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RESEARCH

LIFE EXPECTANCIES AND HEALTH ADJUSTED LIFE EXPECTANCY (HALE) AT 60 YEARS OLD, POPULATION IN TURKEY

ABSTRACT

Introduction: The goal of the study is to provide information and to set up objective criteria, which shall guide policies by using Health Adjusted Life (HALE) analysis. The results of the population census 2000, death statistics, data of the Turkish Demographic and Health Survey and Verbal Autopsy Survey, were used to develop life tables.

Materials and Method: Preston-Coale (50.0%) Method which corresponds to the Horiuchi Method was used when developing life tables, in order to revise the number of deaths. The national life table was developed after urban, rural areas five regions.

Results: Life expectancy at the age 60, is found to be 17.86 years at national, 16.62 among males, and 19.04 among females. At the age of 65, the value is 14.26 at national, 13.26 among males, and 15.19 among felales. At age group 60; HALEs values are 14.4, years for national, 13.4 years in males, 15.9 years in females. At the age group 65 HALEs values are 14.26, for national, 13.26 years for males, and 15.19 years for females.

Conclusion: Necessary efforts should be made to reach the goal to "Ensure Minimum 20% Increase in Life Expectancy and HALE in 65 years and older age.

Key words: 60e, life expectancy, HALE.

ARAŞTIRMA

TÜRKİYE'DE 60 YAŞ ÜZERİ NÜFUSTA BEKLENEN YAŞAM SÜRESİ VE SAĞLIĞA UYARLANMIŞ YAŞAM YILLARI (SUYY)

ÖZ

Giriş: Bu çalışmanın amacı beklenen yaşam süresi ve sağlığa uyarlanmış yaşam yılları (SUYY) analizlerinin yapılması ile bilgi edinilmesi ve politikalara rehberlik etmek üzere objektif kriterler geliştirilmesidir. 2000 nüfus sayımı sonuçları, DİE ölüm istatistikleri, Türkiye Nüfus ve Sağlık Araştırması (TNSA) ve Sözel Otopsi Araştırması verileri kullanılmıştır.

Gereç ve Yöntem: Yaşam tablolarının geliştirilmesinde ölüm sayılarının düzeltilmesi için Benett Horiuchi metoduna benzeyen Preston-Coale (%50.0) yöntemi kullanılmıştır. Kent, kır ve beş bölge ulusal düzey için yaşam tabloları geliştirilmiştir. SUYY hesaplamasında yöntem, yaşam tablolarının fonksiyonunun kullanılmasıdır.

Bulgular: Beklenen yaşam süresi 60 yaş için sırasıyla ulusal düzeyde 17.86, erkeklerde 16.62, kadınlarda 19.04, yıl olarak bulunmuştur. 65 yaşta beklenen yaşam süresi sırasıyla ulusal düzeyde 14.26, erkeklerde 13.26, kadınlarda 15.19 yıldır. 60 yaş grubunda; SUYY değerleri ise ulusal düzeyde 14.4, Erkeklerde 13.4; kadınlarda ise ulusal düzeyde 15.9 yıl hesaplanmıştır. 65 yaşta SUYY ise ulusal düzeyde 14.26, Erkeklerde 13.26; kadınlarda ise ulusal düzeyde 15.19 yıl hesaplanmıştır.

Sonuç: 65 yaş ve üzeri kişilerde beklenen yaşam süresinin ve SUYY'da en az %2 düzeyinde bir artış sağlanabilmesi hedefine ulaşılması için çalışmalar yapılmalıdır.

Anahtar sözcükler: 60e, beklenen yaşam süresi, SUYY.

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INTRODUCTION

In 2000, there were 600 million people aged 60 and over; there will be 1.2 billion by 2025 and 2 billion by 2050.Today, about two thirds of all older people are living in the developing world; by 2025, it will be 75% (1). Over the past few years, the world's population has continued on its remarkable transition path from a state of high birth and death rates to one characterized by low birth and death rates. At the heart of that transition has been the growth in the number and proportion of older persons. Such a rapid, large and ubiquitous growth has never been seen in the history of civilization. The current demographic revolution is predicted to continue well into the coming centuries. Major features: The impact of population ageing is increasingly evident in the old-age dependency ratio, the number of working age persons (age 15 - 64 years) per older person (65 years or older) that is used as an indicator of the 'dependency burden' on potential workers. Between 2005 and 2050, the old-age dependency ratio will almost double in more developed regions and almost triple in less developed regions. The potential socioeconomic impact on society that may result from an increasing old-age dependency ratio is an area of growing research and public debate (2).

