



## Successful aging as a multidimensional concept: An integrative review

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### Abstract

**Background:** Successful aging as an umbrella term with a large amount of literature has emerged with a variety of meanings and dimensions in different studies. This article aims at determining what dimensions contribute to constructing the concept of successful aging.

**Methods:** The method used in this study is an integrative review of published literature related to successful aging. This method includes both qualitative and quantitative studies. Data searching was conducted during November and December 2014 and was then updated in October 2015. First, 2543 articles were identified, and after the screening phase, 76 articles were eligible for inclusion in the integrative review.

**Results:** The results specified 14 subcategories and 5 main categories of successful aging: social well-being, psychological well-being, physical health, spirituality and transcendence, and environment and economic security.

**Conclusion:** The present study provides a thorough understanding of successful aging dimensions and proposes the importance of the multidimensional concept of successful aging at the individual, interpersonal, and environmental levels for future studies and policymaking on population aging.

**Keywords:** Successful aging, Integrative review, Multidimensional, Well-being

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### Introduction

The public and academic attention given to aging was increased significantly at the beginning of the 21st century due to the increase of life expectancy and population aging in most countries. Based on United Nations projection (2015), the number of people aged 60 years or over would grow by 56% from 901 million (12.3% of the total population) in 2015 to 1.4 billion (16.5% of the total population) by 2030 in the world. Hence, the term “successful aging” emerged in the literature to describe the notion of aging well.

Successful aging as an umbrella term overlaps with a

variety of concepts such as positive aging, aging well, productive aging, and healthy aging. One of the fundamental issues underlying the debate is how successful aging should be defined by objective criteria or is it a subjective value judgment (1). Some researchers suggested that the concept of successful aging (SA) was introduced by Harvighurst as maximum satisfaction in the 1960s (2). Some others mentioned Cicero, and in gerontology Cumming and Henry (1961) (1). In 1997, Rowe and Kahn suggested successful aging as avoiding disease and disability, high cognitive and physical functioning, and engagement

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#### ↑What is “already known” in this topic:

Despite a large literature on successful aging, there is no general agreement on the dimensions of successful aging.

#### →What this article adds:

The concept of successful aging consists of 5 main categories: social well-being, psychological well-being, physical health, spirituality and transcendence, and environment and economic security. A comprehensive understanding of successful aging can be used in future studies, interventions, and policymaking to promote aging well.

with life (3). Following the Rowe and Kahn definition and framework, MacArthur studies started as a large attempt to study objective successful aging and distinguish successful agers using physical and cognitive cut-off scores (4, 5). Another popular model of successful aging is the SOC model, which was introduced by Baltes and Baltes to demonstrate how older adults adjust to aging. They stated that success is an individual development comprising 3 main components: selection, optimization, and compensation (6, 7).

Nonetheless, in reality, many of the old people imagine themselves as successful agers despite their disability and health problems such as diabetes or hypertension (8, 9). Thus, successful aging includes other dimensions (10, 11). Also, the cross-cultural perspective of successful aging has an important role in the definition of successful aging conceptual framework (9, 12). More models of successful aging have been explored by both quantitative (13-17) and qualitative (18-22) research designs. Also, in recent years, some new terms have been suggested for successful aging such as gerotranscendence (23) and harmonious aging (24). Despite a large literature on successful aging, some of the researches have mentioned that there is no general agreement on the dimensions of successful aging (11). Therefore, this article aimed at exploring the dimensions of successful aging using an integrative study.

## Methods

The method used in this study was an integrative review of published articles related to successful aging. This methodology is the broadest type of research review method and allows concurrent inclusion of quantitative and qualitative research to allow a fuller understanding of a phenomenon of concern (successful aging). Integrative reviews may also merge/synthesize data from theoretical and empirical studies (25). Whittemore and Knafl (2005) introduced an integrative approach framework consisting

of 5 stages including problem identification, literature search, data evaluation, data analysis (results), and presentation (conclusion) to enhance the accuracy of the process when conducting an integrative review. The data from successful aging reviews were coded, categorized, and compiled into the matrix.

### • Problem identification

Although aging is a natural process in our life, individuals can become involved in creating a successful aging process rather than the passive experience of later life. Thus, a discussion about successful aging converges with the search for factors and conditions that help us to understand the potential of aging, and if desirable, to identify ways to modify the nature of human aging as it exists today (6). The focus of this study was to answer the following question: What dimensions contribute to constructing the concept of successful aging?

### • Literature search

The second stage of an integrative review is a literature search. Data searches were conducted during November and December 2014, and then updated in October 2015. A comprehensive search was conducted using the following electronic databases: ProQuest, EBSCO, JSTOR, PubMed, ISI, and Scopus. The keyword "successful\* aging" was used with both spellings of ageing and aging.

The inclusion criteria for the study were the term "Successful aging" in the title with the aforementioned spellings and abstracts including terms such as "model\*," "definition\*," "theory\*," "structure\*," "dimension\*," and "perception\*"; the full-text articles were available and to prevent overlapping, we excluded other phrases such as healthy aging and aging well.

### • Data evaluation

This integrative study aimed at exploring the current knowledge about the dimensions of successful aging. Thus, in the screening, articles that explained just 1 specific dimension of successful aging such as medical factors,

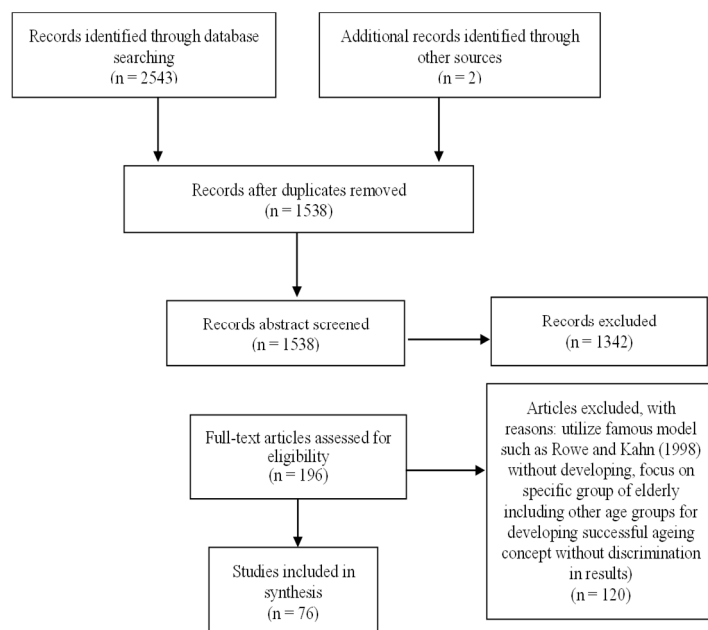


Fig. 1. The number of identified and included articles in the study

or those that focused on a specific group of older adults such as the elderly with chronic diseases or depression were excluded from the study. Moreover, studies that included young people's perception of constructing the concept of successful aging were excluded. Fig. 1 demonstrates the number of identified and included articles in this study.

In the data search, 2543 articles were initially identified, and after screening, 76 articles were eligible for inclusion in the study. A total of 34 articles used quantitative or mixed methods and 42 studies used qualitative methods or a literature review.

