Document heading doi: 10.21276/apjhs.2017.4.1.12 **Review Article**

The most important considerations in the assessment of functional decline in seniors: a literature review

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ABSTRACT

In recent years, there has been much focus on functional decline associated with aging, but not many studies have examined how functional decline can be effectively evaluated and detected at earlier stages of the aging process. Early detection of functional decline helps to intervene much earlier to avoid many of negative consequences of functional decline and frailty. Late identification of functional decline is problematic to the individuals and the healthcare systems considering that the percentage of the world population represented by people over the age of 65 is increasing rapidly worldwide. The aim of this review was to investigate the most important considerations in the assessment of functional decline in the population of seniors, and to explore relevant literature to provide a ground for an effective functional assessment for this population. Comprehensive literature search of the English-language articles for people aged 65 and over were conducted by searching MEDLINE and PubMed. The literature describes two main segments of elderly population with functional decline that should be assessed in different ways: Hospitalized and community-dwelling elders. When working with elderly clients, it is significantly important to identify all the factors that may contribute to the clinical picture of the client. Identification of risk factors, such as inability to do basic activities of daily living, social isolation, or lack of resources may help healthcare providers to intervene on time to avoid many catastrophic changes that affect seniors' health-related quality of life.

Keywords: Frailty, functional decline, geriatric assessment, hospitalized patients

Introduction

The older population continues to grow rapidly worldwide. Today, international reports suggest that 8.5 percent (or 617 million) of the world's population are aged 65 and over, and this number is anticipated to jump to about 17% (or 1.6 billion) by 2050 according to "An Aging World: 2015" report [1]. In Canada, in 2012, nearly 14.4% of Canadians (or 5.1 million) were aged 65 years or older, and by 2061 the number is expected to reach 25.5% of the total population [2,3]. As the population ages, the focus of health care providers is to understand, and identify the older people who are at high risk, and to effectively intervene to stop or delay health and functional decline associated with the aging process. Frailty syndrome has been introduced in literature to represent such risk, especially the elevated vulnerability to stressors such as diseases and injuries which are associated with aging [4,5]. Unfortunately, there is no concrete definition of what frailty means, and there is a big debate over what is the best way to assess it. However, there are many

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operational definitions to differentiate between frail and non-frail elders [6]. These definitions are based on different perspectives (e.g., geriatricians, rehabilitation professionals, psychologists, sociologists ...etc.), and vary in their conceptual backgrounds, domains and assessment measures [7, 8, 6, 9]. There is a general agreement in literature that the operational definitions of frailty should be "multi-dimensional; exclusive of disability and, possibly, of comorbidity; dynamic; predictively valid for adverse outcomes; and feasible. Frailty is characterized by a decrease in functional decline and the development of disability. Functional decline is defined as "The decrease in ability to perform the tasks of everyday living because of a decrement in physical, psychological and/or cognitive functioning" [10]. Functional decline is usually episodic and is associated with a high risk of general health decline. There are a variety of terms used in literature to describe functional decline (e.g., loss of function in ADL, loss of independence, ADL decline, new disabilities, and functional impairment). Functional decline is associated with disability and high mortality rates [11]. It is also associated with increased rates of adverse outcomes, such as hospitalization, nursing home admissions, and need of formal and informal caregivers [12], and utilisation of

ASIAN PACIFIC JOURNAL OF HEALTH SCIENCES, 2017; 4(1):61-70 Alhadi M. Jahan

61 www.apjhs.com

health care resources [13]. Interventions that prevent or delay functional decline have potential to significantly decrease health care costs, and improve seniors' quality of life by enhancing their physical, emotional, and social conditions [14]. The first step to prevent functional decline is identifying older people who are truly at high risk. Since functional decline is not just a medical condition, because it has many dimensions (e.g., social, psychological, economic) and diversity of confounding factors (e.g., personal and contextual), it is necessary to include all these factors in a multi-dimensional functional comprehensive assessment of everyday life activities of the elderly in different contexts. The aim of this review was to investigate the most important considerations in the assessment of functional decline in the population of seniors, and to explore relevant literature to provide a ground for an effective functional assessment for this important population.

Normal aging

Unlike other age groups, elders may experience a great diversity in their health and wellbeing. While some older people remain healthy and physically active in their seventies and beyond, others may experience increasing levels of health issues and functional limitations much earlier. In other words, two elders at the same age may experience completely different health, functional, and cognitive statuses. Normal aging is not a disease, but it is related to a series of changes that may cause disability and mortality. However, not all age-related changes involve mortality. For instance, hair turns to gray with aging, but this change does not influence the functional performance or decreases expected life period. In contrast, other progressive changes may cause functional limitations and disability overtime. For example, as blood vessels age, they lose their elasticity and become hard, and this condition is called arteriosclerosis. Over time, arteriosclerosis can increase the risk of stroke or heart disease. These pathologies are highly disabling and have many negative outcomes on seniors [15].

