



# The Self-Rated Health of Grandmothers Caring for Grandchildren: Evidence from South Africa

Philippa Waterhouse<sup>1</sup> · Rachel Bennett<sup>2</sup>

Received: 20 April 2023 / Accepted: 14 August 2023  
© The Author(s) 2023

## Abstract

Globally older people are increasingly providing care for their grandchildren. A pertinent question across world regions is the extent to which providing care for grandchildren intersects with the ageing process and the implications for grandparents' wellbeing. This paper examines the relationship between caring for grandchildren and the self-rated health of older African women ( $n = 1,397$ ) in South Africa, drawing on data from the National Income Dynamics Study. This is a population which faces significant socio-economic challenges and stresses from the legacy of the HIV epidemic but benefit from a supportive social protection system and strong norms of extended family care. The findings show that prior self-rated health is not associated with assuming primary caregiving responsibilities for grandchildren, suggesting there is no selection effect into caring responsibilities. However, after controlling for prior characteristics, older women who take on primary caring responsibilities for grandchildren have significantly lower odds of reporting poorer self-rated health. Thus, in contrast to the frequent conclusions of negative impacts of custodial grandparenting on grandparent health in the US, this paper indicates that in some cultural contexts grandparents taking on the primary responsibility for grandchildren can be protective for health. Policymakers need to recognise the important caregiving role of grandparents and support them to flourish.

**Keywords** Self-rated health · Grandmothers · Primary caregiving · Grandchildren · South Africa

---

Philippa Waterhouse and Rachel Bennett made an equal contribution to this paper.

✉ Philippa Waterhouse  
philippa.waterhouse@open.ac.uk  
Rachel Bennett  
rbennett3@glos.ac.uk

<sup>1</sup> School of Health, Wellbeing and Social Care, The Open University, Milton Keynes, UK

<sup>2</sup> School of Education and Applied Sciences, Social and Sport Sciences, University of Gloucestershire, Cheltenham, UK

## Introduction

The twenty-first century has been dubbed the “grandparents’ century” (Timonen, 2019, p.271), as longer life expectancies mean more people than ever before will become grandparents and will occupy this role for a longer period of their lives (Sadrudin et al., 2019). Further, grandparents are playing an increasingly important role in caring for their grandchildren, driven by a variety of factors including migration of adult children, rising female labour force participation and changing family and household structures (Bordone et al., 2017; Glaser et al., 2018; Knodel & Nguyen, 2014; Settles et al., 2009). A pertinent question across world regions is the extent to which providing care for grandchildren intersects with the ageing process – with the potential for both positive and negative impacts for older people’s wellbeing reflected in heterogeneous findings in the empirical literature (for example, Chen et al., 2015; Goodman & Silverstein, 2001; Grundy et al., 2012; Leder et al., 2007). This has implications both for the growing number of older adults assuming caregiving responsibilities for grandchildren, and for their grandchildren they care for, as the impact of stress on grandparent health can affect the caregiving practices adopted (Smith et al., 2008) and ability to meet the physical demands of childrearing (Hipple & Hipple, 2008). This study provides a longitudinal analysis of the impact of providing full-time care to grandchildren on the self-rated health of older African women in South Africa—a context where despite significant socio-economic challenges and the legacy of the HIV epidemic, there is a supportive social protection system and strong norms of extended family care.

## Literature Review

Successful ageing is a widely used concept in social gerontology research. The original definition introduced by Rowe and Kahn (1987) is biomedical in nature and uses objective measurements. In 1997, Rowe and Kahn refined their definition of successful ageing as consisting of three elements: the absence of disease and disease-related disability, high cognitive and physical function, and active engagement with life. This focus on objective measurements has, however, been the main critique of the concept with commentators and researchers arguing it fails to consider individuals’ own views of what makes ageing successful (Martinson & Berridge, 2015). For example, Gu’s (2015) analysis of older adults in the Chinese Longitudinal Healthy Longevity Survey found that objective measures of successful ageing (absence of chronic disease and no functional disability of cognitive impairment) do not always correspond with subjective measures (life satisfaction, self-reported health, and distress). Indeed, there was discordance between objective and subjective measures among 23% of women and 29% of men. This has led researchers such as Annele et al. (2019) to argue that successful ageing is a multidimensional concept, and that the consideration of subjective measurements in research is essential.

The concept of successful ageing has roots in activity theory (Tartler, 1961 as cited in Tavel, 2008). This perspective argues that the continuation of social roles, and the adoption of new roles, in later life is core to ageing well. These roles can be in a number of spheres including economic (e.g. a worker), the family (e.g. a parent; grandparent, partner and sibling) or community (e.g. a friend, neighbour, volunteer, church member, member of a club, activist). In Teater and Chonody's (2020) scoping review of research of how older adults across the globe define successful ageing, the theme identified across most studies was 'social relationships and interactions' which included participation in society. Similarly, in Okalie et al.'s (2023) qualitative interviews among women aged 65 and older in rural Nigeria, participants emphasized social roles in terms of family and neighbours as a core component of successful ageing. This body of research supports activity theory, and the importance of the maintenance and adaptation of new roles in later life to ageing well.

The continuation or adaptation of certain roles, however, may not always result in successful ageing. In Okalie et al.'s (2023) research in rural Nigeria there was disagreement among participants as to whether participation in economic activity in later life was a determinant of successful ageing. This highlights individual difference and preference, and the importance of choice. Agency in later life is reflected in Baltes and Baltes' (1990) selective optimization compensation theory that posits that individuals are able to age well when they are able to define their own goals (selection), have the resources to achieve these goals (optimization) and put in mechanisms to adjust and adapt their activities to deal with any consequences of loss of function or disease (compensation). This reflects the theme 'of being healthy' that Tatler et al. (2019) identified in their scoping review which they described as not necessarily being disease or disability free, but being able to accept and adapt to changes.

Grandparenthood is one role that individuals may take on in later life and thus may help or hinder successful ageing. However, social expectations of grandparents vary between cultures (Hossain et al., 2018). This is influenced by norms and values around intergenerational relations. Izuhara (2010) defines intergenerational relations as the relationship between different generations and views a core component of this as the provision of support between generations. In individualistic cultures, such as the US and Northern Europe, emphasis is placed on autonomy and independence. This is reflected in the living arrangement of older people. In Europe, North America and Australia and New Zealand, living alone or with a spouse is the most common residential arrangement of people aged 65 years and over (UN, 2019). Philipson (2010) notes that in Western countries grandparents began to take on more prominent roles in providing childcare for grandchildren after the 1950s when retirement became a more commonplace part of the life course. However, Buchanan and Rotkirch (2018) argue that whilst notions of 'being there' in terms of grandparents caring for grandchildren or providing financial support is widespread in Western countries, there is a greater emphasis on parents being independent in terms of overall raising of children.