## Results

In this study, a matrix was developed by the authors outlining the year, country, population, and dimension of successful aging (Tables A and B in the Appendix). The articles included in the study were published between 1960 and 2015, and most of them had been conducted in the recent years. The most frequent articles in the field of successful aging were conducted in the United States. Many of the quantitative articles employed survey or second data analysis and follow-up methods. Although quantitative studies place more emphasis on physical/mental health and social engagement, in qualitative researches the

Table 1. Dimensions of successful aging extracted from integrative review

Main categories	Subcategories	Codes	Meaning summary
Social well-being	Social presence & interaction	Close relationship with others Social activity	Family relationship, a network of friends and family, intergenerational relationship, doing some activities with family Productive activity or job, volunteer activity, social teaching, self-employment, participating in public activity
	Social support	Recreation Not lonely Social support from family Social support from governments	Traveling, creative activities, having variety of hobbies Having a partner, wife/husband for close relationship and engagement Having a friend for speaking to or traveling, emotional and financial support from family, visiting family Social welfare policy for older adults, sufficient healthcare system, facilitation of social role and productive activity for older adults, sufficient pension, and insurance
Psychological well-being	Individual positive characteristics and capabilities	Happiness	Being full of energy and happy, joyful
		Having purpose/plan and hope	Being hopeful, having aims for the future
		Positive mood	Generous, curious, sense of humor, other positive characteristics based on culture
		Being useful	No feeling of worthlessness, being productive, feeling of usefulness
		Good appearance	Good figure, being stylish
		Self-acceptance	Good feeling about his/herself, self-confidence, feeling of being useful,
		Self-efficacy	Ability for self-care, ability to avoid risk factors, ability to recover from disease
		Mastery	Ability to change environment in his/her interest, ability to do complex activity in life and family, ability to change or select property environment for his/her physical or mental limitation
		Maintaining balance	Balance between opportunity and challenges, selection of alternatives, compensation, balance between body and mind, balance between aspirations and goals achieved
		Coping and resilience	Ability to face life problems and challenges, avoiding running away from problems, adoption of aging limitations, avoiding the wrong solutions
		Continuity in learning	Learning new things, attempting to improve knowledge, attention to development in later life
		Lifespan satisfaction	Acceptance of past life, good job, good memories from the past, satisfaction, and getting over bad memories such as war
		Positive self-perception of aging	Satisfaction with whole life, satisfaction with partner Acceptance of transition and changes from aging, acceptance of decline
		Absence of mental illness	Acceptance of positive points of aging, good self-image, without any bad image such as frail elderly
			No signs of depression, such as withdrawal, feelings of worthlessness and being useless, despair
			No signs or symptoms of Alzheimer's and Parkinson suspicion of having attention problems, no language impairment
			Anorexia or stress eating, fear of the death of someone close, feeling guilty
	Physical health	Good physical health	No pain, no feeling of fatigue and feeling healthy and well
		Avoidance of risk factors	No symptoms of disease such as heart disease, heart attack, diabetes, cancer, emphysema, osteoporosis, asthma, hypertension, obesity, cardiovascular disease, lung disease, Parkinson's disease
			No smoking, eating Mediterranean diet, physical fitness and doing exercises such as stretching
	Functional health	Doing daily living activities	Doing personal activities such as taking a shower, ability to make phone call, shopping, climbing stairs
	Longevity	The absence of disability	No hearing, visual, or physical impairment
			Living to more than 80 or 85 years old

Table 1. Cntd

Spirituality and transcendence	Spirituality		Feeling of inner peace, being thankful, being religious, accepting a superior power, having beliefs
	Gerotranscendence	Self-transcendence	Rationality, self-recognition, decrease of self-orientation
Environment and economic security	Appropriate context and environmental amenity	Ontology	Feeling of being part of world, part of life cycle, change of viewpoint on the world
		Acceptance of death	Reduction of stress from death, change of viewpoint on death
		Solitude	Thinking about secret of life and relation with ancestors
	Financial and economic security	Favorite living neighborhood	Feeling of social security for walking in neighborhood, good accommodation with sufficient heat and light
		Accommodation in the good zone of the city living in a good environment with accessibility to healthcare system	Nice weather, clean water, having sufficient garbage disposal system
		age-friendly city	Near to hospital, proper transportation to healthcare system
		Absence of negative stereotype in society	Absence of negative image of elderly in media avoids marginalizing the social role of the elderly
		Satisfaction with financial resources, sufficient pension, or assets and having a home	

theme of satisfaction with life is more common.

During data analysis, dimensions of successful aging concept in the articles were coded and categorized. The results are presented as codes, subcategories, and main categories in Table 1. The dimensions are summarized in the matrix and include 14 subcategories and 5 main categories: physical health, social well-being, psychological well-being, spirituality, and environment and economic security.

#### 1) Physical health

The main category of physical health includes 3 subcategories: good physical health, avoidance of risk factors, and functional health. An assessment of physical health is frequently performed in most studies on successful aging, particularly in quantitative research. Researchers of aging explore both self-rated health and the disease history of older adults (16, 26). Physical health assessment in the considerations is named as an objective (1) or medical dimension (27). Avoidance of risk factor is another subcategory related to healthy behaviors such as a Mediterranean diet and exercise (26). Moreover, in the qualitative studies, older adults indicated that avoidance of risk factor was an important dimension of aging well (22). Functional health is another significant factor of successful aging that indicates the ability to do daily activities (28, 29). Longevity was mentioned in some studies, but recently some studies mentioned that quality of life is more significant than longevity (9, 30, 31).

#### 2) Psychological well-being

The main category of psychological well-being included 4 subcategories: absence of mental illness, individual positive characteristics and capabilities, lifespan satisfaction, and positive self-perception of aging. Absence of mental illness is one of the most important subcategories and has usually been studied in the absence of depression and dementia (15, 32). Individual positive characteristics and capabilities is one of the subcategories, which contains a variety of initial codes such as mastery, self-acceptance, happiness, having an aim and purpose in life, and being in a positive mood (14, 20, 21, 33). It seems that the codes of this category are flexible in different cultural contexts. Lifespan satisfaction is one of the subcate-

gories interwoven with successful aging from Havighurst's efforts to conceptualize successful aging. Satisfaction of the elderly is not only related to their present life but also to memories and past life (34). The codes that construct the positive self-perception of aging subcategory emerged from qualitative studies that revealed older adults with a positive aging perception accepted the natural cycle of life and aging but tried to feel young at heart (19, 35).

#### 3) Social well-being

Social well-being is another main category and is based on 2 subcategories: presence in the society/community and having social support. Presence in the society means having a close relationship with others, doing social activities, and engaging in recreation (19, 30, 36). Social support is defined at 3 levels: individual (e.g., not being lonely), family (e.g., emotional or instrumental support), and government (e.g., social welfare policy for the elderly). Family social support is an important element and provides a buffer against depression and stress in later life.

#### 4) Spirituality and transcendence

Spirituality and transcendence is one of the latest dimensions of successful aging in the literature. Spirituality is defined as having beliefs or accepting a higher power and being thankful (9). Crowther et al. (37) revised Rowe and Kahn's model of successful aging and added spirituality as the fourth dimension of successful aging. Gerotranscendence is the second subcategory that emerges in the successful aging literature as a new and partly complicated concept. Gerotranscendence includes factors such as self-transcendent, ontology, and accepts death and solitude. Gerotranscendence theory indicates that older adults transfer from a rational view to a more cosmic one in their third stage of life (23, 38).

