

Stefano Bartolini

RETHINKING AGING SOCIETIES

Social Connectedness and the Sustainability of Welfare Systems

Abstract

Population ageing is transforming the demographic structure of all high-income countries, making the well-being of older adults an increasingly important dimension of social progress while simultaneously placing growing pressure on healthcare and pension systems. These challenges are usually addressed separately through healthcare reforms, pension reforms, or long-term care policies. This report argues instead that they are closely interconnected and that a common solution lies in promoting social connectedness among older adults.

The report first questions the widespread assumption that expanding healthcare systems is the primary route to improving population health. While modern medicine has substantially increased life expectancy, gains in healthy life expectancy have been much more limited, resulting in a growing number of years lived with chronic illness and disability. As populations age, this trend threatens the long-term sustainability of healthcare systems.

Drawing on evidence from social epidemiology, the report shows that psychosocial factors — including happiness and social relationships — are among the most important determinants of morbidity and mortality. In particular, loneliness and social isolation substantially increase the risks of cardiovascular disease, cognitive decline, depression, disability, and mortality among older adults, the population group that accounts by far for the highest demand for healthcare goods and services. . Because these conditions increase healthcare demand, preventing loneliness should be regarded not only as a social objective but also as a strategy for improving the sustainability of healthcare systems.

The report concludes that prevention should increasingly take place outside the healthcare sector. Policies that foster social participation, supportive communities, and age-friendly urban environments can improve quality of life, reduce morbidity, and help contain healthcare expenditure. More broadly, the report argues that strengthening social connectedness should become a central pillar of public policy in ageing societies, contributing to healthier ageing and to the long-term sustainability of healthcare systems.

Contents

Introduction	3
1. The Expanding Healthcare Sector	3
2. The Medicalization of Health.....	4
3. Is Health Improving?.....	4
4. Happiness and Health	5
Box. Why does happiness affect health?.....	7
5. Relationships and Health	7
6. The health impact of loneliness and social isolation among older adults.....	8
Box. Mechanisms linking loneliness to poor health	9
7. Conclusion: From Healthcare to Social Prevention	9

Introduction

High-income countries (HICs) are undergoing a profound demographic transition. Declining fertility and increasing life expectancy are rapidly expanding the share of older adults in the population. As societies age and older people become an increasingly large demographic group, they face three major challenges.

The first concerns the quality of life of older adults. As their demographic weight continues to grow, their well-being becomes an increasingly important component of overall social progress. The second challenge is the sustainability of pension systems. According to Eurostat (2026), the number of people aged 65 and over in the European Union is projected to increase from 67.9 million to 133.8 million by 2100. Over the same period, the working-age population (20–64 years)—which provides the fiscal base supporting pension systems—is expected to decline from 61% to 49.7% of the total population, representing a net loss of 63.6 million potential workers. The third challenge is the sustainability of healthcare systems. Population ageing will place growing pressure on healthcare expenditure because older adults account by far for the highest demand for healthcare services, while at the same time the fiscal base financing these systems is expected to shrink.

This report argues that these three challenges are closely interconnected and that promoting richer social relationships for older adults is a key strategy for addressing all of them simultaneously. Achieving this objective requires a profound rethinking of the European approach to later life—not only in healthcare and social policy, but also in urban planning, community organization, and cultural attitudes toward ageing.

The report is organized as follows. Section 1 documents the growth of healthcare expenditure in high-income countries and discusses the resulting concerns about its long-term sustainability. Section 2 examines the widespread belief that expanding healthcare systems is the most effective way to improve population health. Section 3 challenges this assumption by arguing that the greatest achievement of modern healthcare has been increasing longevity rather than improving health itself. Indeed, in many European countries the expected number of years lived with disability or activity limitations has increased despite gains in life expectancy. Sections 4 and 5 review the evidence on the psychosocial determinants of health; section 4 focuses on the role of happiness, while Section 5 examines the effects of social comparisons and the quality of social relationships. Section 6 turns specifically to older adults, reviewing the growing evidence that loneliness and social isolation are major risk factors for morbidity and mortality. The final section discusses the policy implications of these findings and argues that reducing loneliness among older adults should become a central objective of public policy.

