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ANTHROPOLOGIC PROSPECTS TO GERONTOLOGY IN TURKEY

ABSTRACT

Elderliness is one of the inevitable periods of life. The percentage of the elderly increases day by day in our country as well as around the world. According to data of Turkish Statistical Institute (TurkStat) for 2010, it was observed that the number of population above 65 years of age has exceeded 5 million, which is an indication for the growing elderly population compared to previous years. Physical deficiencies, deformations of the skeletal system, cardiovascular diseases and psychiatric disorders are the most common problems experienced by the elderly. These disorders result in restriction of mobility, which is the primary factor decreasing the quality of life in elderly. As part of the measures against such disorders, more emphasis should be placed on elderly and efforts should be made to increase their quality of life. From this perspective, anthropometric measurements obtained from the elderly are of particular importance. Through anthropometric measurements, sex-based characteristics such as height, weight, body mass index (BMI) and body composition will be determined and data obtained from these measurements will be used to rearrange living areas such as living room, kitchen, bathroom, and bedroom by considering ergonomic factors and more healthy life and a higher quality of life will be provided for the elderly.

Keywords: Turkey, Anthropology, Elderly,
Anthropometric Measurements, Ergonomy

TÜRKİYE'DE GERONTOLOJİDE ANTROPOLOJIK BAKIŞ

ÖZET

Yaşlılık; her canlının hayatının son dönemlerinde yaşadığı kaçınılmaz bir olgudur. Tüm dünya'da olduğu gibi ülkemizde de yaşlılık oranı gün geçtikçe artmaktadır. 2010 yılında Türkiye İstatistik Kurumu (TUİK) nüfus verilerine göre, Türkiye'de ki 65 yaş üstü nüfus 5 milyon kişi civarında olduğu görülmüş bu da geçmişte bıraktığımız yıllara göre yaşlı nüfusunun arttığının göstergesidir. Bunun için ilk olarak, yaşlılarda meydana gelecek her türlü rahatsızlığa karşı önlemler alınmalı, sağlık kurumlarında yaşlılara yönelik daha fazla çalışmalar yapılmalıdır. Bununla beraber kemik, yağ, kas yapıları da dikkate alınarak incelenmelidir. Yaşlılardan alınan antropometrik ölçümler de bu noktada önemlidir. Antropometrik ölçümlerle yaşlıların cinsiyete bağlı; boy, ağırlık, beden kitle indeksi (BKİ), vücut kompozisyonu gibi yapıları saptanacak ve bu ölçülerden elde edilecek verilerle ergonomik tasarımlar göz önünde bulundurularak yaşlıların yatak odası, mutfak, banyo, oturma odası gibi mekanlar düzenlenecek, böylece yaşlıların daha rahat, sağlıklı ve kazalara maruz kalmadan yaşamaları sağlanacaktır.

Anahtar Kelimeler: Türkiye, Antropoloji, Yaşlılık,
Antropometrik Ölçümler, Ergonomi

1. INTRODUCTION (GİRİŞ)

The proportion of elderly increases rapidly with the development of civilization and physiologic limit of aging is raised. Elderliness is defined as the period of life in which active working life of a person ends and the person maintains his/her life depended on the social security system and the person is able to use only small proportion of his/her previous abilities and skills. In international definitions, age of 60 is considered the limit for aging, and the high proportion and the long life span of elderly are taken as the indicators of civilization (Vural, 2008).

We can say that populations are getting older in general. Life expectancy is based on predicting until which age individuals at a certain age are going to live. This estimation is affected by infant mortality rate. This does not determine the proportion of elderly within the population. However, aging brings about increase in the rates of degenerative and chronic illnesses (Güler & Çobanoğlu, 1994)
World population is divided into 4 according to age groups:

- **Young Populations:** Less than 4% of the population is above the age of 64 (Underdeveloped countries).
- **Adult Populations:** Between 4% and 7% of the population is above the age of 64 (East Asia and South America Countries).
- **Old Populations:** The proportion of elderly is above 7% and under 10% (countries such as Canada, Australia, and Japan).
- **Very Old Populations:** The proportion of elderly is above 10%. This can be due to emigration of young population (Developed European countries) (Güler, & Çobanoğlu, 1994).

Elderliness is generally attributed to the physical appearance. However, an individual looking physically old may exhibit younger behaviour in his/her social life. Thus, chronological age and the perceived age are distinguished as "functional age" and "social age" (İçli, 2008).

