CHAPTER II

LITERATURE REVIEW

The followings are concepts, theories, researches and academic articles which are related to the functional disability of the elderly;

1. The second national plan on older persons 2002-2021.
2. Declaration on Thailand's older persons 1999.
3. Act on older persons 2003.
4. Theories of aging
5. Functional disability measurement
6. Other related literatures

1. The second plan on older persons 2002-2021.

This plan is developed with strategic purposes as follows;

Vision: "Older persons are the pillar of society"

- Older people are in good conditions, both physically and mentally healthy. They have a good family and live in safe environments. They have income security, social welfare, access to facilities and appropriate services. In addition, they lead their lives with dignity and realize they are worth as active contributor to society. They are self-dependent and can access to information.

- Suffering older persons only need support from the society and with such support; can lead their lives with adequate peace.
- Families and communities are footholds for older persons.
- State welfare and services have to support older persons to stay with their families and in their communities with an acceptable quality of life.
- The government has to encourage the private sector to participate in providing services to protect older persons.

Purposes

- To make people in society think of and respect older persons as an active contributor to the society.
- To make people in society realize of the importance of preparation for old age and becoming a "worthy" older person.
- To empower older persons to lead their lives with dignity and be self-reliant with an acceptable quality of life and social welfare.
- To encourage the public, families, communities, the government and non-government organizations to participate in activities concerning older persons.
- To develop a framework and practice directions for all sectors in the society; namely, civil society, communities, state and private organizations working on older persons, for greater collaboration and coordination.

Strategic Approaches

The followings are 5 integrated strategies;

Section 1: Strategies in the preparation for old age with quality - -

consists of 3 measures as follow;

1. Extension of income security for old age to cover the population in general
2. Life-long education
3. Public education of the importance and the dignity of old age

Section 2: Strategies for encouraging and promoting older persons - - consists of 6 measures as follows;

1. Health promotion, disease prevention and self care among older persons
2. Enhancing the co-operation and strength of organizations and networks dealing with older persons
3. Promoting income security and employment for older persons
4. Supporting the potential and value of older persons
5. Encouraging the mass media to broadcast programs for older persons and encouraging older persons to have access to various forms of information
6. Providing older persons with proper accommodations and living environments

Section 3: Strategies of social security for senior citizens - - consists of 4 measures as follows;

1. Income security and employment in old age
2. Health security
3. Family - caregivers and protection rights of older persons
4. Service systems and support networks

Section 4: Strategies of management systems at the national level and in personnel development - - consists of 2 measures as follows;

1. Management systems at the national level

2. Personnel and caregiver education and training.

Section 5: Strategies of research to support policy and program development and monitoring and evaluating of the Second National Plan for Older Persons - - consists of 3 measures as follows;

1. Promoting and supporting research on older persons which focus on policy and program development
2. Promoting and supporting research relevant to older persons and the research should focus on policy and program development, service improvement and other knowledge which is useful for the improvement of older persons 'quality of life.
3. Developing mechanisms for continuous monitoring and evaluation of the Second National Plan for Older Persons.

2. Declaration on Thailand's older persons 1999

Article 1: Older persons shall be provided with the basic necessities for living in a meaningful and dignified manner. Older persons especially those who cannot depend on themselves nor their families as well as disabled older persons, without any discrimination, shall be protected from neglect and violation of their rights.

Article 2: Older persons should stay with their families and be accorded with due respect, love, understanding, care and attention, with proper recognition for each family member's role and a view to creating a cordial and harmonious relationship.

Article 3: Older persons should have opportunity for continuous pursuit of education, learning and development of their potential. They shall have access to information and social services necessary for their living and for understanding of social changes to adjust their roles accordingly.

Article 4: Older persons should have opportunity to pass on their knowledge and experiences to society, and shall have the opportunity to be employed with appropriate responsibilities for their age on their own will, with fair wages, to maintain their pride and realization of their own value.

Article 5: Older persons should be informed on how to take care of their own health. An equal access to comprehensive health care services should be ensured for older persons. They should also be provided with due care till the end of their lives when they may rest in peace according to their beliefs.

Article 6: Older persons should be allowed to play active roles in their families, communities and societies especially through associations, with a view to sharing, learning and understanding among older persons and persons of different ages.

Article 7: The state, with participation of non-governmental organizations, the public, and social institutions, shall formulate policies and master plans relating to older persons and shall, in order to attain their objectives, ensure that their implementation be undertaken by relevant agencies on continuous basis.

Article 8: The state, with participation of non-governmental organizations, the public, and social institutions, shall enact legislations concerning older

persons in order to ensure and enforce the protection of the rights and well-being of older persons and the provision of their social welfare.

Article 9: The state, with collaboration of non-governmental organizations, the public, and social institutions, shall, in accordance with Thai culture which attaches great importance to gratitude, care and compassion, campaign to instill a social value that recognizes the worth of older persons.