1. The Expanding Healthcare Sector

Healthcare systems in all HICs face growing challenges to their long-term financial sustainability. Over recent decades, healthcare expenditure has steadily absorbed a larger share of national income across the industrialized world. In almost all European countries healthcare spending accounted for about 6-7% of GDP in the 1980s; today it is around 10%.

Since GDP itself has grown substantially over the same period, healthcare expenditure has expanded considerably faster than most other sectors of the economy. As a result, healthcare has become one of the largest sectors of modern economies.

This continuous expansion has persisted despite decades of reforms aimed at improving the efficiency and financial sustainability of healthcare systems. The pressure on healthcare systems is going to intensify over the coming decades. Population ageing will substantially increase the demand for healthcare, since older adults account for by far the highest demand for healthcare goods services. At the same time, declining fertility and the related shrinking working-age population will reduce the tax base that finances public healthcare. These two trends are set to reinforce one another, raising an unavoidable question: will European public healthcare systems remain financially sustainable in the decades ahead? This question does not concern the efficiency of healthcare systems. Even an efficient healthcare system risks becoming unsustainable if the demand for care continually increases.

2. The Medicalization of Health

The continuous growth of healthcare expenditure is often regarded as money well spent. After all, modern medicine has delivered one of the greatest achievements in human history: longer lives. Rising life expectancy has reinforced a widespread belief that improvements in population health depend primarily on advances in medicine and on expanding healthcare systems.

This report refers to this view as the *medicalization of health*: the assumption that the protection of health lies mainly in the hands of healthcare providers and that increasing healthcare expenditure is therefore the most effective way to improve health. Since medical progress has contributed to longer lives, it is tempting to conclude that further investment in healthcare is the primary route to a healthier society.

This reasoning is persuasive, but it overlooks an important distinction. Living longer does not necessarily mean living healthier lives, nor does it imply that healthcare is the main determinant of health.

3. Is Health Improving?

Life expectancy continues to increase across most high-income countries, suggesting that further gains in longevity remain possible. However, improvements in healthy life expectancy have generally been much smaller than gains in total life expectancy. Healthy life expectancy measures the number of years that people can expect to live free from disability or activity limitations caused by health problems.

In several European countries, healthy life expectancy has stagnated or even declined over substantial periods despite continuing increases in overall life expectancy, as documented, for example, in Italy and the United Kingdom (Corradi et al., 2012; Office for National Statistics, 2026). The divergence is particularly pronounced among women.

The implication is straightforward. Modern healthcare has become increasingly successful at extending life, but much less successful at preserving health. The challenge facing ageing societies is therefore not simply to increase longevity, but to increase the number of years people can live in good health.

The widening gap between life expectancy and healthy life expectancy means that people are spending more years living with chronic illness, disability, or functional limitations. As a consequence, the number of individuals requiring long-term healthcare is growing. Combined with the rapid aging of the population, this trend poses a serious threat to the long-term sustainability of European healthcare systems. Unless healthy life expectancy begins to rise alongside life expectancy, public healthcare systems may face financial pressures that become increasingly difficult to sustain.

Moreover, the relationship between healthcare spending and longevity is considerably weaker than is commonly assumed. Across industrialized countries, higher healthcare expenditure is not systematically associated with longer lives. For example, in 2015 total per capita healthcare spending in Italy (public and private combined) was roughly one-third of that in the United States, yet Italians lived approximately five years longer on average. Similar comparisons can be made within Europe. In the same year, Italy spent around 20% less per capita on healthcare than the United Kingdom, while life expectancy was about one and a half years higher.

These comparisons suggest that the public often overestimates the contribution of healthcare to population health. Healthcare systems undoubtedly save lives and extend longevity, but they are neither the main determinant of differences in life expectancy across countries nor the principal determinant of health itself. If higher healthcare expenditure does not necessarily produce better health outcomes, why do some countries that spend more achieve worse results? And why has increasing longevity been accompanied by a growing population living with chronic illness and disability, thereby placing ever greater demands on healthcare systems?

4. Happiness and Health

Social epidemiology, a field of research that investigates how social conditions shape health and disease, provide answers to this question. Rather than viewing healthcare systems as the primary determinant of population health, social epidemiology argues that health is profoundly influenced by the environments in which people live, the quality of their social relationships, and their psychological well-being (Link & Phelan, 1995; Berkman & Glass, 2000; Marmot, 2005; Berkman, Kawachi, & Glymour, 2014, Commission on Social Determinants of Health 2008).