Over time, many theories have emerged to explain the process of aging and to answer the questions: why do we age? And how does everything happen? Many aging theories have old origins, however, researchers started seriously looking for explanations of the aging process in 1960's [16]. Most aging theories face the same difficulties in studying the aging process in humans. Ethical issues, financial resources, lack of time, and lack of adequate models, make it difficult to test these theories in real life. Also, interpreting the results and distinguishing between causes and effects in the elderly population is often controversial. Therefore, there is no consensus over the determinants of aging and what makes our bodies get older, or what exactly happens in the

human body from the ages of 20 to 90 to increase the risk of functional, cognitive, and overall health declines. In the absence of understanding, theories are prone to proliferate. About 25 years ago, Russian geneticist Zhores Medvedev [17] conducted a study to categorize the existing theories of aging. He identified more than 300 theories in literature starting from Weismann's first evolutionary theory in 1882 to more molecular theories such as Orgel's error catastrophe theory which proposed a positive feedback of errors in protein synthesis led to organismal deterioration [17]. Bengtson [18] argues that we have learned more about the biology of aging after Medvedev's paper than we had before, so we might expect more theories than ever before. The major problem in developing a coherent theory of aging is separating causes from effects. In the language of statistics, "correlation does not mean causation" because in two processes parallel to each other, we cannot imply a causal relation in any direction. Therefore, it is very difficult to predict which theory of aging is correct [18]. To sum up, normal aging involves physical, social, psychological and cognitive changes which may influence motor skills, coordination, mobility and balance, sensory skills, vision, hearing, and mental functions. Moreover, aging brings a risk of developing chronic diseases and other age-related diseases such as dementia. Research shows that the rate of aging varies between individuals. Many factors such as genetic codes, behavior, physical and social environments may influence the aging rate. Elderly persons usually transit between dependent and independent states in basic and instrumental daily activities through their life period. Observational studies show that most disability episodes last from 1-2 months and that they increase the risk of recurrent or progressive functional decline [19]. This fluctuation makes the prevention and intervention to stop or delay functional decline is challenging and complicated.

Theoretical approach

In 2001, World Health Organization (WHO) presented a new framework called "the International Classification of Functioning, Disability and health"(ICF). The ICF model introduces health changes in a dynamic way in which health condition and contextual factors interact between each other. In the ICF model, like in its root model "the bio-psycho-social model", health is defined in line with the three elements, the body, the person and the environment. In each element, ICF model describes three domains of functioning (structure and function) and related domains of disability (impairments, limitations, and restrictions). For instance: The difference between body function and structure may be indirect. The muscle is a biological structure and its function is to contract. Thus, both atrophied muscle tissue and decreased muscle strength could be considered "impairments". Likewise, the

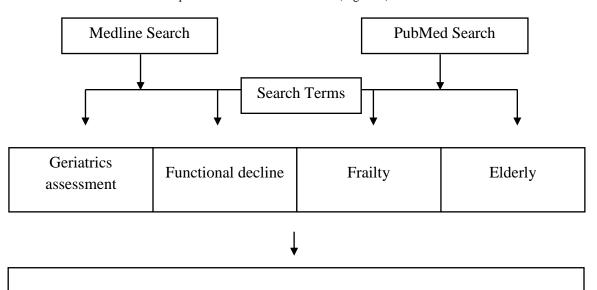
62

difference between activity and participation is indirect. Activity is commonly defined in literature as "the ability of the person to perform a specific task", regardless of whether he/she will do it normally, whereas, participation is whether the person will choose to do this task or not, and how he/she will achieve it. ICF model is an ideal guide for functional assessment in elderly population. Recently, it has been the starting point for many research projects to measure functional status for individuals. Disability in ICF is not "all or none" concept, rather than it is evaluated according to the client's functioning in different life domains. According to WHO, one of the stated intents of the ICF is "to provide a scientific basis

for understanding and studying health and health-related states, outcomes and determinants" [20]. Therefore, ICF will be used to guide this review.

Methods

The objective of this review is to provide an updated literature search on empirical studies in European database (PubMed), and North American database (Medline) that provided any type of functional assessment to seniors regardless of the context. The search process and inclusion/exclusion criteria are illustrated in (Figure 1).



This search identified 210studies were done by North American and European authors



Inclusion criteria: articles were included if they are empirical studies, conducted on elderly people, and the intervention was a geriatric assessment



Exclusion criteria: articles were excluded if they are reviews or discussion papers, or the population wasn't seniors (65+)

Figure 1: The search process

Functional Decline Syndrome

Functional decline is one of the most common clinical syndromes associated with aging. Many terms have been used in literature to describe functional decline, such as going off syndrome, senility, decreased vitality, unexplained decline, failure to thrive, loss of function, ADL status decline, and functional impairment [21]. Functional decline can be defined as "restrictions in fundamental physical and mental actions. In turn, these may lead to disability, which is experienced difficulty doing activities in any domain of life, including ADL and IADL" [22]. Activities of daily living (ADL) are those activities that are essential for living and individuals perform them daily. They include self-care tasks such as eating, bathing, dressing, grooming, walking and continence [23]. Whereas instrumental activities of daily living (IADL) are those activities that allow the person to live in the community independently, such as managing finances, using transport, shopping, housekeeping, using telephone, taking medications and preparing meals. Functional decline is associated with decreased functioning, social isolation and decreased quality of life [10]. Research shows that functional decline is a predictor of mortality, hospital admissions, and prolonged hospitalization, repeat emergency visits, and need for home care [24,25]. Therefore, early detection of functional decline by suitable assessment tools may help seniors to improve their quality of life.