3. Act on older persons 2003

Origin of concepts and philosophy

1. The Constitution of the Kingdom of Thailand contains provisions on the rights of older persons who have attained the age of 60 years and do not have sufficient income for maintenance of life as having the right to receive aid from the state.
2. The second national plan on older persons 2002- 2021.
3. Declaration on Thailand's older persons 1999.

The older persons refer to people who have attained the age of 60 years and are of Thai nationality.

Measures of protection, promotion and empowerment for older persons

Section 1: There shall be a National Older Persons Commission, abbreviated as "NOPC" (or Kor-Por-Sor in Thai) consisting of the Prime Minister as Chairman, the Director-General of the Bureau of Welfare Promotion and Protection of Children, Youth, the Disadvantaged, Persons with Disabilities and Older Persons as a member and secretary and the Director

of the Office of Empowerment for Older Persons and the Director of the Institute of Geriatric Medicine as assistant-secretaries.

Section 2: The Commission shall have the powers and duties; such as,

- To determine policies and principal plans with approval of the Council of Ministers;
- To determine practice directions under the policies and principal plans;
- To consider the support and assistance of the elder-related activities organized by state and private organizations;
- To prescribe rules in connection with the administration of the fund, investment of the fund and management of the fund;
- To prescribe rules in connection with the deliberation for approval of payment of money;
- To prescribe rules in connection with the preparation of reports on financial status;
- To prescribe rules in connection with the receipts of money, the payment of money and the safekeeping of money of the fund, etc.

Section 3: The Office of Empowerment for Older Persons shall have power and duties in connection with the protection, promotion and support in relation to older persons and shall be responsible for the following tasks; such as, to prepare practice directions under the policies and principal plans, to gather data, study, analyze and undertake developments, to act as a center for the coordination, dissemination and advertisement of work or activities, to monitor and evaluate performance under the principal plans and to consider the proposal of opinions to the Commission, etc.

Section 4: An older person shall be entitled to protection, promotion and support in various ways; such as, convenient and expedient medical and public health services; education, religion and news; appropriate occupation or occupational training; self-development and participation in social activities and the network formation in communities; direct provision of facilities and maintenance of safety in buildings, places and vehicles; appropriate subsidies for transport fares; the exemption of entry fees to state places; the aid of older persons facing the dangers of torture or unlawful exploitation of abandonment; the giving of advice and consultation on other proceedings in connection with a case or the remedy of family problems; the extensive provision of accommodation, food and clothing where necessary; extensive and fair relief in the form of maintenance allowances where necessary; and relief for holding traditional funerals, etc.

Section 5: The claim of rights or obtaining of rights or benefits of older persons under this Act shall not constitute a disentitlement to rights or benefits obtainable by older persons under the provisions of other laws.

Section 6: There shall be established a fund called "Older Persons Fund" as capital for the protection, promotion and support of older persons under this act. The fund shall consist of the initial funds appropriated by the government; money received from annual budgetary appropriations; money or properties donated or given by persons, sponsorship from foreign countries or international organizations; money or properties which have reverted to the fund or been received by the fund under the law or through other

juristic acts; and interests accruing from the money or properties of the fund. In addition, the money and interests shall not be remitted to the Ministry of Finance.

Section 7: Donors of money or properties to the fund have the right to apply such donations as a deduction in the assessment of income tax or be exempt from tax on properties.

Section 8: A caregiver of parents who are older persons that do not have sufficient income for maintenance of life shall have tight to receive tax deductions.

Section9: There shall be a Fund Executive Committee consisting of the Permanent-Secretary for Social Development and Human Security as Chairman and the Director of Office of Empowerment for Older Persons shall be a member and secretary. The Fund Executive Committee shall have the powers and duties; such as, to administer the fund as well as carry out matters relating to the investment and management of the fund, to consider the approval of payment and to report the financial status of the fund, etc.

Section10: The Fund Executive Committee shall prepare a balance sheet and operating accounts which hall be submitted to an auditor for auditing within 120 days as from the last day of each accounting year.

4. Theories of aging

According to biological studies, aging has a broad definition. It is a process and a great number of factors which can affect the aging in several degrees of severity. This cannot be explained by a single theory but needs an integration of several theories. Aging theories are as follows;

4.1 Physical change in the elderly consists of 3 theories;

4.1.1 Genome-based theories

Evolution theory suggests aging is an adjustment to the evolution of the organism and it is about improving or creating something better to survive in changing environments. Every time a new life is born, there occurs a possibility of a biological change to make the life better through genetic mutation process. The lifespan of each species allows a balance between the adjustment to the evolution and advantages of long lives to facilitate breeding before passing away. Aging occurs in the lifespan, following the physical development and breeding phases. The lifespan could be shortened due to changes in living cultures and environments.

Biological watch theory believes aging is already determined and each gene has a code to assign the time when biological cells or biological systems in the body become old. This theory suggests organism has its own term of lifespan and has 2 sets of chromosomes. Biological chromosomes are included in the cell nuclei of the breeding cells which are sperms and eggs and it can be passed on from one generation to the next. Each species has its own specific lifespan and has biological mechanisms of aging. The mechanisms consist of the physical growing, development and the deterioration and finally the death.