The largest number of studies on grandparental wellbeing comes from the US, where due to societal perceptions of the role of grandparents a key theme in the

interpretation of assuming primary caregiving responsibilities for grandchildren is of ‘off time’ (Landry-Meyer & Newman, 2004, p. 1106), whereby this parenting is incongruent with grandparents’ life-stage. In these circumstances these grandparents are often viewed as ‘child-savers’ (Arber & Timonen, 2012 p.6), stepping in unexpectedly when parents have been unable to provide care due to negative circumstances such as parent mortality and long-term morbidity, incarceration, and child abuse and neglect. This literature has often reported negative consequences for grandparents’ self-reported physical and mental wellbeing (see Hayslip & Kaminski, 2005; Hadfield, 2014; Danielsbacka et al., 2022 for reviews of the literature). These consequences may in part be linked to other disadvantages grandparents who assume these responsibilities face, for example grief or strain resulting from their adult child’s situation, rather than the grandparenting *per se* (Hayslip & Kaminski, 2005).

In collectivist societies there is an emphasis on interpersonal kin relationships. Interdependence between generations is reflected in the living arrangements of older people. In sub-Saharan Africa, Asia and Latin American living with children or with extended family is the most common residential arrangement among those aged 65 years and over (UN, 2019). A growing literature over the last decade has documented the wellbeing of grandparents who assume primary caregiving responsibilities for grandchildren in East and South-East Asia. In Confucianism a norm is filial piety which is concerned with respect and care of one’s parents and older people are given high status and authority within the family. The principle of familism in Confucianism promotes intergenerational bonds between grandparents and grandchildren and the provision of care to grandchildren by grandparents. However, increases in parental labour economic migration since the 1980s has resulted in the situation whereby children in rural areas are ‘left’ in the care of grandparents has become more common. In this economic context, grandparental caregivers may be perceived as ‘family maximisers’ – enabling their adult children to succeed economically (Arber & Timonen, 2012, p.13), and thus a different perception to US grandparents in disadvantaged families playing the role of ‘child savers’. There are nuances to this, for example Chen and Liu (2011) find that the health benefits of co-residing with grandchildren for paternal grandparents in China is higher than that for maternal grandparents, which the authors relate to patrilineal norms.

In sub-Saharan Africa, the value of “ubuntu” emphasises interdependence and solidarity (Jecker, 2021). The extended family describes the network of relations outside the immediate family characterised by duties, obligations and responsibilities (Nukunyam, 2003). In sub-Saharan Africa the extended family has long been involved in childcare and childrearing. For example, in West Africa fostering, the childrearing of children outside the natal household has evolved from the claim of extended kin on children and their obligations in the childrearing process (Goody, 1978). Grandmothers have been highlighted as important providers of care to grandchildren (for example, Fouts & Brookshire, 2009; Sear et al., 2002; Waterhouse et al., 2017). Grandparents, especially grandmothers, have long been heavily involved in childcare in the region thus the concept of ‘off time’ may be

less relevant, although the HIV epidemic created new stressors (Hoffman, 2019; Schatz et al., 2018).

### The Context of South Africa

Sub-Saharan Africa is the world region where the lowest proportion of children live with both biological parents (DeRose et al., 2017). The pattern of non-co-residence between children and parents is exceptionally pronounced in South Africa, where a minority of children under 18 years live with both biological parents (32%) and an almost equivalent share (33%) live with neither biological parent (DeRose et al., 2017). Variations in living arrangements, however, exist by racial background with the most common residential pattern among the White and Asian population being the nuclear family (Amoateng et al., 2007). Skipped generation households are most prominent among Africans living in rural areas (Amoateng et al., 2007). Patterns in co-residency between children and parents can be linked to family and socio-economic differences among South Africans.

South Africa has a very long and established history of adult temporary labour migration. In the colonial and apartheid periods, segregative legislation controlled the place of residence of the population. The Black South African population were forcibly contained in and removed to ten self-governing homelands, or Bantustans, located in rural areas and characterised by ecologically unproductive land (Bob, 2001). Deficiency of employment opportunities in these areas, combined with restrictions on permanent family migration, encouraged circular migration of adults for work (Jones, 1993). The effect of apartheid continues to shape residency patterns in South Africa today. Whilst removal of prohibits to internal migration has enabled the movement of non-White families to urban centres, the former homelands remain disproportionately populated by the African population (Harrison & Todes, 2015). Migration continues to be an important livelihood strategy, and migration patterns in the post-apartheid era has been characterised by increasing numbers of women migrating and a persistence of temporary forms of migration (Camlin et al., 2014). Longitudinal data from the Africa Centre Demographic Information System in northern rural KwaZulu-Natal indicates that children move with their migrant parents to their destination community in the minority of cases (Bennett et al., 2014).

In addition to parental migration, other common reasons for non-co-residence of children with their parents are extra-marital childbearing and non-marital cohabitation. The 1960s saw the start of changing patterns of marriage and cohabitation among Africans in South Africa, resulting in widening disparities in marital status compared to the White population (Posel & Rudwick, 2013). Childbearing for young African women largely takes place outside of marriage or cohabitation (Bennett & Waterhouse, 2018), and levels of marriage and cohabitation remains relatively low (Posel & Rudwick, 2013). Orphanhood is a third factor that can cause non-residency between children and parents. 14% of children are estimated to be either single or double orphans in South Africa, in part linked to the legacy of the HIV epidemic (Hall, 2023). Rates of double orphanhood are highest in the African

population (Hall, 2023) and in the former homelands, particularly in KwaZulu-Natal and in the Eastern Cape (Bridgman & von Fintel, 2022).

Becoming a grandparent reflects a transition in an individual's life course and can bring new roles and identities (Hutchinson, 2018). Role expectations are highly gendered in South Africa. For example Grapsa and Posel (2016) analysis of time use data collected from adults aged 60 years and older reveals that women spend longer on average on caring activities compared to men. The life course theory emphasises diversity, and that grandparenthood is a social construct that is the outcome of the interplay of human lives and historical time (Hutchinson, 2018). The expectation of grandmothers to take on the role of custodial caregivers varies by population group. Data collected as part of the National Income Dynamic Survey indicates for a large proportion of children their primary caregiver is their biological mother (Hatch & Posel, 2018). However, where mothers are not identified as the primary caregiver, this role is most likely to be taken on by fathers in non-African population groups but grandmothers in African families (Hatch & Posel, 2018). 'Other males', which include grandfathers, are only identified as the primary caregiver in a small minority of cases across population groups. In qualitative research with African grandmothers in KwaZulu-Natal, rearing grandchildren was described as their 'duty' revealing these women saw it as their obligation when circumstances demand it (Chazan, 2008). Primary caregiving of African grandmothers has roots in the patterns of labour migrations, childbearing and orphanhood reflecting the life course theme of 'linked lives' (Hutchinson, 2018) where the life course of older African women is shaped by the life course of the parents of their grandchildren.