1.1. Statistics for Elderly Population in Turkey (Türkiye'de Yaşlı Nüfus İstatistikleri)

In parallel to the expectations in the world, it is thought that the 21st century will be the century of elderly in Turkey. According to the population projections of Turkish Statistical Institute (TurkStat), it is estimated that elderly population in 2050 will be around 16 million in Turkey (Kalkan, 2008)

1.2. Studies on the Increasing Elderly Population in Our Country (Ülkemizde Yaşlı Nüfusun Artmasına Yönelik Yapılan Çalışmalar)

Epidemiologic transformation; in our day, the prevalence of chronic diseases increases with age. Individuals living longer are more affected by hypertension, diabetes, chronic pulmonary diseases and neurological problems which increases the economic burden (Yaman, H. et al.; 2008). Obesity attracts particular attention due to its various effects on morbidity and mortality in elderly (Rakıcıoğlu, 2008).

Studies have shown that growth hormone in elderly causes fluid retention in the body, accelerates the development of diabetes and increases the risks of hypertension and cardiac diseases. Furthermore, arthralgia and carpal tunnel syndrome have been reported (Bogin, 1999).

In Turkey, aging process for each person in the society could be presented as an approach that determines the elements of organizing elderliness or senescence as an opportunity rather than as a problem (Arun, 2008).

2. RESEARCH SIGNIFICANCE (ÇALIŞMANIN ÖNEMİ)

Elderliness is one of the inevitable periods of life. The percentage of the elderly increases day by day in our country as well as around the world. According to data of Turkish Statistical Institute (TurkStat) for 2010, it was observed that the number of population above 65 years of age has exceeded 5 million, which is an indication for the growing elderly population compared to previous years. Physical deficiencies, deformations of the skeletal system, cardiovascular diseases and psychiatric disorders are the most common problems experienced by the elderly. These disorders result in restriction of mobility, which is the primary factor decreasing the quality of life in elderly. As part of the measures against such disorders, more emphasis should be placed on elderly and efforts should be made to increase their quality of life. From this perspective, anthropometric measurements obtained from the elderly are of particular importance. Through anthropometric measurements, sex-based characteristics such as height, weight, body mass index (BMI) and body composition will be determined and data obtained from these measurements will be used to rearrange living areas such as living room, kitchen, bathroom, and bedroom by considering ergonomic factors and more healthy life and a higher quality of life will be provided for the elderly.

3. GLANCE AT THE SCIENCE OF GERONTOLOGY (GERONTOLOJİ BİLİMİNE BIR BAKIŞ)

Gerontology is both an old and a new discipline. Philosophers in 18^{th} and 19^{th} century, namely psychologist Johans Tetens (1777), Fredrich Carus (1808) and Adolph Quetelet (1835) conducted human oriented studies based on human lives (Blieszner, 1986).

Gerontology is a branch of science that examines the process of aging and related problems in connection with other branches of science such as psychology, psychiatry, biology, sociology and medicine. In this context, studies on aging were initiated systematically in an interdisciplinary way in Harvard University with the establishment of Longitudinal Research Centre in 1928. Although many empirical studies have been conducted on elderliness since then, studies conducted in that period could not be evaluated as a whole due to lack of interdisciplinary studies at a certain level (Koç, 2008).
In gerontology, elderly adults cause two specific problems to family life educators:

- Environmental factors affecting physiological development related with the design and application of cognitive program
- Learning ability affecting participation of elderly adults

Thus, this may facilitate understanding of adults of the elderly in their learning environment (Morris, and Ballard, 2003).

In 1980, Fry reported in his anthology which he organized by utilizing anthropology that anthropology has a long history of being interested in age, rather than being interested in the aging or the elderly (Cohen, 1994).

Anthropology has a long history of being interested in age, but not in aging or the aged. Aging is an important biological event. The aging process can be slowed down or postponed with appropriate measures and behaviours but cannot be stopped. In order for the science of gerontology to achieve its goal, gerontologists should understand and evaluate the elderly, the aging process, the environment and the world of the elderly well (Akın, 2006).

4. ANTHROPOMETRY AND ELDERLINESS (ANTROPOMETRİ VE YAŞLILIK)

Anthropometric measurements are used to follow the nutritional status of the community and the individuals. Applicability of anthropometry in all age groups and its ability to reflect the status of public health and wellbeing have increased its usage (Yardımcı and Özçelik, 2006). Anthropometric measures are used in various studies in accordance with the methods set forth by Anthropometric Standardization Reference Manual (ASRM) and International Biological Programme (Weiner and Lourie; 1969).

