



ORIGINAL RESEARCH

Predicting wellness among rural older Australians: a cross-sectional study

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ABSTRACT:

Introduction: Prior research on older people's wellbeing and quality of life has lacked clarity and consistency. Research examining older people's health has tended to use these different terms and measurement tools interchangeably, which might explain why the evidence is somewhat mixed. There is a paucity of research that uses the multi-dimensional construct of wellness in rural older people. Addressing both limitations, this study seeks to make a

unique contribution to knowledge testing an ecological model of wellness that includes intrapersonal factors, interpersonal processes, institutional factors, community factors and public policy.

Methods: Six rural case study sites were chosen across two Australian sites, the states of Queensland and Victoria. A community saturation recruitment strategy was utilised. Telephone surveys were conducted with community-dwelling rural older people ($n=266$) aged ≥ 65 years across the sites. The central variable of the study was wellness as measured by the Perceived Wellness Survey. The ecological model developed included the following intrapersonal factors: physical and mental health, loneliness and social demographic characteristics (age, sex, marital status and financial capability). Interpersonal factors included a measure of social and community group participation, social network size and support provided. Institutional factors were measured by series of questions devised around the resource base environment and access to amenities and services.

Results: A hierarchical regression analysis was conducted to determine which variables in the model predict wellness. The results showed that a combination of intrapersonal factors (physical health, mental health, loneliness and financial capability) and interpersonal factors (size of social network and community participation) predicted wellness. However, institutional factors, the resource base environment, and access to amenities and services, contributed only marginally to the model. Community factors, including the personal and physical characteristics of community, also only made a marginal contribution.

Conclusions: The study identified the usefulness of using an integrated model of measurement in wellness. This model recognised the interrelated physical, social and economic influences that impact on rural older people throughout their life course. The study found that physical health made the greatest contribution to perceived wellness, followed by mental health. These findings support a body of research that has found that rural older people experience poorer health outcomes than those in urban areas. Lower levels of loneliness were also a strong predictor of perceived wellness, thus supporting research that has examined the impact of loneliness on physical and mental health. The presence of social capital, as measured by social network size, and the degree of community participation, were also predictors of perceived wellness. Overall, the findings of the present study implications for policy as well as subsequent strategies designed to increase the capacity of wellness in rural older people. Such strategies need to consider the contribution of a range of factors.

KEYWORDS:

ageing, Australia, loneliness, mental health, older people, physical health, social capital, wellness.

FULL ARTICLE:

Introduction

Australian health and aged care policy is undergoing rapid change as a result of current reforms¹⁻³, which include dramatic changes to aged care advocated in the Productivity Commission report *Caring for older Australians*. Recently, these reforms have advocated an approach to service provision that emphasises a more holistic model of health; consequently, recent policy has emphasised wellness⁴, a multidimensional concept that includes aspects such as physical resilience, emotional wellbeing, social connectedness and spirituality⁵, as an optimal outcome for older adults. This policy perspective promotes the achievement of wellness as a means of enhancing the independence of older people, improving quality of life, ensuring the continued contribution of older people to society and reducing demand for expensive and ongoing services^{1-3,6}.

However, the capacity of older adults to maintain their wellness is problematic in rural contexts. It is generally reported that rural older people experience poorer health outcomes than those in urban areas, specifically related to increased mortality. In Australia, as in many other countries, rural areas have a much higher proportion of older people than do metropolitan areas^{7,8}. Demographic ageing is more dramatic in rural Australia, where the numbers of older people residing in rural communities are growing rapidly as a result of two concurrent trends: young people relocating out of rural areas for education and employment and older people migrating to rural areas in retirement⁹. These changes

reduce the capacity of rural communities to adequately cater for the growing numbers of older people. In particular, demand on local services is increasing at a time when many rural communities struggle to provide the types of health and community services likely to sustain older people's health and wellbeing¹⁰.

Whilst the focus remains on the promotion of wellness in the policy agenda, there is a lack of systematic rigorous evidence examining wellness in older people, particularly those who live in rural areas. Such knowledge is essential if policymakers are to understand how to respond to the needs of older people across the diversity of Australia's rural areas. In view of the gap in knowledge, the present article seeks to test a predictive model of wellness of rural older people. In doing so, it will draw on cross-sectional data collected via a telephone survey utilising a community saturation strategy across six rural case study sites in two Australian states: Queensland and Victoria. The intent was to build a diverse sample of both case study sites and individual respondents in order to best represent the experience of ageing in a rural Australian community.

The concept of wellness

The concepts of wellness, quality of life (QoL) and wellbeing are commonly used in research and in policy. The choice between the terms has been somewhat arbitrary and there exist gaps and inconsistencies in the measurement tools of each of the three. Thus, for example, QoL has been extensively conceptualised and theorised, and WHO has both defined and provided an appropriate measure¹¹. Despite this, the research literature includes many different ways of measuring QoL, including the CASP-19 measure¹², the Satisfaction with Life Scale¹³ and the Philadelphia Centre Morale Scale¹³, as well as numerous unvalidated and self-devised questionnaires. While there are many definitions of wellbeing and different measurement tools, they are remarkably similar in their components, emphasising both current happiness or satisfaction and an expectation of future happiness^{14,15}.

Wellness is considered a broader term and according to the WHO recognises the 'realisation of the fullest potential of an individual physically, psychologically, socially, spiritually and economically', recognising the breadth of factors that lead to positive health and wellbeing¹⁶. Thus wellness is considered the optimal state of health of individuals and groups, encompassing the maximum potential of which the individual is capable.