South Africa is characterised by relatively high levels of income and wealth inequality (International Monetary Fund, 2020). Data from the National Income Dynamics Survey reveals whilst inequality between racial groups persist, there is also growing inequality within the African population (Orthofer, 2016). Persistent income inequality between the non-White and White population reflects racial differences in unemployment (Statista, 2023) and occupational segregation (Gradin, 2018). One means through which the government has attempted to reduce inequality is through targeted government transfers. South Africa has a social protection regime which explicitly supports both older people and children's primary caregivers. The Old Age Pension Programme (OAPP) is a non-contributory means-tested social pension available to South African aged 60 years and older. Given its target of the poorest households, and its relatively high value compared to the median income in South Africa (Woolard & Leibbrandt, 2013), the OAPP has the potential to contribute significantly to household income and support grandparents financially in providing care to grandchildren. Grandparents who are the primary caregivers to their grandchildren may also be eligible for the Children Support Grant (CSG). The CSG is a means-tested cash transfer programme available to children's co-resident primary caregivers. Whilst relatively small in monetary value, the CSG has been cited by grandmothers as important in assisting them raise grandchildren (Dolbin-Macnab et al., 2016).

Whilst there is an established literature on grandmothers caring for children orphaned by AIDS, there has been a substantial decline in HIV/AIDS mortality in South Africa since 2006 with the increased rollout of antiretroviral treatment (Pillay-van Wyk et al., 2016). Recent research of 2,668 Black South African grandparents resident in

the Agincourt Health and Socio-Demographic Surveillance System suggests that assuming primary caregiving responsibilities for grandchildren in contemporary South Africa might be protective for older people's health. Controlling for socio-demographic characteristics, older people who reported providing any care to grandchildren had higher cognitive scores (Jennings et al., 2021). Whilst this study was not restricted to grandparents who identified as primary care-givers, intensity of caregiving in the sample was high with those providing care reporting to provide it on average for 52 weeks a year, and on average 7 days a week. Jennings et al.'s (2021) study is nonetheless, limited, by its cross-sectional nature and regional rather than national focus.

The current study aims to explore impacts of providing care for grandchildren among African grandmothers in South Africa – a middle income country with a supportive social protection system and extended family caregiving norms. The specific research question is: does taking on the primary care-giving responsibility for grandchildren correlate with the self-rated health of older African women in South Africa?

## Methods

### Data

This paper draws on secondary data from waves 4 (2014/15) and 5 (2017) of the National Income Dynamics Survey (NIDS) coordinated by the Southern Africa Labour and Development Research Unit (SALDRU) at the University of Cape Town. NIDS is an ongoing nationally representative panel survey which to date has followed households and individuals up from 2008 (wave 1) to 2017 (wave 5). At Wave 1 a stratified two-stage sample design was used to randomly select approximately 7,300 households from 400 primary sampling units (Leibbrandt et al., 2009). All adults residing in selected households were eligible to be interviewed. In subsequent interviews these individuals (continuing sample members) have been traced to take part in further waves of the survey. In addition, adults belonging to the same household of the continuing sample members at the time of interview, have also been interviewed. Waves 4 and 5 were selected in order to conduct a longitudinal analysis using the most recent data.

### Analytical Sample

The analytical sample was restricted to women who defined their race as African, were aged 50 years and older at wave 4, who were not primary caregivers to any grandchildren, and for whom complete data was available on all variables of interest at waves 4 and 5. When the sample was initially restricted to women aged 50 years and older who became primary caregivers between wave 4 and 5, approximately 89% reported being of African race. The numbers reporting being White, colored or other race were too small to make comparisons. A lack of consensus exists around the cut-off to define older adults. We use age 50 years and older for several reasons. The first is life expectancy at birth in South Africa (64 years in 2020) is shorter

than the world average (72 years in 2020) (World Bank, 2022). Therefore, it seemed suitable to use a lower cut-off than age 60 or 65 years which is commonly used to define older adults in research in high-income countries. Secondly, the age range of 50 years and older to define older adults in sub-Saharan Africa for research purposes was recommended by The Minimum Data Set project on Ageing (Kowal & Peachey, 2001), and has been adopted as a cut-off by the World Health Organisation's Global Study on Ageing and Health (WHO, 2022). We restricted the analytical sample to women who were not primary caregivers to any grandchildren at the time of the wave 4 interview so that at baseline none of the sample were providing care to grandchildren and we could clearly assess the association between becoming a caregiver for grandchildren and self-rated health by wave 5.

At wave 4 there were 1,830 older women who met this requirement for whom complete socio-economic and demographic data was available. Of these older women, 1,486 (81%) were followed to wave 5. Related to the fact the sample focuses on an older demographic, 34% of older women lost to follow up (118 of 344) were reported to be deceased by wave 5. Women who participated in both waves were significantly younger and more likely to be married or cohabiting and report higher self-rated health and level of education than women lost to follow up. In contrast, household income quintile and type of area of residence were not associated with attrition. This is important context to the sample to note when interpreting the findings and these variables are all controlled for in the analytic model and explained in the 'measures' section below. Amongst older women who participated in both waves with complete relevant data for wave 4, 94% responded to the wave 5 self-rated health question, thus the final sample included 1397 older women.

## Measures

Self-reported health at wave 5 was used as the outcome measure. Self-rated health is indicator of current wellbeing but also a robust predictor of future morbidity and mortality (Jylha, 2009). Respondents were asked to describe their present health as excellent, very good, good, fair or poor. Small group sizes meant ratings were collapsed to create a dichotomous variable. This variable, 'poorer self-rated health', was coded 0 for older women who rated their health as excellent, very good or good and 1 for those who rated their health as fair or poor.

The independent variable of interest was whether the respondent was the primary caregiver of any grandchildren in the household at wave 5. Information on women's caregiving responsibility was derived from the wave 4 and 5 child files. At wave 4 and 5 the Child Questionnaire was administered to collect data on any resident members of the household who were 14 years or younger. The questionnaire is administered to the mother/caregiver of the child or another household member who is knowledgeable about the child. The child questionnaire asks '*Who is the person that is currently responsible for this child?*' [personal identifier recorded] and '*What is the relationship of this person to the child?*'. At wave 4 the analytical sample was restricted to women who were not reported as being responsible for any grandchildren in the household.