Human body is composed of fat, muscle, bone and their chemical composition. The chief point is that individuals should have fat, muscle and bone in appropriate amount according to their ages and anthropometric methods should be used to evaluate the body composition (Figure 1) (Başıbüyük, 2010).

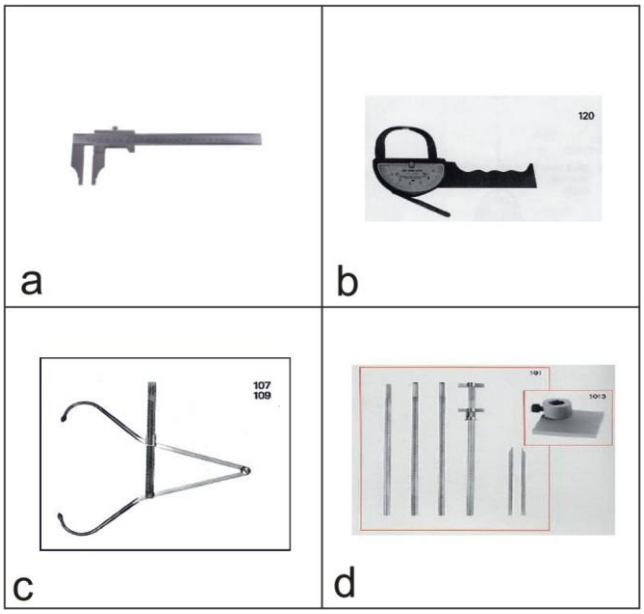

Figure 1. Anthropometric measurement tools (Başıbüyük, G.; 2010) (a) Caliper, (b) Skinfold, (c) Large/Small Diameter Compass, (d) Anthropometry
(Şekil 1. Antropometrik ölçüm aletleri (Başıbüyük, G.; 2010) (a) Kılavuzlu kumpas, (b) Deri kıvrım pergeli, (c) Büyük/ Küçük çap pergeli, (d) Antropometre)

Physical health has a particular importance in the improvement of quality of life of the elderly. Monitoring of parameters including size, proportion and composition of the body comes into prominence in determining the physical health. This assists detection of the conditions seen in elderly with the advanced age and causing functional disabilities, and assists the taking of protective measures (Atamtürk, 2010).

4.1. Application of Anthropometric Methods to Elderliness (Antropometrik Yöntemlerin Yaşlılığa Uygulanması)

An increase in subcutaneous fat tissue, loss in muscle mass and bone mineral content are observed in elderly males and females. Nutritional and health status of the individuals can be evaluated by comparing values obtained from the anthropometric measurements with reference values (Akın, 2006).

Fat-free body mass and body fat distribution are altered with age. Subcutaneous fat tissue of the calves, thighs, triceps and biceps

is decreased and fat tissue in the abdomen and around the waist is increased. Changes in body composition should be taken into account considering the limitations of measurement methods in elderly. Formulas used in anthropometric methods for the measurement of skin fold thickness and circumference have been mostly utilized for young and healthy adults. These techniques have not been validated for elderly population and this raises some problems (Bosi, 2003).

Practical simple strategies in addition to clinical tests, physical-functional status tests and anthropometric assessments are also effective in improving the health status of the elderly. For instance, vital training messages can be generated and training programmes can be developed by evaluating the influence of cultural, social and economic factors and nutrition on health status. Educational level, living conditions, availability of efficient and secure food, cooking techniques, shopping and carrying conditions of the elderly should be taken into consideration (Bosi, 2003).

The size of longitudinal anthropometric studies can be determined by secular changes using cross-sectional data in the aging process. Studies on aging have focused on anthropometric approaches to nutritional assessments (Perissinotto, et al., 2002).

Nutritional and physical status should be evaluated to follow health status of the aging individuals. Anthropometric measurements offer the most practical and cheapest method for this evaluation (Gültekin, 2009). Examples of anthropometric measurement tools are presented in Figure 1 (Başıbüyük, 2010).

5. ERGONOMICS AND AGING (ERGONOMİ VE YAŞLILIK)

Ergonomics is the design of interface between the focus person and the device. The use of the device is facilitated by this design of interface. Ergonomic designs have been used for the operational problems that have risen by the technological advances in the last century. In historical evolution, ergonomics have contributed to the emergence of various disciplines (Bridger, 2003).

