

Editorial

Ageing: Longevity, Successful and PositiveDavid G Smithard^{1, 2,*}

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1. Introduction

From the day we are born our bodies are ageing and cynically, ageing could be termed a life limiting condition or even a fatal disease. We will gain years with time, that is inevitable. Some of the questions that challenge us individually and professionally are: What is the maximum possible life span? And how can the experience of older age be made more positive? These are complex questions that do not necessarily have either a single or simple answer? Lifestyle factors and lived experience will affect how long we may live, how society responds to older adults and how the individual copes physically, emotionally, socially and economically to the stressors of old age. As in many areas of science and medicine, there is no unifying consensus around the definitions of longevity and positive ageing, some of which is population specific. This paper discusses longevity, successful ageing and positive ageing asking questions and may be providing some answers.



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2. Ageing

Ageing is a dynamic process and as such ageing well or successfully is a complex paradigm [1]. Is ageing a chronological or a biological phenomenon? Agron in his book "How We Age", recounts a discussion with Dr Gene Cohen and writes, "Ageing has two paths, there is the process and there's the people. The process shows us how and why we age, but the people tell us how to age. Many things are outside the individual's control, but our own efforts can bring change and meaning to the ageing process that transcend these forces in ways that biology can't" [2].

Should we consider, therefore, biological ageing as a pathological state as accepted by the Greeks and Romans or more an accumulation of molecular deficits secondary to a failure to maintain DNA integrity, cell failure [3, 4], and as a consequence, more disease occurs leading to increasing frailty and death [5, 6].

As people increase in age it is not inevitable that they all begin to "fall apart", though increasing numbers will have multiple long term medical conditions, are malnourished and likely to suffer with sarcopenia [7] and 30% or more may be frail [8] with resultant increasing dependency. This does not mean to say that old age is a disease, as proposed by biologist Andrew Steele, that can be prevented if we hunt diligently for a "cure" [9]. The WHO in ICD-11 [10] does not classify ageing as a disease but does recognise that many processes may be age related (extension code: XT9T) and defines it thus

"Ageing-related means "caused by biological processes which persistently lead to the loss of organism's adaptation and progress in older ages""

3. Longevity

It is inevitable that anyone surviving into adult hood will become old unless their life is prematurely ended due to disease or trauma. Who is old is dependent on the population under study and is based on a maximum duration of life [3]. The number of older people in the world is increasing due to more people surviving into adult hood and longer life expectancy. Those over 65 years make up between 6th and a quarter of populations in higher income countries [11-13]. Those living to be very old, 90 years and beyond is increasing, and in the UK the number exceeding 100 years of age is now 15834 [14]. There is much debate how long people may live, so what is our potentially maximum life span? Biblical scriptures suggest that a healthy life span will be 120 years [15] and those that fail to reach a hundred will be considered accursed [16], science suggests similar figures though reports in 2021 suggest that 150 years might be possible [4]. Longevity requires genome stability/integrity to maintain cellular homeostasis and reduce the prevalence of disease [3]. Genetics, epigenetics, disease and socioeconomics all play a part (Figure 1) [3, 17] and their predominance may depend one's age, with genetics (in particular Apo E and FOXO3A) playing a larger part after the seventh decade [3]. The longer you live; the longer you are likely to live [18].