However, there is a surprising paucity of research that uses wellness as the central measure. Instead, research examining older people's health has tended to use 'wellbeing' and 'quality of life' and 'life satisfaction' measures interchangeably, making comparisons between the studies difficult. In recent studies of older people's health, Gana et al¹⁷ used wellbeing as the central measure of a longitudinal study; Pinto, Fontaine and Neri¹⁸ used life satisfaction; and Prieto-Flores et al¹⁹ used QoL measures. This use of different terms and measurement tools might explain why the evidence about the 'wellness' of rural older people is somewhat mixed.

The Perceived Wellness Survey (PWS) developed by Adams et al²⁰ provides a measure of wellness across six domains: physical, spiritual, social, intellectual, emotional and psychological²⁰. A number of studies have been conducted to validate the PWS in measuring wellness, including Adams et al²⁰, and Harari, Waehler and Rogers²¹. The PWS has been used to investigate wellness in a variety of contexts, including persons with traumatic brain injury²², consumption of organic foods²³, fitness courses²⁴ and burnout rates²⁵. A limited number of studies have utilised the PWS for measuring wellness in older adults. One Australian study demonstrates the strong correlation between wellness and physical and mental aspects of health²⁶.

There has been limited research related to wellness in older people, and little is known about the broader systems in which rural older people live and the impact of personal and environmental factors. Recognising this interconnectedness of older people and place, the present study sought to test an ecological model of wellness. Bronfenbrenner's human ecology model recognises the importance of the environment at the microsystem, mesosystem, exosystem and macrosystem levels²⁷. However, as early as 1988, McLeroy et al argued that models like Bronfenbrenner's lack the specificity to guide conceptualisations of health problems and subsequent interventions²⁸. They instead proposed a variation of Bronfenbrenner's model that includes an examination of (1) intrapersonal factors – characteristics of the individual, (2) interpersonal processes and primary groups – formal and social network and social

support systems, (3) institutional factors – social institutions, (4) community factors – relationships among organisations, institutions and informal networks and (5) public policy. In the present study, McLeroy et al's ecological model²⁸ provided the framework to developing a predictive model of wellness in rural older people.

A review of the literature of community-dwelling older people conducted by Yeom, Fleury and Keller identified the following intrapersonal factors: age, gender, socioeconomic status, marital status, mental health and physical health²⁹. Other factors such as loneliness were also considered due to a body of research that has found loneliness in older people to be correlated with increased anxiety, increased depression³⁰⁻³³ and other physical health conditions. At the interpersonal level, social factors associated with presence of formal and informal ties and levels of social and community participation have been identified as potential factors impacting on older people's wellbeing³⁴. These factors are often associated with bonding forms of social capital, characterised by dense networks of support, reciprocity and engagement in participation³⁵⁻³⁷. At the institutional level, characteristics associated with the service environment, such as the availability of community amenities and health services, have been found to be associated with wellbeing in older people^{34,38}. At the community level, factors associated with the personal and physical characteristics of the community were identified as impacting on older people's wellbeing^{34,39}. The present study, combining this set of factors derived from the literature, seeks to test this ecological model and its relationship to wellness in rural older people.

Methods

Research design

The present study draws on data from a multistage study to address the research question 'What factors best predict wellness for older people living in diverse rural communities?' In recognition of the diversity of both older people and their rural communities, the first stage of the study identified rural case study sites across two Australian states: Queensland and Victoria. Six sites were chosen to maximise community variability, using the Australian Bureau of Statistics Statistical Areas Level 2 (SA2) classification of key variables⁴⁰. During the second stage of the study, a cross-sectional survey was designed and delivered to a diverse sample of rural older people.

Survey instrument

The key measure of this study was wellness as measured by the PWS²⁰. The ecological model developed included the following intrapersonal factors: physical and mental health as measured by the Short-form 8 (SF-8) Health Status Questionnaire⁴¹, Loneliness Scale⁴² and social demographic characteristics (age, gender, marital status and financial capability). Financial capability was measured using a scale developed by Zaidi⁴³. Interpersonal factors included a measure of social and community group participation⁴⁴ and a series of questions designed to determine each respondent's social network size. Questions were also asked on the characteristics of the support network related to the provision of assistance and care. Institutional factors were measured by a series of questions devised around the resource base environment and access to amenities and services. Specifically, participants were asked to rate their level of satisfaction with amenities that are available in their community. A Likert accessibility scale was developed for this purpose. Community factors were measured by a series of questions of perceptions of community (11 items) drawn from Dobbs' study⁴⁵.

A factor analysis was used to group the 11 community perception questions into two broader categories: personal characteristics of the community (eg 'my community is a safe place to live', 'most people in my community can be trusted' and 'most people in my community have lived here a long time') and physical characteristics of the community ('the services in my community are easily accessible' and 'the community is an easy place to get around').

Recruitment strategy

A community saturation approach⁴⁶ was utilised to recruit a diverse sample of participants in relation to age, health status and location. The research team visited communities within the six case study sites in person to circulate information and elicit interest in the study. By working with health and aged care agency partners, the study

endeavoured to include more frail and isolated older people. Inclusion criteria for the sample population was those aged 65 years or more and living within one of the six selected rural communities. Older people living in residential care or experiencing dementia were excluded. Study materials for participant recruitment were developed, including a flyer and an expression of interest postcard. A 1800 number was created and included in the study material to allow participants to contact staff toll-free. A detailed information sheet was supplied to all participants. A total of 266 older people from six rural townships within Australia took part in the current study. The sample consisted of 93 men and 172 women aged 63–100 years (mean=75.92, standard deviation (SD)=7.77), with 1.1% identifying as Aboriginal or Torres Strait Islander.