Covariates included as controls in the analysis of women's change in caregiving status by wave 5 were age, partnership status, highest level of education, household income quintile, area of residence, illness/disability status and self-rated health at wave 4. Total household income was derived by the NIDS team using variables from the adult, proxy and household datasets. It reflects the regular income received by the household on a monthly basis, net of taxes, as well as imputed rental income from owner-occupied housing (Brophy et al., 2018). For ease of interpretation and reflecting the approach of similar studies using this dataset (see, for example, Lau and Ataguba (2015)) we split household income into quintile based on the whole sample of African women aged 50 years plus who were not caregivers and responded in wave 4. Illness/disability status was derived from a series of questions asking whether the respondent currently had TB, high blood pressure, diabetes, stroke, asthma or another major illness or disability. The variable was coded 0 if the participant responded negatively to each question and 1 if they answered positively to one or more of the questions.

Over 93% of age-eligible (60+ years) women in the sample receive the state pension. This is higher than the national average of 73% (Statistics South Africa, 2022) reflecting the fact that women and those who identify as African race disproportionately fall under the income threshold which determines which older people can claim the pension. The number of age-eligible women who do not receive the pension was too small ( $n=40$ ) to warrant an additional variable on pension receipt. However, age was categorised as 50–59 years and 60+ years which divides the sample by age-eligibility for the pension. Support grants were received for at least one grandchild in the care of 84% of women who reported caring for grandchildren by wave 5. The number of women with caregiving responsibilities for children that support grants were not claimed for was too small to consider this separately ( $n=42$ ).

## Statistical Analysis

Chi-squared tests for independence were used to assess the significance of the bivariate associations between the individual and household characteristics of the sample at wave 4 and becoming a primary caregiver for grandchildren by wave 5 and the bivariate association between becoming a primary caregiver for grandchildren and self-rated health at wave 5. Multiple logistic regression was used to analyse the association between women's grandchild caregiving status and self-reported health at wave 5, after controlling for individual characteristics and household characteristics at wave 4. This approach is referred to as lagged regression as it models the outcome variable after controlling for an earlier measurement of the outcome (in this case self-rated health at wave 5, controlling for self-rated health at wave 4) as well as additional predictors. It is advocated for when assessing an 'intervention' between time points (in this case becoming a primary caregiver for grandchildren). See Valente et al. (2017) for arguments in favour of this approach. Odds Ratios (ORs) are presented with 95% confidence intervals. All statistical analyses were conducted using STATA software version 14 (Stata Corp, Inc, TX, USA).

## Results

### Individual and Household Characteristics of Older Women in wave 4 by Caregiving Status in wave 5

Table 1 displays the individual and household characteristics of the sample in wave 4 by women's caregiving status for grandchildren in wave 5. Just under half the sample

**Table 1** Individual & household characteristics amongst older African women by caregiving status

	Non-Caregivers [Older African women who do not become caregivers for grandchildren by wave 5]	Caregivers [Older African women who become caregivers for grandchildren by w5]	Total	<i>p</i> -value
<b>Individual Characteristics at wave 4</b>				
<i>Age category (years)</i>				<0.001
50–59	44.5	57.3	47.0	
60+	55.5	42.8	53.0	
<i>Partnership status</i>				0.655
Widowed, never married, divorced or separated	66.5	65.1	66.2	
Married or cohabiting	33.5	34.9	33.8	
<i>Highest level of education</i>				0.379
Primary school or lower	34.4	32.0	33.9	
Some secondary school	58.0	58.0	58.0	
Completed secondary school or higher	7.6	10.0	8.1	
<i>Illness/disability status</i>				0.395
No reported illness/disability	81.0	83.3	81.5	
At least one reported illness/disability	19.0	16.7	18.5	
<i>Self-rated health</i>				0.091
Excellent, very good or good	66.8	72.1	67.8	
Fair or very poor	33.2	27.9	32.2	
<b>Household Characteristics at wave 4</b>				
<i>Household income quintile</i>				0.298
Poorest	18.4	13.8	17.5	
Poor	21.8	19.7	21.4	
Middle	22.4	25.3	23.0	
Rich	19.7	22.7	20.3	
Richest	17.7	18.6	17.9	
<i>Type of area</i>				0.082
Rural	62.0	67.7	63.1	
Urban	38.0	32.3	36.9	
Total (N)	100.0 (1,128)	100.0 (269)	100.0 (1397)	

(47.0%) were aged 50–59 years, and the other half (53.0%) aged 60 years or older. Two-thirds (66.2%) of the sample were widowed, never married, divorced or separated. Just over half of the sample (58%) had some secondary school education, and only the minority (8.1%) had completed secondary school or had higher education. One third reported their health as fair or very poor and approximately one in five (18.5%) reported at least one illness or disability. Two thirds of the sample live in rural areas.

Approximately one in five (19.3%) older women had assumed primary caregiving responsibilities for at least one grandchild by wave 5 – confirming that this is a commonplace role for older African women in South Africa. Younger-old women (50–59 years) are significantly more likely to assume caregiving responsibilities for grandchildren than those aged 60 years or older ( $p < 0.001$ ). However, none of the other individual or household characteristics were significantly associated with becoming primary caregiver for grandchildren, indicating that older African women across a breadth of characteristics assume this role. Notably, this includes self-rated health and illness/disability status at wave 4, indicating that this is not a health selection effect into assuming primary caregiving responsibilities for grandchildren.

### Women’s Caregiving Status and Self-Rated Health at wave 5

Figure 1 shows that older African women who assume caregiving responsibilities are approximately one third less likely to have fair or poor self-rated health at wave 5 than other older African women: 27% compared to 36% ( $p = 0.003$ ).

