The Science of Longevity in the Middle East: Innovations, Challenges, and Future Directions

A whitepaper by investopia

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INTRODUCTION

Since the early 20th century, human life expectancy has doubled due to significant advancements in medicine, particularly in combating infectious diseases. However, while some people are lucky enough to maintain good health and mobility well into their 80s and beyond, others may face a decline in physical and cognitive abilities much earlier in life. When we talk about longevity today, we should understand it as the capacity to live a long life beyond the typical average age of death for our species. The definition of longevity is crucial and distinct from lifespan—the age at which we are expected to die—as it focuses on how many years we live in good health, free from the limitations of illness.

The World Health Organization predicts that the number of people living beyond 60 will double by 205 and go on to triple by 2100. Other estimates are similar, with the Office of National Statistics predicting that a third of babies born in 2013 will reach the age of 100. The US Census Bureau expects the number of people ages over 85 to triple by 2060. While it's encouraging that science is making strides in developing effective treatments and improving early diagnostics for chronic illnesses like cancer, diabetes, and heart disease, the aging process still incurs significant costs and presents unique challenges to society.

In this regard, enhancing one's healthy lifespan through a personalized blend of behavioral and lifestyle adjustments, coupled with scientifically-backed therapies and treatments, is quickly becoming a consumer essential. By 2028, the global longevity market is projected to approach nearly US$183 billion. This shift towards longevity is driven by the rapid aging of the global population, the fastest in history according to the UN. As of 2021, the number of people aged 65 and older reached 761 million, a figure anticipated to double to 1.6 billion by 2050.

Like many nations with rising life expectancy, the Gulf states are also witnessing significant demographic shifts due to increased longevity. By 2025, individuals over the age of 50 are projected to constitute nearly one in five of the GCC population, compared to one in seven in 2020. The median age of the local population is expected to increase from 32 in 2022 to 51 by 2100. This demographic shift could place a strain on healthcare systems due to the growing prevalence of age-related diseases and an over-reliance on expatriate healthcare workers. In the UAE, for instance, only 1% of the population was aged 60 and above in 2021, but this figure is projected to rise to 16% by 2050.

This shift in demographics, along with technological advancements that have fuelled a longevity biotech boom, means that the longevity sector can no longer be ignored. Recognizing the potential of the sector to revolutionize healthcare and overall societal structure, Investopia is committed to supporting initiatives that harness the power of longevity and support innovation in this regard.

CURRENT LANDSCAPE OF LONGEVITY RESEARCH

The UAE is emerging as a regional leader in longevity and preventive anti-aging care. The country has adopted positive aging as a key component of its Social Cohesion Strategy, further emphasizing it in its Centennial Plan 2071. The nation is preparing for demographic shifts that require a responsive and adaptable ecosystem. In tandem with an anti-obesity initiative aimed at curbing the increasing rates of overweight individuals, specialized centers are being established to promote healthy aging. Notable among these efforts is the collaboration between the Sharjah Research Technology and Innovation Park (SRTIP) and Deep Knowledge Analytics (DKA) to map out the UAE's longevity industry. Since 2019, the Abu Dhabi Stem Cell Centre (ADSCC) has been conducting research into tissue regeneration and the rejuvenation of aging cells, exploring their potential to enhance longevity. Meanwhile, in Masdar City, a biocomputing innovation research laboratory — a collaboration between Abu Dhabi's Mohamed bin Zayed University of Artificial Intelligence and AI modelers BioMap — is dedicated to studying age-related illnesses. The UAE has launched one of the most comprehensive genome programmes in the world, the results of which will be applied by the Abu Dhabi Health Services Company to improve healthcare services.

In 2020, the longevity market in the UAE surpassed $19 billion, with projections indicating an 8.5% compound annual growth rate (CAGR), which could see it reach $32 billion by 2026.

As part of its Vision 2030 initiative, Saudi Arabia is making significant investments in healthcare and biotechnology, including research into aging and longevity. The country is establishing medical cities and research centers that focus on advanced biomedical research. Its Quality of Life Programme, a key component of Vision 2030, seeks to raise life expectancy to 80 years by 2030. The Hevolution Foundation in the country is dedicated to advancing healthspan science, with a focus on understanding the biological mechanisms of aging. The Hevolution Foundation's Geroscience Research Opportunities (HF-GRO) will allocate up to $25 million in 2024, with a total planned budget of $115 million over five years, to fund 40-60 projects in Aging Biology or Geroscience (excluding clinical trials). Each project, lasting 4 to 5 years, will receive between $300-500k annually. Funding will be available to independent investigators with labs in the USA, Canada, Europe, and the UK. Meanwhile, the King Abdullah University of Science and Technology (KAUST) is involved in various research projects related to biotechnology, genomics, and personalized medicine, all of which are crucial for advancing longevity science.