Assessing Functional Status in Seniors

Functional performance in elderly people is traditionally categorized into two types: Basic Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). As people age, many physical, psychosocial, and mental changes occur. These changes often negatively affect the functional status and cause functional decline and dependence. To evaluate the level of dependence and to conceptualize a picture of the future needs and further interventions, it is necessary to perform a functional assessment. There are many definitions of functional assessments in literature, but in this review, functional assessment is conceptualized as comprehensive assessment of the functional abilities required by the elderly to remain independent in his or her environment. The assessment process means collecting information by using qualitative and quantitative methods to evaluate and to make estimations and judgements about functional activity and social participation of the elderly. Social participation has a great value to older people because it gives meaning to their life. It is also essential determinant of health and wellbeing [26]. Another important consideration in functional status assessment is person's values, beliefs and preferences. To take client's values, beliefs and preferences into account, elderly healthcare should be a client-centered practice. Client-centered practice has been defined as "A partnership between the

client and the therapist that empowers the client to engage in functional performance and fulfill his or her...roles in a variety of environments. The client participates actively in negotiating goals, which are given priority and are at the centre of assessment, intervention and evaluation. Throughout the process the therapist listens to and respects the client's values, adapts the interventions to meet the client's needs and enables the client to make informed decisions" [27].

The aim of the assessment is to make sure that all activities that a senior need to, or want to, or expected to do are identified and the reasons for any limitations are recognised. Conceptual frameworks are essential to help the therapist and the client to understand the goal of the assessment and which measures to use. Assessment tools or instruments should meet basic psychometric criteria, reliability and validity. Reliability is defined as the degree to which an assessment tool provides consistent and stable results. It is commonly reported as inter-rater reliability and intra-rater reliability. Validity refers to how well an assessment measures what it is supposed to measure. There are numerous assessment tools have been developed to be used in different contexts and populations, but the major barrier to successful implementation of such tools was the lack of standardization and validity to detect persons who are truly frail and at high risk of further functional deterioration [5].In occupational therapy practice, the assessment process is a combine set of procedures and thoughts. The procedures include interviews, ADL assessment, and hands-on tests to evaluate the client's skills, such as muscle strength and range of motion. The evaluation thought process is a mental set of observations and interpretation of client's behaviour to get a clear picture of his or her problems, needs, and helpful interventions. It is very important for the occupational therapist to create a connection between the assessment, theories and his or her frame of reference. Frame of reference may be unique to every one; it may be a collection of ideas drawn from different theories and frames of reference that fit together logically to guide the assessment process, and to help the clinician in making informative and effective decisions. According to Neistadt [28], occupational therapy evaluation and intervention will be more effective and efficient when using client-centred approach and narrative reasoning to make a client's life story and to think first of all about working with a person, not a set of problems [28].

1) Functional decline in hospitalized elderly patients

In hospitals, elderly patients represent a significant proportion of inpatients. In 1992, about 37% of hospitalized patients are over 65 years old, while in 2011, they accounted about 50% [29]. Research shows that about 30% to 60% of senior patients experience functional decline during or after hospitalization [30]. Hirsch et al. [31] conducted a study in Stanford University Hospital on 71 hospitalized elders, and reported a statistically significant deterioration in all functional scores for mobility, transfer, toileting, incontinence, feeding and

ASIAN PACIFIC JOURNAL OF HEALTH SCIENCES, 2017; 4(1):61-70 Alhadi M. Jahan

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grooming before, and after hospitalization [31]. Similarly, Mcvey et al. [32] conducted a randomised controlled trail on elders aged 75 years and over, and observed that about one-third of participants developed at least one new disability in ADL after admission to a veteran's hospital [32].

During hospitalization, the elderly people develop functional decline due to reduced mobility and activity levels [33]. There are other recognized factors that contribute to the development of functional decline during hospitalization and are related to bed rest besides immobility, includes rapid bone loss, dehydration, malnutrition, delirium, sensory deprivation, isolation, sheering forces on the skin, and incontinence [34]. Because of functional decline, the patients lose part of their independence in basic activities of daily living (ADL) [35]. This decline may increase the risk of readmission, nursing home placement or death [36,37]. The first step in prevention or delay of deterioration in health-related quality of life and autonomy during or after hospitalization is identifying the patients who are at risk. Health condition before admission and functional status are widely cited in literature as strong predictors of further deterioration in functional status during hospitalization. Other risk factor associated with further functional decline during hospital stay is preadmission use of mobility assistive devices, such as canes and walkers. In a study was conducted on 1,212 hospitalized elderly patients (70 years and older) reported that the use of mobility assistive technology at baseline was a predictor of functional decline during hospitalization. Elderly people who have been used walkers before hospital admission were at 2.8 times higher risk for ADL limitation by the time of discharge compared to non-walker users. Additionally, 3 months after discharge, seniors who had used a mobility device before hospitalization were more likely to experience functional decline in both ADL and IADL statuses [38].Other factors that may contribute to the development of functional decline in hospitalized seniors include pre-admission physical, social and cognitive statuses of the patient [39], comorbidity and polymedication [40], having had a hospitalization or emergency visit during the last 12 months [41], and iatrogenic conditions. Iatrogenic disability is defined as "avoidable dependence which often occurs during the course of care" [42].