Procedures

The survey was administered by telephone, with the specific aim of reducing incomplete data, a significant limitation of self-administered questionnaires. Face-to-face administration of the questionnaire was offered to those participants who were particularly frail, had hearing problems or who had trouble with English language.

Statistical analysis

All data were entered into the Statistical Package for Social Sciences v22 (IBM; <http://www.spss.com>) for analysis. Data were checked for accuracy, missing values and outliers and cleaned, with out-of-range values recorded as missing. Missing values for the PWS subscales were replaced with means where more than 50% of the questions in the subscale were answered. Prior to examining hypothesised bivariate and multivariable relationships analysis, scores were calculated on key measures. Wellness scores were calculated (36 items), with means calculated for psychological, emotional, social, physical, spiritual and intellectual items. A wellness composite score was calculated, adhering to the guidelines provided. Total scores were calculated for SF-8 (physical and mental components) and the De Jong Gierveld and Van Tilburg loneliness measure⁴². The sizes of social networks were calculated, adding together the number of family, friends and neighbours. A total score for access to amenities was calculated, along with a total score for access to health services.

Prior to conducting multivariable analysis, the relationship between perceived wellness and several key variables was determined using Pearson product correlation coefficient (r). A one-way between-groups analysis of variance (ANOVA) was used to examine whether there were significant differences in wellness scores across the different sites. Hierarchical regression analysis was used to determine which factors in the model best predict wellness. A hierarchical regression involves predictors to a regression model being added in blocks, which allows the incremental contribution of these variables to be determined.

Ethics approval

Ethics approval was obtained from La Trobe University (HREC #14-051) and the University of Queensland (HREC # 2014001347).

Results

Descriptive data are provided in Table 1. On the SF-8 participants scored an average of 45.03 (SD=10.82) for the physical component score and 51.67 (SD=9.06) for the mental component score. The SF-8 has norm-based scoring (mean=50, SD=10), suggesting that the results obtained in the current study are relatively standard. Participants scored an average of 13.39 (SD=3.07) on the composite score for the PWS (range=6–36). While there are no validated cut-off points for the PWS, these results are similar to those obtained in other literature^{22,25,47,48}, suggesting that these averages are again relatively standard. Participants scored an average of 1.11 (SD=1.27) on the six-item De Jong Gierveld and Van Tilburg loneliness measure (range=0–6). These scores are somewhat lower than those obtained from older adults in different countries^{47,48}. Financial capability was relatively high with almost all participants (261; 98.1%) reporting an ability to afford to keep their home adequately warm or cool and 233 (87.6%) reporting an ability to pay for unexpected expenses through their own resources.

All participants excluding one were able to name at least one person in their social network, with most (84.6%) naming

between 5 and 15 people. The mean size of this network was 9.33 people (SD=4.42). The majority of participants (96.3%) were satisfied or very satisfied with the contact they had with family, friends and neighbours. All participants excluding one attended at least one social or community group event semi-regularly, with the majority of participants (88%) attending at least three social or community types of services a year.

The majority of participants were fairly satisfied with their access to amenities and health care, with participants reporting access as easy 87% of the time for amenities and 66% of the time for health care. Participant ratings of transport options ranged from 1 ('very poor') to 5 ('excellent'), with the mean rating of 2.37 (SD=1.23) sitting between the 'poor' to 'fair' response options, although most reported minimal effect of lack of transport on their ability to do specific tasks.

A bivariate correlation was conducted to assess the relationship between the measured variables (Table 2). Of note, wellness was significantly related to physical health, mental health and loneliness. However, wellness was not associated with access to services or the size of a participant's social network.

Table 1: Characteristics of study participants

Variable	n (%)
Sex	
Male	93 (35.1)
Female	172 (64.9)
(Data missing)	1
Age (years)	
65–70	71 (27.0)
71–75	76 (28.9)
76–80	47 (17.9)
81–85	31 (11.8)
≥86	38 (14.4)
(Data missing)	3
Main source of income [†]	
Full pension	143 (53.8)
Part pension	55 (20.7)
Salary or wages	9 (3.4)
Self-funded (eg superannuation, investments)	102 (38.3)
Other	34 (12.8)
Driving status (those who still drive)	225 (84.6)
Area recruited from	
Bright–Mount Beauty	57 (21.4)
Yarriambiack	50 (18.8)
Yarram	53 (19.9)
Roma	27 (10.2)
Nanango	29 (10.9)
Stanthorpe	50 (18.8)
Total size of network	mean=9.26 SD=4.42

[†] More than one option could be selected by participants.
SD, standard deviation.

