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Quality of Life for 19,114 participants in the ASPREE (ASpirin in Reducing Events in the Elderly) study and their association with sociodemographic and modifiable lifestyle risk factors

Nigel P. Stocks¹, David A. González-Chica¹, Robyn L. Woods², Jessica E. Lockery², Rory S. J. Wolfe², Anne M. Murray³, Brenda Kirpach³, Raj C. Shah⁴, Mark R. Nelson^{2,5}, Christopher M. Reid^{2,6}, Michael E. Ernst⁷, John J. McNeil² ASPREE Investigator Group

¹Discipline of General Practice, Adelaide Medical School, The University of Adelaide, Level 1, Helen Mayo North, Frome Road, North Tce Campus, Adelaide, SA 5005, Australia

²Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, VIC, Australia

³Berman Center for Outcomes and Clinical Research, Minneapolis Medical Research Foundation, Hennepin County Medical Center, Minneapolis, MN, USA

⁴Department of Family Medicine and Rush Alzheimer's Disease Center, Rush University Medical Center, Chicago, IL, USA

⁵Menzies Institute for Medical Research, University of Tasmania, Hobart, TAS, Australia

⁶School of Public Health, Curtin University, Perth, WA, Australia

⁷Department of Pharmacy Practice and Science, College of Pharmacy, Department of Family Medicine, Carver College of Medicine, University of Iowa, Iowa City, IA, USA

Abstract

Purpose—To explore the relationship between sociodemographic and lifestyle variables with health-related quality of life (HRQoL) of a large cohort of 'healthy' older individuals.

Methods—The sample included individuals aged 65+ years from Australia ($N = 16,703$) and the USA ($N = 2411$) enrolled in the ASPIrin in Reducing Events in the Elderly (ASPREE) multicentre placebo-controlled trial study and free of cardiovascular disease, dementia, serious physical disabilities or 'fatal' illnesses. The associations with the physical (PCS) and mental component

Nigel P. Stocks nigel.stocks@adelaide.edu.au.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed consent Informed consent was obtained from all individual participants included in the study.

Research involving human participants This study was conducted in accordance with the Declaration of Helsinki 1964 as revised in 2008, the NHMRC Guidelines on Human Experimentation, the federal patient privacy (HIPAA) law and ICH-GCP guidelines and the International Conference of Harmonisation Guidelines for Good Clinical Practice. We also follow the Code of Federal Regulations as it relates to areas of clinical research. Multiple Institutional Review Board approvals were obtained in Australia and the USA.

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scores (MCS) of HRQoL (SF-12 questionnaire) were explored using multiple linear regression models from data collected at baseline (2010–2014).

Results—The adjusted PCS mean was slightly higher in the USA (49.5 ± 9.1) than Australia (48.2 ± 11.6 ; $p < 0.001$), but MCS was similar in both samples (55.7 ± 7.5 and 55.7 ± 9.6 , respectively; $p = 0.603$). Males, younger participants, better educated, more active individuals, or those currently drinking 1–2 alcoholic drinks/day showed a better HRQoL (results more evident for PCS than MCS), while current heavy smokers had the lowest physical HRQoL in both countries. Neither age, walking time, nor alcohol intake was associated with MCS in either cohort.

Conclusions—Baseline HRQoL of ASPREE participants was higher than that reported in population-based studies of older individuals, but the associations between sociodemographic and lifestyle variables were consistent with the published literature. As the cohort ages and develops chronic diseases, ASPREE will be able to document HRQoL changes.

Keywords

Health status; Social Determinants of Health; Global health; Mental health; Health-related quality of life

Background

Globally, a trend toward increasing life expectancy but reduced quality of life has been identified as a consequence of the demographic and epidemiological transition [1], with healthy life years being lost due to disability and multi-morbidity [2, 3]. For this reason, there has been increased interest in understanding the determinants of health-related quality of life (HRQoL), as it could help with the development of public health strategies that aim to promote healthy aging [3, 4]. HRQoL is an individual-centered outcome that assesses the impact of a person's physical and mental health, independence, social relationships, personal beliefs and the effects of their environment on their overall well-being [5].

Internationally, norms for HRQoL have been described in multiple population-based studies of adults in New Zealand [6], the USA [7], Australia [8], and Europe [5], which included individuals with or without chronic conditions. Moreover, the relationship between sociodemographic characteristics [9–11], lifestyle (diet [12], physical activity [13, 14], smoking, and alcohol intake [4]), and chronic diseases (diabetes mellitus [15, 16], gastrointestinal [17], respiratory [18], musculoskeletal [19], and cardiovascular (CVD) [20–24]) with HRQoL has also been studied extensively. However, HRQoL in the 'healthy' elderly, examining sociodemographic and lifestyle risk factors, has not been described.