Yet, functional dependence of elderly people is not an unavoidable result of hospitalization. There is a growing Evidence supporting the effectiveness of early interventions in the prevention or delay of functional deterioration of hospitalized elders [43]. Comprehensive geriatric assessments to identify patients who are at risk, structured geriatric care models, dedicated hospital units for acute care of the elderly, and the use of specific resources to enhance care for the hospitalized seniors are beneficial interventions in reducing functional decline during hospitalization [44].

2) Functional decline in community-dwelling seniors

Research shows that about 10% of communitydwelling seniors who aged 75 and older, and who are not suffering from functional disability, experience functional decline and dependence in basic activities of daily living (ADL) each year. In a cross-sectional study was done in Netherland by Laan et al [45] documented that 71% of female elderly and 40% of male elderly who have multiple morbidities and live in the community had a decline in activities of daily living, as assessed with the modified Katz ADL scale. They also found, by multivariate modelling, that several diseases were independently associated with modified Katz ADL scale. The most significant factor in women was psychiatric disorders, while in men was cerebrovascular diseases [45]. In a systematic review conducted by Vermeulen and colleagues [46], showed that slow gait speed and low physical activity seem to be the most important predictors of ADL disability in community-dwelling elderly people followed by weight loss, lower extremity function, balance, and muscle strength. Taking these indicators into account when assessing community-dwelling seniors may be beneficial for elderly people who are at risk of functional decline. These people can be the target for any intervention aims to prevent or delay ADL disability in elders living in the community [46]. Additionally, for community-dwelling seniors, cognitive impairment was considered the highest risk factor for development of functional decline [47], followed by depression [48]. There are also other clinical factors associated with functional decline, such as disease burden [49], vision and hearing impairments [50], and functional limitations [51]. Sociodemographic factors, such as age, gender, ethnicity, and education, are considered contributing factors to functional decline and are potentially important in detection of people who are at risk for future medical and social interventions [49].

Discussion

According to ICF model, successful assessment and treatment of elderly person with functional decline should take in consideration, not only physical condition, but also the patient's personality, the environment and his or her coping skills. Before conducting any functional assessments for elderly individuals, there are very important questions we should ask:

1) Who is the client?

When health care professionals are working with seniors, these clients are expected to communicate with the therapist effectively and to participate in decision making process. This situation changes with individuals with communication disorders, cognitive impairments, or have mental problems. Often, therapists discuss the functional abilities, preferences, interests, and values with their caregivers, family members or friends instead to get

all the data they need. However, it is more important to engage the client into a client-centred approach.

2) What to assess?

When people grow older, their life roles, responsibilities, and activities in which they participate will change as well. They usually do not go to work anymore, and in some countries they must retire at a certain age. Some people do volunteer work, while others prefer to do other leisure activities. As a person ages, the leisure time increases significantly. Thus, it is necessary, not only to assess ADLs and IADLs, but also to evaluate functional and community mobility, productivity and leisure. There are many functional performance assessments that cover a broad area of functional performance can be considered [52].

3) What are significant clinical considerations related to functional assessments?

There are number of factors are specific to functional assessments in elderly population. These factors include assessment of lower limb function, sensory and motor functions, and the presence of a chronic condition. Any changes in lower limb functions (e.g., walking speed or distance), changes in sensory functions (e.g., hearing or vision impairments), or aging with chronic disability or illness, should be considered when assessing functional status in elderly populations. In addition to the medical (biological) factors discussed in the previous section, there are number of factors related to functional assessment that are essential when conducting functional evaluations in elderly population: personal factors (demographic characteristics), and environmental factors (contextual factors).

1) Demographic Characteristics

1. Age

Age is believed to be an important consideration in the assessment of functional decline. It is important to take the client's age into account, because age, for seniors, doesn't mean only the number of years since birth, but it also a powerful social and psychological dimension in their lives. As people age, the percentage of being dependant increases. For hospitalized elderly patients, the majority of studies reported that age is a principal element and independent risk factor for functional decline during hospitalization [35, 41, 53], and after discharge [54, 55]. For community-dwelling seniors, chronological age is considered the most important demographic risk factor for functional decline. For each 10-year increase in age, there is a relative risk of about 2.0 in functional status. The crucial period of experiencing functional decline seems to occur in the 70-75 years old [49].

2. Gender

Before 1950, the male population outnumbered the female population. In 1950, the trend has reversed. Now, the majority of elderly population (55%) in all nations are women [56]. The higher disability prevalence

among women can be explained by the fact that women live longer than men [57]. Campbell et al (2005) argue that gender is sometimes mentioned in literature as a demographic factor related to functional decline, but it doesn't seem to have a meaningful importance [58]. However, there are important differences between genders in terms of different tasks assigned to women and men. These differences should be taken into account when assessing functional status. Laundry and cooking are typically female duties, while gardening and house work are purely male tasks.