Table 2 displays the results of a multiple logistic regression assessing the association between older women’s grandchild caregiving status and self-reported health at wave 5. It is evident that after controlling for individual and household

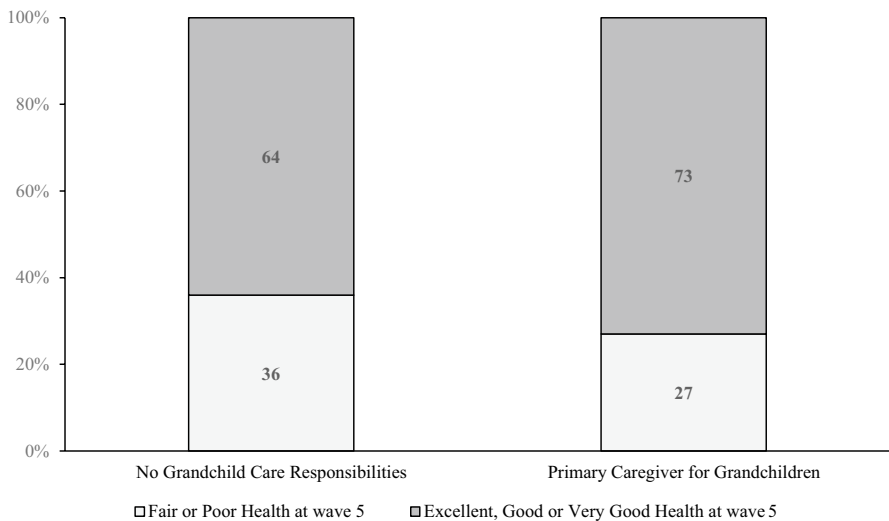


Fig. 1 Self-rated health amongst older African women at wave 5 by grandchild caregiver status

**Table 2** Multiple logistic regressions for the association between older Black women's grandchild caregiving status and self-rated health in wave 5

	Odds Ratio	95% Confidence Interval	<i>p</i> -value
<i>Caregiving status by wave 5</i>			
No grandchild care responsibilities (ref)			
Primary caregiver for grandchildren	0.725	0.533–0.985	0.040
<i>Age category (years) in wave 4</i>			
50–59 (ref)			
60+	2.078	1.610–2.682	<0.001
<i>Partnership status in wave 4</i>			
Widowed, never married, divorced or separated (ref)			
Married or cohabiting	0.874	0.673–1.135	0.313
<i>Highest level of education in wave 4</i>			
Primary school or lower (ref)			
Some secondary school	1.052	0.812–1.365	0.700
Completed secondary school or higher	0.642	0.369–1.116	0.116
<i>Illness/disability status in wave 4</i>			
No reported illness/disability (ref)			
At least one reported illness/disability	1.286	0.960–1.721	0.092
<i>Self-rated health in wave 4</i>			
Excellent, very good, good (ref)			
Fair or very poor	1.758	1.375–2.248	<0.001
<i>Household income quintile in wave 4</i>			
Poorest (ref)			
Poor	1.005	0.696–1.450	0.980
Middle	1.015	0.704–1.463	0.936
Rich	0.737	0.502–1.082	0.120
Richest	0.886	0.586–1.341	0.568
<i>Type of area in wave 4</i>			
Rural (ref)			
Urban	0.946	0.733–1.221	0.670
Constant	0.334	0.229–0.486	<0.001

characteristics at wave 4, women who became caregivers for children between waves have lower odds of reporting fair or poor health at wave 5 than their contemporaries (OR 0.725, 95% CI 0.533 – 0.985).

## Discussion

Grandparents are playing an increasingly important role in providing care for their grandchildren and policymakers need to support all generations of families to thrive in this arrangement. The association between custodial grandparenting and

grandparents' wellbeing has been studied most intensely in the US and has often been found to have a negative correlation. The key contribution of our paper is to highlight the importance of context to this relationship. In South Africa, a middle income country which alongside significant socio-economic challenges has a supportive social protection system and strong norms of extended family support, the analysis shows that taking on primary caregiving responsibilities for grandchildren is positively associated with the self-rated health of older African women.

This finding suggests taking on caregiving responsibility for grandchildren contributes to successful ageing in this context. It is supported by Jennings et al.'s (2021) regional cross-sectional study which found a positive association between caregiving for grandchildren and cognitive scores and builds on results from qualitative research which highlights that despite the challenges associated with caregiving for grandchildren there are opportunities for wellbeing in South Africa. For example, African grandmothers who have taken on the primary caregiver role have reported feelings of pride (Casale, 2011) and the importance of focusing on the purpose of their caregiving role for their resilience (Dolbin-Macnab et al., 2016). Through contributing to older women's identity, primary caregiving may be a source of wellbeing, and this effect may buffer some of the negative consequences of the caregiver role. Further, studies of the social protection regime highlight how older women use these funds to support their grandchildren (see, for example, Schatz, 2007), which may reduce the stressors felt by grandparents in other similar contexts.

A strength of this paper is its longitudinal nature that allowed us to control for self-rated health and illness/disability status at baseline. However, there are limitations associated with the data. By looking at the change in caregiving status between two time points, two years apart, we were unable to explore the potentially dynamic nature of primary caregiving by grandmothers and how this might be associated with older women's health. One reason that grandmothers may take on primary responsibility for grandchildren is due to labour migration of mothers, however this can be temporary or seasonal in nature (Camlin et al., 2014). The NIDS did not contain information that would allow for a more nuanced measure of caregiving dynamics. By only using two waves of the NIDS we were unable to explore the cumulative impact of primary caregiving to grandchildren on older women's health. Whilst five waves of NIDS were available at the time of analysis, drop out over the course of the five waves was too high to make the analysis feasible.

## Implications

This paper has demonstrated that providing care for grandchildren can be positively associated with older people's wellbeing. Positive wellbeing amongst grandparents is in turn likely to be positive for the grandchildren they care for and for the adult children who entrust them with their care of their children. A key transferable feature of the South African context is the progressive social protection system with wide coverage, as demonstrated by the high uptake of the pension and child support

grants amongst the sample analysed in this paper. Other countries seeking to support intergenerational care arrangements should consider inclusive social protection schemes in order to support wellbeing across the generations.

On a broader level, recognising families as ‘enabling agents’ for achieving the United Nations’ Sustainable Development Goals (UNICEF, 2018) must extend beyond parent–child dyads to acknowledge the important role grandparents can play in the success of their families and communities and create the contextual conditions for them to flourish. It is only recently that ageing and older people have become a focus of development agendas. The 2002 Madrid International Plan of Action on Ageing was one of the first international documents framing ageing as a human rights concern (United Nations, 2002). More recently, the 2030 Sustainable Development Goals has a commitment to ‘leave no one behind’ including a more explicit focus on people of all ages and later life (United Nations, 2023). Our research highlights the important roles and contribution that grandmothers can play in grandchildren lives, and therefore the significance of including older people in initiatives at the local level.

**Author Contributions** Both authors contributed to the study conception, the analysis, and the writing of the first draft of the manuscript.

**Data Availability** Data from Wave 4 and 5 of the National Income Dynamics Survey (NIDS) are available and can be access via NIDS website at [www.nids.ac.za](http://www.nids.ac.za).