From this perspective, healthcare is only one determinant of health. Lifestyle factors such as smoking, diet, alcohol consumption, and physical activity undoubtedly matter, but decades of epidemiological research have shown that psychosocial factors—including happiness, social relationships, and social comparisons—also exert a major influence on morbidity and mortality.

The following sections review these three psychosocial pathways. We begin with happiness. A large body of evidence indicates that unhappiness is a major risk factor for disease. Depression approximately doubles the risk of cardiovascular disease—the leading cause of death in high-income countries—while even individuals who simply report being unhappy experience substantially higher cardiovascular risk (Keyes, 2004). Some estimates suggest that the influence of subjective well-being on health is comparable to, or even greater than, that of traditional behavioural risk factors such as smoking or physical inactivity (Levy et al., 2002).

One of the most striking demonstrations of the relationship between happiness and longevity comes from the well-known Nun Study. In the 1930s, a group of young nuns wrote short autobiographical essays. More than six decades later, researchers analysed the emotional content of these texts and found that the expression of positive emotions strongly predicted longevity. Among the quarter of nuns expressing the highest levels of positive emotion, about 90% were still alive at age 85, compared with only 34% of those in the lowest quarter (Danner et al., 2001). Because the participants shared remarkably similar lifestyles, diets, occupations, and living conditions, alternative explanations for these differences were greatly reduced.

The Nun Study is only one illustration of a much broader body of evidence. Numerous longitudinal studies, involving populations from different countries and following participants for many years, sometimes for decades, have consistently shown that psychological well-being predicts future health. Although researchers have used different indicators—including happiness, life satisfaction, optimism, positive affect, depression, anxiety, hostility, and perceived stress—the conclusions have been remarkably consistent.

Individuals reporting poorer psychological well-being at the beginning of these studies were subsequently more likely to develop cardiovascular disease (Hemingway & Marmot, 1999), cancer (Chida et al., 2008), hypertension (Raikkonen et al., 1999), impaired immune function (Lyubomirsky et al., 2005), delayed wound healing (Kiecolt-Glaser et al., 2005), and higher mortality among patients with chronic diseases, HIV infection, and diabetes (Moskowitz, 2003; Moskowitz et al., 2008; Pressman & Cohen, S. 2005). Psychological well-being has also been associated with faster recovery following major surgery (Scheier et al., 1989), greater survival after stem-cell transplantation (Loberiza et al., 2002), and even higher female fertility (Buck et al., 2010).

Experimental evidence further supports these findings. Acute psychological stress produces measurable physiological changes, including increases in blood pressure and blood viscosity that may persist for months after major stressful events such as earthquakes (Kario et al., 1997). Conversely, interventions that reduce stress appear to improve immune function and recovery from illness. For example, meditation has been associated with stronger antibody responses to influenza vaccination (Davidson et al., 2003), while relaxation techniques reduce post-operative wound infections (Holden-Lund, 1988). Excellent reviews of most of these findings are provided by Steptoe (2019), Pressman et al. (2019), Diener et al. (2017).

Taken together, these findings suggest that happiness is not merely a consequence of good health but also one of its determinants. Psychological well-being influences not only objective

health outcomes but also perceived health, which in turn affects healthcare utilization. Individuals experiencing distress are more likely to seek medical consultations and diagnostic tests, even when objective clinical conditions are unchanged (Argyle, 2001). Improving psychological well-being may therefore contribute not only to healthier lives but also to reducing unnecessary demand for healthcare services.

Box. Why does happiness affect health?

Several complementary mechanisms explain why happier people tend to enjoy better health. First, happier individuals generally adopt healthier lifestyles, including better diets, greater physical activity, lower smoking rates, and more moderate alcohol consumption. Second, they tend to sleep longer and more efficiently, which has wide-ranging physiological benefits. Third, positive psychological states enhance immune function. For example, happier individuals develop stronger antibody responses following vaccination against influenza (Cohen et al., 2006) and hepatitis B (Marsland et al., 2006). Fourth, psychological well-being is associated with better cardiovascular regulation, including lower blood pressure and reduced cardiovascular reactivity to stress. Finally, happier individuals report lower pain perception, even in chronic conditions such as arthritis.