3. Cultural background

Culture, the word is everywhere around us today. We hear terms like, culture shock, culture contact, culture conflict quite often. All these concepts refer to explanations of human behaviour and human misunderstanding. although we are overwhelmed by similar terms and concepts, however, we are not always sure about how we should behave. Countries like Canada, United States and, to a lesser extent, United Kingdom, are multicultural populations. In everyday life events people face situations in which cultural backgrounds are completely different, and they have to exchange ideas, interpret outcomes, and take decisions. In health care practice, we require to handle ourselves in a cross cultural situation. To improve health care delivery, it is important for health care professionals to learn skills that help to identify cultural values, beliefs and practices and to integrate all these factors into a more effective and successful interventions [59]. In elderly health assessment practice, healthcare providers should obtain complete, accurate and comprehensive information about the client. This information should include description of cultural characteristics.

Traditionally, interviews and standardized assessments are used to obtain and measure the attributes Biological interests. assessments, assessments, the ability to communicate, the ability to dress, to bath, or to participate in social and cultural activities are usually administered to obtain certain information about the clients physical or functional status. As long as culture is factored into the assessment process, many issues arise in the use of these different assessments. A frequent issue is the perceived relationship between the client and the therapist. Clients commonly recognize themselves as dependant on therapists or clinicians, therefor they probably give information that they think it is important to the therapist. They also may hide their real feeling because of "fear of abandonment". Economic and status differences can significantly affect their comfortability with the therapist. Thus, health care provider may fail to make accurate assumptions about his or her client [44].

Another cultural issue in relationship between the client and the therapist is gender difference. Not only cultures differ in the way they assign gender responsibilities, but also vary in their attitude of the

appropriate relationship with a therapist of the same or different gender. Within some cultures, it is not appropriately to ask certain questions from a man to a woman or the opposite. For instance, in Mexican culture, the man has the power to take all decisions on behave of all his family members. A mother may take her child to a physician, but she must defer any decisions to her husband, even though these decisions must be taken immediately, she doesn't have the right to take any decisions without approval from her husband [59].In multicultural societies, standardized assessments are highly problematic. Even those objective assessments, like range of motion tests or manual muscle tests, have cultural errors. Using a professional terminology such as "Is your range of motion limited?" or "Do you limit your activities because of fear of falling?" may cause misunderstand by the client, especially the elderly. Certain terms like "range of motion" or "fear of falling" are difficult to understand by seniors. Culturally relevant assessments can be applied by using qualitative approaches. Although there are some difficulties, mainly time consuming, qualitative methods can provide meaningful information about the health condition of the client in relation to his or her cultural background.

4. Language abilities

Another factor related to functional assessment and is very important to consider when assessing elderly people are language proficiency. If the client's first language is different from the language of the assessors or the assessment itself, then difficulties in performance may be related to the understanding of the instructions than to actual functional problems [52]. For instance, Spanish language which is spoken in Mexico and that which is the official language of Spain is slightly different, and similarly, English language of United Kingdom is slightly different from Canadian English. If the assessment is in written format (written language or numeric work), it is essential to make sure that the client understands the literacy level of the assessment and responds to the questions correctly.

5. Economic resources

There is well established relation between low income and poor health status. Elderly people who have low income are most likely to experience social and psychological conditions that may have bad impacts on their overall health [60]. Low income Seniors who are aging with disabilities or chronic conditions are possessing fewer economic resources to manage these circumstances [61]. Low income may have direct effects on health and wellbeing in terms of inability to pay for medications, assistive devices, or inadequate housing and sanitation.

6. Emotional health

Depression is common among elderly people with chronic conditions. Research shows that chronic diseases and frailty have negative impact on emotional health. This negative effect of chronic illnesses on

function is higher when there is depression. Carful assessment of depression by using validated instruments and using antidepressant medications can improve functional performance and quality of life of seniors suffering from depression. Cognition and mood disorders, inability to engage in self-care activities, resistiveness to care, and lack of motivation to rehabilitation also contribute to the deterioration of functional status of elderly people [56].

2) The Environmental Factors

1. Social environment

Social components that are important to physical and mental health of the aging population include those related to safety, violence, and social disorders. There are more specific factors related to the type, quality, and stability of social connections, such as social participation, social cohesion, social capital, and the collective efficacy of the neighborhood environment [62]. Social participation and integration in the immediate social environment appear to be important to both physical and mental health [63]. Moreover, stability of social connections appears to be also important in terms of the availability of stable and supportive local social environments in which people live and participate. Seeman et al. [64] documented that elderly people receive more emotional support from social context especially among those who have low frequency of instrumental support had a significant impact on functional performance [64].

2. Physical environment

Research suggests that physical environment may has a negative influence on functional status of elderly people. The physical environment is defined as "the objective and perceived characteristics of the physical context in which people spend their time (e.g. home, neighborhood), including aspects of urban design (e.g. presence of side- walks), traffic density and speed, distance to and design of venues (e.g. parks), crime and safety" [65]. Home physical environment is a very important factor to consider during the assessment of functional disability. It is essential to look inward, and to examine the internal settings of home environments as a key focal point of functional status evaluation. Gitlin [66] suggested a future research direction on home environments of elderly people, because the home environment offers a new understanding of personenvironment relationship [66].

