

Geography of population longevity hotspots in Azerbaijan

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Abstract: The global aging of the world's population and the increase of the share of older age categories in its structure, which has become one of the distinctive features of the demographic transformation of the modern world, has aroused the ever-growing interest of researchers of various profiles in gerontological problems. The study of the phenomenon of the group or population longevity, which is noted in some regions of the world, called "blue zones", has acquired particular importance. The data of complex biomedical studies of populations with an increased longevity index carried out on the territory of Azerbaijan since the end of the last century indicate the potential of some regions of the country to obtain the status of a "blue zone". The study of the geography of the longevity spread among the indigenous population of the country reveals the presence of "natural" centers of longevity in certain regions, in particular in Karabakh, where, thanks to a rare combination of favorable natural-ecological and social conditions, the indigenous population has historically emerged and consolidated, i.e. an increased concentration of long-lived people has been traced for quite a long time. The article provides a map of the distribution of such centers of longevity in Azerbaijan and discusses the compliance of some regions, in particular Karabakh, with the criteria of the "blue zone".

Keywords: *Human ageing, demographic transformation, population longevity, blue zones, Karabakh*

INTRODUCTION

According to UN forecast, the world population will increase by 40% in the next 40 years. But the nature of this increase will be fundamentally different from what humankind has experienced in the past, due to two global trends: declining birth rate and increasing average life expectancy, that feature the demographic make-up of the modern world (Sharman, 2011). In other words, the world's population will not grow because of the high birthrate, as it always did previously, but mainly as a result of increased numbers of older people. In the near future, the number of people aged 80 and over will be about the same as the population of children under 5 years (Anbdrews, 2002).

One inevitable consequence of population ageing is an undesirable rise in the proportion of those suffering from age-related disease and disability. In this regard, the multidisciplinary re-

search on so-called *Blue Zones*, in which, as shown in many studies, people live exceptional longer and healthier lives than average, is of paramount importance. The findings of these studies widen the existing knowledge on the nature of human ageing as well as on how and to what extent all the socioeconomic, behavioral, environmental, and genetic factors individually, jointly, and interactively contribute to exceptionally long and healthy lives. Therefore, for the last few decades, the phenomenon of Blue Zones has been attracting increasing attention from gerontologists and specialists of related disciplines (Poulain et al., 2013).

In general, the BZ population is characterized by a significantly higher level of longevity compared to the neighboring regions, provided that the exceptional longevity of people in this population has been fully validated. In practice, a blue zone is defined as a rather limited and homogenous geo-

graphical area where the population shares the same lifestyle and environment and its longevity has been proved to be exceptionally high. A number of studies have shown that the BZs exist in different parts of the world including the South of Europe (Italy, Greece), Latin America (Costa-Rica), Japan (Okinawa), USA (Loma-Linda California) (Poulain et al., 2013).

A high concentration of the long-lived is observed in the Caucasus countries including Azerbaijan (Козлов, Комарова, 1982). A number of studies by gerontologists mostly from the former Soviet Union's scientific community have found that with the longevity indices reaching up to 20-50 % in some areas Azerbaijan can be considered as one of the world's longevity hotspots. The individual longevity records have been reported in the country as well (Козлов, 1989). Availability of such unique human resources opens up unique prospects for multidisciplinary research both on the individual and the population longevity as a complex biomedical and psycho-social phenomenon. It is not surprising that Azerbaijan has been in the focus of the specialists engaged in human

ageing studies since the first epidemiological survey in 1986 which was carried out by the international team of experts from the Institute of Physiology, Azerbaijan National Academy of Sciences, jointly with the Kiev Institute of Gerontology (Ukraine), the Research Institute for Human Studies (USA) and the Institute of Ethnology, Russia. It was found that among the aboriginal population of Azerbaijan there has naturally-historically emerged and been fixed the high concentration of people representing maximal species-specific lifespan (Kuznetsova et al., 2016). Those findings opened up the unique possibilities for the multidisciplinary study of complex medical-biological and social-cultural factors underlying the formation of the 'longevity phenomenon' at the population level which was launched in 2015 when a dedicated academic programme was developed by the Garayev Institute of Physiology of NANA aimed at a comprehensive study of populations with the elevated longevity indices (Гашимова и др., 2019; Рашидова и др., 2019; Carbone et al., 2020; Rashidova et al., 2020).