Also Turkish population is ageing: 7% of Turkish population is above 65 years old. Older population ratio is 9% in rural area, while it is 6% in urban settlements. The ratio of the older population is the highest older population ratio in the demographic history of Turkey. The increase in the older population could have been caused by two reasons: rapid decrease in fertility, and life expectancy increase in all age groups (3, 4).

On the other hand summary measures of population health are measures that combine information on mortality and non-fatal health outcomes to represent the health of a particular population as a single number. Summary measures of population health allow us to summarise all these numbers in a comprehensive and consistent manner. Potential applications are comparison of health conditions or overall health status between two populations or the same population over time; quantification of health inequalities;inclusion of non-fatal health outcomes to ensure these receive appropriate policy attention;measurement of the magnitude of different health problems using a common currency; provision of information to assist in setting priorities for health planning, public health programs, research and development, and professional training. Summary measure of population health can be classified into two classes: health expectancies (e.g. disability-free life expectancy, DFLE; health-adjusted life expectancy, HALE) and health gaps (e.g. disability-adjusted life years, DALY; healthy life years). These two classes of measures are complementary.

As a summary measure of the burden of disability from all causes in a population, healthy life expectancy (health-adjusted life expectancy – HALE) has two advantages over other summary measures. The first is that it is relatively easy to explain the concept of an equivalent "healthy" life expectancy to a non-technical audience. The second is that HALE is measured in units (expected years of life) that are meaningful to and within the common experience of non-technical audiences (unlike other indicators such as mortality rates or incidence rates).

During the 1990s, Disability-Free Life Expectancy (DFLE) and related measures were calculated for many However, these measures incorporate a dichotomous weighting scheme in which time spent in any health state categorized as disabled is assigned arbitrarily a weight of zero (equivalent to death). Thus, DFLE is not sensitive to differences in the severity distribution of disability in populations. In contrast, DALE adds up expectation of life for different health states with adjustment for severity weights. DALYs are a gap measure; they measure the gap between a population's actual health and some defined goal, while healthy life expectancy (HALE) belongs to the family of health expectancies, summarizing the expected number of years to be lived in what might be termed the equivalent of "full health". Healthy life expectancy provides the best available single number SMPH for measuring the overall level of health for populations in a way that is appropriately sensitive to probabilities of survival and death and to the prevalence and severity of health states among the population (5) .

WHO has used healthy life expectancy as the measure of the average level of health of the populations of Member States in its World Health Report (WHR) for annually reporting on population health (6,7). Following feedback from WHO Member States and to better reflect the inclusion of all states of health in the calculation of healthy life expectancy, the name of the indicator used to measure healthy life expectancy was changed from disability-adjusted life expectancy (DALE) in the WHR 2000 to health-adjusted life expectancy (HALE) in the WHR 2001.

Two different types of methods have been used for calculating health expectancies: Sullivan's method and multistate life table methods. All healthy life expectancies calculated to date from burden of disease studies have used Sullivan's method. This Involves using the observed prevalence of disability at each age in the current population (at a given point of time) to divide the hypothetical years of life lived by a period life table cohort at different ages into years with and without disability. Sullivan's method requires only a population life table and prevalence data for the health states of interest (5).

HALE includes all disability in a population, regardless of severity and duration, and weights time spent in less than perfect health for severity (8). It is an indicator of overall population health. It combines measures of both age- and sex-specific health status, and age- and sex-specific mortality into a single statistic. HALE represents the number of expected years of life equivalent to years lived in full health, based on the average experience in a population. In this sense, HALE is not only a measure of quantity of life but also a measure of quality of life .The HALE is a relatively new indicator, and embodies a number of assumptions which are important for its interpretation. One such assumption is using an indicator of the self-reported health status of a sample of individuals, each at a moment in time, to represent the double average, first, of that individual's health status over a period of time, such as a year, and then over-all of the individuals in the population (e.g. of a province). A second and related assumption is that there is a reciprocity between health and time such that, for example, 5 years lived at a heath state of 0.5 (quite poor health) as measured by the indicator is the same thing as 2.5 years lived in full health (9) .