Israel is known for its strong research institutions, such as the Weizmann Institute of Science and the Hebrew University, which are involved in pioneering research on aging, genomics, and longevity. Israel stands out as a unique nation in the region with strong academic and industrial connections to the United States and Europe. As a result, Israel's geroscience has advanced more rapidly than in other parts of the region, with at least one aging research center or cluster already established or planned at every Israeli university. Additionally, Israel is a highly attractive hub for technology and innovation, with high-tech startups raising increasing amounts of funding, reaching $6.47 billion across 623 deals in 2018. The country is home to numerous biotech startups focusing on anti-aging technologies, regenerative medicine, and personalized healthcare, making it a significant player in the global longevity industry.

In Egypt, the National Research Centre in Egypt is involved in various health-related research projects, including studies on aging and age-related diseases. The country is gradually increasing its focus on biotechnology and medical research.

In Qatar, the Qatar Biomedical Research Institute (QBRI) is actively engaged in research on aging and age-related diseases, focusing on genomics, precision medicine, and regenerative medicine. Qatar is positioning itself as a leader in biomedical research within the region.

CHALLENGES TO PROMOTING LONGEVITY

Since 1900, human life expectancy has nearly doubled due to significant medical advancements against infectious diseases. However, this has led to diseases of aging, like cancer and Alzheimer's, becoming the leading cause of death. The majority of healthcare costs in developed countries are now focused on managing these chronic, debilitating conditions, with the developing world quickly facing a similar challenge.

Promoting longevity, while a valuable goal, comes with several significant challenges. Similar to other regions worldwide, countries in the Middle East are undergoing socio-economic shifts, urbanization, and technological advancements that have significantly increased life expectancy. This has led to a growing number and proportion of people living into old age, along with a corresponding rise in their needs. There is also evidence that populations in the Middle East are aging faster biologically than they are chronologically. Although the region has one of the youngest populations globally, its residents are facing higher mortality rates due to chronic conditions such as heart disease, cancer and diabetesThis would place significant strain on healthcare systems, especially those not adequately prepared for the growing number of elderly individuals with health issues. Similar to trends in the UK, where health improvements in the aging population haven't kept pace with increased life expectancy, the Middle East faces a similar demographic transition that could result in higher healthcare costs for both governments and individuals. For instance, in the UAE, while life expectancy increased to 76 years in 2019, the healthy life expectancy only increase to 66 years.

Understanding the complex biological processes that drive aging is a significant challenge. Aging involves numerous pathways and mechanisms, and targeting these effectively to extend healthy lifespan is still an area of active research. The variability in how individuals age means that interventions must often be personalized, complicating the development of universal treatments.

Ensuring that longevity-promoting treatments and preventive care are accessible to all segments of the population is a major hurdle, especially in parts of the Middle East with underdeveloped healthcare systems.

Longevity and quality of life are also influenced by lifestyle and behavioral factors, including living conditions, socioeconomic status, activity levels, and both physiological and psychological stress. As nations become wealthier and more urbanized, there is a tendency for diets to shift toward more ultra-processed foods, a trend referred to as the nutrition transition. Countries in the Middle East are already in the advanced stages of this nutritional transition, a shift that has significant and noticeable effects on public health. For instance, obesity rates in the GCC have risen, with national prevalence exceeding the global average of 13.1%.

The rise in longevity also brings about various socio-economic and socio-demographic challenges, including increased labor force participation by informal caregivers, a growth in single-person households, and a heightened demand for long-term care.

SOCIAL AND ECONOMIC IMPLICATIONS

Demographically, the age distribution in GCC countries is relatively young compared to most developed nations. For instance, in 2023, countries like Japan, Denmark, the United Kingdom, the United States, and Switzerland had 28% of their population over 60 years old, while in the GCC countries, this figure averages only 6%. However, populations in the Middle East are ageing at a rate that is significantly faster than the rate in developed countries in the past. This is resulting in an altered social structure, resulting in rising demand for old age facilities. This is also in line with the shift towards nuclear families and a more individualistic society which has caused the availability and willingness of younger family members to care for older ones to decrease.

The fast rate of ageing means that the increases in life expectancy are now happening at ages typically marked by economic inactivity and declining health. Consequently, the previously strong relationship between health, life expectancy, and gross domestic product (GDP) is beginning to break down. This also means higher health and pension expenditures, which may have to be met through the introduction of new taxes. A rising proportion of old citizens may also lead to intergenerational tensions.