Many of these mechanisms appear to operate through the reduction of chronic stress. Persistent stress dysregulates the immune, endocrine, and cardiovascular systems, thereby increasing vulnerability to a wide range of diseases (Wilkinson & Pickett, 2009).

5. Relationships and Health

Alongside happiness, social epidemiology has identified two other major psychosocial determinants of health: the quality of social relationships and social hierarchy, including status competition and social comparisons.

Social comparisons become particularly intense in societies characterized by high levels of income inequality. A large body of evidence suggests that populations living in more unequal societies experience poorer health and shorter lives than those living in more egalitarian ones (Wilkinson & Pickett, 2009). One important mechanism is psychological: persistent status competition generates stress, anxiety, and feelings of inferiority that undermine both mental and physical health.

The second determinant is the quality of people's social relationships. Research spanning more than four decades has consistently shown that social isolation and loneliness are among the strongest predictors of morbidity and mortality (Berkman & Syme, 1979; House et al., 1988; Berkman & Glass, 2000; Stansfeld, 2006).

For example, patients recovering from myocardial infarction who are socially isolated are almost twice as likely to experience another cardiac event within five years as patients with rich social networks. Remarkably, social isolation predicts recurrent heart attacks more

strongly than several traditional clinical risk factors, including physical inactivity and even the severity of coronary disease (Jetten et al., 2012).

The effects of social relationships extend well beyond cardiovascular disease. Socially isolated individuals are approximately twice as likely to develop the common cold despite having fewer opportunities for viral exposure (Cohen, 2005), and wound healing is faster among individuals in supportive marriages than among those experiencing relationship distress.

Evidence also shows that active participation in community life promotes health. Putnam (2000) reported that individuals who began volunteering reduced their probability of dying during the following year by approximately 50%. Similar associations emerge at the population level. Across American states, participation in voluntary associations strongly predicts lower mortality, lower infant mortality, and reduced deaths from cardiovascular disease and cancer (Kawachi et al., 1997; Putnam, 2000).

The evidence reviewed in this section suggests that social relationships are not simply a source of psychological comfort. They constitute a fundamental determinant of health. Their importance is likely to be mediated partly through their effects on happiness and chronic stress: people embedded in supportive social networks tend to be happier, experience lower physiological stress, and consequently enjoy better physical health.

6. The health impact of loneliness and social isolation among older adults

This section focuses on the population group for whom loneliness and social isolation have become one of the major public health challenges: older adults. Loneliness refers to the subjective perception that one's social relationships are insufficient in quantity or quality, whereas social isolation refers to the objective lack of social contacts and interactions. Although correlated, the two conditions are distinct and may independently affect health (National Academies of Sciences, Engineering, and Medicine, 2020).

A large body of evidence shows that both loneliness and social isolation are associated with increased mortality. A meta-analysis of 148 prospective studies involving more than 300,000 participants found that individuals with stronger social relationships had a 50% higher likelihood of survival over an average follow-up of 7.5 years (Holt-Lunstad et al., 2010). A subsequent meta-analysis including 3.4 million participants confirmed that loneliness, social isolation, and living alone are each associated with a significantly increased risk of all-cause mortality, with effect sizes comparable to or greater than those associated with several established behavioral risk factors (Holt-Lunstad et al., 2015).

Older adults who are socially isolated or lonely are also at higher risk of age-related diseases. A systematic review and meta-analysis found that loneliness and social isolation are associated with a 29% higher risk of coronary heart disease and a 32% higher risk of stroke (Valtorta et al., 2016). Evidence from longitudinal studies further suggests that limited social engagement increases the risk of cognitive decline and dementia. In the Kungsholmen Project, older adults with poor social networks had a substantially higher risk of developing dementia during follow-up (Fratiglioni et al., 2000). Similarly, data from the Rush Memory and

Aging Project showed that lonely individuals had a significantly increased risk of developing Alzheimer's disease (Wilson et al., 2007). Other longitudinal studies have found that greater social integration and participation are associated with slower cognitive decline and better memory performance in later life (Ertel et al., 2008).