#### 5) Environment and economic security

The main category of environment and economic security indicates a good relationship between the elderly and external factors. The subcategory "appropriate context and environmental amenity" can be categorized at the neighborhood level as well as at macro levels such as living in an appropriate environment with nice weather, infrastructure facilities, and health systems (10, 27, 39). In successful aging literature, less attention is given to social con-



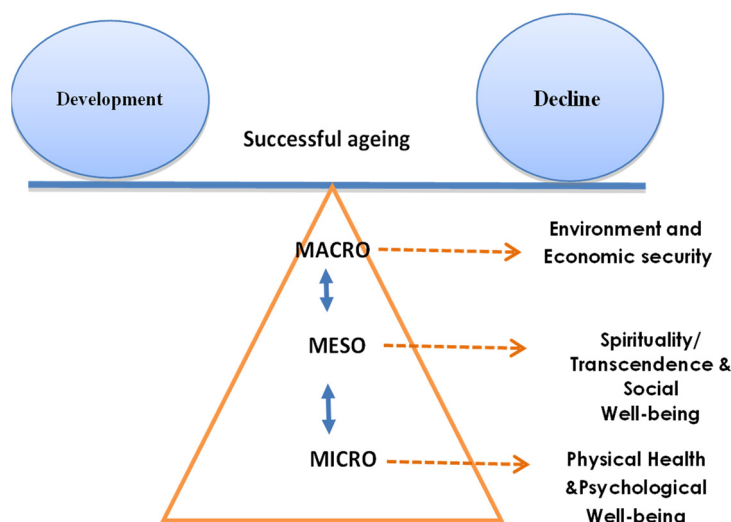


Fig. 2. Balance in "successful aging" concept

texts such as absence of negative stereotypes, which can shape a desirable living environment for the elderly (19). The last subcategory is financial sufficiency through pensions, governmental support, or individual property, which is known to be a basic need for aging well (40, 41).

### Discussion

This study aimed at exploring the dimensions of successful aging using an integrative review. The results revealed 5 main categories (social well-being, psychological well-being, physical health, spirituality and transcendence, and environment and economic security) and 14 subcategories for successful aging. According to the main categories and subcategories, the 4 following characteristics of successful aging concept are suggested:

**Multidimensional:** Successful aging is not a single-dimensional concept that only focuses on physical aspects, but it consists of social, psychological, spiritual/ transcendent, and economic and environmental aspects. This is consistent with the existing literature on successful aging that emphasizes the multidimensional nature of successful aging (15, 42).

**Life course:** Successful aging does not emerge spontaneously in the third stage of life (late life). In fact, it is the fruit of the previous life stages. Aging successfully is based on the past life conditions of the elderly (6, 43).

**Multilevel:** The results showed successful aging to be a multilevel concept. The definition starts with an underlying individual level such as individual characteristics and continues to a higher level such as structural and environmental amenity. In other words, it covers many determinants at different levels from micro to macro levels of successful aging.

**Contextual:** The concept of successful aging is sensitive to culture. As Torres (1999) noted, the elderly have different viewpoints from a variety of cultures in the meaning of a good old age. While Chinese older adults define it in terms of how others view them, elderly Americans define successful aging in terms of how they view the world (44).

As Baltes (1987) emphasized in his theory of lifespan development, "Throughout life, development always consists of the joint occurrence of gain (growth) and loss (decline)." (45, p.616). With regard to the results of the present study, the concept of successful aging is constructed with individual and social elements. The elderly try to maintain a balance between losses such as physical decline and gains such as transcendence in their later life. The balance between development and decline is attained by having individual, social, and environmental resources. In other words, balance means having physical health and psychological well-being at the micro level, having social well-being, and spirituality/transcendence at the meso level, and living in an appropriate environment with economic security (Fig. 2)

Therefore, successful aging is a multidimensional and multilevel concept. As Bowling and Dieppe (2005) stated, "Achievement of successful aging in terms of all the criteria presented (here) is unrealistic for most people. However, successful aging needs to be viewed, not only multidimensionally, but as an ideal state to be aimed for, and the concept itself should be placed on a continuum of achievement rather than subject to simplistic normative assessments of success or failure." (8, p.1550).

### Conclusion

The present study clarifies the dimension of success in later life from among the huge body of literature on successful aging. Given the extent of this concept and the cultural nature of successful aging, there is no integrative definition of successful aging. In previous studies, the focus was on physical dimensions and less attention was given to the multidimensional approach. Recently, other dimensions of successful aging, particularly psychological aspects and other levels of successful aging including interpersonal and environmental dimensions, have been drawn to researchers' attention. The results of this study suggested the importance of successful aging at the individual, interpersonal, and environmental levels in the def-

inition of the multidimensional viewpoint of successful aging. Moreover, the findings of this study allow a thorough understanding of the dimensions of successful aging, which can be applied in future studies and interventions on older adults' well-being and policymaking on population aging.

# Conflict of Interests

The authors declare that they have no competing interests.