Table 2: Spearman correlations for demographic and outcome variable

	Access to amenities	Access to health care	Social network size	Community participation	Social participation	Personal characteristics of the community	Physical characteristics of the community	Wellness score	Physical health	Mental health	Loneliness	Age
Access to amenities		-0.72***	-0.01	0.12	0.23***	-0.02	0.26***	0.15*	0.13*	0.13*	-0.05	-0.19**
Access to health care			-0.01	-0.04	-0.06	0.02	-0.38***	-0.07	-0.07	-0.2*	0.02	-0.15*
Social network size				0.21***	0.24***	0.29***	0.13*	0.07	0.002	-0.03		
Community participation					0.42***	0.03	-0.009	0.19**	0.16***	0.13*	-0.19***	-0.11
Social participation						0.13*	-0.05	0.21***	0.2***	0.12*	-0.23***	-0.41***
Personal characteristics of the community							0.32***	0.14*	0.05	0.1	-0.22***	-0.008
Physical characteristics of the community								0.12	0.11	0.11	-0.07	0.09
Wellness score									0.49***	0.4***	-0.49***	-0.05
Physical health										0.1	-0.11	-0.11
Mental health											-0.453***	0.03
Loneliness												0.07
Age												

*p<0.05, **p<0.01, ***p<0.001

Differences in wellness scores across six case study sites

Comparisons between the six rural townships in wellness was conducted using ANOVA. The results were non-significant ($F(5,245)=1.06, p=0.38, \eta^2=0.02$), indicating that the wellness levels are relatively similar in each of the six sites across Australia.

Predictors of wellness

A hierarchical regression was conducted to determine which variables in the model predict wellness. The ecological model determined the steps and how they were entered. Thus intrapersonal characteristic variables were entered at step 1 and explained 54.2% of the variance in wellness scores ($R^2=0.54$, $F(7,96)=16.24$, $p<0.001$). At step 2, interpersonal variables were added to the regression and explained an additional 4.1% of the variance ($R^2=0.58$, $F(9,94)=14.54$, $p<0.001$). At step 3, institutional variables were added to the regression, adding 1.7% of explained variance ($R^2=0.6$, $F(11, 92)=12.54$, $p<0.001$). Finally, at step 4, community variables were added to the regression; however, they explained minimal additional variance ($R^2=0.601$, $F(13,90)=10.44$, $p<0.001$). The results are summarised in Table 3.

The hierarchical regression revealed that the variables that contributed independently and significantly to perceived wellness were physical health, mental health, loneliness, financial capability, social network size and community participation.

Table 3: Summary of hierarchical regression analysis for variables predicting wellness

Variable	B (95%CI)	p	Adjusted R ²
Step 1			0.509
Physical health	0.14 (0.096, 0.178)	<0.001	
Mental health	0.06 (0.01, 0.115)	0.02	
Loneliness	-0.58 (-0.990, -0.248)	0.001	
Sex	0.44 (-0.243, 1.73)	0.138	
Age	-0.02 (-0.06, 0.067)	0.915	
Financial capability	-0.37 (-0.722, 0.85)	0.12	
Marital status	-0.8 (-1.785, 0.180)	0.108	
Step 2			0.543
Physical health	0.13 (0.09, 0.169)	<0.001	
Mental health	0.06 (0.006, 0.108)	0.029	
Loneliness	-0.54 (-0.942, -0.208)	0.002	
Sex	0.33 (-0.343, 1.57)	0.206	
Age	-0.02 (-0.059, 0.066)	0.907	
Financial capability	-0.45 (-0.789, -0.011)	0.044	
Marital status	-0.71 (-1.66, 0.25)	0.146	
Social network size	-0.13 (-0.229, -0.22)	0.018	
Community participation	0.05 (0.008, 0.091)	0.02	
Step 3			0.552
Physical health	0.13 (0.092, 0.171)	<0.001	
Mental health	0.06 (0.014, 0.118)	0.014	
Loneliness	-0.55 (-0.961, -0.232)	0.002	
Sex	0.33 (-0.23, 1.694)	0.134	
Age	-0.02 (-0.075, 0.053)	0.731	
Financial capability	-0.44 (-0.831, -0.047)	0.029	
Marital status	-0.67 (-1.631, 0.261)	0.154	
Social network size	-0.13 (-0.231, -0.026)	0.015	
Community participation	0.06 (0.015, 0.098)	0.009	
Access to amenities	-0.096 (-0.192, 0.000)	0.05	
Access to services	-0.08 (-0.178, 0.027)	0.148	
Step 4			0.544
Physical health	0.13 (0.092, 0.172)	<0.001	
Mental health	0.07 (0.015, 0.123)	0.013	
Loneliness	-0.57 (-0.989, -0.24)	0.002	
Sex	0.46 (-0.224, 1.722)	0.13	
Age	-0.03 (-0.075, 0.058)	0.794	
Financial capability	-0.48 (-0.825, -0.026)	0.037	
Marital status	-0.71 (-1.665, 0.252)	0.147	
Social network size	-0.13 (-0.235, 0.000)	0.049	
Community participation	0.06 (0.013, 0.098)	0.011	
Access to amenities	-0.095 (-0.192, 0.002)	0.055	
Access to services	-0.08 (-0.188, 0.026)	0.137	
Personal characteristic of the community	-0.1 (-0.140, 0.123)	0.895	
Physical characteristics of the community	-0.1 (-0.482, 0.284)	0.61	

CI, confidence interval.

Discussion

This study, using an ecological approach, has indicated which factors best predict wellness for older people living in diverse rural communities. As prior research has focused on rural older people's wellbeing and QoL and generally lacked conceptual clarity and consistency, the present study sought to make a unique contribution to knowledge through use of the multidimensional measure of wellness⁴⁹. Use of this concept recognised the interrelated social, economic and physical influences that impact older people throughout the life course⁵⁰.