Somatic mutation theory proposes aging is caused by an accumulation of mutated or abnormal cells, resulting in over-synthesizing of protein which could affect normal cells and organs in the body. Mutation of molecules is related to changes of base level in DNA, causing bad protein to produce new cells. The mutation concerns modifications of elements in permanent genes and this can be passed on to the next generation if it occurs to breeding cells. The mutation of the

somatic cells is called "Somatic Mutation" which, is currently believed, could interact with some cells in the body. The incident of mutation could damage good biological systems, causing aging, deteriorating illnesses and cancers.

Errors theory assumes aging is a result of an accumulation of errors or deficiency of some elements in the molecule level in biological cells. This theory believes that new cells and tissues are constantly produced, replacing the dead ones and so are other essential biological parts; such as, enzyme, hormone and neuro-transmitters. In each biological production mechanism, some errors may occur and when more and more errors accumulate, and reach a certain level, cells and tissues may deteriorate and die in the end. Although some cells may be still alive, they can no longer function. This causes variations in the balance control system, especially if it happens to crucial cells in functioning biological systems; such as, brain cells. It is widely accepted that some changes in protein are found only in the brain of the elder.

4.1.2 Organ theories

Wear and tear theory believes physical structures and functioning of the body could deteriorate after being utilized for some time. If the body is heavily used, people tend to become old sooner. This theory assumes that when people grow old, their bodies become deteriorated at a different varying degree in each person even though they are at the same age because it depends on how hard their body is functioned and the exposure to the environment. Degrees of the organ deterioration for each of the elderly are not at the same pace although they have lived in the same environment.

Neuro-endocrine theory believes that nerve cells and hormones are the most important in maintaining lives and balancing homeostasis of the body. Aging is

the result from a slow down of the nervous system and endocrine glands. This theory suggests that symptoms occurring at the old age are directly controlled by the nervous system and hormones from endocrine glands; such as, memory loss, less responsive to any reaction, under-functioning hypophysis or pituitary gland, less hormones produced, etc. All of these cause other endocrine glands which are controlled by hormones from pituitary glands to become less functioning, as a result, the body lacks of some hormones, causing illnesses; such as, diabetes, frustration, stresses, etc.

Immunological theory proposes that the aging is the result from immunization deficiency, so the body fails to effectively combat diseases and foreign bodies and then people often get sick. Once people have illness, it becomes serious and could be fatal. This theory believes that the biological immunization consists of coordination and lifespan can be shortened due to changes of living cultures and environments.

4.1.3 Physiological theory

Stress and adaptation theory believes reaction of the body towards stresses could interfere the functioning of cells and kill them. Repeatedly facing stressful situations could result in aging sooner than anticipating which is in accordance with this theory assumption that stress could stimulate sensory nerves in the brain which link to hypothalamus and pituitary glances. The glances then release ACTH hormone to stimulate adrenal gland to release stressor hormone named "Cortisol Aldosterone" and "Epinephrine" which activate the functioning of the nerve system, blood circulation system and metabolism and cause symptoms in each system of the body in response to stress.

Cross-linkage theory suggests that aging is the result of collagens overly accumulating and collagen fibers are shortened and become less flexible, toughened and easily torn. This theory believes that collagens are about 25-30% of protein in the body and are the main component of molecule tissues. Collagens consist of 3 cross linking Polypeptide fibers, called "Triplehelix". Inside the molecules of the collagen are a pair of ester-bonds being linked together. When people get older, these bonds will be broken and move to pair with nearby molecules and cross linkages among collagen's molecules will then occur, making collagens less flexible, tougher and easily torn.

Waste-product accumulation theory believes aging of cells is a reflection of a long overdue accumulation of biological wastes in the body. This causes a constant transformation of chemical reaction in order to produce energy in metabolism process in the body, organs and cells. The accumulation of the wastes in and out of cells from such process could be a part of the aging process, especially those cells in the body which cannot be replicated, especially those cells which cannot be re-produced.

Free radical theory believes free radicals in the body are the cause of aging and they are so very active to chemical reactions that they can cause malfunctioning of genes and damage tissues and organs. This theory suggests that free radicals are a chemical component of cells and they are originated from a chemical reaction of oxygen and other substances; such as, protein, carbohydrate, fatty acid, especially unsaturated fatty acid like ammonia (NH4), hydroxyl (OH), bicarbonate (HCO3). When more and more free radicals accumulate, it could endanger the functioning of cells. When molecules of free radicals spilt, they will move to pair with

nearby molecules. Such reaction does not cause any change but will be accelerated if oxygen is involved.