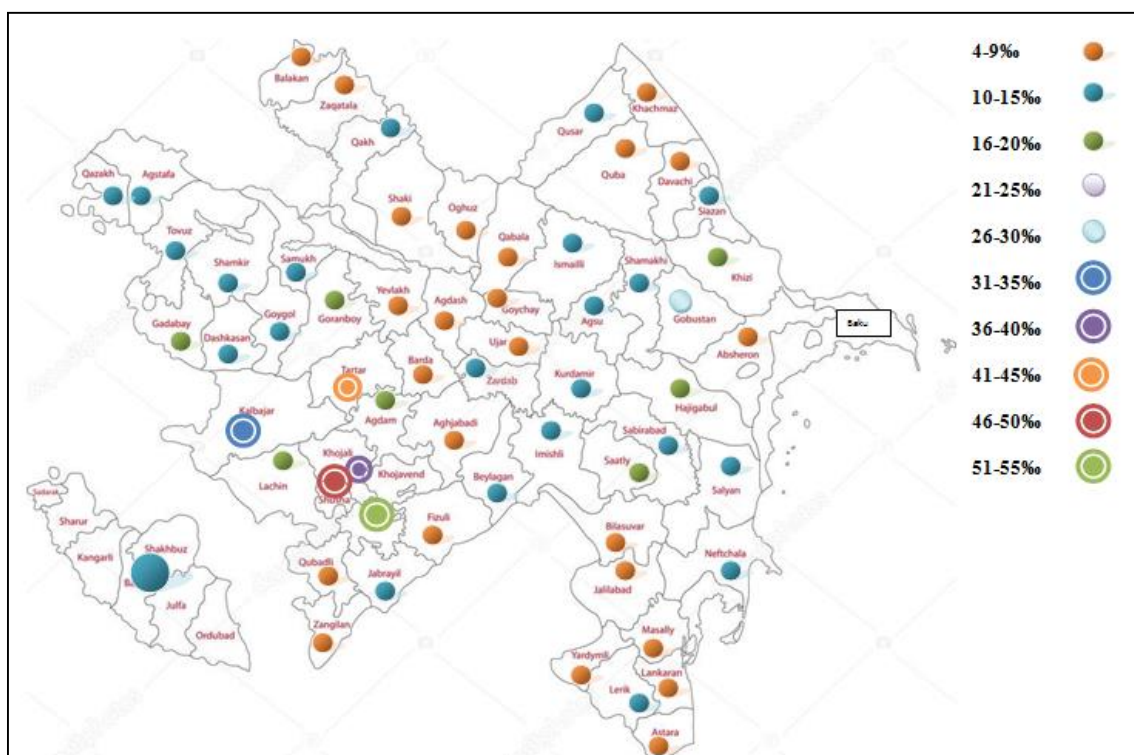


Fig. 1. Geography of Longevity in Azerbaijan

One of the major findings of this programme is associated with the geography of longevity in the country. It was shown that even though the cases of age 90+ are reported for in various areas of Azerbaijan, the regions of their particularly high concentration are distributed unevenly. Specifically, the highest concentration of long-living people is characteristic for the Karabakh region, particularly for the Shusha and Khojavend districts, where the longevity index (share of those at age of 90+ in the total population aged 60+) is reaching up to 50-54 % (Fig. 1). The comparison of our findings with the data available in the literature regarding the geography of longevity hotspots in the Caucasus has revealed that in those areas the highest longevity indices have been reported since 1926, indicating that in this mountainous area the longevity phenomenon has naturally-historically emerged and been fixed for generations (Козлов В., Комарова О., 1982). One more striking point is that in the latest census data of 2016 that were used in our demographic elaborations, the populations of Shusha and other Karabakh settlements were registered not in their historical land of residence, but in the places of their temporary residence. It appears that despite nearly 30 years of life in completely different social-environmental settings, those people have managed to preserve the biological potential ensuring better adaptation to physical and social environments and longer life.