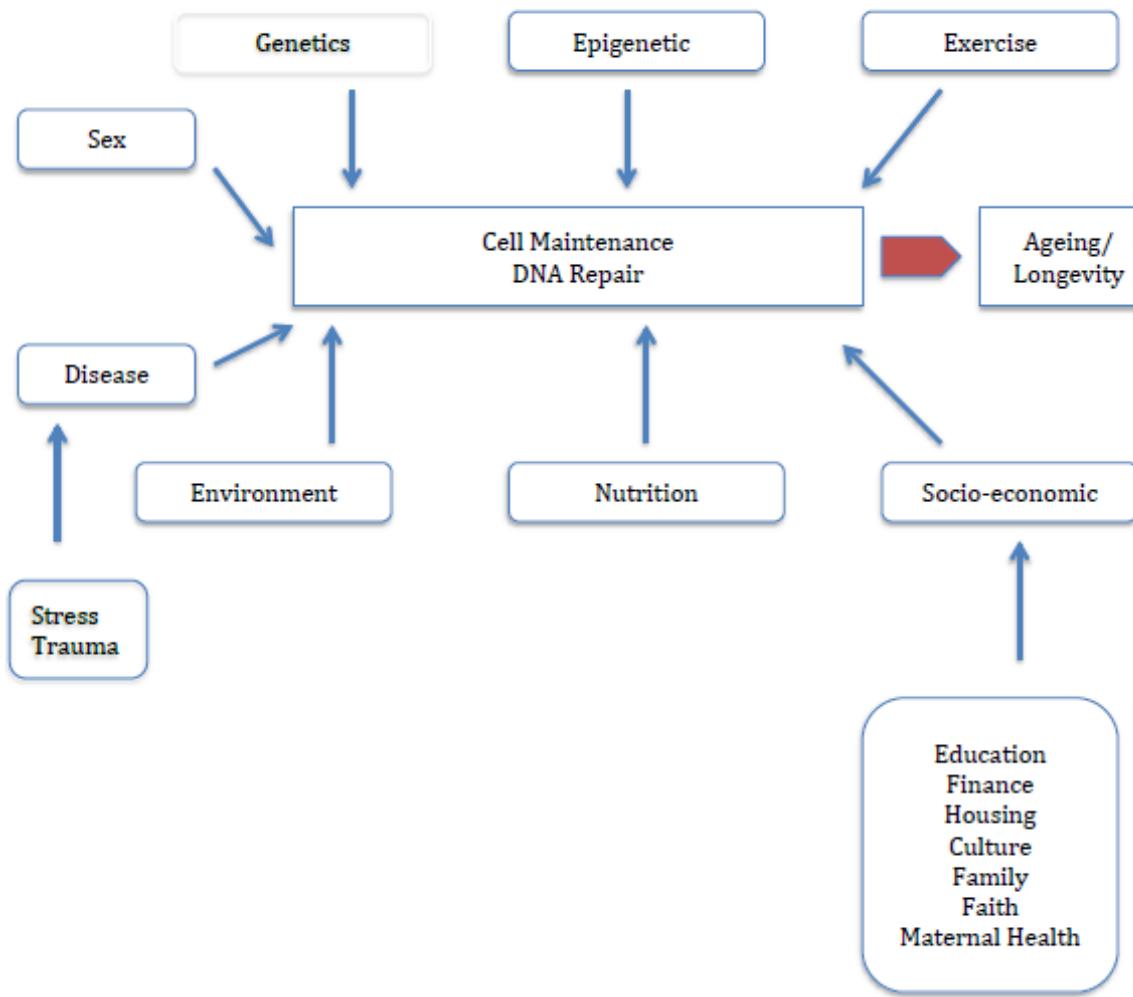


Figure 1 Factors affecting ageing and longevity.

Living longer may be a false goal, if accompanied by increasing disability; whereas successfully and positively ageing, i.e. adding life to years may be a more appropriate goal.

4. Successful Ageing

How we age and whether we age “successfully” is complex, and many of the influencing factors influence each other. For instance, a family that has many people living to a great age, often share common social, economic and environmental factors as well as a pool of genes [3, 18, 19]. Consequently there are many modifiable factors and the individual has the ability modify (Functional plasticity) to modify their response to the challenges posed [1, 20]. If it is possible to delay the signs of ageing [21, 22], and the period of ill health [23] will someone live successfully? Despite all the theories put forward over the years, a full understanding of ageing remains elusive [24], and a lack of consensus remains as to what ageing and successful ageing is [20].