4.2 Psycho-social theory for the elderly

Psycho-social is an important aspect in supporting the elderly to continue their long lives with quality. Both psycho and social changes often occur in the lives of the elderly at the same time and can affect each other in terms of physical and characteristics of the elderly. The followings are psycho-social related theories;

4.2.1 Disengagement theory suggests that most of the elderly gradually separate themselves from their peers and people in other age groups in order to reduce some social pressures. This theory believes that the elderly have to give up some of their roles; for instance, retirement from work discontinues their relationships with colleagues, their children move out with their own families, their spouse passes away or the fact that they are no longer the head of the family. All of these can cause the elderly to disengage from the society.

4.2.2 Activity theory suggests the elderly will physically and psycho-

socially enjoy performing activities in which they can move around and it makes them feel active in leading their lives. In addition, they feel they can make contributions to the society and believe that health status can significantly affect their participation in social activities. When the number of activities in a community is going down, the number of activities in other communities will decrease as well. If the elderly who are still healthy can make a contribution to the society, they feel they have to constantly improve themselves to keep pace with new roles and responsibilities. This theory also suggests that most of the elderly adopt the lifestyle of the middle aged people and deny living like the elderly as long as they could. Such

social need of the elderly should be supported, so they could maintain their lifestyle like the middle-aged. They would like to be supported to continue doing their activities and still keen to associate with their peers. It is believed that the elderly will be physically and psycho-socially healthy if they are allowed to perform some activities.

4.2.3 Continuity theory believes the elderly will be happy if they are allowed to perform some activities like they used to do. Older persons who are familiar with living with a lot of people should be permitted to do so while those who prefer to live in peace, should be separated to live on their own.

4.2.4 Erickson's theory suggests that the psycho-social development of the elderly can be classified as feeling valued and secure or feeling in despair. For those who feel their lives are worth and secure, it shows that they are satisfied with their achievements in the past, have inner peace and can accept that death is a part of life. On the other hand, those who are in despair, they feel that they have just a few opportunities in life and do not want to live any longer. In addition, they lose hope, are in the depths of despair and perceive themselves as valueless. They are unable to face the challenge of becoming the elderly.

4.2.5 Peck's development theory believes that the elderly achieved three issues of development progress; 1) ability to differentiate themselves at the moment and his/herself in the past, 2) physical ability which will be changed naturally from when they were capable of working and 3) acceptance that their body has naturally deteriorated.

These aforementioned theories concerning the aging still have restrictions and it is not possible to rely on a single theory to explain the aging of individuals in more

details. Such restriction exists because physical, mental and social changes can be varied for each individual, depending on factors; such as, environments (organic and non-organic) and economic status of the individual.

Every species ages, undergoing noticeable changes from birth to death. Scientists have developed theories for why people age, although no theory has been proven. Ultimately, parts of each theory may explain why people grow old and die.

With the programmed senescence theory, the rate at which a species grows old is predetermined by its genes. Genes determine how long cells live. As cells die, organs being to malfunction and eventually cannot maintain the biologic functions necessary to sustain life. Programmed senescence helps preserve a species; older members die at a rate that allows room for the young.

The free-radical theory says that cells age as a result of accumulated harm from on-going chemical reactions within cells. During these ongoing chemical reactions, toxins called free radicals are produced. The free radicals ultimately damage the cells and cause a person to age. With age, more and more damage is done until many cells cannot function normally or depending on how cells produce and respond to free radicals.

Physiological Change

The human body changes in many noticeable ways with age. Perhaps the first sign of ageing occurs when the eye cannot focus easily on closed objects [presbyopia]. Often by age 40 or so, many people find it difficult to read without using glasses. Hearing also changes with age people tend to lose some ability to hear the highest pitched tones (presbycusis). Therefore, older people may find that violin music no longer sounds as exciting as it did when they were younger. Also, because

most of the closed consonants of speech are high tones [sounds such as k,t,s,p, and ch], older people many think that others are mumbling.

In most people, the proportion of body fat increases by more than 30 % with age. The distribution of fat also change: There is less fat under the skin and more in the abdominal area. Thus, skin becomes thinner, wrinkled, and more fragile, and the shape of the torso changes.

Identification of changes accompanying aging

Aging is not disease but the normal cause of the human condition. Prevention of aging is neither desirable nor realistic. However, promotion of health and prevention of chronic illness and disability are significant goals for older people. Our entire view of aging has been distorted by equating it with disease and disuse. In the current times, virtually no one live long enough to die of "natural causes." Rather, people die from conditions that are largely preventable given available knowledge. It is important to recognize that aging process are gradual and continuous and from a progression of changes.

Integumentary System

The most salient and visible aspect of the aging body is the skin .Thus, changes is the skin are perhaps the most obvious reflection of aging process. Although overall epidermal thinning is noted in aging skin, areas of the epidermis may thicken in response to extrinsic factors, such as chronic exposure to sunlight.