# References

1. Pruchno RA, Wilson-Genderson M, Cartwright F. A two-factor model of successful aging. *J Gerontol B Psychol Sci Soc Sci*. 2010;65(6):671-9.
2. Havighurst RJ. Successful aging. *Gerontologist*. 1961; 1:8-13.
3. Rowe JW, Kahn RL. Successful aging. *Gerontologist*. 1997;37(4):433.
4. Berkman LF, Seeman TE, Albert M, Blazer D, Kahn R, Mohs R, et al. High, usual and impaired functioning in community-dwelling older men and women: findings from the MacArthur Foundation Research Network on Successful Aging. *J Clin Epidemiol*. 1993;46(10):1129-40.
5. Cernin PA, Lysack C, Lichtenberg PA. A comparison of self-rated and objectively measured successful Aging constructs in an urban sample of African American older adults. *Clin Gerontol*. 2011;34(2):89-102.
6. Baltes P, Baltes M. Psychological perspectives on successful aging: the model of selective optimisation with compensation. *Successful aging: perspectives from the behavioral sciences*. New York: Cambridge University Press; 1990.
7. Martin P, Kelly N, Kahana B, Kahana E, B JW, Willcox DC, et al. Defining successful aging: a tangible or elusive concept?. *Gerontologist*. 2015;55(1):14-25.
8. Bowling A, Dieppe P. What is successful aging and who should define it? *BMJ*. 2005;331:1548-1551.
9. Tate RB, Loewen BL, Bayomi DJ, Payne BJ. The consistency of definitions of successful aging provided by older men: The Manitoba Follow-up Study. *Can J Aging*. 2009;28(4):315-22.
10. Hsu H-C. Exploring elderly people's perspectives on successful aging in Taiwan. *Ageing Soc*. 2007;27(1):87-102.
11. Cosco TD, Prina AM, Perales J, Stephan BCM, Brayne C. Operational definitions of successful aging: a systematic review. *Int Psychogeriatr*. 2014;26(3):373-81.
12. Phelan EA, Anderson LA, LaCioz AZ, Larson EB. Older adults' views of "successful aging" -- how do they compare with researchers' definitions? *Journal of the American Geriatrics Society*. 2004;52(2):211-6.
13. Doyle YG, McKee M, Sherriff M. A model of successful aging in British populations. *Eur J Public Health*. 2012;22(1):71-6.
14. Jeon SN, Shin H, Lee HJ. Dynamics of constructs in successful Aging of Korean elderly: modified Rowe and Kahn's Model. *Osong Public Health Res Perspect*. 2012;3(3):137-44.
15. Lee PL, Lan W, Yen TW. Aging successfully: a four-factor model. *Educ Gerontol*. 2011;37(3):210-27.
16. Tate RB, Swift AU, Bayomi DJ. Older men's lay definitions of successful Aging over time: The Manitoba Follow-Up Study. *Int J Aging Hum Dev*. 2013;76(4):297-322.
17. Young Y, Frick KD, Phelan EA. Can successful aging and chronic illness coexist in the same individual? A multidimensional concept of successful aging. *J Am Med Dir*. 2009;10(2):87-92.
18. Hörder HM, Frändin K, Larsson MEH. Self-respect through the ability to keep the fear of frailty at a distance: successful aging from the perspective of community-dwelling older people. *Int J Qual Stud Health Well-being*. 2013; 8:20194-20204.
19. Jopp DS, Wozniak D, Damarin AK, De Feo M, Jung S, Jeswani S. How could lay perspectives on successful aging complement scientific theory? Findings from a U.S. and a German life-span sample. *Gerontologist*. 2014;55(1):91-106.
20. Zanjari N, Sharifian Sani M, Hosseini Chavoshi M, Rafiey H, Mohammadi Shahboulaghi F. Perceptions of successful aging among Iranian elders: insights from a qualitative study. *Int J Aging Hum Dev*. 2016;83(4):381-401.
21. Reichstadt J, Sengupta G, Depp CA, Palinkas LA, Jeste DV. Older adults' perspectives on successful aging: qualitative interviews. *Am J Geriatr Psychiatry*. 2010;18(7):567-75.
22. Troutman-Jordan M, Staples J. Successful Aging from the viewpoint of older adults. *Res Theory Nurs Pract*. 2014;28(1):87-104.
23. Tornstam L. Gerotranscendence: the contemplative dimension of aging. *J Aging Stud*. 1997;11(2):143-54.
24. Liang J, Luo B. Toward a discourse shift in social gerontology: from successful aging to harmonious aging. *J Aging Stud*. 2012; 26(3):327-34.
25. Whittemore R, Knafl K. The integrative review: updated methodology. *J Adv Nurs*. 2005;52(5):546-53.
26. Tyrovolas S, Haro JM, Mariolis A, Piscopo S, Valacchi G, Tsakountakis N, et al. Successful aging, dietary habits and health status of elderly individuals: a k-dimensional approach within the multi-national MEDIS study. *Exp Gerontol*. 2014;60: 57-63.
27. Cosco TD, Brayne C, Matthew Prina A, Perales J, Stephan BCM. Whose "successful aging"? Lay- and researcher-driven conceptualisations of aging well. *Eur. Psychiatry*. 2014;28(2):124-30.
28. Hodge AM, English DR, Giles GG, Flicker L. Social connectedness and predictors of successful aging. *Maturitas*. 2013;75(4):361-6.
29. Thielke S, Diehr P. Transitions among health states using 12 measures of successful aging in men and women: results from the Cardiovascular Health Study. *J Aging Res*. 2012;2012.
30. Hilton JM, Gonzalez CA, Saleh M, Maitoza R, Anngela-Cole L. Perceptions of successful aging among older Latinos, in cross-cultural context. *J Cross Cult Gerontol*. 2012;27(3):183-99.
31. Knight T, Ricciardelli LA. Successful aging: perceptions of adults aged between 70 and 101 years. *Int J Aging Hum Dev*. 2003;56(3):223-45.
32. Parslow RA, Lewis VJ, Nay R. Successful aging: development and testing of a multidimensional model using data from a large sample of older Australians. *J Am Geriatr Soc*. 2011;59(11):2077-83.
33. Baltes MM, Carstensen LL. The process of successful aging. *Ageing Soc*. 1996;16:397-422.
34. Craciun C. Successful aging-Utopia or the result of lifelong learning? Meaning and representations of aging in Romanian elderly. *Aging International*. 2012;37(4):373-85.
35. Swift AU, Tate RB. Themes from older men's lay definitions of successful aging as indicators of primary and secondary control beliefs over time: The Manitoba Follow-up Study. *J Aging Stud*. 2013;27(4):410-8.
36. Nguyen AL, Seal DW. Cross-cultural comparison of successful aging definitions between Chinese and Hmong elders in the United States. *J Cross Cult Gerontol*. 2014;29(2):153-71.
37. Crowther MR, Parker MW, Achenbaum WA, Larimore WL, Koenig HG. Rowe and Kahn's model of successful aging revisited positive spirituality—the forgotten factor. *Gerontologist*. 2002;42(5):613-20.
38. Topaz M, Troutman-Jordan M, MacKenzie M. Construction, deconstruction, and reconstruction: the roots of successful Aging theories. *Nurs Sci Q*. 2014;27(3):226-33.
39. Hsu H, Tsai C, Chang M, Luh D. Constructing area-level indicators of successful aging in Taiwan. *Health Soc Care Community*. 2010;18(1):70-81.
40. Bowling A. Lay perceptions of successful aging: findings from a national survey of middle-aged and older adults in Britain. *Eur J Ageing*. 2006;3(3):123.
41. Wang YT, Lin WI. Successful aging: the case of Taiwan. *Australas J Ageing*. 2012;31(3):141-6.
42. Cosco TD, Prina AM, Perales J, Stephan BCM, Brayne C. Lay perspectives of successful aging: a systematic review and meta-ethnography. *BMJ*. 2013;3(6).
43. Schulz R, Heckhausen J. A life span model of successful aging. *Am Psychol*. 1996;51(7):702-14.
44. Torres S. A culturally-relevant theoretical framework for the study of successful aging. *Ageing Soc*. 1999;19(1):33.
45. Baltes PB. Theoretical propositions of life-span developmental psychology: on the dynamics between growth and decline. *Dev Psychol*. 1987;23(5):611-626.

Table A. Quantitative and mixed studies of successful aging

No.	Author name & year of study	Type of study	Population	Country	Dimensions of successful aging
1	Cho et al (2015)	Sequential study (Structural equation modelling)	375 centenarians (98+) and octogenarians(80-89 years old)	USA	Physical functioning, having no physical health impairment, education, past life experience, cognitive functioning, social resources, perceived economic status.
2	Cheung and Lau(2015)	Cross-sectional data analysis	120(95-108)	China	Physical and functional health, Psychological well-being and cognition, Social engagement and family support, and Economic resources and financial security
3	Cosco et al (2015)	Population-based study	740(65+)	UK	Physical functioning and cognitive Functioning, personal resources, engagement, and self-awareness
4	Tyrovoulas et al (2015)	Survey (2005-2011)	2,663 older (aged 65-100 years old)	Greece	Education, financial status, physical activity status, BMI, psychological level, participation in social activities with friends and family, yearly excursions, the burden of CVD risk factors, and dietary habits
5	Gasiorek(2015)	Second data analysis(Latent class analysis across of two datasets	692(40-82 years old)	New Zealand and USA	Subjective approach (answer to questions: How successfully have you aged up to now? How well are you aging? How do you rate your life these days? I am happy with the age I am right now; at my age, I feel that life has much to offer, and I'm as happy at this stage of my life as I have been at other points in time)
6	Feng et al(2015)	Comparative study(longitudinal survey)	19,346(65+)	China and Korea	Free from major illness and disability, having no depressive or symptom, participating in social or productive activities, and being satisfied with life
7	Tyrovoulas et al(2014)	Follow-up study	2663 elderly (aged 65-100 years old)	21 Mediter-ranean Is-lands	Psychosocial economic factors(education, financial status, social activity with friends, Social activities with family, going to excursions, GDS score); Clinical characteristics factors(CVD risk score, Body mass index); Lifestyle characteristics factors(Med-Diet Score, Frequency of daily physical activities)
8	Tovel and Carmel(2014)	Cross-sectional study	262(75+)	Israel	Subjective well-being measured by Positive Morale Scale ( Agitation, Attitude toward aging, Lonely, dissatisfaction), Life Satisfaction Scale(resolution, congruence, self-concept and mood tone) and Happiness Scale
9	Li et al (2014)	Population-based cross-sectional study	903(65+)	Taiwan	SF-36 The SF-36 PCS and MCS scales (physical functioning, social functioning, role limitations due to physical problems, role limitations due to emotional problems, mental health, vitality, pain, and general perception of health
10	Tate et al(2013)	Content analysis from Manitoba Follow-up Study and Generalized Linear Mode	2,043 men were alive at a mean age of 78 years in 1996	Canada	Leisure activity and interests(activity/ interests/hobbies-specific; keeping active-nonspecific; pursuing interests-nonspecific; and performing mental activities), Happiness (content/satisfied/comfortable with self; reflecting on life; sense of humor/worth; sense of purpose; enjoying/having an interesting life; and knowing offspring are doing well), Attitude(positive attitude/being interested/looking ahead; having good fortune/who I am; don't think about aging; thinking young; being thankful; having virtues; having dignity; and less stress/worry), Health-General(being healthy, having few health problems, not having disabilities, absence of illness/sickness, and gradual deterioration), Physical Activity(keeping physically fit/working out; keeping physically active; participating in sports; and golfing), Relationships-Family(loving spouse and relationships with family), Coping, Adjustment, Acceptance, Being Productive, Contributing(Having goals/making plans; being productive/useful; contributing/helping family; contributing/helping friends; volunteering; and donating to charity), Living and Dying(not aging; staying alive; chronological; comparative; and die quickly), Life Experience(education/career; being retired; and having served in the war), Independence(autonomy; make own decisions; independent living; independent activities of daily living (IADL); basic activities of daily living (ADL); mobility; driving/flying; and financial security), Health-Physical(good physical health, no/minimal physical disease/impairment/disabilities, physical function(ability), and feeling healthy/energetic.), Relationships Companionship(companionship/ belonging; friendships/neighbours; and animal companionship), Adaptation(assistive devices; living one day at a time; moderation/accommodation; planning for future support/assistance; and receiving support when it is needed), Lifestyle(nutrition; no smoking/ drinking/drugs; smoking/drinking in moderation; and healthy lifestyle choices), Health-Cognitive(memory, mind, ability to communicate, and not having mental illness), Relationships-Society(keeping active socially and interest in/ties to the community/world), Spirituality, Health-System(health care provider, taking medication, and minimal/no health care required.), Quality of Life(good lifestyle and basic needs are provided), Relationships-Intimate
11	Hodge et al(2013)	Cohort study	5512 older adults(70+)	Australia	Who had survived to age 70 years, who at follow-up study reported none of: diabetes, heart attack, coronary artery bypass graft surgery, angioplasty, stroke, or had a cancer (excluding non-melanoma skin cancer), impairment, or perceived major difficulty with physical functioning(SF-12), without having any limitation in moderate activities (such as moving a table, pushing a vacuum cleaner, bowling, or playing golf), or having a lot of limitation in climbing several flights of stairs, no difficulty in using a telephone or perform the following instrumental activities of daily living: shopping, walking 200 m, getting out by car or public transport by themselves, going up stairs or doing heavy work around the house such as shovelling dirt or washing walls. Without psychological distress such as depression and anxiety(Kessler scale)