The ecological model developed explains 58.8% variance in the wellness scores of rural older people. An examination

of the independent variables highlighted that the intrapersonal factors were the strongest predictors of wellness: physical health, financial capability, the extent of loneliness experienced and mental health. Interpersonal factors – size of social network and extent of community participation – also contributed significantly to the variance observed. Institutional factors – the resource base environment and access to amenities and services – contributed only marginally to the model. Community factors – the personal and physical characteristics of community – only made a marginal contribution.

The means scores for the physical and mental components of health were close to the average score noted in the general population. However, this study did find that physical health made the strongest unique contribution to perceived wellness. Together, physical and mental health accounted for almost half the variance in relation to perceived wellness. This finding supports other research into wellness and older people using Adam's perceived wellness measure²⁰, such as Footitt and Anderson's work²⁶. From the results of their study Footitt and Anderson concluded that being physically able to do a number of activities (free of chronic pain), combined with good mental health, contributes to older people's perceptions of wellness. Findings also support a body of work that has found rural older people experience poorer health outcomes than those in urban areas^{51,52}. As there is a paucity of research using wellness as the central measure in older cohorts and across the lifespan⁵³, the present study's findings provide further supporting evidence.

The other key intrapersonal factor in the present study was loneliness. The impact of loneliness on physical health has been well documented, with evidence suggesting that through this and other mechanisms loneliness may be linked to multiple chronic illnesses^{54,55}. It is also associated with poor mental health outcomes, such as increased depressive symptoms⁵⁶, suicidal behaviours⁵⁷, impaired cognitive performance⁵⁸ and diminished executive control⁵⁹. The findings here extend this body of work, by demonstrating a significant relationship to the broader concept of wellness.

The other intrapersonal factor that contributed significantly to the model was financial capability. Using Zaidi's measure the present study was able to confirm that lower levels of financial capability were related to perceived wellness. Kimberley's analysis of national Australian data demonstrates that 56% of Australians aged 75 years or more fall into the lowest income quintile and 22% into the second lowest⁶⁰. In Australia, the aged care pension alone is widely recognised as inadequate⁶⁰, yet in the present study nearly three-quarters of participants (74%) were reliant on full or part pension.

Perceived wellness was also predicted by interpersonal factors, in particular size of social network and degree of community participation. A detailed examination of support networks enabled the following to be captured: the mean size of participants' network was over nine people, with 94.0–94.7% of networks containing a mix of ages and sexes and 90.9% including both kin and non-kin relationships. The majority of participants had regular contact with family, friends or neighbours and were involved in at least one social or community group. The social capital literature has highlighted the importance of bonding social capital, characterised by dense networks of social support⁶¹ in enabling people to 'get by'³⁵. Previous work by Heenan found evidence of strong reciprocal support between older people living in rural Northern Ireland⁶². Similarly, Australian research has found evidence of considerable reciprocal relationships between older people and their friends and neighbours^{63,64}. The present study adds to the body of research on social capital, establishing a link to wellness in rural older people.

Somewhat surprisingly, both institutional factors and community factors did not significantly predict individual wellness. The institutional factors in the model, in particular access to amenities and health services, were not significant predictors, with the majority of participants satisfied with their access to amenities and health care. This is despite the literature highlighting the importance of the interactions between the resource environment on wellbeing and quality of life. This finding may be explained by a number of factors, including that rural older people see themselves as resilient and thus may have lower expectations of health care⁶⁵.

The present study was not able to find support for community perception, either personal or physical. This was similarly surprising, as the study specifically set out to focus on rural communities with very diverse resource environments,

including, for example, alpine areas, mining towns and farming regions. Despite this, the authors were unable to find any statistical difference in wellness based upon where participants lived, with surprisingly similar means in wellness scores across these areas. One potential explanation is that older people from a diverse range of rural communities tend to perceive themselves as having a rural place-based identity⁶⁶.

Further explanations for this set of findings relate to the difficulties of recruiting hard-to-access populations, such as frail aged and socially isolated people from rural regions. Due to financial, ethical and practical constraints, it was not possible to recruit a random sample for this study. Instead, an attempt was made to maximise diversity among participants by utilising a community saturation approach. However, results suggest that there was both a gender bias and an overrepresentation of people from higher educational backgrounds in the sample. This limitation clearly needs addressing in future research, and the next stage of the study, in-depth interviews, draws on stratified sampling techniques to maximise diversity across the sample.

There are other limitations to the study, including its cross-sectional nature, which makes causality difficult to predict. Further, at the time of conducting the study, Adam's perceived wellness measure²⁰ was assessed as the best available tool, whilst acknowledging its lack of consistent application to older cohorts. Foster, Galjour and Spengel⁵³ have since proposed that this measure fails to accommodate the impact of lifespan change on wellness and hence that older people tend to perceive wellness differently from the dimensions proposed by Adams²⁰. In doing so they drop items from the established scale, drawing into question the validity of their tool. Strout and Howard have developed the Wellness Assessment Tool (WEL) designed specifically to measure wellness in older people living independently in the community and including other dimensions such as exercise and fitness, nutrition and social relationships⁶⁷. There remains, however, only limited research measuring wellness in older people, suggesting that there is potential for future research development in this area.

Conclusions

This study set out to examine the predictors of wellness in rural older people. It did so by using a multidimensional concept that moves away from measuring descriptors of wellness, such as wellbeing and quality of life, to an integrated model of measurement. Using an ecological approach, the present study found wellness to be related to key intrapersonal and interpersonal factors. These factors should be considered when developing policy and subsequent strategies to increase the capacity of rural communities to facilitate wellness.