One of the longest-running longitudinal investigations, the Harvard Study of Adult Development, has also reported that the quality of close relationships is a strong predictor of healthy ageing, physical health, and subjective well-being in later life. Although the study is observational and based on a non-representative sample, it provides additional evidence that supportive social relationships are closely associated with healthier and more satisfying lives (Waldinger & Schulz, 2023).

Growing recognition of the health consequences of loneliness has led several governments to adopt dedicated policy initiatives. In the United Kingdom, the government appointed a Minister for Loneliness in 2018 following the recommendations of the Jo Cox Commission on Loneliness. The policy was supported by evidence showing that around nine million people in the UK report feeling always or often lonely (Kantar Public, 2016), and that approximately 200,000 older people had not had a conversation with a friend or relative for more than a month (UK Government, 2018).

Box. Mechanisms linking loneliness to poor health

The association between loneliness and poor health is thought to operate through multiple interacting pathways. First, loneliness is associated with chronic activation of the stress response, including increased sympathetic nervous system activity and dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis, leading to elevated cortisol levels (Hawkley & Cacioppo, 2010). Second, lonely individuals tend to exhibit higher levels of systemic inflammation and impaired immune functioning, both of which are linked to cardiovascular disease, frailty, and neurodegenerative disorders. Third, loneliness is associated with unhealthy behaviors, including reduced physical activity, poorer sleep quality, smoking, and lower adherence to medical treatments. Finally, loneliness increases the risk of depression and anxiety, which can further worsen physical health and accelerate functional decline. These biological, behavioral, and psychological mechanisms likely reinforce one another over time, creating a cumulative process through which persistent loneliness contributes to morbidity and premature mortality in older adults.

7. Conclusion: From Healthcare to Social Prevention

The evidence reviewed in this report, summarized in fig. 1, suggests that societies cannot successfully address population ageing simply by expanding healthcare systems or increasing long-term care capacity. Such policies intervene only after health has already deteriorated. Healthcare systems are, to a large extent, the downstream consequence of upstream social conditions. Much of the demand for healthcare originates outside the

healthcare system itself—in loneliness, chronic stress, deteriorating social relationships, and declining well-being.