The successful ageing paradigm was introduced by Rowe and Khan (1998), focusing on the following; a low probability of disease, and disability, and high cognitive and physical capacity and active engagement with life [25]. McLaughlin et al (2010) noted that only 12% of senior adults age successfully in any one year by these criteria [26]. Rowe and Khan updated their criteria in 2015 to

include other softer criteria for successful ageing [27]. The World Health Organisation (WHO) has defined Healthy/successful ageing is “the process of developing and maintaining the functional ability that enables wellbeing in older age”, with functional ability defined as “having capabilities that enable all people to be and do what they have reason to value” [28], and hence Healthy Ageing is about creating the opportunities that enable people to be and do what they value throughout their lives.

Despite this, there remains no consensus of successful ageing, or ageing well [29]. Whenever someone reaches a grand old age, and is asked the secret of doing so, there are as many explanations as there are people.

Successful ageing is complex and many internal and external factors will influence how an individual progresses along the ageing trajectory [30], including psychological, social, physical, and spiritual. These do not exist in isolation, some are manageable (mood, nutrition, exercise) and others (autoimmune disease, family) are not. One factor, often not considered, is the role played by maternal health. Barker in 1989 suggested that maternal health, and resultant low birth weight were more likely to suffer with diabetes, metabolic syndrome and cardiovascular disease [31], and hence increased morbidity, and mortality at a younger age [32]. More recently Husby et al, using a sibling comparison design, suggested that gestational age could influence cognition at a later age [33].

For ageing to be considered successful or healthy it is an absolute requirement to have and continue to maintain physical (activities such as walking, running, swimming, cycling, gardening), cognitive (memory, intellect), psychological (mood, socializing, interaction, spirituality) functioning and nutritional health. Where any of these fail (and manifests as one of the Geriatric Giants [34-36] or one of the 5'Ms' [37]), (Table 1), intrinsic capacity may decline [38], increasing risk of frailty and shortening of life. Is frailty, therefore, a sign of unsuccessful ageing and therefore resilience the manifestation of successful ageing? In some respects ageing could be considered a syndrome, in that many different factors influence the rate of biological ageing and ageing is progressive leading ultimately to death.

Table 1 Geriatric Giants and the 5 'Ms'.

Original Geriatric Giants [34]	New Geriatric Giants [35, 36]	5 Ms [38]
Incontinence	Frailty	Mind
Impaired Memory	Sarcopenia	Mobility
Immobility	Dysphagia	Medications
Imbalance	Ageing?	Multicomplexity
Iatrogenic		Matters Most

5. Positive Ageing

How can we define whether someone has grown old successfully and positively, aged gracefully or been dragged into a situation of penury, dependency and suffering against their will? Who decides, and what factors are in play that inform, shape our opinions? Expectations, experience, hearsay or fear will colour our opinion, but evidence in across academia suggests that there is often a divergence between the person being “judged” and the person doing the “judging” [39].

Across the ages, perceptions of older people have varied and oscillated between respect and disgust and derision [20]. As countries increase their GDP and children insist on their independence, older people tend to become more marginalized potentially resulting in a negative attitude to older people as a burden on society. This negativity could increase as more people with long term disability will survive into old age (46% of those >60 years have disabilities [40], it may also mean a redefining of what successful and positive ageing means.

One of the earliest descriptions of old age can be found in the Biblical text, Ecclesiastes [41] attributed to King Solomon (970-931 BC)

"Remember your Creator in the days of your youth, before the days of your trouble come...."

Solomon's description of ageing although descriptive is slightly negative but not out of kilter with the thoughts of Hippocrates and Senneca [20].

The Centre for Positive Ageing states 'Positive Ageing' denotes the aspirations of individuals and communities to plan for, approach and live life's changes and challenges as they age and approach the end of their lives, in a productive, active and fulfilling manner. The focus embraces the idea of making the most of opportunities, innovations and research, which promote a person's sense of independence, dignity, well-being, good health and enable their participation in society [42]. Dary and Glasgow suggest that positive ageing is "evolving, inclusive and multidimensional concept guided by the premise that older age should be viewed and experienced positively" [43] But what counts as active ageing and do we have to think outside the box [44]?

Research into positive ageing has been hampered frequently by the narrowness of the question being asked and the methodological approach [45] frequently because of the lack of co-design with older adults, even if the academic leading the study is of mature years [45].