Gastrointestinal System

Normal age-related changes in the gastrointestinal system are difficult to identify. Diminished functional capacity may be associated with normal aging; however ,decreased functioning is more often due disease states. Some age-related

change include mucosal changes, decreased blood flow to the organs, and changes in organ size and motility. Changes in stomach with aging reflect atrophy of the gastric mucosa and a decreased production of hydrochloric acid. Alteration in surface area and function of the small intestine is thought to decrease absorption of certain essential nutrients, including vitamin D and calcium. Diminished motility of the colon and compromised blood flow to the large intestine characterize changes in the large intestine with age. Decreases in organ size and weight have been noted in the pancreas and liver with age. Fibrotic changes have been noted in pancreatic blood vessels with distention of the pancreatic ducts. Hepatic function is compromised, notably synthesis of cholesterol and total bile acid.

Genitourinary System

Anatomical and physiological changes occur in the genitourinary system with advanced age. Anatomical and physiological change include loss of nephrons, progressive decrease in renal mass, and a decrease in the number of glomeruli. Sclerotic changes in renal blood vessels, particularly in hypertensive elderly people, lead to diminished renal blood flow and decreased creatinine clearance. Decreases in renal blood flow and glomerular filtration rate have been noted in response to age-related change in cardiac output, renal mass, and decreased renal filtering surface. Creatinine clearance also decreases with age. A decline in endocrine Functions of the kidney may be associated with a decrease in calcium absorption and anemia.

Bladder changes in older people include replacement of the smooth muscle and elastic tissue with fibrous connective tissue as well as a progressive weakening of bladder muscles and incomplete emptying. Bladder capacity is decreased in older people, with an associated increase in frequency of urination. Bladder contracticity

and the ability to postpone voiding appear to decline in both genders, whereas urethral length and closure pressure probably decline with age in women. The prostate enlarges in most men and appears to cause urodynamic obstruction in approximately 50 of elderly men.

Musculoskeletal System

Musculoskletal systems changes with aging with aging include a progressive decrease in stature, particularly among older people women. This decrease is attributed to compression of the spinal column, narrowing of the inter-vertebral discs and loss of height of spinal vertebrae. The structure of the aging musculoskeletal system also is affected by changes in lean and fat mass distribution. As individuals age, the among of lean body mass decreases, and subcutaneous fat increases and is redistributed. There is fat loss from the face and extremities and fat gain in abdomen and hips. There is loss of skeletal calcium that accompanies normal aging. Following skeletal maturity, bone absorption begins to exceed bone formation. Age-related changes include reductions in gonadal hormone status, calcium intake, vitamin D status, physical activity, and other endocrine influences that negatively affect bone mass and metabolism. The progressive bone loss results in a loss of bone strength, estimated at 5% to 12% per decade from age 20 through 90, due primarily to a loss of bone mineral content. Beginning at approximately age 40 to 50, a 10% to 20% decrease in muscle strength is expected, with a 30% to 40% decrease by age 70 to 80 . Muscle wasting is noted with increasing age to due to a decrease in the number of muscle fibers. Regeneration of muscle tissue slows with age, and atrophied muscle tissue is replaced with fibrous tissue. Alterations of posture and voluntary movement can be indicators of the health and biologic age of an individual. Age-associated

limitations may affect quality of life by restricting mobility. Voluntary movement slows with increasing age of as a result of changes in the musculoskeletal and nervous systems. Postural changes may impair physical stability during movement and increase the risk for injury. Increased muscle rigidity and joint limitations also may impair movement. Age-related changes have been noted to occur in structural components of the joints, with decreases in function beginning after age 20 and accelerating after age 60.

Cardiovascular System

The change with aging in the cardiovascular system include both structural and physiological changes, resulting in decreased cardiac reserve. This decrease in reserve is not usually pronounced in the healthy elderly. The overall size of the heart dose not increase with aging, but there is a small increase in the left ventricular wall and ventricular septum. The thickness of the left ventricular wall, ventricular septum, and overall weight of the heart increases with age, as do fat, collagen, and elastin, contributing to increased stiffness and decreased contractility.

The conduction system in the aging heart also demonstrates change. The number of pacemaker cells decreases significantly with age. There is loss of sinoatrial node cells; internodal tracts have an increase in fibrous tissue and fat, and calcification of the valve and conduction system occurs.

Changes in the peripheral vascular system underline the changes in blood pressure that accompany aging. There are change in the vascular smooth muscle, including aortic and large artery thickness and vascular stiffness, which contribute to left ventricular ejection impedance and increased systolic pressure.

Pulmonary System

There are both structural and functional changes in the elderly individual that predispose to alternations in respiratory over time. These changes result in and increase in the work of breathing, decrease in reserve capacity, reduction in flow rates, and decrease in cough effectiveness in older people. There is a loss of pulmonary reserve with aging. Increased stiffness of the chest wall due to osteoporosis of the ribs and vertebrae, calcification of the costal cartilages, and diminished muscle strength contribute to reduced maximal inspiratory and expiratory force. The major effect of the aging process on the pulmonary system is the reduced quality of gas exchange. Total lung capacity remains essentially constant with age. The residual volume may increases with age, due to airway collapse at higher lung volumes secondary to loss of elastic recoil.Neurological SystemChanges in the neurological system are manifested in functional changes for the elderly individual. The generalized slowing and wasting of the nervous system accompanying ageing affects several functional areas. Functional changes that occur with ageing include a slowing of reaction time, loss of sensory cues, decline in function of muscle stretch receptors, and associated loss of muscle mass. There are decreases in visual acuity and accommodation, as well as often-marked changes in auditory function.

