activities of Daily Living (IADLs) represent key life tasks that people need to manage, in order to live at home and be fully independent. Generally, older adults need to be able to manage ADLs and IADLs in order to live independently without the assistance of another person.

Geriatricians assess ADLs and IADLs as part of assessing an older person's "function." Problems with ADLs and IADLs usually reflect problems with physical health and/or cognitive health. Identifying functional difficulties can help us diagnose and manage important health problems.

The current findings demonstrated that the Instrumental Activities of Daily Living (IADL) after educational program showed statistically significant improvement ( $P \leq 0.010$ ) on overall score This observation in accordance with another study studies <sup>[20],[21]</sup> as well which has shown that the intervention significantly brings greater benefit on IADL. This has been further supported by various functional magnetic resonance imaging and electroencephalography studies <sup>[22]</sup> and another intervention study was carried out in united kingdom in the year 2015, composed of 50 dwelling community  $\geq 65$  years old with dementia , the intervention program was to reduce multiple medications and IADLs performance among the study group , the study has showed great improvement in medication reduction and other IADLs .( p value = 0.03) , which support the current study .

Some Psychological Function were assessed by measuring cognitive mental and affective functions independently these includes five items which is known briefly as SPICES (Sleep Disorders, Problems with, eating or feeding, Incontinence, Confusion, Evidence of Falls, Skin Breakdown).

Results found a significant statistical association between Sleep Disorders, Problems with eating or feeding and the study group (p value= 0.01, 0.02) respectively, where association considered significant when  $p \leq 0.05$ . This

indicated that the educational program enhanced elderly coping with some psychological and social problems such as sleep disorder and feeding. Where there was no effect of this educational program on other problems. This supported by a prospective cohort study (n=174) inpatient 65 years and older , to indentify risk factors in older patients and alert nurses to initiate care plan. SPICES was significantly correlated with the constructed measures ,( p value =0.001). that strongly indicates SPICES is a valid screening assessment tool developed for community –residing older adults .

There is now general agreement that increasing age is accompanied by inevitable physiologic changes that represent normal aging and are separable from the effects of diseases states that become increasingly prevalent with age. Results of the current study revealed that the most common diseases among respondents were cataracts (66%), Osteoarthritis (60.2%), diabetes (43.7%), benign prostatic hyperplasia (58.3 %) and Alzheimer disease and other dementias (15.5%).

In a cross sectional survey of the whole community aged 65 years and over, was carried out in a small rural town in Italy. Subjects were screened by geriatricians for major chronic conditions, including hip, knee, and hand OA. The estimated prevalence was 29.8%, 14.9%, and 7.7%, respectively. Only hip OA was significantly associated with disability in basic activities of daily living.

## **5.2 Conclusion**

The current findings strongly support the view that a educational programs applied to elderly people and their family members seems to improve their performance on their DLA and IDLA or slow down the rate of decline thereby improving the elderly functional independence.

### **5.3 Recommendations:**

- 1- Ministry of health should conduct community campaign concerning with raising health awareness about aging and elderly care continuously by providing of health information concerning older adults through the different media.
- 2- Universities (Medical, Nursing colleges) should conduct further research in concerning this important issue, as our Sudanese community in need for such researches.
- 3- Social affairs ministry should conduct a community survey to assess and meet the older people needs.

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## Appendix (1) Questionnaire