Maggie Kuhn, a campaigner for positivity in old age has said that "Living to old age is a victory against the storms of life" (Maggie Kuhn 1905-1995), and many older adults do not feel old and do not want to be classified as old or "geriatric" [46]. Can living to a grand chronological age a success, positive and to be celebrated or, is old age to be suffered. Gillick, on the other hand writes, As the passage of time marches forward, or tempus fugit as many claim, the addition of years to life can be positive rather than hopeless [47].

Older people have a life time of experience, knowledge and wisdom to apply that knowledge [48] that can be invaluable for not only themselves but also for many others within society, Henry Wadsworth Longfellow (1807-1882) [49] wrote

*"For age is an opportunity no less
Than youth itself, though in another dress,
And as evening twilight fades away,
The sky is filled with stars, invisible by day"*

Positivity in old age has two basic necessities, one at a societal level and the other individual. In 2021 the WHO published "The Decade of Healthy Ageing" baseline report [50] with a stated purpose of changing how we think about older people. Marjory Warren, writing in the Lancet [51], that when older people are neglected, with no physical or cognitive activity, they rapidly decline with the inevitable consequences of death.

Older peoples' opportunities may or be perceived to have to reduced, as they age, and physical abilities diminish. Old age and retirement from work, can be seen as a period of redirection and development, continued learning and contribution to be grasped [52] focusing on emotional positives [53]. Maintaining at least a modicum of social involvement and independence may evidence of ageing successfully, whereas the requirement of care (at home or in an institution) is not. The move from one to another need not be stark and could be a gradation of care, moving from full independence, through family support and supported living environments, such as shared living environments (single building or complexes) as championed by Atul Gwande [54] and Julia Neuberger [55] in their books and more latterly "Dementia Villages" providing a secure environment for people with dementia and their families [56]. Even when dependency increases such that more intensive support is needed a more positive outlook may be experienced by those in institutionalized care than those living at home [57].

Within a given cultural heritage, there is a shared system of ideas/values/customs and expectations related to ageing, and getting old may be perceived as an end state [58]. Cramm and Nieboer found that ageing perceptions were generally more negative among older Turkish residents of Rotterdam compared to native Dutch older adults. If adults within a culture perceive getting old as one of loss rather than gain, negativity rather than positivity a sense of foreboding and fear will be present [58].

To get the conditions right for healthy ageing will take a coordinated approach between all components of society as well as the individual, to ensure that people feel, irrespective of their needs, safe and valued [59-61]. The structure of society, at present, overtly or covertly biases successful ageing towards those who are better off.

Therefore positivity in old age and successful ageing is multidimensional and requires a focus on maintaining a functional independence where possible [29], and have people who consider that they have aged positively and successfully, made subtle and (sub)conscious compromises and are happy with their contextual situation. That is people have come to accept any impairments that they may have. However, this does not absolve society of its responsibility to do what it can to improve the lived experience of the individual [45], which raises the question "Can you age well and have a positive experience, whilst living with disability, if there is a distinct lack of social and environmental support networks?"

Wellbeing and happiness [62] in older age is associated with an absence of physical and mental health problems but at the same time having a subjective sense of happiness and a good quality of life from having purpose in life [63], which may include the ability partake in sexual activity or express their sexuality [64]. Support from a small close knit social network (family and meaningful friendships) [63, 65, 66]. One important factor is the ability to access food of high quality and being able to eat and drink is crucial to survival. Society as a whole and individual within society have a responsibility to ensure that older adults, particularly those who are older, more frail and isolated have access to food that they are able to eat. Failure to do this will result in physical and psychological decline and eventually death (Figure 2). The WHO has published Guidelines on *Integrated Care for Older People* (ICOPE 2017) [66], providing evidence-based recommendations for health care professionals to prevent, slow or reverse declines in the physical and mental capacities of older people.