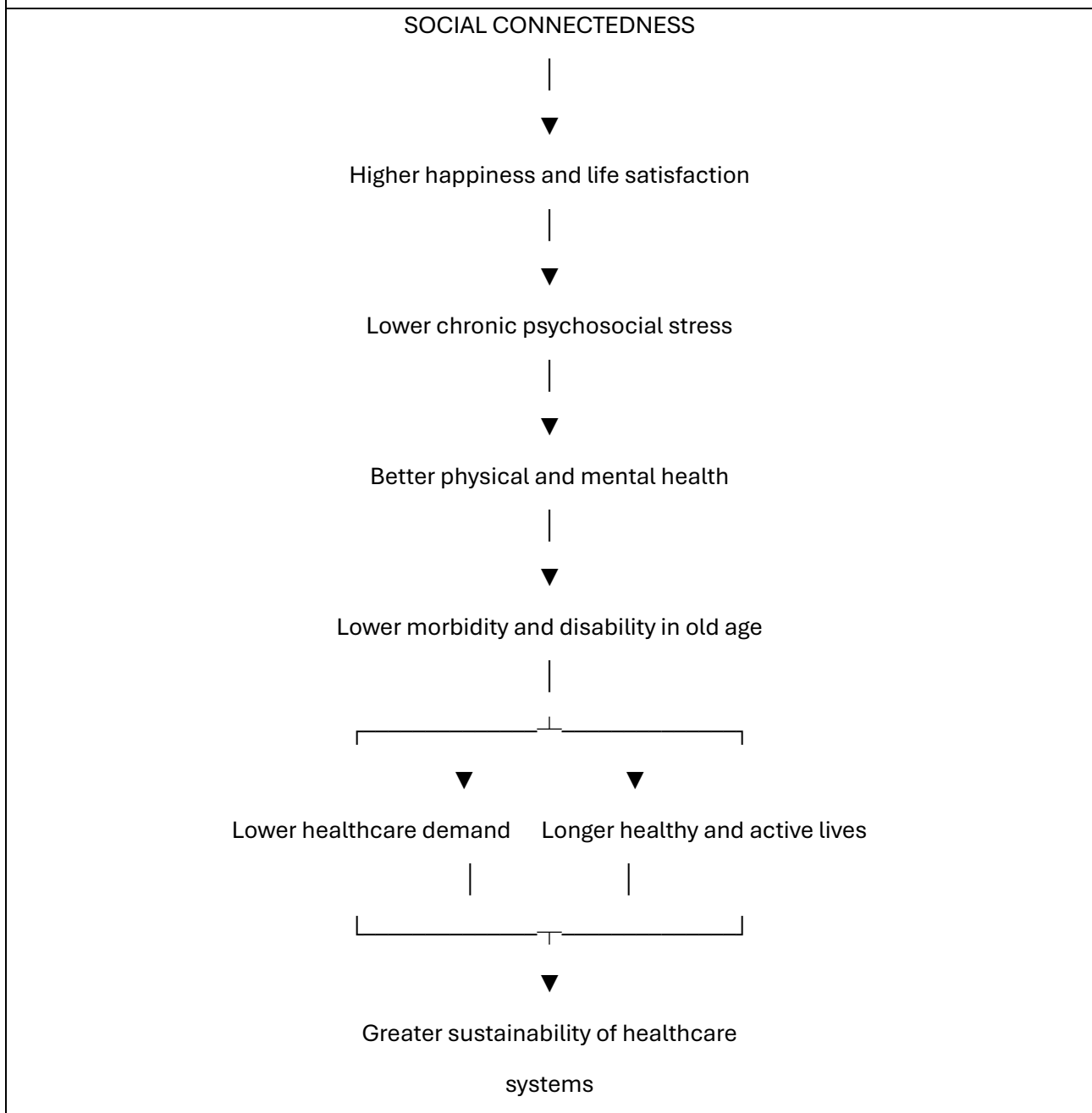
European welfare systems are highly developed in treating the consequences of social isolation but remarkably underdeveloped in preventing it. The more fundamental challenge is to redesign the social environments in which older people live. Urban planning, community life, volunteering, intergenerational activities, and opportunities for meaningful social participation should no longer be viewed as peripheral social policies. They are health policies, fiscal policies, and policies for the sustainability of ageing societies.

Older adults represent the population group most exposed to loneliness while simultaneously accounting for the largest share of healthcare expenditure. Preventing loneliness among older adults is therefore not merely an ethical objective aimed at improving quality of life. It is an economic investment capable of reducing morbidity, containing healthcare expenditure, and—by extending healthy and active lives—contributing to the long-term sustainability of welfare systems.

The first part of this report showed that relatively inexpensive urban-planning reforms could substantially increase opportunities for social interaction among young people. The same principles can be applied to older adults. Designing neighborhoods, public spaces, and communities that encourage everyday social interaction would cost only a small fraction of the enormous expenditure currently devoted to treating the consequences of prolonged social isolation through expensive hospitals, residential care facilities, and other highly specialized services.

Population ageing is often portrayed as an unavoidable economic burden. This report suggests a different perspective. Whether ageing societies become economically sustainable will depend not only on pension reforms or healthcare budgets, but also on their capacity to preserve one of the most important resources for healthy ageing: human relationships.