**Age ..... Sex.....Occupation .....Marital state.....Education level**

**Patient residential state : a/ with family (     ) b/ Alone (     ).**

Activities	Independence (1 point) NO supervision, direction or personal assistance	Dependence (0 points) WITH supervision, direction, personal assistance or total care
BATHING Point: _____	(1 POINT) Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area, or disabled extremity.	(0 POINT) Needs help in bathing more than one part of the body getting out of the tub or shower. Requires total bathing.
DRESSING Point: _____	(1 POINT) Gets clothes from closets and drawers and puts on clothes and other garments complete with fasteners. May have help tying shoes.	(0 POINTS) Needs help with dressing self or needs to be completely dressed.
TOILETING Point: _____	(1 POINT) Goes to toilet, gets on and off, arranges clothes, cleans genital area without help.	(0 POINTS) Needs help transferring to the toilet, cleaning self or uses bedpan or commode.
TRANSFERRING Point: _____	(1 POINT) Moves in and out of bed or chair unassisted. Mechanical transferring aides are acceptable.	(0 POINTS) Needs help in moving from bed to chair or requires a complete transfer.
CONTINENCE Point: _____	(1 POINT) Exercises complete self control over urination and defecation.	(0 POINTS) Is partially or totally incontinent of bowel or bladder.
FEEDING Point: _____	(1 POINT) Gets food from plate into mouth without help. Preparation of food may be done by another person.	(0 POINTS) Needs partial or total help with feeding or requires parenteral feeding.
TOTAL POINTS= _____	6 = <i>High(patient independent)</i>	0 = <i>Low (patient very dependent)</i>

## **1/ Activities of daily living (Katz model) :**

## **2/ Instrumental Activities of Daily Living (IADL) Lawton model:**

### **Responsibility for Own Medication**

1. Is responsible for taking medication in correct dosages at correct time.
2. Takes responsibility if medication is prepared in advance, in separated dosages.
3. Is not capable of dispensing own medication.

### **Ability to Handle Finances**

1. Manages financial matters independently (budgets, writes checks, pays rent and bills, goes to bank); collects and keeps track of income.
2. Manages day-to-day purchases but need help with banking, major purchases, controlled spending, and so on.
3. Incapable of handling money.

### **Ability to Telephone**

1. Operates telephone on own initiative: looks up and dials number, etc.
2. Answers telephone and dials a few well-known numbers.
3. Answers telephone but does not dial.
4. Does not use telephone at all.

### **Shopping**

1. Takes care of all shopping needs independently.
2. Shops independently for small purchases.
3. Needs to be accompanied on any shopping trip.
4. Completely unable to shop.

### **Food Preparation**

1. Plans, prepares, and serves adequate meals independently.
2. Prepares adequate meals if supplied with ingredients.
3. Heats and serves prepared meals, or prepares meals but does not maintain adequate diet.
4. Needs to have meals prepared and served.

### **Housekeeping**

1. Maintains house alone or with occasional assistance (e.g. heavy work done by domestic help).
2. Performs light daily tasks such as dishwashing and bed making.

Scoring: Circle one number for each domain. Total the numbers circled. The lower the score, the more independent the older adult is.

### 3/ Fulmer Spices model:

SPICES	EVIDENCE
Sleep Disorders	
Problems with eating or feeding	
Incontinence	
Confusion	
Evidence of Falls	
Skin Breakdown	

### 4/ Common older adults diseases :

Disorder	Yes /No	Causes	Duration	Seen by doctor?
Alzheimer disease and other dementias				
Benign prostatic hyperplasia				
Cataracts				
Glaucoma				
Prostate cancer				
Stroke				
Urinary incontinence				
Parkinson disease				
Diabetes				
Osteoarthritis				
Pressure sores				

## جامعة شندي

### كلية الدراسات العليا

العمر ..... الجنس ..... (ذكر ..... أنثى) ..... المهنة ..... الحالة الاجتماعية .....  
المستوى التعليمي. (أبتدائي ... متوسط ... ثانوي ... جامعي ... السكن الحالي : أ. مع الأسرة . منفرد