The goal of the study is to provide information on the life expectancy (LE) and health status of 60+ aged people in Turkey by an evaluation of the LE and HALE values and to set up clear and objective criteria, which shall guide health sector reforms, policies and strategies in Turkey.

Materials and Method

Calculating a Life Table

The reference year distinguished for this project is the year 2000 because the last population consensus was made in this year. The results of the population consensus 2000, death statistics from SIS, data of the Turkey Demographic Health Survey and "Verbal Autopsy Survey", which was conducted on the basis of the study, were used to develop life tables. Preston-Coale (50%) Method which corresponds to the Horiuchi Method was used when developing life tables, in order to revise the number of deaths and it was found that the ratio of the neglected deaths in adult deaths is 20% (10). The life table for Turkey at national level was developed after life tables for urban areas, rural areas and five regions in Turkey had been developed. When developing life tables for urban areas in Turkey population census for the year 2000 and death statistics of 1990-2000 of the SIS were used. In the applied method, 5q0 is needed for child mortality level in Turkey and 45q15 is needed for death possibilities for 15-60 ages. As for development of life tables, Turkey Demographic and Health Survey was utilized for 5q0 value and SIS values were utilized for 45q15 value. As the second step, with Benett-Horichi and Hill Generalized Growth Balance method, age and gender-specific mortality rates were identified by making use of all ages and genders-specific number of deaths taken from the Ministry of Internal Affairs and data obtained from population census for the year 1990 and 2000 and thus completeness rates number of deaths of the SIS urban areas were calculated. As a result of this evaluation, it was found out that accurate data collection for female number of deaths was 84 % and for male number of deaths was 88 % with respect to urban areas in Turkey. At the next step, previously identified 5q0 values and urban areas-oriented 45q15 values were used and life tables of urban areas in Turkey were developed by means of the "WHO Modified logit life table system". WHO's modified Brass Logit System. This is an extension of the two-parameter Brass system to incorporate age-specific correction factors which correct for the non-linearity observed in the logit relationship as mortality patterns and levels depart from the standard lx values. This system is increasingly being used by WHO to estimate life tables from data on child (5qo) and adult mortality (45q15) (8,11-17).

Turkey Demographic Health Survey 1998 rural areas data were used for rural areas 5q0 value in Turkey. Whereas the SIS presents the population under 20.000 as 40% of the entire population, administrative distribution used in the SIS death statistics presents rural population as 35%. In order to eliminate difference of 5% between two definitions, 60/65 urban and 5/65 rural weighting was applied as in urban areas and calculations were based on this. 45q15 average was estimated for adult mortality and for 5q0 value, corresponding values in females and males were compared by means of the

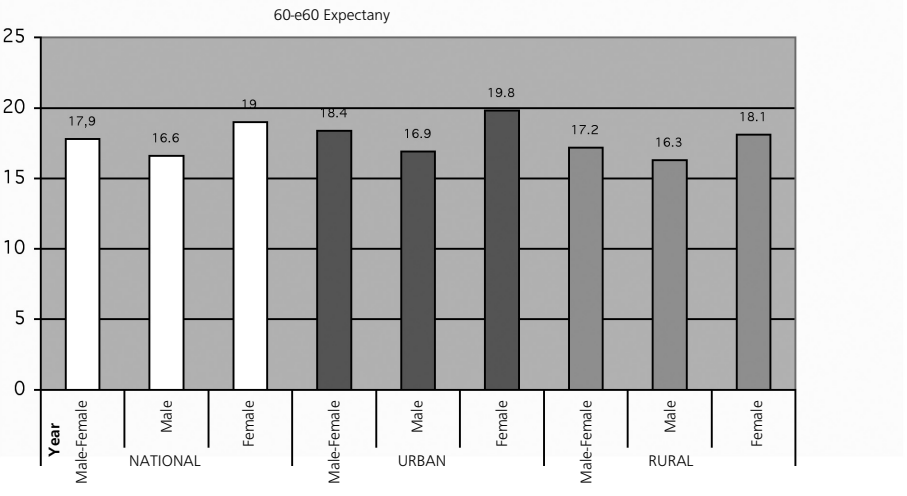
WHO Modified Logit Life Table system. Besides, in random selection of 1000, adult mortality was estimated considering theoretical distribution of 45q15. Apart from this, with the help of the verbal autopsy data, the values that correspond to 33% were estimated and the model is applied. 5q0 value was obtained from Turkey Demographic Health Survey 1998 data while life tables related to the regions were being developed. 45q15 value for adult mortality was estimated and life tables were developed based on the SIS data (16).