Table A. Cntd

12	Swift and Tate(2013)	Manitoba Follow-up Study: thematic codes of an open question and correlation	2043(74-88 years old)	Canada	<p><u>Primary control proper</u>(Health care provider, Taking medication Education/career, Having served in the war Having/accomplishing goals/making plans, Assistive devices , Moderation/accommodation, Being productive/useful Contributing/helping family Contributing/helping friends, Volunteering Donating to charity, Keeping physically fit/working out, Keeping physically active, Participating in sports, Golfing, Activity/interests/hobbies, Keeping active, Pursuing interests, Performing mental activities, Healthy nutrition, No smoking/drinking/drugs, Smoking/drinking in moderation, Healthy lifestyle choices, Independence - autonomy, Independence - make own decisions, Independence — independent living, Independence - instrumental activities, Independence-basic activities, Independence — mobility, Independence - driving/flying, Independence - financial)</p> <p><u>Limited primary control</u>(Being healthy, Having few health problems, Absence of illness/sickness, Gradual deterioration, Good physical health, No/minimal physical disease/impairment, Physical functional ability, Feeling healthy/energetic, Memory, Mind Ability to communicate, Minimal/no health care required, Not aging, Staying alive, Comparative age, Being retired Good, lifestyle, Basic needs provided, Getting support when needed)</p> <p><u>Pertinent to primary control</u>(Not having disabilities, Not having mental illness, Reaching old age, Dying quickly)</p> <p><u>Secondary control proper</u>(Positive attitude, Having good fortune, Don't think about aging, Thinking young, Being thankful, Knowing offspring are doing well, Coping with personal stressors, Coping with family/friend's declining health/death, Adjusting to wife's/friend's declining health/death, Accepting changing body, Accepting the "natural progression" of life, Accepting wife's/friend's declining health/death, Loving spouse, Relationships with family, Companionship/belonging — non-specific, Friendships/neighbors, Animal companionship, Intimate relationships, Keeping active socially, Interest in/ties to the community/world, Being spiritual/having faith, Sense of purpose, Planning for future support/assistance, Sense of meaning and purpose)</p> <p><u>Limited secondary control</u>(Having virtues, Having dignity, Sense of humor/worth, Enjoying/having an interesting life, Less stress/worry, Content/satisfied/comfortable with self, Living one day at a time)</p>
13	Gwee et al (2013)	Cross-sectional data analysis	489 community-dwelling (65+)	Singapore	Self-rated SA on an analogue scale from 1 to 10 and five specific dimensions (physical health and function, mental well-being, social engagement, psychological well-being, and spirituality/religiosity)
14	Jeon et al (2012)	Cross-sectional data analysis	600 older adults (65+)	South Korea	Modified Rowe and Kahn model: self-reported health(Healthy habits, Subjective health, chronic diseases), social network(emotional support, instrumental support) physical-cognitive function, psychological trait(life satisfaction, self-efficacy), productive activity(hours of PA and Numbers of PA)
15	Hilton et al(2012)	multi-method approach	60 older Latinos (50+)	USA	Quantitative results: highest and lowest rankings based on Phelan questions: act on inner standards, feel good about self, good health, cope with aging challenges, sense of peace about the end of life, friends and family support, no regrets, stay involved with world and others, able to work, longevity. Qualitative results: positive attitude, independence, good health, stay involved with life, social relationships/family, cognitive functioning, self-care, acceptance, financial well-being, spirituality/religion/transcendence
16	Thielke and Diehr(2012)	Population-based longitudinal study	5888 adults (65+)	USA	Psychological, physical, cognitive, and functional status(not hospitalized, no bed days, life satisfaction, life as a whole, not depressed, no limitations in activities of daily living, no limitations in independent activities of daily living, intact extremity strength, Self-rated health, Intact cognition, Ability to ambulate, Frequent ambulation
17	Lee et al (2011)	Survey	312 participants aged 65+	Taiwan	Physical(physical condition over the past two weeks), psychological(psychological symptoms of depression and stress), social support(personal interaction with others), leisure time(frequency of engaging in intense exercises or activities and frequency of out-of-town traveling during the past 12 months)
18	Tan et al(2011)	Survey (Phelan(2004)questionnaire used)	Anglo-Australian and 116 Chinese-Australian(60+)	Australia	Rated as an important aspect among both Chinese and Anglo-Australians: physical health and functioning, the absence of disability and disease, staying engaged with life, adjusting to changes, being able to make choices and having friends and family.
19	Parslow et al (2011)	Second data analysis	2286 elders(61 to 85 years old)	Australia	Latent variable of successful aging: Self-assessed physical and mental Health(general health question), life satisfaction(Delighted– Terrible scale), and cognitive function(MMSE score)
20	Bowling and Iliffe(2011)	Postal follow-up in 2007/8 of a 999 people	287 national random sample(65+)	UK	Biomedical (having diagnosed, chronic medical conditions; ability to perform activities of daily living (ADL), psychiatric morbidity(GHQ-12)); Broader biomedical(number of different social activities engaged in during past month) Social functioning(number of different social activities engaged in during past month, frequency of social contacts, number of helpers/supporters); Psychological resources(self-efficacy, sense of purpose, playing useful part, coping, facing up to problems, overcoming difficulties; self-esteem, feels has self-confidence and has self-worth); Lay(gross annual income and perceived social capital, rating of area facilities transport, closeness to shops, services, area problems, crime, vandalism, graffiti, speed and volume of traffic, air quality, somewhere nice to go for a walk, feels safe walking alone during the day or night)
21	Wang and lin(2011)	Cross-section national survey	1309(65+)	Taiwan	<u>Physical health</u> (self-rated health, self-reported ability to stand up), <u>mental health</u> (depression) <u>social/productive engagements</u> (having paid jobs, no. of weekly hours in paid work, no. of weekly hours in volunteer work, social support) <u>economic security</u> (current financial condition, economic sufficiency during retirement)
22	Doyle et al(2010)	Longitudinal study with follow-up data	3005 members aged 50+	UK	Objective: avoidance of disease and related risk factors, maintenance of high function and sustained engagement with life Subjective: process of selection, optimization and compensation/confidence(optimal well-being as outcome)
23	Pruchno et al (2010)	Data analysis from a Panel study(2006 and 2008)	from 5,688 persons aged 50 – 74 years old	USA	Objective: functional ability, pain, number of diseases Subjective: aging well, life rating(self-rated)