**Declarations** The authors have no relevant financial or non-financial interests to disclose.

**Competing Interests** The authors have no conflict of interests to declare.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

## References

- Amoateng, A. Y., Heaton, T. B., & Kalule-Sabiti, I. (2007). Living arrangements in South Africa. In A. Y. Amoateng & T. B. Heaton (Eds.), *Families and households in post-apartheid South Africa* (pp. 43–60). HSRC Press.
- Annele, U., Satu, K. J., & Timo, E. S. (2019). Definition of successful ageing: a brief review of a multidimensional concept. *Acta Biomedica*, *90*(2), 359–363. <https://doi.org/10.23750/abm.v90i2.8376>
- Arber, S., & Timonen, V. (2012). A new look at grandparenting. In S. Arber & V. Timonen (Eds.), *Contemporary grandparenting: Changing family relationships in global contexts* (pp. 1–26). Policy Press.
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful ageing: the model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful ageing: Perspectives from the behavioural sciences* (pp. 1–34). Cambridge University Press.

- Bennett, R., Hosegood, V., Newell, M., & McGrath, N. (2014). Understanding family migration in rural South Africa: exploring children's inclusion in the destination households of migrant parents. *Population, Space and Place*, 21(4), 301–321. <https://doi.org/10.1002/psp.1842>
- Bennett, R., & Waterhouse, P. (2018). Work and family transitions and the self-rated health of young women in South Africa. *Social Science and Medicine*, 203, 9–18. <https://doi.org/10.1016/j.socscimed.2018.03.001>
- Bob, U. (2001). The intersection of gender, race and class: The socio-economic and spatial implications of differentiation in the former homelands of South Africa. *South African Geographical Journal*, 83(3), 190–197. <https://doi.org/10.1080/03736245.2001.9713736>
- Bordone, V., Arpino, B., & Aassve, A. (2017). Patterns of grandparental childcare across Europe: The role of policy context and working mothers' need. *Ageing and Society*, 37(4), 845–873. <https://doi.org/10.1017/S0144686X1600009X>
- Bridgman, G., & von Fintel, D. (2022). Stunting, double orphanhood and unequal access to public services in democratic South Africa. *Economics & Human Biology*, 44, 101076. <https://doi.org/10.1016/j.ehb.2021.101076>
- Brophy, T., Branson, N., Daniels, R.C., Leibbrandt, M., Mlatsheni, C., & Woolard, I. (2018). *National Income Dynamics Study Panel User Manual*. Release 2018. Version 1. Southern Africa Labour and Development Research Unit, Cape Town. <http://www.nids.uct.ac.za/images/documents/20180831-NIDS-W5PanelUserManual-V1.0.pdf>. Accessed 25 Aug 2023
- Buchanan, A., & Rotkirch, A. (2018). Twenty-first century grandparents: Global perspectives on changing roles and consequences. *Contemporary Social Science: Journal of the Academy of Social Sciences*, 13(2), 131–144. <https://doi.org/10.1080/21582041.2018.1467034>
- Camlin, C. S., Snow, R. C., & Hosegood, V. (2014). Gendered patterns of migration in rural South Africa. *Population, Space and Place*, 20(6), 528–551. <https://doi.org/10.1002/psp/1794>
- Casale, M. (2011). "I am living a peaceful life with my grandchildren. Nothing else." Stories of adversity and "resilience" of older women caring for children in the context of HIV/AIDS and other stressors. *Ageing & Society*, 31(8), 1265–1288. <https://doi.org/10.1017/S0144686X10001303>
- Chazan, M. (2008). Seven 'deadly' assumptions: Unravelling the implications of HIV/AIDS among grandmothers in South Africa and beyond. *Ageing and Society*, 28(7), 935–958. <https://doi.org/10.1017/S0144686Z08007265>
- Chen, F., & Liu, G. (2011). The health implications of grandparents caring for grandchildren in China. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 67(1), 99–112. <https://doi.org/10.1093/geronb/bgr132>
- Chen, F., Mair, C., Bao, L., & Yang, Y. (2015). Race/ethnic differences in the health consequences of caring for grandchildren for grandparents. *The Journal of Gerontology Series b: Psychological and Social Sciences*, 70(5), 793–803. <https://doi.org/10.1093/geronb/gbu160>
- Danielsbacka, M., Krenkova, L., & Tanskanen, A. O. (2022). Grandparenting, health and well-being: A systematic review. *European Journal of Ageing*, 19(3), 341–368. <https://doi.org/10.1007/s10433-021-00674-y>
- DeRose, L., Lyons-Amos, M., Wilcox, W., & Huarcaya, G. (2017). *World Family Map 2017: Mapping family change and child well-being outcomes*. Social Trends Institute. [http://www.socialtrendsinsitute.org/upload/2017\\_WorldFamilyMap\\_SocialTrendsInstitute\\_english.pdf](http://www.socialtrendsinsitute.org/upload/2017_WorldFamilyMap_SocialTrendsInstitute_english.pdf). Accessed 25 Aug 2023
- Dolbin-Macnab, M. L., Jarrott, S. E., Moore, L. E., O'Hara, K. A., De Chavonnes Vrugt, M., & Erasmus, M. (2016). Dumela Mma: An examination of resilience among South African grandmothers raising grandchildren. *Ageing and Society*, 36(10), 2182–2212. <https://doi.org/10.1017/S0144686X15001014>
- Fouts, H. N., & Brookshire, R. A. (2009). Who feeds children? A child's eye view of caregiver feeding patterns among the Aka foragers in Congo. *Social Science & Medicine*, 69(2), 285–292. <https://doi.org/10.1016/j.socscimed.2009.05.016>
- Glaser, K., Stuchbury, R., Price, D., Di Gessa, G., Ribe, E., & Tinker, A. (2018). Trends in the prevalence of grandparents living with grandchild(ren) in selected European countries and the United States. *European Journal of Ageing*, 15(3), 237–250. <https://doi.org/10.1007/s10433-018-0474-3>
- Goody, E. (1978). Some theoretical and empirical aspects of parenthood in West Africa. In C. Opong, G. Adaba, M. Bekombo-Priso, & J. Mogege (Eds.), *Marriage, fertility and parenthood in West Africa* (pp. 227–272). The Australian National University Press.
- Goodman, C. C., & Silverstein, M. (2001). Grandmothers who parent their grandchildren: An exploratory study of close relations across three generations. *Journal of Family Issues*, 22(5), 557–578. <https://doi.org/10.1177/019251301022005002>