Figure 1. Social connectedness as a strategy for healthy and sustainable aging



References

- Argyle M. 2001, *The Psychology of Happiness*, Routledge, London.
- Berkman, L. F., & Glass, T. A. (2000). Social integration, social networks, social support, and health. In L. F. Berkman & I. Kawachi (Eds.), *Social Epidemiology* (pp. 137–173). Oxford University Press.
- Berkman, L. F., Kawachi, I., & Glymour, M. M. (Eds.). (2014). *Social Epidemiology* (2nd ed.). Oxford University Press.
- Buck L. G. M. et al. (2011). Stress reduces conception probabilities across the fertile window: evidence in support of relaxation. *Fertility and sterility*, 95(7), 2184-2189
- Chida, Y., Hamer, M., Wardle, J., & Steptoe, A. (2008). *Do stress-related psychosocial factors contribute to cancer incidence and survival?* *Nature Clinical Practice Oncology*, 5, 466–475.
- Commission on Social Determinants of Health. (2008). *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health*. Geneva: World Health Organization.
- Corradi, M. L., Valerio, G., & Giovanni, G. (2012). In Italy, Healthy Life expectancy drop dramatically, from 2004 to 2008 there was a 9 years drop in HLE among newborn girls and the situation appeared to worsen in the following years. *THE ITALIAN JOURNAL OF PEDIATRICS*, 38(18 maggio).
- Danner, D., Snowdown D., Friesen W., 2001, Positive Emotions in Early Life and Longevity. Findings from the Nun Study, in «*Journal of Personality and Social Psychology*», 80, pp. 804-13.
- Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., ... & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Biopsychosocial Science and Medicine*, 65(4), 564-570.
- Diener, E., Pressman, S. D., Hunter, J., & Delgadillo-Chase, D. (2017). *If, why, and when subjective well-being influences health, and future needed research*. *Applied Psychology: Health and Well-Being*, 9(2), 133–167.
- Ertel, K. A., Glymour, M. M., & Berkman, L. F. (2008). Effects of Social Integration on Preserving Memory Function in a Nationally Representative US Elderly Population. *American Journal of Public Health*, 98(7), 1215–1220.
- Eurostat (2026), EU's population projected to drop by 11.7% by 2100.
<https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20260416-1u>
- Fratiglioni, L., Wang, H. X., Ericsson, K., Maytan, M., & Winblad, B. (2000). Influence of social network on occurrence of dementia: a community-based longitudinal study. *The lancet*, 355(9212), 1315–1319.
- Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: a theoretical and empirical review of consequences and mechanisms. *Annals of behavioral medicine*, 40(2), 218-227
- Hemingway, H., & Marmot, M. (1999), Psychosocial factors in the aetiology and prognosis of coronary heart disease: Systematic review of prospective cohort studies. *British Medical Journal*, 318, 1460–1467.
- Holden-lund, C. (1988). Effects of relaxation with guided imagery on surgical stress and wound healing. *Research in nursing & health*, 11(4), 235-244.
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS medicine*, 7(7), e1000316.

- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Perspectives on Psychological Science*, 10(2), 227–237. <https://doi.org/10.1177/1745691614568352>
- Kantar Public (2016). Trapped in a Bubble: An investigation into triggers for loneliness in the UK. British Red Cross and Co-op. https://assets.ctfassets.net/5ywmq66472jr/5tKumBSlO0suKwiWO6KmaM/230366b0171541781a0cd98fa80fdc6e/Coop_Trapped_in_a_bubble_report.pdf
- Kario, K., Matsuo, T., Kobayashi, H., Yamamoto, K., & Shimada, K. (1997). Earthquake-induced potentiation of acute risk factors in hypertensive elderly patients: possible triggering of cardiovascular events after a major earthquake. *Journal of the American College of Cardiology*, 29(5), 926-933.
- Keyes, C. 2004, The Nexus of Cardiovascular Disease and Depression Revisited. The Complete Mental Health Perspective and the Moderating Role of Age and Gender, in «Aging and Mental Health», 8, pp. 266-74.
- Keyes, C. 2004, The Nexus of Cardiovascular Disease and Depression Revisited. The Complete Mental Health Perspective and the Moderating Role of Age and Gender, in «Aging and Mental Health», 8, pp. 266-74.
- Kiecolt-Glaser, J. K., McGuire, L., Robles, T. F., & Glaser, R. (2002). Psychoneuroimmunology and psychosomatic medicine: back to the future. *Biopsychosocial Science and Medicine*, 64(1), 15-28.
- Knox, S. S., & Uvnäs-Moberg, K. (1998). Social isolation and cardiovascular disease: an atherosclerotic pathway?. *Psychoneuroendocrinology*, 23(8), 877-890.
- Levy, B. R., Slade, M. D., Kunkel, S. R., Kasl, S. V. 2002, Longevity Increased by Self-Perception of Age, in «Journal of Personality and Social Psychology», LXXXIII, 2, pp. 261-70
- Link, B. G., & Phelan, J. (1995). Social conditions as fundamental causes of disease. *Journal of Health and Social Behavior*, 35(Extra Issue), 80–94. <https://doi.org/10.2307/2626958>
- Loberiza Jr, F. R., Rizzo, J. D., Bredeson, C. N., Antin, J. H., Horowitz, M. M., Weeks, J. C., & Lee, S. J. (2002). Association of depressive syndrome and early deaths among patients after stem-cell transplantation for malignant diseases. *Journal of Clinical Oncology*, 20(8), 2118-2126.
- Marmot, M. (2005). Social determinants of health inequalities. *The Lancet*, 365(9464), 1099–1104. [https://doi.org/10.1016/S0140-6736\(05\)71146-6](https://doi.org/10.1016/S0140-6736(05)71146-6)
- Marmot, M. (2005). Social determinants of health inequalities. *The Lancet*, 365(9464), 1099–1104. [https://doi.org/10.1016/S0140-6736\(05\)71146-6](https://doi.org/10.1016/S0140-6736(05)71146-6)
- Moskowitz, J. T. (2003). Positive affect predicts lower risk of AIDS mortality. *Biopsychosocial Science and Medicine*, 65(4), 620-626.
- Moskowitz, J. T., Epel, E. S., & Acree, M. (2008). Positive affect uniquely predicts lower risk of mortality in people with diabetes. *Health Psychology*, 27(1S), S73.
- National Academies of Sciences, Engineering, and Medicine. (2020). Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System. Washington, DC: The National Academies Press. <https://nap.nationalacademies.org/catalog/25663/social-isolation-and-loneliness-in-older-adults-opportunities-for-the>
- Office for National Statistics (2026). Healthy life expectancy, UK: between 2011 to 2013 and 2022 to 2024 <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpect>