Due to their genetic capacity, humans can live 120 years on average. Science, techniques and technological level that the humans have reached allow maintaining the environment and environmental conditions in a favourable level (Akın, 2009). Our goal should not be to stop but to postpone aging as much as possible. Nutrition, socio-economic and educational status, adaptation to climatic conditions and improving environmental conditions by designing thousands of ergonomic products will have substantial favourable effects (Bektaş, Akın, & Koca Ozer, 2009).

Biological, physiological and psychological changes that occur in an individual by aging limit the adaptation of the elderly to life and to environmental conditions. Physical and psychological diseases, risk of falling, accidents and related physical restrictions increase mortality rate. Thus, increasing the quality of life should be the focus by adapting environment and life conditions to the elderly rather than to adapt the elderly to the environment (Doğan, 2009).

Ergonomics aims at humanising and accommodating the life of individuals. Since the elderly generally live within a limited area including house, district, street or neighbourhood, they are both physically and socially restricted which substantially decrease their quality of life. Home accidents account for the majority of the problems that the elderly face. Physiologic alterations such as progressive hearing loss, sensorial changes, posture, balance and memory disturbances, all of which are related with aging, cause a decrease in the quality of life. Norton et al (1987) reported that 85% of the fractures caused by falls have occurred due to home accidents and falls were mostly associated with staircases (14.9%), chairs and

other furniture (13.9%), door mats and textile floor coverings (12.8%) (Bulduk, 2007).

5.1. Configuration of Indoor Environment for Elderly (Yaşlılara Yönelik İç Mekan Düzenlemeleri)

Inappropriate stair treads which may cause stumbling should not be preferred and staircases should be built with extra stair-heads for elderly to take a pause. Elderly move with wheelchair or walk along the building corridors. Door pull handles are particularly appropriate for those using wheelchair. Door sills should be designed accordingly to allow easy passage across the door frame for wheelchairs (Figure 2) (İlçe, İlçe & Dıramalı, 2007).

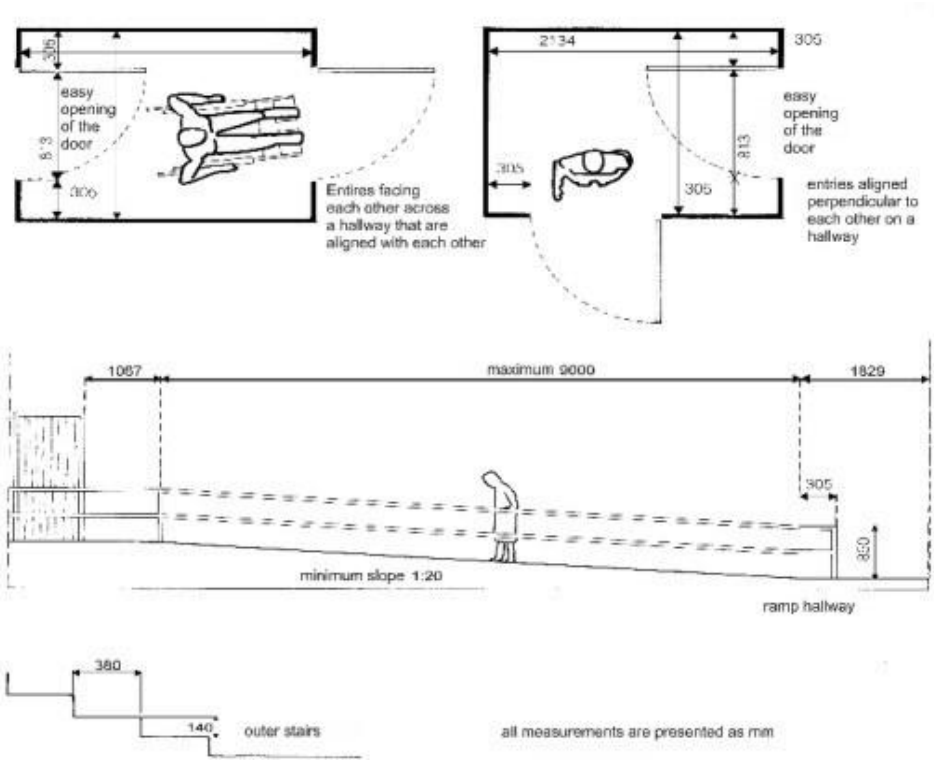

Figure 2. Alternative conditions and measurements for gateways for elderly people (İlçe, A. et al.; 2007)
Şekil 2. Yaşlıların konut girişlerinde alternatif durumlar ve ölçüler (İlçe, A. Ve Ark.; 2007)

Furniture at the doorways should not have sharp corners or feather edges due to risk of falling. A seat placed closely to the door is important to take a pause. Hooks at various heights should be available for the risk of imbalance and faulty movement (Kalınkara, 2003).