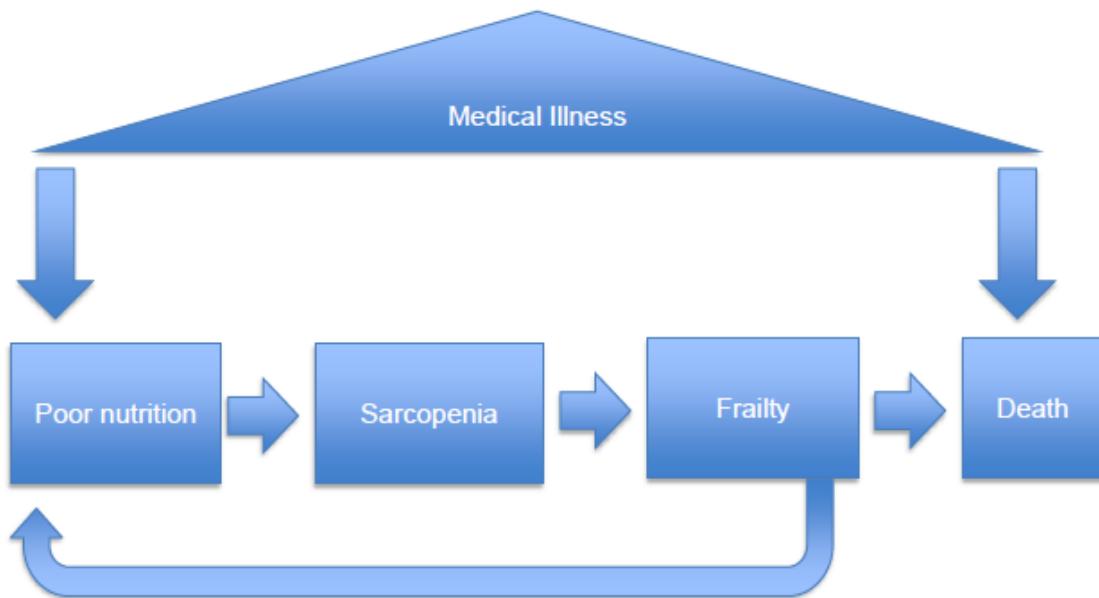


Figure 2 Poor nutrition and the consequences.

People may carry grudges and anger towards others as a weighty burden that can negatively affect their positivity, well-being and happiness. This can have a negative effect on their independence, health (both physical and psychological) and even reduce survival. The ability to forgive [67] carries positive benefits in all these areas, for all. Being able to give and receive forgiveness within a religious framework provides a more lasting benefit [68-70]. This may be because, faith networks, rather than just spirituality, provide a sense of community, belonging and social interaction, where as a search for spirituality is more of a search for internal calmness, a personal need for connection with either a higher or external power or within oneself [63]. Both can be associated with mental and physical health.

For those where family and social support may be limited technology has the possibility to provide peace of mind physical support., The burgeoning use of technology [71] by society has increased the potential to support people in their own environments (including their own homes) for longer. Robotic pets have been demonstrated to increase a level of contentment, reduce loneliness, stress and anxiety and reduce the need for psychoactive medication [72, 73].

6. Summary

The population across the world is getting older. The ethnicity and cultural backgrounds of populations are changing as people become more mobile, either through choice or circumstance. Many more people with disability and disease are living into older age due to improved health care. Views on ageing and positive ageing will vary according to culture, ethnicity and disability [7, 45] yet current research tends to have a narrow approach, assuming all that the older generation is homogeneous and as a consequence does not ask the right questions [74].

There are many different biological, environmental and social factors that influence ageing and how the person and society interact and react to each other. Positive ageing requires a joint approach from individuals, their peers and society to enable all people to attain their potential.

7. Conclusions

Evidence supports that a positive approach to old age has a beneficial effect on both psychological and physical health.

Older adults, of the future, will demand and expect more from life and hence there will need to be a societal reset of who is old, what being old means, and what is successful and positive ageing. Not only will there be more very old people there will be more old people with disability.

Research into positive ageing will need to explore co-design to ensure questions relevant to the increasingly diverse population of older people are asked and the most appropriate tools are used to collate the evidence, which may then enable a better understanding of what positive ageing means.

Author Contributions

The author did all the research work of this study.

Competing Interests

The author has declared that no competing interests exist.

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