Table A. Cntd

24	Hsu et al(2010)	Secondary data analysis (modified Delphi method and analytical hierarchy process)	23 city(4624 older adults)	Taiwan	Area-level indicators of Successful aging: <u>health status</u> (chronic disease prevalence, chronic disease screening, healthy aging), <u>health lifestyle</u> (smoking, drinking, chewing betel nuts, exercise, diet) <u>health care resources and utilization</u> (disease prevention and medical utilization, medical resources, long-term care resources) <u>social participation</u> (employment and productive activities, economic security, education, community development, volunteer) <u>social environment</u> (safety, infrastructure) <u>natural environment</u> (air, water, garbage disposal)
25	Pin Ng et al(2009)	Cross-sectional and longitudinal data analysis	1281 older adults(65+)	Singapore	Functioning and wellness: cognitive and affective status(MMSE and GDS), physical health(self-reported health and IADL), social functioning and engagement(the level of participation (often or at least once a week) engaging with at least one listed social or productive activities including social, recreational, civic activities, voluntary work, and paid employment or business, and domestic activities) and life satisfaction(self-reported of interest in life, happiness, loneliness, and general ease of living)
26	Tate et al(2009)	Manitoba Follow-up Study	734 Men older adults	Canada	<u>Health</u> (physical, mental, and cognitive health); <u>health behaviours</u> (physical and mental activity or interests including health care and lifestyle); <u>having life</u> (longevity, being alive, and resistance to aging); <u>productivity</u> (being useful, contributing, volunteering); <u>independence</u> (in mobility and self-care); <u>spirituality/faith</u> (in whatever way stated); <u>acceptance/adaptation</u> (including coping mechanisms); <u>social networks</u> (family/ friends, and social activity); <u>life experience</u> (earlier choices in occupations, education, and retirement to support quality of life)
27	Jang et al(2009)	Survey	1825 persons aged 65+	The Republic of Korea	<u>Physical functioning</u> (chronic diseases and ADL scale), <u>mental functioning</u> (history of mental Disease and MMSE scale), <u>social functioning</u> (social activity participation per week) <u>subjective well-being</u> ( PGCMS scale)
28	Kahng(2008)	Second data analysis of Americans' Changing Lives (ACL) data	683 older adults (65+)	USA	<u>Physical health</u> (chronic health condition, functional health, physical health), <u>mental health</u> (depressive symptoms, cognitive impairment, self-efficacy), <u>engagement with life</u> (formal social integration, informal social integration, social support from friends and relatives)
29	Bowling(2006)	Second data analyses	854 older adults (50+)	UK	Health and functioning; psychological factors; social roles and activities; financial and living circumstances; Social relationships; neighborhood/community; work; independence
30	Li et al (2006)	Cross-sectional	100000 older adults(65+)	China	Chinese version of functional health (MMSE), activities of daily living (ADL), the Life Satisfaction (LSIA), functional social support (DUFSS), leisure activities, healthy behaviours, negative life events, health (SF-36)
31	Hsu(2007)	Qualitative and quantitative method	720 elderly	Taiwan	physical health and independence(living without chronic disease), economic security, family and social support(living with family and receiving emotional care), engagement with life, spiritual well-being, and environment and social welfare policy
32	Phelan et al (2004)	Cross-sectional(mailed survey)	1985 Japanese American elders and 2581 white men and women (65+)	USA	Physical health, functioning, psychological/mental health(perception of autonomy, control and coping), social health
33	Tate et al (2003)	The Manitoba Follow-up Study: content analysis and correlation	3983(The mean age at entry was 31 after 50 years follow-up (a mean age of 78)	Canada	Health and disease(good health or less pain, visits to physicians, and having check-ups), physical activity, keeping mentally active, Keeping socially, keeping active in general ( Keeping active (unspecified), keep busy, keep going, keep working), happy life or satisfying lifestyle ( Happiness, enjoy life, satisfying lifestyle, don't worry, retirement(quite work)), positive outlook on life or having a positive attitude(Positive outlook, attitude, interest in life), Having close and loving family and friends(Have a loving spouse, family, and friends), spiritual component, accepting growing old(growing old gracefully, peace of mind, tranquillity), Independence (being able to carry on, lead a normal life, make own decisions, mobile, do whatever you want, keep up responsibilities), Recognition of necessity for moderation (to decline gradually, limitations, adjust capabilities), A component encompassing mention of diet or eating (eating (includes all ingestible: smoking, drinking, vitamins), good appetite), having goals or challenges(travel), being financially secure, having hobbies or interests(having various interests, activities), being useful (volunteering, helping others, being productive), being content(having a sense of humor(laughing)), miscellaneous(staying alive)
34	Ford et al(2000)	Followed up	602 older adults (70+)	USA	Sustained Independence: receiving no help, in the form of either formal (paid) or informal (unpaid) service, with any of the personal or instrumental ADLs during the 2-year observation period(A total of 17 activities, including seven personal care tasks(feeding self, dressing, grooming, transferring, bathing, toileting and walking), seven instrumental activities(use of telephone, transportation, shopping, meal preparation, housework, taking medication and handling money), plus three self-designated, highly valued activities such as going to church or recreational activities, Visits to physicians and hospital admissions
35	Strawbridge and e al(1996)	longitudinal study	356 older adults	USA	Ability to do 13 basic physical activities: bathing, eating, dressing, grooming, using the toilet, walking across a room, transferring from bed to chair, shopping, cooking, doing housework, walking a half mile (0.8 km), walking up a flight of stairs, and having no problem getting where they needed to go. ability to do five physical performance activities: lifting or carrying weights over 10 pounds (4.54 kg); stooping, crouching, or kneeling; pushing or pulling a large object (like a living room chair); Lifting arms above the shoulders, and writing or handling small objects.