- Gradin, C. (2018). Occupational segregation by race in South Africa after apartheid. *Review of Development Economics*, 23(2), 553–576. <https://doi.org/10.1111/rode.12551>
- Grapsa, E., & Posel, D. (2016). Sequencing the real time of the elderly: Evidence from South Africa. *Demographic Research*, 35, 25. <https://doi.org/10.2054/DemRes.2016.35.25>
- Grundy, E. M., Albala, C., Allen, E., Dangour, A. D., Elbourne, D., & Uauy, R. (2012). Grandparenting and psychosocial health among older Chileans: A longitudinal analysis. *Ageing and Mental Health*, 16(8), 1047–1057. <https://doi.org/10.1080/13607863.2012.692766>
- Gu, D. (2015). Concordance and discordance between objectively and subjectively measured successful ageing and their linkages with mortality. *International Journal of Population Studies*, 1(1), 29–41. <https://dex.doi.org/10.18063/IJPS.2015.01.003>
- Hadfield, J. C. (2014). The health of grandparents raising grandchildren: A literature review. *Journal of Gerontological Nursing*, 40(4), 32–42. <https://doi.org/10.3928/00989134-20140219-01>
- Hall, K. (2023) Orphaning. *Statistics on children in South Africa*. Available from: <http://childrencount.uct.ac.za/indicator.php?domain=1&indicator=4>. Accessed 25 Aug 2023
- Harrison, P., & Todes, A. (2015). Spatial transformations in a “loosening state”: South Africa in a comparative perspective. *Geoforum*, 61, 148–162. <https://doi.org/10.1016/j.geoforum.2015.03.003>
- Hatch, M., & Posel, D. (2018). Who cares for children? A quantitative study of childcare in South Africa. *Development Southern Africa*, 35(2), 267–282. <https://doi.org/10.1080/0376835X.2018.1452716>
- Hayslip, B., Jr., & Kaminski, P. L. (2005). Grandparents raising their grandchildren: A review of the literature and suggestions for practice. *The Gerontologist*, 45(2), 262–269. <https://doi.org/10.1093/geront/45.2.262>
- Hipple, L., & Hipple, J. (2008). Raising a granddaughter: Sharing our experience. In B. Hayslip & P. Kaminski (Eds.), *Parenting the custodial grandchild: Implications for clinical practice* (pp. 93–100). New York: Springer.
- Hoffman, J. (2019). Second-parenthood realities, third-age ideals: (grand)parenthood in the context of poverty and HIV/AIDS. In V. Timonen (Ed.), *Grandparenting practices around the World* (pp. 89–110). Policy Press.
- Hossain, Z., Eisberg, G., & Schwalb, D. W. (2018). Grandparents’ social identities in cultural context. *Contemporary Social Sciences: Journal of the Academy of Social Sciences*, 13(2), 275–287. <https://doi.org/10.1080/21582041.2018.143315>
- Hutchinson, E. D. (2018). Life course theory. In R. J. R. Levesque (Ed.), *Encyclopedia of adolescence* (2nd ed.). Springer.
- International Monetary Fund. (2020) *Six charts explain South Africa’s inequality*. Available from: <https://www.imf.org/en/News/Articles/2020/01/29/na012820six-charts-on-south-africas-persistent-and-multi-faceted-inequality>. Accessed 25 Aug 2023
- Izuhara, M. (2010). Introduction. In M. Izuhara (Ed.), *Ageing and intergenerational relations: Family reciprocity from a global perspective* (pp. 1–12). Policy Press.
- Jennings, E. A., Farrell, N., & Kobayashi, L. C. (2021). Grandchild caregiving and cognitive health among grandparents in rural South Africa. *Journal of Aging Health*, 33(9), 661–673. <https://doi.org/10.1177/08982643211006592>
- Jones, S. (1993). *Assaulting childhood: Children’s experiences of migrancy and hostel life in South Africa*. Witwatersrand University Press.
- Jecker, N. S. (2021). Intergenerational ethics in Africa: Duties to older adults in skipped generation household. *Developing World Bioethics*, 22(3), 152–161. <https://doi.org/10.1111/dewb.12325>
- Jylha, M. (2009). What is self-rated health and why does it predict mortality? Towards a unified conceptual model. *Social Science and Medicine*, 36(6), 812–817. <https://doi.org/10.1016/j.socscimed.2009.05.013>
- Knodel, J., & Nguyen, M. D. (2014). Grandparents and grandchildren: Care and support in Myanmar, Thailand and Vietnam. *Ageing and Society*, 35(9), 1960–1988. <https://doi.org/10.1017/S0144686X14000786>
- Kowal, P. and Peachey, K. (2001). Indicators for the Minimum Data Set Project on Ageing: A critical review in sub-Saharan Africa, Information needs for research, policy and action on ageing and older adults, 21–22 June 2001, Dar es Salaam, United Republic of Tanzania. Available from: [https://apps.who.int/iris/bitstream/handle/10665/69829/WHO\\_EIP\\_GPE\\_01.1.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/69829/WHO_EIP_GPE_01.1.pdf?sequence=1&isAllowed=y). Accessed 25 Aug 2023
- Landry-Meyer, L., & Newman, B. M. (2004). An exploration of the grandparent caregiver role. *Journal of Family Issues*, 25(8), 1005–1025. <https://doi.org/10.1177/0192513X04265955>