On the positive side, the longevity biotech boom may mean longer working lives, which would mean the proportion of people remaining in the labor force after the age of 65 increases, as has already been witnessed in developed countries such as the UK, where the proportion of the labor force older than 65 years of age increased from 5.6% in 1990 to 10.9% in 2019. For the Middle East, this may mean that In the future, to capitalize on increased longevity, workers will need to embrace greater job mobility during middle and older ages, transitioning between jobs or even careers more frequently than before. However, making these career shifts can be more challenging for older workers due to health concerns, unfamiliarity with new technologies, or a lack of recent job search experience. This could lead to a disconnect between the types of jobs they seek and the opportunities employers offer. Robust policymaking will be required to manage these challenges, including an increased emphasis on lifelong learning that allows workers to develop new skills and remain relevant.

The McKinsey Health Institute estimates that employing older workers could unlock around $5 trillion in potential economic output. As the population ages, the ratio of workers to retirees is may decline.

Increased longevity will also have implications for healthcare in the Middle East, changing the focus from treating diseases to precautionary health, with many changes coming from outside the traditional health sector. The healthcare share of GDP may rise further for countries in the Middle East. This increase may lead to negotiations between ministries of finance and ministries of health over the allocation of additional resources if reforms to support healthy longevity are implemented.

FUTURE OUTLOOK AND OPPORTUNITIES

The Gulf region, with its increasing wealth and proactive populations, is prime territory for the consumer longevity revolution. While the aesthetic aspects of age reversal have long been popular in this region, the focus on health is rapidly becoming a significant industry. A growing number of longevity clinics now employ advanced diagnostics to assess health, identify potential issues, and recommend personalized treatments, therapies, and lifestyle changes aimed at combating cellular aging.

Among the most advanced wellness techniques, IV drips, cryotherapy, peptide injections, hyperbaric oxygen therapy, and red-light therapy are gaining popularity as they all claim to slow cellular aging, enhance cognitive function, and even delay the onset of chronic diseases such as dementia and diabetes.

The Middle East presents a significant growth opportunity in the realm of clinical trials for drug approval within the longevity sector. While regulatory processes in the US have been slow to adapt, the Middle East has developed a highly advanced clinical trial infrastructure and boasts top-quality hospitals. This positions the region as an attractive hub for investment and innovation in drug development.

The Middle East has the opportunity to establish itself as a hub for "Longevity Valleys," following the World Health Organisation's concept of Age-Friendly Cities. These areas would not only cater to retirees but also serve as ideal locations where seniors can stay professionally, mentally, socially, and economically active for extended periods. This positioning could attract those seeking an enriched and active lifestyle during their later years.

This region, with its rich legacy of pioneering science and medicine, yet grappling with significant age-related risks, is well-positioned to lead the global transformation in extending healthspan.

Formulating national policies that emphasize healthy lifestyles and aging, including expanding healthcare access and regulating unhealthy behaviors like smoking and poor nutrition, is essential. A promising approach includes increased investment in maternal and newborn care, with a focus on healthcare education, as the first 1,000 days are critical in preventing adult diseases.

Preventive healthcare and holistic care, including social and mental health considerations, should be prioritized. This approach should involve coordinated care across healthcare sectors, early identification and treatment of individuals at risk for chronic diseases, and the integration of social welfare workers into interdisciplinary healthcare teams. Government support and mandates are crucial for successful implementation.

There should also be a focus on expanding digital health and virtual care capabilities to support healthy aging. This includes increasing access to telemedicine, home healthcare, rehabilitation services, and specialized treatment facilities. Patient data should be leveraged to identify key risk factors and develop customized, personalized healthcare programs aimed at promoting longevity and healthy aging.

The private sector should promote incubators for local and global start-ups focused on longevity treatments and healthy aging, which could also boost the region's economy by attracting medical tourism. It should support the growth of local and global start-ups, particularly biotechnology companies specializing in longevity treatments, to accelerate the development of precision medicine and next-generation gene therapies.

CONCLUSION

The Middle East is at a pivotal moment where innovations in longevity science, combined with strategic investments and policy-making, can lead to significant advancements in healthy aging. Despite challenges such as rising rates of chronic diseases and the need for robust healthcare infrastructure, the region's proactive approach and growing focus on biotechnology, precision medicine, and preventive care position it to become a global leader in longevity. By fostering collaboration between the public and private sectors, encouraging research, and developing patient-centered healthcare models, the Middle East can drive a transformative impact on the well-being of its aging population, setting a benchmark for other regions to follow.

Enhanced funding, grants, partnerships, including public-private partnerships, and other incentives will drive research and support the development of new technologies and medications focused on longevity and healthy aging. The private sector can play a pivotal role in promoting healthy aging by making strategic investments in key areas that enhance the well-being of the aging population.

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