Structural changes that occur with normal aging include loss of neurons, slowed synaptic transmissions, and loss of peripheral nerve functions. Changes in prefrontal and subcortical brain regions are thought to be part of the normal aging process that leads to many of the declines in cognitive functioning in older people. With advancing age, there is thought to be a slowing in central nervous system processing, which reduces cognitive speed and negatively affects cognitive function.

The speed and potential to process auditory and visual information, particularly novel information, is diminished in older people. A change in memory is probably the most frequent concern of the older people. Empirical findings have shown that for the most part, shot-term memory is well preserved into old age. Endocrine System

Age-related changes in the endocrine system affect both the reception and the production of hormones. Alterations have been noted in the structure and function of the pituitary and thyroid glands, adrenal cortex, gonads, parathyroid glands, and pancreas. Additional changes that occur in the older man include decrease in testicular volume and spermatogenesis. Testosterone secretion declines, and there is in an increase in estrogen-to-testosterone ratio. Woman experience menopause and decreased serum estrogen production. Endocrine changes that occur with aging affect metabolic processes. In woman, cessation of menses accompanies reduced estrogen production and decreased follicular sensitivity to gonadotropins. Changes in pancreatic function result in a decreased glucose tolerance and a corresponding decline in insulin secretion.

Physical Functioning

Physical functioning refers to an individual's ability to perform life's daily activities physical demands, such as rising from a chair or walking, or purposeful activities such as self-care. A major focus of the impact of chronic illness and their treatment on physical functioning is in terms of physical disability. There is no "gold standard" by which to define and assess disability, but the individual's ability to perform a task [difficulty], the degree of independence reported or recorded.

5. The functional disability measurement

The tool that using can be divided into 2 types. The first type was used as measuring the level of activity that actually do in order to assess the level of ability in performing of population. The second type was used as measuring the speed in finding out population whom are the functional disability that combine with a set of questionnaire that would find out an individual's limit ability to perform one normal life.

The functional disability measurement method refers to method that measure whether "the individual can perform the activity" or "by measuring time that use for performing the activity." The measurement method that popular in use with the elderly and patient generally is to measure whether the individual can perform the activity and that the activity that chosen using would be the activity that perform generally and also who is a normal health can do it , so the activity that use in the functional disability measurement would be the activity of daily living in society by categorizing as basic activity of daily living; such as eating, dressing, using toilet or taking a shower, moving in the house, moving from one place to another place, climbing up and down the ladder and pausing excrement and urine and another level is the extended or instrumental activity of daily living that is the activity for living in society freely, such as shopping, cleaning the house, cooking, money exchange and changing etc. To make the testing model or measuring scale has to rely on the suitable activity closing and combination as a group of activity by using the total score of activity that able to do or using the position of last important activity as score and that as this functional measurement method if it were used in the different culture country, it might effect on outcome score incorrectly or not good enough to be the functional

disability index. So the testing model that con be tested for value and redeveloped properly for Thai elderly in the present are Barthell ADL index and Chula ADL index that both testing models are suitable for the assessment of the functional disability.

6. Related literatures

Chitaphankul, S. (1998) studied health status of Thai elderly and the followings are the findings;

Death

Changes in social-economic structures of Thailand have caused the development in public health and technology, resulting in less importance of infected diseases (except HIV/AIDS, tuberculosis and malaria) but placing greater importance on chronic diseases, mental illnesses and accidents. Data on the death cause, based on death certificates, found that almost half of them died of aging. Such high number of the death cause among the elderly was probably due to the fact that a large number of those certificates were recorded by officers, not medical doctors. However, the on-hand data suggested that chronic illnesses; such as, heart diseases, cancers, brain blood vessels disease and accidents, etc. were the most important death cause of the elderly. There was still a need to emphasize that infected diseases were still a crucial problem among the elderly. A cohort study among the elderly in Thailand revealed that independent factors of the death were functional disabilities and unemployment. In addition to the health status, this result showed that social status could be a factor of the death.

Illnesses

When people become older, the frequency of illness incidents will also increase and the elderly became sick by several causes in each month as high as 43.6%. Most of the sick elderly were female and lived in rural areas. However, the majority of diseases found or causes of illnesses were not serious; such as having a cold or joint-ache, etc. Reported chronic diseases were similar to those in developed countries which were high blood pressure, diabetes, coronary heart disease, cerebrovascular disease, high cholesterol in blood, dementia syndrome, osteoarthritis, urinary incontinence, pervasive depression and falling down, etc.