3. Geographic location

Place of residence or geographic location is another important factor in understanding the experience of the senior in his or her place and the quality of that particular place. The environment has the potential to facilitate or complicate activities of the seniors and consequently it may maintain or deteriorate their health. In literature, there is evidence of a strong link between the type of place in which the senior lives and his or her health (e.g., rural, semi-rural, or urban). Seniors form a

Alhadi M. Jahan ASIAN PACIFIC JOURNAL OF HEALTH SCIENCES, 2017; 4(1):61-70

www.apjhs.com 67

strong informal support networks in rural areas. There are several places like the grocery stores, banks, post offices, and so forth where elders can meet, communicate, and support each other. Informal networks are useful for maintaining health and providing care for those who are ill [15]. Thus, considering the geographic location in a comprehensive functional assessment may provide important barriers and facilitators to active aging of elderly people.

Conclusion

Health care practices have achieved a great advancement over the last decades. Consequently, life expectancy has increased significantly especially in developed countries. This progress, unfortunately, did not include elderly care as it should be. Geriatrics care costs almost half of the annual health care expenditure in USA and Canada. There are many reasons why seniors seek health care quiet often. Chronic diseases such as arthritis, heart diseases, and the natural aging process are all together represent risk factors that could adversely influence health condition of the elderly. Unlike younger ages, when older clients experience health crisis or disability, it is more likely to encounter a significant functional decline and become progressively more disabled over a short period of time, because the physiological, behavioral, or social compensatory strategies are less common in older age. When working with elderly clients, it is significantly important to identify all of the factors that may contribute to the clinical picture of the client. Powerful predictors of health and wellbeing include the availability of social support, mental health, positive attitude, and the availability of resources to provide alternative coping strategies when needed. Identification of risk factors, such as inability to do ADL or IDAL, difficulty with driving at night, social isolation or cognitive impairments needs to be addressed. Also, screening and detection of problems, such as cancer, heart diseases, dementia, depression or visual and hearing losses is essential. Early identification of all these risk factors may help the senior to avoid many catastrophic changes in health and wellbeing in near future.

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References

- He W, Goodkind D, KowalP.. An Aging World: 2015 US Census Bureau, International Population Reports 2016.
- **2.** Statistics Canada. Population by sex and age group, by province and territory. *Statistics Canada* 2012.

- 3. Anonymous Human Resources and Skills Development Canada. Canadians in Context Aging Population 2013
- **4.** Bandeen-Roche K, Xue Q, Ferrucci L, Walston J, Guralnik JM, Chaves Pet al. Phenotype of Frailty: Characterization in the Women's Health and Aging Studies. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences2006;61:262-6
- **5.** Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener Jet al. Frailty in older adults: evidence for a phenotype. The journals of gerontology. Series A, Biological sciences and medical sciences 2001;56:M146
- **6.** Gobbens RJ, Luijkx KG, Wijnen-Sponselee M, Schols JM. Toward a conceptual definition of frail community dwelling older people. *Nurs Outlook*2010;58:76-86
- 7. Bouillon K, Kivimaki M, Hamer M, Sabia S, Fransson EI, Singh-Manoux Aet al. Measures of frailty in population-based studies: an overview. BMC geriatrics2013;13:64
- 8. De Vries NM, Staal JB, van Ravensberg CD, Hobbelen JSM, OldeRikkert MGM, Nijhuis-van DS. Outcome instruments to measure frailty: A systematic review. *Ageing Research Reviews* 2011;10:104-14.
- **9.** Sternberg SA, Schwartz AW, Karunananthan S, Bergman H, Mark Clarfield A. The Identification of Frailty: A Systematic Literature Review. *J Am GeriatrSoc*2011:59:2129-38.
- **10.** Sutton M, Grimmer- somers K, Jeffries L. Screening tools to identify hospitalised elderly patients at risk of functional decline: a systematic review. *Int J ClinPract*2008;62:1900-9.
- **11.** Manton KG. A longitudinal study of functional change and mortality in the United States. *J Gerontol* 1988;43:S153.
- **12.** Kemper P. The Use of Formal and Informal Home Care by the Disabled Elderly. *Health Serv Res*1992;27:421.
- **13.** Levine C. The Loneliness of the Long- Term Care Giver. *N Engl J Med*1999;340:1587-90.
- **14.** Guralnik JM, Alecxih L, Branch LG, Wiener JM. Medical and long- term care costs when older persons become more dependent. *Am J Public Health* 2002;92:1244.
- **15.** Moody HR. *Aging : concepts and controversies.* Thousand Oaks, Calf.: Thousand Oaks, Calf. : SAGE Publications, c2012, 2012.
- **16.** Shute N. Why do we age?. *U.S.News* & *World Report* 1997;123:55-7
- **17.** Bengtson VL. *Handbook of theories of aging*. New York: New York: Springer, c2009, 2009
- **18.** De Magalhaes JP, Toussaint O. Telomeres and telomerase: a modern fountain of youth?. *Rejuvenation research* 2004;7(2):126-133

