CHAPTER II

LITERATURE REVIEW

This research focuses to assessment of the functional abilities among the elderly in the community. By this study the researcher reviewed literature as follows:

1. The concept of functional abilities
2. The instrument for measuring functional abilities.
3. Related studies of functional ability

1. The Concept of Functional Abilities

1.1 Functional ability

Functional ability is the capacity to perform a given function or activity.[19] An individual may not use all available capacities in the actual performance of a function or ability, and functional status may be limited by a person's capacity to perform.[20]

As the researcher reviews many concepts of functional ability, there are multi-dimension domains. Functional ability is conceptualized as the integration of three domains, which are physical ability, psycho-cognitive ability and social ability. [20, 21] Assessment of each of these domains provides a critical estimation of the person's overall functional abilities, need for care services and prognosis. The particulars of each domains will be described as follow :

1.2 Physical ability

Measures of this domain attempt to derive a global determination of overall health and fitness[22]. Some measures inquire about the presence of illness or disease, whereas others may cover items related to activities of daily living and instrumental activities of daily living.[23] 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 for daily activities (without help of others), and the amount of limitation experienced by the individual in performing the activity have become standard approaches.[21] The degree or level of functioning in daily activities is usually classified from basic activities of daily living (BADL) which include eating, toileting, ambulation, bathing and grooming, these are tasks needed for self-care Three of these tasks (grooming, dressing, and bathing) require cognitive function. Instrumental activities of daily living (IADL) are those activities that are more complex than basic activities of daily living (BADL) These include tasks such as cooking and housekeeping which are activities performed in the home, and activities performed outside home such as walk outdoor, use of transportation and shopping.

1.3 Psycho-cognitive ability[19]

Psychological functioning has been described with cognitive abilities on one hand and with features of mental health and personality resources on the other.[21] Cognitive ability is a completely separate construct from functional ability in client assessment and functioning.

The evaluation of cognitive status suggests the significance of cognition in research that is primarily evaluating functional status, even as defined through BADL. However, some studies noted functional status became a descriptor for instrumental activities of daily living (IADL) such as shopping, cooking and housekeeping. In addition, functional status was used to describe broad functioning in major aspects of living such as the social functioning.

Fisher [24] hypothesized that motor and process skills are required for IADL performance. Motor skills are the observed actions ; process skills are the observed operations that are used to logically organize and adapt actions to affect, efficient and timely completion of a specific IADLs task.The assessment of motor and process skills (AMPS) was developed to evaluate individuals in the performance of IADL activities that were familiar to them. Individuals would be asked to prepare the table for lunch or wrap or parcel for mailing. Individuals would subsequently be rated on a scale of 1-4 on 16 separate motor activities (aligns, reaches, coordinates) and 20 separate process activities (chooses, attends, organizes).

Fisher [25] believed these method of evaluation to be superior to traditional ones as it allowed for the evaluation of both motor and cognitive skills across any activity or task.

Methods of assessing the mental and cognitive function identify a number of areas for evaluation: attention, memory, orientation, calculation, language, visual–spatial ability, concentration, and abstraction and judgment. Many times questionnaires

that evaluate cognitive or mental capacity are combined with BADL or IADL instruments.[23]

1.4 Dementia[26]

The word "dementia" is derived from two Latin words: "De" meaning "away" and "mentis" meaning "mind." Dementia is the loss of a person's cognitive or intellectual function without impairment in consciousness. Memory impairment typically is an early and prominent feature of dementia, particularly in Alzheimer's. Dementia also affects perception, concentration, judgment (including problem-solving ability and decision making), language, and ability to orient oneself in space. It also is often associated with personality change. All of these functions become progressively affected as the disease advances. People who suffer from dementia eventually are unable to take care of themselves and require round-the-clock care. Forgetfulness can happen at any age. Isolated incidents of temporary memory loss or other temporary cognitive impairments are not considered dementia. Aging is not necessarily associated with cognitive decline, though minor memory loss can occur as a normal part of aging. These normal changes are distinguishable from dementia by the minor nature and the fact that they do not interfere with the patient's social life or occupational ability. Dementia develops when the parts of the brain involved with learning, memory, decision making and language are affected by any of various neurological, vascular, infections, or metabolic diseases.

2. The Instrument for Measuring Functional Abilities

2.1 The instrument for measuring physical ability

2.1.1 ADL scales (activities of daily living) have many scales implied[27] such as the pulse, Bathel Index, Index of independence in activities of daily living, Kenny self-care Evaluation and the Functional Status Rating System.

Most of the rating scales have been developed based on populations of chronically ill and aging persons, although some have been based on particularly disabilities. These general scales provide a measure of overall function. The existence of so many scale implies that each of them focuses on different aspects of ADL measurement.

From literature review, the Barthel Index is considered to be the best of the ADL [28] measurement scales, and has widespread use., However there are some scales that are more sensitive to small changes in functional independence than the Barthel Index. The modified scoring of the Barthel Index achieved greater sensitivity or affecting the implementation time. The reliability coefficient for the modified scoring of the Bathel Index was 0.90, compared to 0.87 for the original scoring.