- Lau, Y. K., & Ataguba, J. E. (2015). Investigating the relationship between self-rated health and social capital in South Africa: A multilevel panel data analysis. *BMC Public Health*, *15*, 1–10.
- Leder, S., Grinstead, L. N., & Torres, E. (2007). Grandparents raising grandchildren, stressors, social support, and health outcomes. *Journal of Family Nursing*, *13*(3), 333–352. <https://doi.org/10.1177/1074840707303841>
- Leibbrandt, M., Woolard, I., & de Villiers, L. (2009). National Income Dynamics Study: Methodology: Report on NIDS Wave 1, Southern Africa Labour and Development Research Unit, University of Cape Town, Cape Town. <http://www.nids.uct.ac.za/publications/technical-papers/108-nids-technical-paper-no1/file>. Accessed 25 Aug 2023
- Martinson, M., & Berridge, C. (2015). Successful aging and its discontents: A systematic review of social gerontology literature. *The Gerontologist*, *55*, 51–57. <https://doi.org/10.1093/geront/gnu037>
- Nukunyam, G. K. (2003). *Traditional and change in Ghana*. Ghana Universities Press.
- Orthofer, A. (2016) Wealth inequality in South Africa: evidence from survey and text data. *REDI3x3 Working Paper 15*. The Research Project on Employment, Income Distribution and Inclusive Growth, University of Cape Town. Available from: <https://thedocs.worldbank.org/en/doc/731511476914370714-0050022016/original/WealthinequalityinSouthAfrica.pdf>. Accessed 25 Aug 2023
- Okolie, T. J., Ekoh, P. C., Onuh, S. C., & Ugwu, E. (2023). Perspectives of rural older women on the determinants of successful ageing in Southeast Nigeria. *Journal of Cross-Cultural Gerontology*, *38*, 173–189. <https://doi.org/10.1007/s10823-023-09480-8>
- Philipson, C. (2010). Globalisation, global ageing and intergenerational change. In M. Izuohara (Ed.), *Ageing and Intergenerational Relations: Family reciprocity from a global perspective* (pp. 13–28). Policy Press.
- Pillay-van Wyk, V., Msemburi, W., Laubscher, R., Dorrington, R. E., Groenwald, P., Glass, T., Nojilana, B., Joubert, J. D., Matzopoulos, R., Prinsloo, M., Nannan, N., Gwebushe, N., Vos, T., Somdyala, N., Sithole, N., Neethling, I., Nicol, E., Rossouw, A., & Bradshaw, D. (2016). Mortality trends and differentials in South Africa from 1997 to 2012: second National Burden of Disease Study. *The Lancet: Global Health*, *4*(9), PE642–E653. [https://doi.org/10.1016/S2214-109X\(16\)30113-9](https://doi.org/10.1016/S2214-109X(16)30113-9)
- Posel, D., & Rudwick, S. (2013). Changing patterns of marriage and cohabitation in South Africa. *Acta Juridica*, *2013*, 169–180. <https://hdl.handle.net/10520/EJC148461>
- Rowe, J. W., & Kahn, R. L. (1987). Human aging: Usual and successful. *Science*, *237*, 143–149. <https://doi.org/10.1126/science.3299702>
- Sadrudin, A. F., Ponguta, L. A., Zonderman, A. L., Wiley, K. S., Grimshaw, A., & Panter-Brick, C. (2019). How do grandparents influence child health and development? A systematic review. *Social Science & Medicine*, *239*, 112476. <https://doi.org/10.1016/j.socscimed.2019.112476>
- Schatz, E., Seeley, J., & Zalwango, F. (2018). Intergenerational care for and by children: Examining reciprocity through focus group interviews with older adults in rural Uganda. *Demographic Research*, *38*, 2003–2026. <https://doi.org/10.4054/DemRes.2018.38.63>
- Schatz, E. J. (2007). “Taking care of my own blood”: Older women’s relationships to their households in rural South Africa. *Scandinavian Journal of Public Health*, *35*(69\_suppl), 147–154.
- Sear, R., Steele, F., McGregor, I. A., & Mace, R. (2002). The effects of kin on child mortality in rural Gambia. *Demography*, *39*(1), 43–63. <https://doi.org/10.1353/dem.2002.0010>
- Settles, B., Zhao, J., Mancini, K. D., Rich, A., Pierre, S., & Oduor, A. (2009). Grandparents caring for their grandchildren: emerging roles and exchanges in global perspectives. *Journal of Comparative Family Studies*, *40*(5), 827–848. <https://www.jstor.org/stable/41604328>. Accessed 25 Aug 2023
- Smith, G., Palmieri, P., Hancock, G., & Richardson, R. (2008). Custodial grandmothers’ psychological distress, parenting, and grandchildren’s adjustment. *International Journal of Ageing and Human Development*, *67*, 327–358. <https://doi.org/10.1177/0898264314525664>
- Statista. (2023) *Unemployment rate in South Africa from Q1 2019 to Q3 2022, by population group*. Available from: <https://www.statista.com/statistics/1129481/unemployment-rate-by-population-group-in-south-africa/>. Accessed 25 Aug 2023
- Statistics South Africa. (2022). *SA’s elderly population increasing steadily*. Available from: <https://www.statssa.gov.za/?p=16280>. Accessed 25 Aug 2023
- Tavel, P. (2008). Successful ageing: A survey of the most important theories. *Human Affairs*, *18*, 183–196. <https://doi.org/10.2478/v10023-008-0018-0>
- Teater, B., & Chonody, J. M. (2020). How do older adults define successful ageing? A scoping review. *The International Journal of Aging and Human Development*, *91*(4), 599–625. <https://doi.org/10.1177/0091415019871207>

- Timonen, V. (2019). Introduction: widening the lens on grandparenting. In R. Timonen (Ed.), *Grandparenting practices around the world* (pp. 1–22). Policy Press.
- UNICEF. (2018). Key Findings on Families, Family Policy and the Sustainable Development Goals: Synthesis Report, UNICEF Office of Research - Innocenti. Florence. [https://www.unicef-irc.org/publications/pdf/Families\\_and\\_SDGs\\_Synthesis\\_Report.pdf](https://www.unicef-irc.org/publications/pdf/Families_and_SDGs_Synthesis_Report.pdf). Accessed 25 Aug 2023
- United Nations. (2002). *Political declaration and Madrid international plan of action on ageing*. United Nations. <https://www.un.org/esa/socdev/documents/ageing/MIPAA/political-declaration-en.pdf>. Accessed 25 Aug 2023
- United Nations. (2023) The 17 Goals. Available from <https://sdgs.un.org/goals>. Accessed 25 Aug 2023
- United Nations Department of Economic and Social Affairs. (2019). *Living arrangements of older persons around the world*. Available from: [https://www.un.org/en/development/desa/population/publications/pdf/popfacts/PopFacts\\_2019-2.pdf](https://www.un.org/en/development/desa/population/publications/pdf/popfacts/PopFacts_2019-2.pdf). Accessed 25 Aug 2023
- Valente, T. W., Sidhu, A. K., Lee, J., Baezconde-Garbanati, L., Pandol, S., Saab, S., Mendler, M., & Tsukumoto, H. (2017). Lagged versus difference score regression: An example from a community-based educational seminar evaluation. *Pedagogy in Health Promotion*, 3(4), 239–245.
- Waterhouse, P., Hill, A. G., & Hinde, A. (2017). Combining work and childcare: The experience of mothers in Accra. *Ghana. Development Southern Africa*, 34(6), 771–786. <https://doi.org/10.1080/0376835X.2017.1323627>
- World Health Organisation. (2022). *Study on Global AGEing and Adult Health (SAGE)*. Available from: <https://www.who.int/data/data-collection-tools/study-on-global-ageing-and-adult-health>. Accessed 25 Aug 2023
- Woolard, I., & Leibbrandt, M. (2013). The evolution and impact of unconditional cash transfers in South Africa. *Development Challenges in a Postcrisis World*, 363. <http://hdl.handle.net/11090/66>. Accessed 25 Aug 2023
- World Bank. (2022). *Life expectancy at birth, total (years)*. Available from: <https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=ZA>. Accessed 25 Aug 2023

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.