Functional disabilities

Approximately 1.7% of the Thai elderly suffered from functional disabilities at the moderate or very serious level. It showed in the Barthell ADL index value with the score less than 12 points. Such result implied a need to have a caregiver to assist regularly or at all times. The main cause of the functional disability at this level was the coronary heart disease. Studies revealed that second-thirds of the elderly with functional disabilities experienced eyesight difficulties (ametropia by several factors) and 1.7% of them was classified in the blind level. The ratio of the elderly who were unable to walk in and out of their house when they became older and it was one of important problems of the female elderly and those living in urban areas. In addition, one–third of Thai elderly was unable to use the public transportation service without a companion or caregiver and this was also another crucial problem of the female elderly.

Chuprapawan, C. (2000) conducted a survey on the health status of Thai elderly in 2000 and collected data from records of physical examination compiled by

Thailand's Public Health Research Institute in 1998. It was found that 69.3% of the elderly in the age range of 60-69 years had chronic diseases and the number increased to 83.3 % among the elderly in the age group of 90 years or older and they suffered from multiple illnesses. This study revealed that 70.8% of the elderly aged 90 years or older were simultaneously suffering from 6 diseases. For accidents occurring within the last 2 weeks to the elderly prior to the survey, it was found that 6.8% had an accident; 32.7% of the accident happened in the house, followed by 22.3% from traveling, 21.8% from work. For the long-term functional disabilities, it revealed that 19% was the elderly suffering from the disabilities for more than 6 months and the severity of the disabilities at the serious and very serious level was related to older age. In addition, 5% of those aged more than 80 years was at the extremely serious level of disabilities and need constant care at all times. The followings are top ten causes of the long-term disabilities; accidents, hemiplegia, eye disease or blindness, knee ache and inflammable knees, high-blood pressure, less energy in arms and feet, deaf and difficulties in hearing and diabetes.

The Research Institute of Public Health Systems (Sor-War-Ror-Sor), 1995, investigated situations of illnesses among the elderly and made some conclusions as follows;

1. Frequency of acute illnesses among Thai elderly within 2 weeks prior to this study was similar to those of other population groups. Twenty eight percent of the elderly aged 60-89 years experienced such illnesses, and the figure increased to 31% among the elderly aged more than 90 years. Symptoms found were common cold, headache, joint ache, backache, high blood pressure and fever.

2. This study revealed that 6.8% of the elderly had suffered an accident within 2 weeks prior to the study; 32.7% of the accident occurred in house, 22.3 % from traveling and 21.8% from working. Considering the accident rate against the total populations, the percentage of the accident in the house fell to 1.8 % and for the accident from traveling and working equaling at the rate 1.2%. Based from this result, the domestic accident was one of very serious problems for the elderly and it reflected the fact that living conditions of many Thai elderly people were not adequately safe. Regarding mistakes in taking wrong medicines or picking the wrong ones, this probably was related to difficulties in reading labels because a great number of the Thai elderly could not read. Also, this could be implied that pharmacists or heath service providers might not explain to the elderly clear enough about how to use/take the medicines.

The National Statistic Bureau, (1998) analyzed the status of the elderly concerning the following aspects; demographic, economic, social, employment and job characteristics. This study, using 5.1 million people as its sample size, revealed that the size estimation of the elderly increased in terms of the number and proportion and females outnumbered males. Concerning their employment and job characteristics, the elderly could be divided into 2 groups; 1) the elderly who were still in the workforce (employment, unemployment and seasonal unemployment) and 2) those who were not in the workforce (housekeepers, too old or not capable of working). This study found that the number of older people who were out of the workforce (almost 3 million) doubled those who were still in the workforce. For the elderly who continued working after the age of 60 years, if living in municipality areas, they usually worked as a vendor, and if they lived outside the municipality

areas, they took up agricultural work. Their incomes were rather low, compared to other populations. Concerning their social status and living conditions, it was found that proportionately, the male elderly took charge as the leader in the family more than the female and most of the elderly responded living with their spouse, children and others, followed by living with children and others. However, it also found an increase of the elderly living on their own. Analytical results on relationships between demographic, geographic and social characteristics and workforce status of the elderly revealed that the demographic was significantly related to the working capacities of the elderly. The male elderly were most likely to continue working and in terms of the relationship between the geographic and the workforce status, it was found that the region was the most influential factor for the elderly to continue working. The South region of Thailand had the highest number of the working elderly and the elderly living outside the municipality area were more likely to continue working than those in the municipality. The last one was the relationship between the social characteristics and the workforce status. The study found that education and types of family were the most influential factors. The elderly who graduated with primary educational level were likely to continue working while those without any education background were the least likely. In addition, the elderly living in a single family were most likely to continue working.