The Loss of Standard Expected Life Year method is designed to combine the advantages of Loss of Expected Life Year method when evaluating the elder individuals and the equity approach of the Loss of Potential Life Year method. Japanese data, which include the highest life expectancy value of the world in terms of calculations, are accepted as the "ideal standard". In Japan, life expectancy at birth for women is 82.5 years. Men have shorter life expectancies than women. This difference may be as high as 7 years in developed countries. This difference is not totally due to the biological causes, and men are exposed to different risks related to their occupational conditions and different life styles compared to women. From data on high socio-economic classes living in the developed countries, where these risks are reduced to minimum, this difference is reduced to 2-3 years. This difference is 2.7 years in Turkey. The life expectancy difference caused by biological differences among men and women is set as 2.5 years in the reference table of DALY calculations. Loss of healthy life in all ages is usually based on the standard life expectancy for all ages, which was used in GBD 1990 .In HALE calculation, the methodology uses the functions of life tables (17).

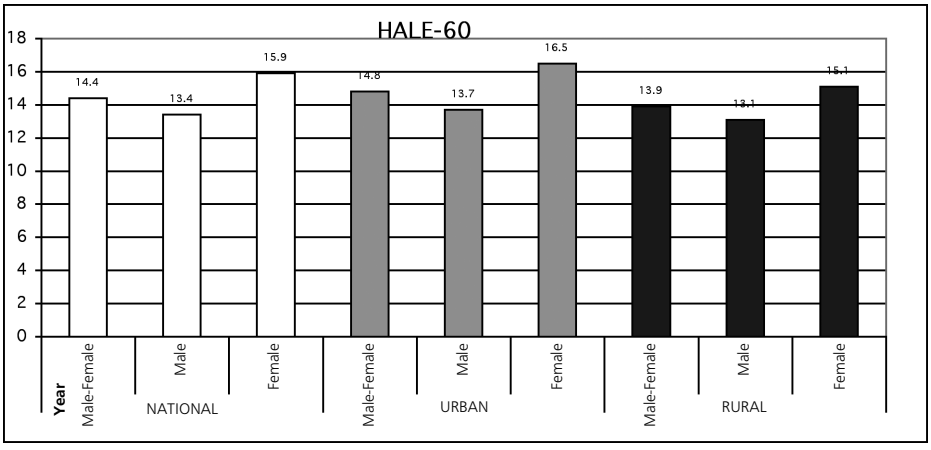
All healthy life expectancies calculated to date from burden of disease studies have used Sullivan's method. Sullivan's method requires only a population life table and prevalence data of the observed prevalence of disability at each age in the current population (at a given point of time). The hypothetical years of life lived by a period life table cohort at different ages are divided into years with and without disability. The class of health expectancy produced from Sullivan's method will depend on how disability prevalence is treated: dichotomous (leading to DFLE) or polychotomous (leading to HALE). Prevalence rates of disability can be obtained from cross-sectional health or disability surveys for a population at a point in time, carried out regularly in most developed countries. As a result, Sullivan's method has been widely used during the 1980's and 1990s to estimate disability-free life expectancy and other forms of health expectancy (8, 18).