Table B. Qualitative and review studies of successful aging

No.	Author name & year of study	Type of study	Population	Country	Dimensions of successful aging
1	Chen(2015)	Constant comparative method	14 older female(60+)	Taiwan	Being healthy, having no financial worries, maintaining connections with family and friends, contributing to society, and desiring a good death, not longevity
2	Zolnikov(2015)	Basic review	-	USA	Avoid disease and disability, optimal health activities, access to healthcare, healthy environment, engagement with life, high physical and cognitive function
3	Sato-Komata et al(2015)	Grounded theory	15(85+)	Japan	<u>Conflict over declining functions</u> (sensation of loss of physical and cognitive function, fear of one's inability to predict future decline, acceptance or denial of health condition, need to feel self-assured of one's health condition, realisation of having aged compared to earlier years); <u>relationship with the aging body</u> (personal effort to maintain one's physical condition, essential medical treatment), <u>reflection on self</u> (gratitude, outlook toward living a long life, distinct views on objects, desiring few objects and goals); <u>reflection on daily life</u> (mundaneness of everyday life, economic factors of daily life, acceptance of daily life, objects to look forward); <u>reflection on society</u> (acknowledgment of the value of one's relationships, wish to be useful to society, interest in modern society); <u>reflection on life and preparation for death</u> (Reminiscence of life, Preparations for the future, ideal way of living, ideal way of dying)
4	Nosraty et al(2015)	Thematic analysis	45(90+)	Finland	<u>Death</u> (not being afraid of death, an easy death, a nice death, a painless death), <u>a balanced and harmonious life</u> (living in harmony, a rich life, a balanced life, a normal life, a happy life, living in peace), <u>independence</u> (physical independence, financial independence, autonomy and decision-making and self-mastery), <u>life circumstances</u> (Environment(a nice home and not being institutionalized), <u>a sense of security</u> , freedom from responsibilities, no transitions of care, not being alone) <u>physical</u> (Mobility: Ability to walk, <u>good mobility</u> , (good function activities: doing exercise and being physically active, health: good physical condition, not smoking, not having pain), <u>cognitive and psychological</u> (Mental health, absence of dementia, feeling good (mentally), absence of depression or cognitive problems, no painful memories, happiness and joy, preserving one's own personality, accepting reality, self-acceptance and self-contentment and focusing on the present, accepting others, a positive outlook and a positive attitude, tolerance, coping and adaptation and adjustment, maintaining an interest, humility, self-esteem, self-respect, satisfaction (with life), a calm personality, no arguments and conflict, being open and honest, peace of mind, not feeling loneliness, keeping up to date, learning new things and having a good memory) <u>social</u> (social network: family, friends, children, grandchildren, good neighbours, being surrounded by people and having company, having a partner and a good marriage, not being alone), <u>Social roles</u> (doing things for the family(taking care of grandchildren or a partner), helping others, being a member of an organization, having social interactions and relationships with others), <u>recreation and entertainment</u> (going out with others, having hobbies, keeping going, listening to music, visiting family) <u>Health</u> (health in general, health behaviour, physical fitness, mental health), <u>social resources</u> (care-related aspects, have social, feeling of social embeddedness/belonging resources, Social engagement/participation), <u>activities/interests</u> (activity without further specification, cognitive activities, work/job-related activities, sports, hobbies travel, culture/creativity, volunteering/unpaid engagement) <u>virtues/attitudes/beliefs</u> (positive attitude about life, acceptance, openness/curiosity, self-esteem, self-efficacy, be good to self, other psychological characteristics), <u>well-being</u> (well-being/satisfaction/happiness/fulfilment, enjoying life) <u>life management/ coping</u> (setting goals/having plans/planning for the future, realizing goals/working on tasks/starting new things, coping active or passive), financial resources(having money/wealth, financial security, retirement fund) <u>aging/age as a topic</u> (money/wealth not needed, acceptance of age/aging/death/dying, becoming old, thinking about/anticipating age/aging/ death/dying, remaining young, ignoring age/aging/death/dying) <u>independence</u> (independent without further, specification, autonomy, physical independence/mobility), <u>meaning in life</u> (religion, a life worth living) <u>growth/maturation, respect/status, respect/status, education/knowledge</u> (education, knowledge about life in general) <u>microenvironment</u> (environment (not further specified or Social, positive role models, family upbringing) <u>society/macro environment</u> (social policy (health/work/education retirement policy), policy/society (not further specified), <u>negative aging stereotypes, newspaper/TV</u> <u>Availability of support system</u> (supportive policies, culture, welfare facilities, family background and relationships, social interaction), <u>state of health, personal capabilities</u> (gained experiences, efficacy), <u>personality characteristics</u> (attitude, personal beliefs, temperament), <u>lifestyle</u> (life management, healthy lifestyle)
5	Jopp et al (2015)	Qualitative approach	306(16+) and 91(60+)	USA and Germany	Positive perspective and coping, active independence, health, relationships with people, freedom, beneficial contribution, relationship with God, comfort resources
6	Javadi et al(2015)	Qualitative content analysis	16 women older adults(60+)	Iran	Biomedical(physical functioning/disability, cognitive functioning/disability, affective status, presence/probability of disease, mental health, longevity); <u>psychosocial</u> ( personal resources, engagement, life satisfaction/well-being, support system, independence/ autonomy); <u>extrinsic factors</u> (environment/finances)
7	Troutman(2014)	Secondary qualitative analysis	311 older adults (60+)	USA	Meaning purpose in life: <u>gerotranscendence</u> (decreased death anxiety, meaningful activities, self-acceptance, relationships, solitude, wisdom) <u>spirituality</u> (spiritual Perspective, religiosity) <u>intrapsychic factors</u> (creativity, low level), negative affectivity, personal control), <u>functional performance mechanisms</u> (health promotion activities, physical health, physical mobility)
8	Cosco et al(2014)	Systematic review	84 quantitative studies and 26 qualitative studies	UK	Chinese elders emphasized physical health and mobility, mental health, positive attitudes, shedding responsibilities, positive family relationships, financial stability, social engagement, religious faith, and accomplishments and volunteer work. Hmong elders emphasized physical health and mobility, mental health, harmonious relationships, positive family relationships, tangible family support, financial stability, social engagement, and religious faith
9	Topaz et al(2014)	Literature review	44 elders	USA	Biomedical(cognitive and mental, psychological health and functioning, health maintenance behavior, health and longevity); <u>external factors</u> (environmental factors, finance), <u>psychosocial</u> (engagement, perspective, self-awareness, independence, acceptance, quality of life, prevention and remediation, community, spirituality, social roles, maintenance, adjustment)
10	Nguyen & Seal 2014	Qualitative approach	26 qualitative article	UK	Transcendence(relationships, creativity, introspection, contemplation, and spirituality)
11	Cosco et al (2014)	Systematic review	26 qualitative article	UK	Themes: Self-respect through ability to keep fear of frailty at a distance
12	McCarthy and Bockweg(2013)	Concept analysis	-	USA	Categories: Having sufficient bodily resources for security and opportunities, structures that promote security and opportunities(satisfaction with one's financial situation, security and opportunities in the closest context, the health and well-being of close relatives and friends), feeling valuable in relation to the outside world(feeling noticed and appreciated in social relations, engagement in activities that provide pleasure or benefit), choosing gratitude instead of worries(choosing gratitude for not being as bad as others who are in a worse situation, denying difficulties, accepting things you cannot change)
13	Horder et al(2013)	Qualitative content analysis	24 community-dwelling older (77-90 years old)	Sweden	maintaining physical, mental, and relational well-being; living a healthy life, and living a faithful life
14	Cherry et al (2013)	Grounded theory	83 elders (60-94 years old)	USA	