Hoysang, S. (1998) studied the elderly needs and perceptions of care from their families in the rural of Trang province and found that regarding the needs of the elderly for care, love and acceptance as a part of society were rated the highest. For the perception of care that the elderly gained from their families, the highest score went to the elderly self-worth, followed by love and acceptance as a part of society.

The elderly rated their perceptions of care in aspects of safety and recreation in the moderate level. A comparison between the needs of the elderly to be looked after and their overall perceptions of care from their families revealed a significant statistical difference at level 0.10. If looking at each aspect, the means of their needs to be looked after and their perceptions of care from their families scored a significant statistical difference at level 0.01. In addition, the study found more significant statistical differences at level 0.05 concerning their physical, safety, love and being a part of society, self-value and self-value awareness. On the other hand, the means of needs and perceptions of care that the elderly received from their family yielded statistical indifference in the aspect of recreation.

Tienneprapas, C. et al. (1997) investigated needs of the elderly for services and found the services the elderly needed the most from the elderly daycare program were; 1) health care services (81.5 %), 2) religious activities (12.5 %), 3) recreational activities (3.3%) and the last was activities for social services (2.7%)

According to a population survey conducted Chuprapawan, C. et al. (1995) on a case study of the elderly, it was found that the male elderly scored higher in the economic workforce than the female and the males in rural had to work to make a living more than those in the urban. Reasons for not working were health problems, requests from their families to stop working and retirement from work, etc. Regarding the income, Chayowan, N. et al. (1989) found that the economic status of the elderly was poor. Most of then earned just 500 baht or nothing per month. However, they did not have any difficulties maintaining their lives as they received support from their children and relatives. In addition, if comparing monetary situation, the elderly living in the rural were likely to experience more difficulties than those in the urban because

they gained less support from children and relatives and job opportunities in the agriculture sector were very few. Moreover, they could not professionally compete with the younger generation. This study also explored the relationship in their family and found that their children or relatives took their position as the family leader, making them become just the house owner and opportunities for them to advise and guide their family members decreased. In addition, there were some changes in their roles in the house; such as, gardening, cooking, cleaning, buying food and caring for a baby, etc.

Nualjinda, A. et al. (1991) summarized the physical and spiritual needs of the elderly which were different from other age group populations as follows;

Physical

- Food; besides carbohydrate, the elderly regularly needed, in order of importance, vegetable, fruit, beverage; such as, soft drink, tea, coffee, meat and seafood. Fat was rarely needed and most of the elderly did not drink alcohol.
- Accommodations; most of the elderly would like to have a private space for sleeping and rest and a bathroom. A safe and convenient toilet was also needed.
- Equipment; clothes and clothing; the majority of the elderly needed a bed, pillows, a clean and easy-to-use mosquitoes net and regular clothes.
- Caregivers; their needs for regular support and assistance from the caregivers were listed in order of importance starting from the highest to the lowest as follows; clothes, food, care for their space of sleeping and companion to the hospital for physical examinations.

Spiritual

- Intelligence and wisdom; most of the elderly needed to continue learning as much as passing on their knowledge and experiences to others.
- Relaxation and recreation; the majority of the elderly would like to; 1) listen to the ratio to catch up with news and religious programs, 2) go to temples to make a merit, 3) have visitors, 4) read, 5) have some hobbies and 6) travel which came up the last.
- Economic; the majority of the elderly still would like to work and earn some money for their personal spending.
- Socialization; the majority of the elderly would like to regularly participate in; 1) their families' activities, and 2) general activities. Only once in a while they would like to have outdoor activities.

The quality of life for the elderly refers to satisfactions when their needs are met physically and spiritually and also when they are able to participate in improving socio-economic environments, making them feel physically and mentally healthy.

Nualjinda, A et al. (1991) studied the satisfactory – the moderator variable of the improvement of quality of life for the elderly and summarized that fulfilling their physical and spiritual needs was the most important strategy in improving the quality of life for the elderly.

Sitthicharoenchai, O. as refered in Visuttitum, P et al. (1999) studied the quality of life of Thai elderly in Nakhonsawan province and summarized main results as follows;

1. Regarding the economic situation, the elderly were still independent, especially those aged under 70 years but they would need more support from children and

relatives as they grew older and their spending would be eventually higher than income. Socially, they usually turned to their children and relatives and community organizations still had a limited role in supporting and linking with them.

2. Time spending and activities is daily life; the majority of the elderly spent time on relaxation at home and needed assistance from others in their daily activities; both personal and in caring their own family. As the society had changed and many families had shifted to be single families, care and support for the elderly might decrease.
3. Health status of the elderly; the majority of the elderly were still healthy and did not experience any physical handicap. However, many of them showed had a sign of organ deterioration, especially those aged more than 71 years. They would have more needs to frequently turn to health service providers. Risk behaviors for the male elderly were smoking and drinking while the female often took analgesic (painkiller tablets) to relieve pain. The female elderly were more likely to suffer from chronic diseases than the male.
4. Satisfaction in life; it was found that the male elderly had a higher score of satisfaction in life than the female.