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REFERENCES:

- 1 National Health and Hospitals Reform Commission. *A healthier future for all Australians: final report of the National Health and Hospitals Reform Commission*. Canberra: Australian Government, 2009.
- 2 Queensland Health. *Queensland Health Strategic Plan 2011–2015*. Brisbane: State of Queensland, 2011.
- 3 Productivity Commission. *Caring for older Australians: final inquiry report*. Canberra: Commonwealth of Australia, 2011.
- 4 Australian Government. *Consumer directed care (CDC) 2016*. Available: https://agedcare.health.gov.au/sites/g/files/net1426/f/documents/04_2015/what_is_consumer_directed_care_0_0.pdf (Accessed 1 October 2016).
- 5 Adams T, Bezner J, Steinhardt M. The conceptualization and measurement of perceived wellness: integrating balance across and within dimensions. *American Journal of Health Promotion* 1997; **11(3)**: 208-218. <https://doi.org/10.4278>

- 6 Department of Health. *Doing it with us not for us: strategic direction 2010–13*. Melbourne: Victorian Government Rural and Regional Health and Aged Care Services Division, 2009.
- 7 Inder KJ, Lewin TJ, Kelly BJ. Factors impacting on the well-being of older residents in rural communities. *Perspectives in Public Health* 2012; **132(4)**: 182-191. <https://doi.org/10.1177/1757913912447018>
- 8 United Nations. *World population ageing 2009*. Geneva: Department of Economic and Social Affairs, 2009.
- 9 Hugo G. The state of rural populations. In: Cocklin C, Dibden J (Eds). *Sustainability and change in rural Australia*. Sydney: University of New South Wales Press, 2005.
- 10 Alston M. Globalisation, rural restructuring and health service delivery in Australia: policy failure and the role of social work? *Health and Social Care in the Community* 2007; **15(3)**: 195-202. <https://doi.org/10.1111/j.1365-2524.2007.00696.x>
- 11 The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. *Social Science & Medicine* 1995; **41(10)**: 1403-1409. [https://doi.org/10.1016/0277-9536\(95\)00112-K](https://doi.org/10.1016/0277-9536(95)00112-K)
- 12 Wiggins RD, Higgs PF, Hyde M, Blane DB. Quality of life in the third age: key predictors of the CASP-19 measure. *Ageing and Society* 2004; **24(5)**: 693-708. <https://doi.org/10.1017/S0144686X04002284>
- 13 Smith AE, Sim J, Scharf T, Phillipson C. Determinants of quality of life amongst older people in deprived neighbourhoods. *Ageing and Society* 2004; **24(5)**: 793-814. <https://doi.org/10.1017/S0144686X04002569>
- 14 Adams KB, Leibbrandt S, Moon H. A critical review of the literature on social and leisure activity and wellbeing in later life. *Ageing and Society* 2011; **31(4)**: 683-712. <https://doi.org/10.1017/S0144686X10001091>
- 15 Baker LA, Cahalin LP, Gerst K, Burr JA. Productive activities and subjective well-being among older adults: the influence of number of activities and time commitment. *Social Indicators Research* 2005; **73(3)**: 431-458. <https://doi.org/10.1007/s11205-005-0805-6>
- 16 Smith BJ, Tang KC, Nutbeam D. WHO health promotion glossary: new terms. *Health Promotion International* 2006; **21(4)**: 340-345. <https://doi.org/10.1093/heapro/dal033>
- 17 Gana K, Bailly N, Saada Y, Joulain M, Trouillet R, Hervé C, et al. Relationship between life satisfaction and physical health in older adults: a longitudinal test of cross-lagged and simultaneous effects. *Health Psychology* 2013; **32(8)**: 896. <https://doi.org/10.1037/a0031656>
- 18 Pinto JM, Fontaine AM, Neri AL. The influence of physical and mental health on life satisfaction is mediated by self-rated health: a study with Brazilian elderly. *Archives of Gerontology and Geriatrics* 2016; **65**: 104-110. <https://doi.org/10.1016/j.archger.2016.03.009>
- 19 Prieto-Flores M-E, Moreno-Jimenez A, Fernandez-Mayoralas G, Rojo-Perez F, Forjaz MJ. The relative contribution of health status and quality of life domains in subjective health in old age. *Social Indicators Research* 2012; **106(1)**: 27-39. <https://doi.org/10.1007/s11205-011-9791-z>
- 20 Adams T, Bezner J, Garner L, Woodruff S. Construct validation for the Perceived Wellness Survey. *American Journal of Health Studies* 1998; **14(4)**: 212-219.
- 21 Harari MJ, Waehler CA, Rogers JR. An empirical investigation of a theoretically based measure of perceived wellness. *Journal of Counseling Psychology* 2005; **52(1)**: 93-103. <https://doi.org/10.1037/0022-0167.52.1.93>
- 22 Braden CA, Cuthbert JP, Brenner L, Hawley L, Morey C, Newman J, Staniszewski K, et al. Health and wellness characteristics of persons with traumatic brain injury. *Brain Injury* 2012; **26(11)**: 1315-1327. <https://doi.org/10.3109/02699052.2012.706351>
- 23 Goetzke B, Nitzko S, Spiller A. Consumption of organic and functional food. A matter of well-being and health? *Appetite* 2014; **77**: 96-105. <https://doi.org/10.1016/j.appet.2014.02.012>