- 19. Colón-EmericC,S., Whitson HE, Pavon J, Hoenig H. Functional decline in older adults. Am Fam Physician2013;88:388
- 20. World Health Organization. ICF: International classification of functioning, disability and health. World Health Organization 2001:5-7
- 21. Nikolova R, Demers L, Béland F, Giroux F. Transitions in the functional status of disabled community-living older adults over a 3- year followup period. Arch GerontolGeriatr2011;52:12-7
- 22. Hebert R. Functional decline in old age. Canadian Medical Association. Journal 1997;157:1037-45
- 23. Wilber ST, Blanda M, Gerson LW. Does Functional Decline Prompt Emergency Department Visits and Admission in Older Patients?. AcadEmerg Med2006;13:680-2
- 24. Aminzadeh F, Dalziel WB. Older adults in the emergency department: A systematic review of patterns of use, adverse outcomes, and effectiveness of interventions. Ann Emerg Med2002;39:238-47.
- 25. Hoogerduijn JG, Schuurmans MJ, Duijnstee MS, De RooijS,E., Grypdonck MF. A systematic review of predictors and screening instruments to identify older hospitalized patients at risk for functional decline. J ClinNurs2007;16:46-57
- 26. Lawton MP, Brody EM. Assessment of older people: self- maintaining and instrumental activities of daily living. Gerontologist1969;9:179
- 27. Sumsion T. A Revised Occupational Therapy Definition of Client-Centred Practice. The British Journal of Occupational Therapy2000;63:304-9.
- 28. Neistadt ME. Occupational therapy evaluation for adults: a pocket guide. Baltimore, MD: Baltimore, MD:: Lippincott Williams & Wilkins, 2000, 2000
- 29. Sager MA, Rudberg MA. Functional decline associated with hospitalization for acute illness. Clinics in geriatric medicine JID - 8603766 1998;14(4):669-679
- 30. Boyd CM, Ricks M, Fried LP, Guralnik JM, Xue Q, Xia Jet al. Functional Decline and Recovery of Activities of Daily Living in Hospitalized, Disabled Older Women: The Women's Health and Aging Study I. J Am GeriatrSoc 2009;57:1757-66
- 31. Hirsch CH, Sommers LF, Olsen AF, Mullen L FAU - Winograd, C.H., Winograd CH. The natural history of functional morbidity in hospitalized older patients. Journal of the American Geriatrics Society 1990;38(12):1296-303
- 32. McVey LJ, FAU BP, FAU SC, FAU FJ, Cohen HJ. Effect of a geriatric consultation team on functional status of elderly hospitalized patients. A randomized, controlled clinical trial. Annals of internal medicine 1989;110(1):79-84
- 33. Inouve SK, Bogarus ST, Baker DI, Leo-Summers L, Cooney LM. The Hospital Elder Life Program: a model of care to prevent cognitive and functional

- decline in older hospitalized patients.(Statistical Data Included). J Am GeriatrSoc2000:48:1697
- 34. Convertino VA. Cardiovascular consequences of bed rest: Effect on maximal oxygen uptake. Med Sci Sports Exerc1997;29:191-6
- 35. Chang H, Tsai S, Chen C, Liu W. Outcomes of hospitalized elderly patients with geriatric syndrome: report of a community hospital reform plan in Taiwan. Arch GerontolGeriatr 2010;50:S30-3.
- 36. Covinsky KE, Justice AC, Rosenthal GE, Palmer RM, Landefeld CS. Measuring Prognosis and Case Mix in Hospitalized Elders. Journal of General Internal Medicine1997;12:203-8.
- 37. Fortinsky RH, Covinsky KE, Palmer RM, Landefeld CS. Effects of Functional Status Changes Before and During Hospitalization on Nursing Home Admission of Older Adults. Journals of Gerontology Series A: Biomedical Sciences and Medical 1999;54:M521-6.
- 38. Shelton P, Sager MA, Schraeder C. The community assessment risk screen (CARS): identifying elderly persons at risk for hospitalization or emergency department visit. Am J Manag Care 2000;6:925
- 39. Kortebein P, Symons TB, Ferrando A, Paddon-Jones D, Ronsen O, Protas Eet al. Functional Impact of 10 Days of Bed Rest in Healthy Older Adults. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences 2008;63:1076-81
- 40. Marengoni A, Von Strauss E, Rizzuto D, Winblad B, Fratiglioni L. The impact of chronic multimorbidity and disability on functional decline and survival in elderly persons. A community-based, longitudinal study. J Intern Med2009;265:288-95
- 41. Mahoney JE, Sager MA, Jalaluddin M. Use of an Ambulation Assistive Device Predicts Functional Decline Associated With Hospitalization. Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences 1999;54:M83-8
- 42. Lafont C, Gérard S, Voisin T, Pahor M, Vellas B. Reducing "iatrogenic disability" in the hospitalized frail elderly. J Nutr Health Aging 2011;15:645-60
- 43. Fitzpatrick JJ, Stier L, Eichorn A, Dlugacz YD, O'Connor L,J., Salinas TK et al. Hospitalized elders: changes in functional and mental status. Outcomes management2004;8:52-6
- 44. Hughes R, United States Agency for Healthcare Research, and Quality, National Center for BI. Patient safety and quality an evidence-based handbook for nurses. Rockville, MD: Rockville, MD: Agency for Healthcare Research and Quality, 2008, 2008
- 45. Laan W, Bleijenberg N, Drubbel I, Numans ME, de Wit NJ, Schuurmans MJ. Factors associated with increasing functional decline in multimorbid independently living older people. Maturitas2013;75:276-81.
- **46.** Vermeulen J, Neyens J, van Rossum E, Spreeuwenberg MD, de Witte L. Predicting ADL