At present, new surveys are under development in a comparative way for the areas in the country with elevated longevity indices, involving biomedical and environmental aspects. A comprehensive approach is being considered, favoring the analysis of numerous biomedical, social and environmental factors that could have interacted to result in exceptional longevity hotspots.

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Azərbaycanda uzunömürlülüğün yayılma coğrafiyası

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Müasir dünyanın demoqrafik transformasiyasının səciyyəvi xüsusiyyətlərindən biri olan dünya əhalisinin qlobal şəkildə yaşlanması və bu strukturda yaşlı nəsil kateqoriyasının payının artması müxtəlif profilli tədqiqatçıların herontoloji problemlərə getdikcə artan marağına səbəb olmuşdur. Dünyanın bəzi bölgələrində "mavi zonalar" kimi qeyd olunan qrup və ya populyasiya uzunömürlülüğü fenomeninin öyrənilməsi xüsusi əhəmiyyət kəsb edir. Azərbaycan ərazisində yüksək uzunömürlülük indeksinə malik olan populyasiyalarda ötən əsrin sonlarından başlayaraq kompleks şəkildə aparılan biotibbi tədqiqatların nəticələrinə əsasən demək olar ki, ölkənin bəzi bölgələri "mavi zona" statusunu almaq potensialına malikdirlər. Belə ki, yerli əhali arasında uzunömürlülüğün yayılma coğrafiyasının tədqiqi ölkənin ayrı-ayrı bölgələrində "təbii" uzunömürlülük ocaqlarının olduğunu aşkara çıxarmışdır. Xüsusilə də Qarabağda, əlverişli təbii-ekoloji və sosial şəraitin nadir birləşməsi sayəsində yerli əhali arasında uzunömürlülüğün geniş yayılması təbii-tarixi olaraq yaranmış və möhkəmlənmişdir, yəni bu kifayət qədər uzun müddət ərzində izlənilmişdir. Məqalədə Azərbaycanda bu cür uzunömürlülük mərkəzlərinin yayılma xəritəsi verilir və bəzi bölgələrin, o cümlədən Qarabağın "mavi zona" meyarlarına uyğunluğu müzakirə edilir.

Açar sözlər: *İnsanın qocalması, demoqrafik transformasiya, populyasiya uzunömürlülük, mavi zonalar, Qarabağ*

География распределения очагов долгожительства в Азербайджане

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Глобальное старение населения планеты и увеличение в его структуре доли старших возрастных категорий, ставшее одной из отличительных особенностей демографической трансформации современного мира, вызвало всевозрастающий интерес исследователей разного профиля к геронтологической проблематике. Особое значение приобрело изучение феномена группового или популяционного долгожительства, который отмечается в некоторых регионах мира, получивших название «голубых зон». Данные комплексных медико-биологических исследований популяций с повышенным индексом долгожительства, проведенных на территории Азербайджана, начиная с конца прошлого века, свидетельствуют о потенциале некоторых районов страны для получения статуса «голубой зоны». В частности, изучение географии распространения долгожительства среди коренного населения страны выявляет присутствие «естественных» очагов долгожительства в отдельных районах, в частности в Карабахе, где, благодаря редкой комбинации благоприятных природно-экологических и социальных условий, у коренного населения естественно-исторически возникла и закрепились (т.е. тенденция прослеживается в течение довольно длительного времени) повышенная концентрация долголетних людей. В статье приводится карта распределения таких очагов долгожительства в Азербайджане и обсуждается соответствие некоторых районов, в частности Карабаха, к критериям «голубой зоны».

Ключевые слова: *Старение человека, демографическая трансформация, популяционное долгожительство, голубые зоны, Карабах*