- 24 Milroy JJ, Orsini MM, Abundo ML, Sidman CL. College students' perceived wellness among online, face-to-face, and hybrid formats of a lifetime physical activity and wellness course. *American Journal of Health Education* 2013; **44(5)**: 252-258. <https://doi.org/10.1080/19325037.2013.807754>
- 25 Naugle KE, Behar-Horenstein LS, Dodd VJ, Tillman MD, Borsa PA. Perceptions of wellness and burnout among certified athletic trainers: sex differences. *Journal of Athletic Training* 2013; **48(3)**: 424. <https://doi.org/10.4085/1062-6050-48.2.07>
- 26 Footitt J, Anderson D. Associations between perception of wellness and health-related quality of life, comorbidities, modifiable lifestyle factors and demographics in older Australians. *Australasian Journal on Ageing* 2012; **31(1)**: 22-27. <https://doi.org/10.1111/j.1741-6612.2011.00526.x>
- 27 Bronfenbrenner U. *The ecology of human development*. Cambridge: Harvard University Press, 1979.
- 28 McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Education Quarterly* 1988; **15(4)**: 351-377. <https://doi.org/10.1177/109019818801500401>
- 29 Yeom HA, Fleury J, Keller C. Risk factors for mobility limitation in community-dwelling older adults: a social ecological perspective. *Geriatric Nursing* 2008; **29(2)**: 133-140. <https://doi.org/10.1016/j.gerinurse.2007.07.002>
- 30 Boehlen F, Herzog W, Quinzler R, Haefeli WE, Maatouk I, Niehoff D, et al. Loneliness in the elderly is associated with the use of psychotropic drugs. *International Journal of Geriatric Psychiatry* 2015; **30(9)**: 957-964. <https://doi.org/10.1002/gps.4246>
- 31 Cacioppo S, Cacioppo J. Decoding the invisible forces of social connections. *Frontiers in Integrative Neuroscience* 2015 2012; **6(51)**. <https://doi.org/10.3389/fnint.2012.00051>
- 32 Hawkey LC, Cacioppo JT. Loneliness matters: a theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine* 2010; **40(2)**: 218-227. <https://doi.org/10.1007/s12160-010-9210-8>
- 33 Luo Y, Hawkey LC, Waite LJ, Cacioppo JT. Loneliness, health, and mortality in old age: a national longitudinal study. *Social Science & Medicine* 2012; **74(6)**: 907-914. <https://doi.org/10.1016/j.socscimed.2011.11.028>
- 34 Winterton R, Warburton J, Keating N, Petersen M, Berg T, Wilson J. Understanding the influence of community characteristics on wellness for rural older adults: a meta-synthesis. *Journal of Rural Studies* 2016; **45**: 320-327. <https://doi.org/10.1016/j.jrurstud.2015.12.010>
- 35 Putnam RD. *Bowling alone: the collapse and revival of American community*. New York: Simon & Schuster, 2000. <https://doi.org/10.1145/358916.361990>
- 36 Baum FE, Ziersch AM. Social capital. *Journal of Epidemiology and Community Health* 2003; **57(5)**: 320. <https://doi.org/10.1136/jech.57.5.320>
- 37 Agahi N, Parker N. Are today's older people more active than their predecessors? Participation in leisure-time activities in Sweden in 1992 and 2002. *Ageing and Society* 2005; **25**: 925-941. <https://doi.org/10.1017/S0144686X05004058>
- 38 Wakerman J, Humphreys J. Sustainable primary health care services in rural and remote areas: innovation and evidence. *Australian Journal of Rural Health* 2011; **19(3)**: 118-124. <https://doi.org/10.1111/j.1440-1584.2010.01180.x>
- 39 Keating N, Phillips JE. A critical human ecology perspective on rural ageing. In: N Keating (Ed.). *Rural ageing: a good place to grow old?* Bristol: Policy Press, 2008; 1-10. <https://doi.org/10.1332/policypress/9781861349019.003.0001>
- 40 Bell M, Cooper J. Measuring spatial variations in wellness among Australia's rural aged. In: T Wilson, E Charles-Edwards, M Bell (Eds). *Demography for Planning and Policy: Australian Case Studies. 7: Applied Demography Series*. 2015.
- 41 Ware JE, Kosinski M, Dewey JE, Gandek B. *How to score and interpret single-item health status measures: a manual for users of the SF-8 Health Survey*. Lincoln, RI: QualityMetric, 2001.