Table B. Cntd

15	Troutman et al (2013)	Focus group	-	USA	Connecting and relating (spirituality, friends and social life and spouse.), temporality (impressions of the past, family and history, and future generation), perception and interpretation (mental and cognitive and adjusting), activity (mobility, independence, exercise, and nutrition).
16	Cosco et al(2013)	Systematic review	103 Articles	UK	Physiological(physical function/disability, cognitive function, illness/disease presence, health status, longevity, mental health), well-being(affective status, life-satisfaction/well-being), engagement(active life/social engagement, support system), personal resources(personal resources, independence/autonomy), extrinsic factors(environment/finances)
17	Liang and Luo(2012)	Literature review	-	USA	Harmonious aging includes: individual health, balanced outlook, inter-relationship, dialectic discourse(between challenge and opportunities, disengagement and activity)
18	Craciun(2012)	Thematic analysis	11 men and 11 women, aged 65 to 90 years old	Romania	Continuous learning process, planning for a future and accepting one's past and present
19	Stordal et al(2012)	Literature review	-	Sweden	Biological and medical aspects(disease and disability, genetic factors, brain characteristics, other basic biological factors), psychological and social aspects(lifestyle, self-rated health status, and SAE), cognitive aspects(cognition in usual aging, cognitive stability,)
20	Marina and Ionas(2012)	Literature review (without specified method)	-	Romania	satisfaction with life, self-acceptance, positive social, relationships, control over the own life, adaptation to life environment, sense of personal usefulness, personal development, social participation, subjective well-being
21	Lewis(2011)	Explanatory model(an inductive research)	26 elders aged 61–93 years	Alaska	Emotional Well-Being, Community Engagement, Spirituality, Physical Health
22	Troutman et al (2011)	Grounded theory	99 elders(65+)		Independence/ability, health, mindset, activity/services, family, spirituality
23	Iwamasa & Iwasaki(2011)	Focus group	77 elders	USA(Japonecas elderly)	Physical(health, exercise, activities, physical appearance, diet), psychological(positive affect and attitudes, maintenance of independence, willingness to change, openness to new experience, intrapersonal coping), social(social support/social network, recreation and entertainment, social learning, social roles), social roles(using one's mind, education), spirituality(religion, internal peace, faith, altruistic behaviour, appreciation), financial(monetary value, financial security)
24	Reichstadt et al(2010)	Qualitative approach(coding consensus, co-occurrence, and comparison)	66 elders	USA	Self-acceptance and self-contentment(realistic self-appraisal, a review of one's life, focusing on the present) engagement with life and self-growth(novel pursuits, giving to others, social interactions, positive attitude)
25	Ferri and Pruchno (2009)	Descriptive quantitative and qualitative	53 older adults	USA	Activity/exercise, physical health, social relationships, and psychological/cognitive health
26	Young et al(2009)	Literature review(and test on 1438 women age 65+ in another study)		USA	Physiological(disease and impairment), psychological(emotional vitality), sociological(engaging with life and spirituality)
27	Mortimer et al(2008)	Thematic analyses	14 women aged(60-89)	Australia	Personal agency(adaptability, nature, health, life of the mind, finance, spiritual, and self-expression), social value(interpersonal, generativity, affiliations, value), quality of life/quality of death(life quality, spirituality, death, autonomy, authenticity)
28	Rossen et al (2008)	Qualitative(Miles and Huberman's method)	31 older women	USA	Acceptance(physical change, relational change, environmental change), engagement(social, self-care), comportment(attributes toward life, demeanour toward others)
29	Kanning & Schlicht(2008)	Literature review		Germany	Bio-psycho-social model of SA with Subjective Well-being as a criterion of an SA process (Psychological need satisfaction, setting and pursuing personally valued goals, cognitive and emotional processes)
30	Reichstadt and et al(2007)	Focus groups	12 focus group(six individual per group)	USA	Health and wellness, attitude and adaptation, security and stability, engagement and stimulation
31	Nagaling (2007)	Qualitative approach	32 older Indian adults(60-84 years old) and 10 informants	Singapore	Financial resources, religiosity, purpose in life, life satisfaction, engagement with life, Leisure activities, volunteer work, health status, intergenerational, transfers & relationships, social support networks
32	Bowling (2007)	Systematic review	170 studies	UK	Social functioning(social engagement, social roles, participation and activity, social contacts and exchanges, and/or positive relationships with others), life satisfaction(zest, resolution, fortitude, relationships between desired and achieved goals, self-concept and mood, including happiness), psychological resource and medical(possession of the resources of personal growth, creativity, self-efficacy, autonomy, independence, effective coping strategies, sense of purpose, self-acceptance, and self-worth, coping and self-concept) From lay view: physical health and functioning; mental and cognitive health; psychological well-being and life satisfaction, including happiness; social relationships, support, activities and productivity; psychological resources, including personality, personal growth, accomplishments, sense of purpose, self-acceptance, coping, positive outlook, sense of humor; spirituality; lifestyles; neighborhood and financial circumstances and security
33	Depp and Jeste(2006)	Systematic review(quantitative articles)	27 Articles	US	Disability/physical functioning(clinician-rated disability, no impairment in daily activities, no more than a little difficulty in lifting weights, climbing stairs, good physical function); Cognitive functioning( no cognitive impairment, no delayed recall, normal orientation, absence of history of memory problem, no depressed mood, generally happy, contented and unworried), Social/productive engagement(contact with friends and relatives, participating in outside social activities, social support, role variety, occupational status, paid employment, caring for child, cleaning house, helping activity); presence, illness(absence of heart disease, stroke, diabetes, cancer, osteoporosis, emphysema, asthma, no smoking, hypertension, obesity, absence of cancer, cardiovascular disease, chronic obstructive pulmonary disease, Absence of coronary heart disease, stroke, cancer, diabetes, chronic obstructive pulmonary disease, Parkinson disease, number of health problems identified); longevity(living at age 85, survival to age 75); self-rated health(Good or excellent; Excellent to fair); personality(Extraversion, goal strength, Perceived control); environment/finances(financial security, Liking home environment, warm enough, no anxiety about intruders or going outside the home); self-rated successful aging(agreeing strongly to "I am aging successfully", scoring 7–10 on a 1- to 10-point scale)

Table B. Cntd

34	Bowling, and Dieppe(2005)	Systematic literature review	170 articles	UK	Theoretical definitions: life expectancy, life satisfaction and wellbeing (includes happiness and contentment), mental and psychological health, cognitive function, personal growth, learning new things, physical health and functioning, independent functioning, psychological characteristics and resources, including perceived autonomy, control, independence, adaptability, coping, self-esteem, positive outlook, goals, sense of self, social community, leisure activities, integration and participation, social networks, support, participation, activity Additional lay definitions: accomplishments, enjoyment of diet, financial security, neighborhood, physical appearance, productivity and contribution to life, sense of humor, sense of purpose, spirituality
35	Knight and Ricciardelli(2003)	Content analysis	60 older adults (ages of 70 and 101 years)	Australia	Health, Activity, Personal Growth, Happiness/ contentment, Relationships, Independence, Appreciation/ value of life, Longevity
36	Baltes and Baltes (1990,2003)	Literature review (Test quantitatively among 244)	-	Germany	<u>Selection</u> (elective and loss-based concerns directionality of development including selection of alternative outcomes and goal structures) <u>Optimization</u> concerns(achieving desired outcomes (attaining higher levels of functioning)) <u>Compensation</u> concerns(activation or acquisition of new means for counteracting loss/decline in means that threatens the maintenance of a given level of functioning)
37	Crowther et al (2002)	Literature review	-	USA	Minimize risk and disability; engage in active life, maximize positive spirituality, maximize physical and mental ability
38	Flood(2002)	Concept analysis	-	USA	Life satisfaction, functional status, gerotranscendence, spirituality
39	Rowe and Kahn (1997)	Theory development	-	USA	Avoiding disease and disability, engagement with life, high cognitive and physical function
40	Ryff(1989)	Literature review	-	USA	Well-being (Self-Acceptance, Positive Relations with Others, Autonomy, Environmental Mastery, Purpose in Life, Personal Growth)
41	Havighurst(1961)	Literature review	-	USA	Life satisfaction(Zest Vs. apathy; resolution and fortitude; goodness of fit between desired and achieved goals; positive self-concept; mood tone)