RESULTS

As for life expectancy at the age 60 (e60), value is 17.86 on national level, 17.21 in rural and 18.44 years in urban areas. In male 16.62 on national level, 16.27 in rural 16.94 years in urban areas. In female is 19.04 on national level, 18.12 in rural, 19.82 years in urban areas (Graph 1). At the



Graph 1— Distribution of life expectancy at age 60 by gender at urban, rural and national level in Turkey (NBD Project, Turkey)



Graph 2— Distribution of health-adjusted life expectancy at the age of 60 by gender at urban, rural and national level in Turkey (NBD Project, Turkey)

age 65 (e65), value is 14.26 on national level, 13.73 in rural and 14.74 years in urban areas. In male 13.26 on national level, 12.98 in rural 13.52 years in urban areas. In female is 15.19 on national level, 14.45 in rural, 15.81 years in urban areas

At age group 60 HALEs values are 14.4, 14.8 and 13.9 years respectively for national, urban and rural area. In males, HALEs are 13.4 years, 13.7 years and 13.1 years; for females 15.9 years, 16.5 years and 15.1 years respectively in national, urban and rural area (Graph 2). At age group 65 HALEs values are 14.4, 14.8 and 10.9 years respectively for national, urban and rural area. In males, HALEs are 10,6 years, 10,8 years and 10,4 years; for females 12.7 years, 13.2 years and 12.0 years respectively in national, urban and rural area.

Discussion

As the tempo of ageing in developing countries is more rapid than in developed countries, developing countries will have less time than the developed countries to adapt to the consequences of population ageing. over the last half of the 20th century, 20 years were added to the average lifespan, bringing global life expectancy to its current level of 66 years. Large differences exist between countries, however, in the least developed countries, men reaching age 60 can expect only 15 more years of life and women, 17 more, while in the more developed regions, life expectancy at age 60 is 19 years for men and 23 years for women (19) .

Average life expectancy in Turkey is gradually increasing. 7% of Turkish population is above 65 years old. Older population ratio is 9% in rural area, while it is 6% in urban settlements. The ratio of the older population is the highest older population ratio in the demographic history of Turkey. The increase in the older population could have been caused by two reasons: rapid decrease in fertility, and life expectancy increase in all age groups (3,4).

In Turkey life expectancy at the age 65 (e65), value is 14.26 at national level, this is thirty one rank between the WHO Euro Region Member States the Switzerland is first rank with 20.19 years (20).

When we look at the Global HALE at age 60 was 12.7 years and 14.7 years for males and females, respectively, 4.3 years lower than total life expectancy at age 60 for males and 5.3 years lower for females (21). At age group 60 HALEs values are 14.4, 13.4 and 15.9 years were found for national level, male and female respectively in Turkey.

In Australian Burden of disease study (1999) at age group 65 DALE values are 12.0 for males, 15.2 for females (22). In Turkey, at age group 65 HALEs values are 10,6 years for males, 12.7 years for females.

Although the healthy life expectancy in Turkey is 1 to 2 years longer than the international value, it is found to be 2 to 3 years shorter than that of Australia.

Health statistics and summary measure of population health for the elderly, together with production and interpretation, are essential to identify the policies and priorities (e.g elderly Health) in the respective field.

Apart from these, calculations for life expectancy and HALE are the indirect criteria of development, which indicate the health status within a society. They reflect the way that health care services are offered and the extent of effectiveness and success. From this point of view, it would be reasonable to acknowledge that we need improvements when domestic values of life expectancy at the age of 60 and 65 are considered, as well as the HALE values in Turkey. So Health 21, Target 5, Healthy ageing: Necessary efforts should be made so as to reach the goal to "Ensure Minimum 20% Increase in Life Expectancy and HALE in 65+ Age".

On the other hand, life expectancy and HALE except for the fact that they are necessary for planning health care services - are also significant concepts for the retirement and insurance system in a country. Life expectancy at the age of 60 and 65 turns out to be important especially when determining the age of retirement. And the HALE is an essential parameter for the insurance system, as well. According to the current laws and regulations, female employees have to fill the 20th and male employees have to fill the 25th year of the active service years so that they get retired on their own will. In addition to this provision, also they should have filled their current age at the time of request for retirement, as per duration of services by 23.05.2002. The Provisional Article 206, which was added to the Law on Public Employee's Retirement Fund by the Law Numbered 4447 and amended by the Law Numbered 4759, orders that fund members, who were 50 years old or elder on 08.09.1999, could receive pension from the fund only if they filled 10 years of active service when they got retired at the age of 61 on their own will or due to old age (23).

Life expectancy at the age 60 (e60) is found to be 17.86 years at national level, 16.62 in male 19.04 and in female. At the age 65 (e65), the value is 14.26 at national level, 13.26 in male and 15.19 in female. Expected life span is taken into consideration when determining the gradual ages of retirement.

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