https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthstatelifeexpectanciesuk/between2011to2013and2022to2024?utm_source=chatgpt.com

- Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health?. *Psychological bulletin*, 131(6), 925.
- Pressman, S. D., Jenkins, B. N., & Moskowitz, J. T. (2019). Positive affect and health: What do we know and where next should we go?. *Annual review of psychology*, 70(1), 627-650.
- Räikkönen, K., Matthews, K. A., Flory, J. D., Owens, J. F., & Gump, B. B. (1999). Effects of optimism, pessimism, and trait anxiety on ambulatory blood pressure and mood during everyday life. *Journal of personality and social psychology*, 76(1), 104.
- Scheier, M. F., Matthews, K. A., Owens, J. F., Magovern, G. J., Lefebvre, R. C., Abbott, R. A., & Carver, C. S. (1989). Dispositional optimism and recovery from coronary artery bypass surgery: the beneficial effects on physical and psychological well-being. *Journal of personality and social psychology*, 57(6), 1024.
- Step toe, A. (2019). Happiness and health. *Annual review of public health*, 40(1), 339-359.
- UK Government (2018). A Connected Society: A Strategy for Tackling Loneliness, per il dato dei 200,000 older people, https://www.gov.uk/government/news/pm-launches-governments-first-loneliness-strategy?utm_source=chatgpt.com
- UK Government. (2018). PM launches government's first loneliness strategy. <https://www.gov.uk/government/news/pm-launches-governments-first-loneliness-strategy>
- Valtorta, N. K., Kanaan, M., Gilbody, S., Ronzi, S., & Hanratty, B. (2016). Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis. *Heart*, 102(13), 1009-1016. <https://heart.bmj.com/content/102/13/1009>
- Waldinger, R. J., & Schulz, M. S. (2023). *The Good Life: Lessons from the World's Longest Scientific Study of Happiness*. New York: Simon & Schuster. <https://www.simonandschuster.com/books/The-Good-Life/Robert-Waldinger/9781982166694>
- Wilkinson, R. G., & Pickett, K. (2009). *The spirit level: Why more equal societies almost always do better* (Vol. 6). London: Allen Lane.
- Wilson RS, Krueger KR, Arnold SE, et al. (2007). Loneliness and risk of Alzheimer disease. *Arch Gen Psychiatry*;64:234-40
- Wilson, R. S., Krueger, K. R., Arnold, S. E., et al. (2007). Loneliness and risk of Alzheimer disease. *Archives of General Psychiatry*, 64(2), 234-240. <https://doi.org/10.1001/archpsyc.64.2.234>