- disability in community- dwelling elderly people using physical frailty indicators: a systematic review. *Bmc Geriatrics; BMC Geriatr.* 2011;11
- **47.** Gill TM, Williams CS, Tinetti ME. The Combined Effects of Baseline Vulnerability and Acute Hospital Events on the Development of Functional Dependence Among Community- Living Older Persons. *Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences* 1999;54:M377-83
- **48.** Guralnik J, Ferruci L, Simonsick E. Depressive symptoms and physical decline in community-dwelling older persons. *JAMA*1998;279:1720-6
- **49.** Guralnik J, Lacroix A, Abbott RD, Berkman L, Satterfield S, Evans D *et al.* Maintaining mobility in late-life.1.Demographic characteristics and chronic conditions. *Am J Epidemiol* 1993;137:845-57
- **50.** Baltes PB, Lindenberger U. Emergence of a Powerful Connection Between Sensory and Cognitive Functions Across the Adult Life Span: A New Window to the Study of Cognitive Aging? *Psychol Aging* 1997;12:12-21.
- **51.** Jette A, Assmann S, Rooks D, Harris B, Crawford S. Interrelationships among disablement concepts. *The Journals of Gerontology* 1998;53a:M395-404.
- **52.** Bonder B, Dal Bello-Haas V. *Functional performance in older adults*. Philadelphia: Philadelphia: F. A. Davis Company, 2009, 2009.
- **53.** Volpato S, Onder G, Cavalieri M, Guerra G, Sioulis F, Maraldi Cet al. Characteristics of Nondisabled Older Patients Developing New Disability Associated with Medical Illnesses and Hospitalization. *J Gen Intern Med*2007;22:668-74.
- **54.** Anpalahan M, Gibson SJ. Geriatric syndromes as predictors of adverse outcomes of hospitalization. *Internal medicine journal JID 101092952* 2007;38(1):16-23.
- 55. Wu AW, Yasui Y, Alzola C, Galanos AN, Tsevat J, Phillips RS et al. Predicting functional status outcomes in hospitalized patients aged 80 years and older. J Am GeriatrSoc 2000;48:S6.
- **56.** Tabloski PA. *Gerontological nursing*. Boston: Boston: Pearson, c2014, 2014.

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- **57.** Strawbridge WJ, FAU KG, Camacho T FAU Cohen, R.D., Cohen RD. The dynamics of disability and functional change in an elderly cohort: results from the Alameda County Study. *Journal of the American Geriatrics Society* 1992;40(8):12
- **58.** Campbell SE, Seymour DG, Primrose WR, Lynch JE, Dunstan E, Espallargues M *et al.* A multi- centre European study of factors affecting the discharge destination of older people admitted to hospital: analysis of in- hospital data from the ACMEitplus/it project. *Age Ageing* 2005;34:467-75.
- **59.** Bonder B. *Culture in clinical care*. Thorofare, NJ: Thorofare, NJ: Slack, c2002, 2002
- **60.** Pappas G, Queen S, Hadden W, Fisher G. The Increasing Disparity in Mortality between Socioeconomic Groups in the United States, 1960 and 1986. *N Engl J Med* 1993;329:103-9.
- **61.** Geronimus AT, Bound J, Waidmann TA, Hillemeier MM, Burns PB. Excess Mortality among Blacks and Whites in the United States. *N Engl J Med*1996;335:1552-8
- **62.** Ahern J, Galea S. Collective Efficacy and Major Depression in Urban Neighborhoods. *Am J Epidemiol*2011;173:1453-62
- **63.** De Silva M,J., Mckenzie K, Harpham T, Huttly SRA. Social capital and mental illness: a systematic review. *J Epidemiol Community Health* 2005;59:619.
- **64.** Seeman TE, Bruce ML, Mcavay GJ. Social network characteristics and onset of ADL disability: MacArthur studies of successful aging. *The journals of gerontology.Series B, Psychological sciences and social sciences* 1996;51:S191
- **65.** Davison K, Lawson CT. Do attributes in the physical environment influence children's physical activity? A review of the literature. *International Journal Of Behavioral Nutrition And Physical Activity; Int.J.Behav.Nutr. Phys.Act.* 2006;3.
- 66. Gitlin LN. Conducting research on home environments: lessons learned and new directions.(Author Abstract). Gerontologist 2003;43:628.