2.1.2 IADL scales[27] Instrumental Activities of Daily Living scales extend the ADL theme to cover tasks that require a finer level of motor coordination than is necessary for the relatively gross activities covered in ADL scales. IADL scales are commonly used with less

severely handicapped populations, often as survey instruments for use in the general population, and cover activities needed for continued community residence. The instruments include a rapid disability rating scale, the functional status index, the patient evaluation conference system, the functional activities questionnaire, the lambeth disability screening questionnaire, the OECD long-term disability questionnaire, the health assessment questionnaire, the functional independence measure and the Chula ADL. From the IADL scales reviewed, IADL scales tend to emphasize tasks commonly performed by women and may put men at a disadvantage because of social roles. It is particularly important to measure IADL in individuals living in the community. Impairment in IADL may precede other impairments and may be a detriment to independent living. However, IADL are influenced by a person's cultural background, therefore, Chula ADL was appreciated for measuring instrumental activities of daily living in Thai elderly.[29]

Based on the above review the modified Barthel Index for ADL combined with the Chula ADL index will be used in this study. The scales have been designed to cover the severity of functional disability among elderly in the community. The level of functional disability will be categorized as independent, dependent, need supervision and assistance.

2.2 Instrument for measuring cognitive ability

The evaluation of cognitive status in this set of the studies suggests the significance of cognition in research that is primary evaluation of the functional status,even as defined through ADLS. The Folstein Mini Mental State Examination (MMSE) [30] provides a quantitative assessment of the cognitive performance and capacity of the elderly, and is a measure of severity of cognitive areas including orientation., registration, attention and calculation, recall, language, and ability to follow a three-part command. Although a score of 23 or less has generally been considered the cutoff score for cognitive impairment, a three tiered system is now often utilized suggesting that a score of 24-30: No impairment ; 18-23 : mild impairment and 0-17 : severe impairment TMSE [31] (Thai Mental Status Examination) and CMT (Chula Mental Test) have the same aim that is selection, but have the difference in some minor factors. It found that both questionnaire are similar in correlation coefficient 0.78 ($p < 0.05$)

To search for the appropriate mental states deteriorated in the Thai elderly, it is necessary to use mental states tests to determine the deterioration of mental states. The MMSE (Mini – Mental Examination) is limited to ability to read and write so it is not appropriate. (TMSE) and Chula Mental Test (CMT) are developed along with MMSE, but it is not able to solve the problem with illiteracy for TMSE, it has never been studied. In order to search for the deteriorated mental states, Chula Mental Test (CMT) has been developed again aiming to reduce the effect from illiteracy. It has also tested the value of searching for the patients with deteriorated mental states among other

population groups in, hospitals and elsewhere in the society. The value of the analysis is 15 (under 15 means wide mental deterioration)

In developed countries, prevalence of mildly severity in cognitive impairment varied from 2.0 to 52.7 percent. Therefore, this study will use CMT with score under 15 and dependence in basic activities of daily living at least one activity such as eating, face washing, change from bed to sit, toilet use, dressing and bathing.

3. Related Studies of Functional Ability

Horbunlerkit,T. [12] found that there was statistically significant differences between ages in dependence and independence in IADL ($p < 0.05$). Factors associated with basic activities of daily living were sex. On the other hand IADL factors were education.

Jitapankul, S.[8] found that the factors associated with functional disability were age, sex, reading,literacy and economy status.

S Shahar, J Earland, Abd Rakmans [32] evaluated health functions of rural elderly Malays. They found that a percentage of the elderly, required assistance or were unable to perform the ADL. There was a trend of those at the older age group to be unable to undertake all the ADL tasks, since the ability to use public transport and to manage own money could be related to factors other than health such as education levels.

Krugkrabipetch, N. [33] found that the factors associated with unadjusted Bathel ADL score were age,sex, literacy and work status. Factors associated unadjusted Chula ADL score were age, literacy and working status.

Wooj. Hose Yuen Yk,Yu LM, Lau J [34]**.** Estimated the functional disability burden in elderly Chinese. Functional ability of disability for different activities of daily living varied from 0.8 % to 26 % (lowest for feeding and highest for climbing stairs and bathing). The prevalence was higher for women than men, and higher in the older age group for both sexes.

Ania Lafuente BJ, Suarez Almenara JL, Gurra Hernavidez L, Santana AJ, A costa Morales CD, Saaredra Rodriquez JM.[35] found that greater disability was associated with higher age, lesser education, worse subjective visions.

Chantamoon, E. [36] found that the prevalence rate of dementia was 3.2 percent. The female subjects are significantly tended to suffer dementia at the level of 0.01 the other personal factors that significantly related to dementia at the revel of 0.001 are aging, uneducated, hearing and visual loss, and unable to do the activities of daily living.

Sownna, A. [37] found that the factors associated with dementia were sex, age, education level, living status and illness or deterioration of physical health such as head injury, visual and hearing loss.

Raya, T. [38] evaluated functional performance among the elderly, Changmai province. The study found that the most subjects (77.5%) were totally independent in managing daily living activities,21.9% of subjects were partially dependent and only 0.6% of them were totally dependent. There are statistically significant relationships between the level of abilities to manage daily living,and some demographic variables such as age ($P< 0.01$),health status ($P< 0.01$), and income ($P< 0.05$)

Jitapankul, S[8] found that 23%,of elderly people were unable to perform at least one of activities of daily living (BADL), such as bathing,dressing and grooming. About 50% of those who are 85 years and older need assistance in performing one or more BADL and carrying out one or more instrumental activities of daily living (IADL), such as shopping, cooking, managing finance and using transportation. And this study also found that the prevalence rate of dementia was 3.4 percent. The factors associated with dementia were age and literacy.