نموذج كاتزا .اولا: الانشطة الحياتية اليومي

مستقل (1)	معتد (0)	الأنشطة
(بدون مراقبة أو توجيه أو مساعدة من أحد )	بمراقبة وتوجيه ومساعدة من احد (أو رعاية كاملة )	
(نقطة واحدة)	تقييم صفر	الاستحمام..
يغسل جسده كاملا منفردا أو يحتاج لمساعدة لغسل جزء واحد مثل الظهر أو المنطقة التناسلية أو عضو مشلول	يحتاج لمساعدة لغسل أكثر من عضو أو للخروج من الحوض أو يحتاج لعمل حمام كامل	
(نقطة واحدة)	(صفر)	ارتداء الملابس
يأخذ الملابس من الدولاب ويرتدي بمفرده، ربما يحتاج لعمل رباط الحذاء .	يحتاج للمساعدة لارتداء ملابسه جزئيا أو كلياً	
(نقطة واحدة)	( صفر ..... )	الخلاء ( التبول / التبرز).
يذهب لقضاء حاجته ويعود، يرتب ملابسه ويغسل المنطقة التناسلية	يحتاج مساعدة للذهاب لدورة المياه أو لتنظيف نفسه او استخدام المبولة	
(نقطة واحدة)	صفر	التنقل
ينتقل من والى السرير أو الكرسي بدون مساعدة . استخدام مساعدات التحرك مسموح بها	يحتاج للمساعدة للانتقال من السرير واليه ا والى الكرسي	
(نقطة واحدة )	(صفر 0)	القدرة على التحكم في التبول و الإخراج
يتحكم تمام في التبول والإخراج	لا يتحكم جزئيا أو كلياً	
(نقطة واحدة )	(صفر 0)	التغذية
يتناول الطعام بيده من الطبق إلى فمه بدون مساعدة. قد يحضر الطعام شخص آخر	يحتاج لمساعدة جزئية أو كلياً لتغذيته	
=6 عالي ( المريض مستقل )	صفر = منخفض (المريض معتمد جدا)	التقييم الكلي

## ثانياً نموذج لوتن: الأنشطة الحياتية اليومية الجهازية:

### أ. المسؤولية تجاه استخدام الأدوية :

- 1 . يتناول الأدوية بالجرعة الصحية في الوقت الصحيح .
- 2 . يتناول الأدوية إذا كانت محضرة مسبقاً في جرعات منفصلة .
- 3 . غير قادر على تحضير وتناول الأدوية .

### ب . قدرة التعامل مع المال :

1 . يدير الأمور المالية مستقلاً (الميزانية ، تحرير شيك ، دفع إيجار أو تسديد فاتورة ، الذهاب للبنك) حفظ المنصرف والدخل).

- 2 . يدير المصروف اليومي ولكنه يحتاج لمساعدة في البنك والمشتريات الكبرى ، و ضبط الصرف .
- 3 . غير قادر على التعامل مع الأمور المالية .

### ج . القدرة على استخدام التلفون:

- 1 . يشغل التلفون ، يختار الأرقام ويجري اتصالاً .
- 2 . يجيب على المكالمات ويتصل ببعض الأرقام المعروفة .
- 3 . يجيب على المكالمات ولكنه لا يجري اتصالاً .
- 4 . لا يستخدم التلفون أبداً .

### د . التسوق :

- 1 . يعتني ويقوم بكل احتياجاته منفرداً .
- 2 . يتسوق مستقلاً للأغراض الصغيرة .
- 3 . يحتاج ليصطحبه أحد في كل خروج للتسوق .
- 4 . لا يستطيع التسوق بالكلية .

### هـ . تحضير الطعام :

- 1 . يخطط ويحضر ويخدم وجباته مستقلاً بنفسه .
- 2 . يحضر وجباته إذا تم توفير المكونات الغذائية .
- 3 . يحضر ويخدم الوجبات الجاهزة ، أو يحضر وجباته ولكنها غير كافية .
- 4 . يحتاج لتقدم له الوجبات جاهزة .

### و . خدمة المنزل :

- 1 . يحافظ على منزله مستقلاً أو يحتاج أحياناً .
- 2 . يقوم ببعض الأعمال اليومية البسيطة مثل غسل الصحون وترتيب السرير .



### ثالثا : فولر اسبايس مودل

المشاكل حسب اسبايس مودل	الدليل / البرهان
مشاكل في النوم	
مشاكل في الأكل او التغذية	
التبول أو الإخراج اللاإرادي	
الارتباك	
السقوط على الأرض	
تمزق الجلد	

رابعاً : بعض الأمراض المنتشرة بين كبار السن :

الفترة الزمنية	السبب	هل قابلت طبيب مختص		هل تعاني من		الأمراض
		لا	نعم	لا	نعم	
						الزهايمر و الخرف
						تضخم البروستات الحميد
						الموية البيضاء
						الموية الزرقاء
						سرطان البروستات
						جلطة دماغية
						عدم التحكم في التبول
						شلل رعاش
						مرض السكر
						التهابات العظام والمفاصل
						تقرحات الفراش