- 42 De Jong Gierveld J, Van Tilburg T. A 6-item scale for overall, emotional, and social loneliness: confirmatory tests on survey data. *Research on Aging* 2006; **28**: 582. <https://doi.org/10.1177/0164027506289723>
- 43 Zaidi A. *Exclusion from material resources among older people in EU countries: new evidence on poverty and capability deprivation*. Vienna: European Centre for Social Welfare Policy and Research, 2011.
- 44 Baum FE, Bush RA, Modra CC, Murray CJ, Cox EM, Alexander KM, et al. Epidemiology of participation: an Australian community study. *Journal of Epidemiology and Community Health* 2000; **54(6)**: 414. <https://doi.org/10.1136/jech.54.6.414>
- 45 Dobbs B. Supportiveness to seniors in rural Canada: results from a national survey. *Gerontologist* 2005; **45**: 221.
- 46 Feist H, Parker K, Howard N, Hugo G. New technologies: their potential role in linking rural older people to community. *International Journal of Emerging Technologies and Society* 2010; **8(2)**: 68-84.
- 47 De Jong Gierveld J, Keating N, Fast J. Determinants of loneliness among older adults in Canada. *Canadian Journal on Aging* 2015; **34(2)**: 125-136. <https://doi.org/10.1017/S0714980815000070>
- 48 De Jong Gierveld J, Tilburg T. The De Jong Gierveld short scales for emotional and social loneliness: tested on data from 7 countries in the UN generations and gender surveys. *European Journal of Ageing* 2010; **7(2)**: 121-130. <https://doi.org/10.1007/s10433-010-0144-6>
- 49 Roscoe LJ. Wellness: a review of theory and measurement for counselors. *Journal of Counseling and Development* 2009; **87(Spring)**: 216-226. <https://doi.org/10.1002/j.1556-6678.2009.tb00570.x>
- 50 Kindig D, Stoddart G. What is population health? *The American Journal of Public Health* 2003; **93(3)**: 380-384. <https://doi.org/10.2105/AJPH.93.3.380>
- 51 Australian Institute of Health and Welfare. *Older Australia at a glance – special population groups*. Canberra: Department of Health and Ageing, 2007.
- 52 Bourke L, Sheridan C, Russell U, Jones G, Dewitt D, Liaw S-T. Developing a conceptual understanding of rural health practice. *Australian Journal of Rural Health* 2004; **12(5)**: 181-186. <https://doi.org/10.1111/j.1440-1854.2004.00601.x>
- 53 Foster T, Galjour C, Spengel S. Investigating holistic wellness dimensions during older adulthood: a factor analytic study. *Journal of Adult Development* 2015; **22(4)**: 239-247. <https://doi.org/10.1007/s10804-015-9215-4>
- 54 Doane LD, Adam EK. Loneliness and cortisol: momentary, day-to-day, and trait associations. *Psychoneuroendocrinology* 2010; **35(3)**: 430-441. <https://doi.org/10.1016/j.psyneuen.2009.08.005>
- 55 Cacioppo JT, Hawkley LC, Crawford LE, Ernst JM, Burleson MH, Kowalewski RB, et al. Loneliness and health: potential mechanisms. *Psychosomatic Medicine* 2002; **64(3)**: 407-417. <https://doi.org/10.1097/00006842-200205000-00005>
- 56 Cacioppo JT, Hughes ME, Waite LJ, Hawkley LC, Thisted RA. Loneliness as a specific risk factor for depressive symptoms: cross-sectional and longitudinal analyses. *Psychology and Aging* 2006; **21(1)**: 140-151. <https://doi.org/10.1037/0882-7974.21.1.140>
- 57 Stickley A, Koyanagi A. Loneliness, common mental disorders and suicidal behavior: findings from a general population survey. *Journal of Affective Disorders* 2016; **197**: 81-87. <https://doi.org/10.1016/j.jad.2016.02.054>
- 58 Griffin SC, Mezuk B, Baylor A, Rybarczyk BD, Perrin P. Cynical hostility and loneliness as predictors of cognitive decline in older adults. *The Gerontologist* 2016; **56(Suppl3)**: 535. <https://doi.org/10.1093/geront/gnw162.2160>
- 59 Layden EA, Cacioppo JT, Cacioppo S, Cappa SF, Dodich A, Falini A, et al. Perceived social isolation is associated with altered functional connectivity in neural networks associated with tonic alertness and executive control. *NeuroImage* 2017; **145**: 58-73. <https://doi.org/10.1016/j.neuroimage.2016.09.050>
- 60 Kimberley H. Living a life value: constraints experiences by older Australians. In: K Serr (Ed.). *Thinking about*

poverty. Sydney: Federation Press, 2017.

61 Hodgkin S. Participating in social, civic, and community life: are we all equal? *Australian Social Work* 2011; **64(3)**: 245-265. <https://doi.org/10.1080/0312407X.2011.573798>

62 Heenan D. Social capital and older people in farming communities. *Journal of Aging Studies* 2010; **24(1)**: 40-46. <https://doi.org/10.1016/j.jaging.2008.09.002>

63 Hodgkin S. 'I'm older and more interested in my community': older people's contributions to social capital. *Australasian Journal on Ageing* 2012; **31(1)**: 34-39. <https://doi.org/10.1111/j.1741-6612.2011.00528.x>

64 Warburton J, McLaughlin D. 'Lots of little kindnesses': valuing the role of older Australians as informal volunteers in the community. *Ageing and Society* 2005; **25(5)**: 715-730. <https://doi.org/10.1017/S0144686X05003648>

65 Winterton R, Warburton J. Does place matter? Reviewing the experience of disadvantage for older people in rural Australia. *Rural Society* 2011; **20(2)**: 187-197. <https://doi.org/10.5172/rsj.20.2.187>

66 Winterton R, Warburton J. Ageing in the bush: the role of rural places in maintaining identity for long term rural residents and retirement migrants in north-east Victoria, Australia. *Journal of Rural Studies* 2012; **28**: 329-337. <https://doi.org/10.1016/j.jrurstud.2012.01.005>

67 Strout K, Howard EP. Application of the Rasch model to measure five dimensions of wellness in community-dwelling older adults. *Journal of Nursing Measurement* 2014; **22(2)**: 268-290. <https://doi.org/10.1891/1061-3749.22.2.268>

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