Living room is important since elderly spend most of their time sitting. Chairs and armchairs with a poor ergonomic design discomfort spine and legs, and make difficult for elderly to stand up. Hot colours should be preferred for the painting of walls, ceilings and floor. Attention should be paid to orient furniture as not to obstruct television viewing (İlçe, İlçe & Dıramalı, 2007)

Body posture during sitting, standing, walking, bending and crouching should be kept at natural position while working in the kitchen. Standards should be determined for kitchen and some units should be movable and adjustable to solve problems of the individuals in the kitchen (Figure 3) (Pınarcı & Efe, 2010).

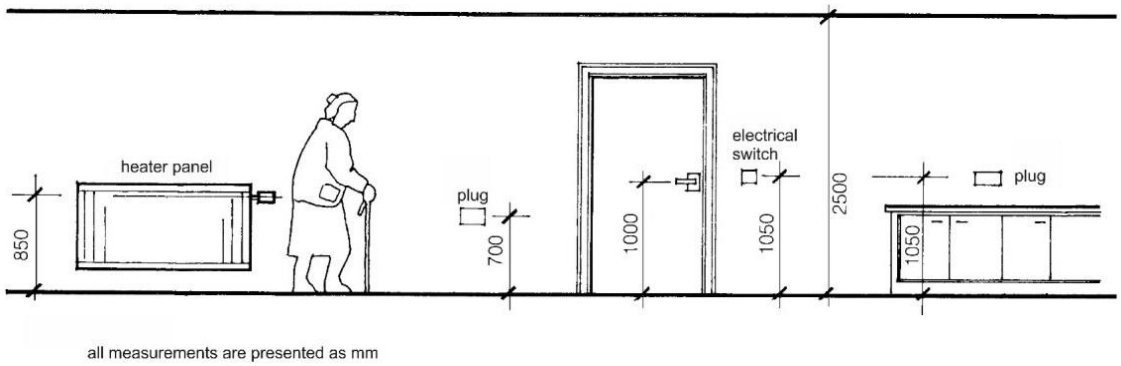

Figure 3. The locations of door handles, plugs and switches in houses of the elderly (İlçe, A. et al.; 2007)
Şekil 3. Yaşlıların konutlarında kapı kolu, priz ve elektrik düğmelerinin yerleri (İlçe, A. ve Ark.; 2007)

Toilet seats at a standard height cause problems for people with restricted mobility or joint problems while sitting on and getting up off the seat; raised toilet seats should be used to solve this problem. Grab bars should be placed around the toilet for people with walking difficulty and restricted joint motion. The bathroom and particularly bathtub should have a nonslip floor to avoid falls since bathrooms are wet areas. Hand-held shower heads with a soft extension pipe provide great convenience for disabled, however, it should be remembered that placing the shower head to its hanger may be problematic due to various disabilities (Tezel, 2005).

Physical environmental factors that influence spatial structure of bedrooms for elderly include direction, environment, view, climate, topography, wind, accessibility and environmental data. Bedrooms intended for the personal usage of the elderly should be designed in appropriate size to fit body size of the individual and to allow easy circulation. Availability of bathroom inside the bedroom also affects total size of the bedroom. Preferring hot colours, vivid tones and patterns on the walls, floor coverings and equipment of the bedroom increases the motivation of elderly users and strengthens their conduct of life. The height of wardrobes should not exceed 160 cm (Dikmen, 2009).

6. CONCLUSION (TARTIŞMA)

The population in Turkey and in the world is getting older. On the other hand, scientific and technological advances in medicine, have begun to positively influence the life span of the human beings. These advances have caused a rapid increase in the elderly population in Turkey as well as in the world.

Changes in nutritional status, obesity, changes in body size and decreases in skinfold thickness have led to various problems in elderly. Such problems have raised the emphasis placed on gerontology and therefore, studies and researches, of which anthropometric and ergonomic researches are the leading fields of research, have been conducted to increase the life satisfaction of the elderly. Studies attempted to increase the life satisfaction of elderly and ergonomic designs have been implemented under the light of data obtained from anthropometric measurements in the elderly with the purpose of increasing physical and psychological quality of their life. These kinds of studies are expected to be increased in the following years.

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