Aspirin in Reducing Events in the Elderly (ASPREE) is a multicentre placebo-controlled trial of low-dose aspirin that will determine, in a healthy elderly population from Australia and the USA, whether 5 years of daily 100-mg enteric-coated aspirin extends disability-free and dementia-free life. In addition to these primary endpoints, HRQoL was investigated as a secondary outcome [25, 26]. Although the sample in the ASPREE study was not intended to be representative of all older Australian or US populations, it is a unique cohort of 'healthy' individuals aged > 70 years (> 65 years for minorities in the USA), who were free of CVD, dementia, serious physical disabilities, or other conditions that were likely to be fatal for 5

years from recruitment. Moreover, although participants were not randomly selected from the wider population in each country, the sampling strategy [25, 26] provided a group well balanced in terms of sex, age, race/ethnicity, education level, or rurality (see Online Resource 1) that would allow extrapolation of conclusions to groups usually underrepresented in similar studies [27–29]. Given the comprehensive nature of the ASPREE dataset, which includes sociodemographic, lifestyle, and clinical variables [25, 26], the opportunities to explore their cross-sectional and longitudinal associations with HRQoL are readily apparent.

This paper provides data describing cross-sectional measures of HRQoL at baseline for this large ‘healthy’ older cohort, including Australian and US ASPREE participants. It also explores the association between sociodemographic and lifestyle variables with HRQoL—physical (PCS) and mental (MCS) components summary scores—in each country.

Methods

Participants

ASPREE is a multicentre randomized placebo-controlled trial involving 19,114 ‘healthy’ elderly individuals, enrolled between March 2010 and December 2014 in Australia and the USA. Details of the methodology and baseline characteristics of participants have been published elsewhere [25, 26]. Briefly, the Australian sample was almost entirely recruited through general practices, while in the USA recruitment was community based through clinical trial and academic centres. In Australia, recruitment locations included major cities and metropolitan areas, large and small regional towns, with many practices located in regional or rural areas. Given evidence of the higher burden of chronic disease among minority and lower socioeconomic groups, the ASPREE protocol was modified in 2011 and recruitment in the USA was restricted to sites with high proportions of African-American or Hispanics aged 65–69 years. Therefore, the final sample included individuals aged 65+ years in the USA and 70+ years in Australia. Interested potential participants were screened by phone ($N=83,376$) for suitability and eligibility. After applying the exclusion criteria (clinical history of CVD, dementia, disability, bleeding condition, anemia, current use of aspirin for secondary prevention, current use of other antiplatelet agent or anticoagulant medication, uncontrolled high blood pressure, or presence of any serious condition likely to cause death within 5 years) and obtaining informed consent, the final number of participants was 19,114. Sociodemographic, lifestyle, clinical variables, HRQoL, and other relevant data were collected during two baseline visits. ASPREE participants were then randomized 50:50 to 100-mg enteric-coated aspirin tablet or matching placebo [26].

Outcome

HRQoL was evaluated at baseline data collection using the Medical Outcomes Study Short Form 12 (SF-12, version 2) [30]. The questions are combined to generate the PCS and MCS scores, with a mean value of 50 and standard deviation of 10, with higher values indicating a better HRQoL [5, 30].

Additionally, answers to each of the 12 items in the SF-12 questionnaire were also compared in Australia and the USA. Some items of the Sf-12 were reordered [general health (Q1), pain (Q8), feeling calm (Q9) and lot of energy (Q10)], so that a lower value in the scale represented a poor performance (i.e., more frequent/intense limitations) and a higher value an excellent performance.

Independent variables

Sociodemographic and lifestyle variables were selected based on results from previous studies investigating individuals at risk of CVD [9–11]. Demographic variables included sex (male or female), age (categorized as 65–69; 70–74; 75–79, 80 years), living situation (at home alone, at home with family or friends, in a residential/nursing home), race/ ethnicity (white, black/African-American, Hispanic, Asiatic, Indian/Aboriginal/Native, mixed/other), and attained educational level (up to 9 years, 9–11 years, 12–15 years, and 15+ years). In Australia, the postal code for the area of residence was also collected. This information was used to estimate a macro-level socioeconomic position variable (Socio-Economic Indexes for Areas Index of Relative Socioeconomic Advantage and Disadvantaged (SEIFA-IRSAD), divided in quintiles) and the residence area (major cities, inner regional, outer/remote), using reference data from the 2011 Australian Census [31]. SEIFA-IRSAD is based on a range of census variables and an indicator of relative economic and social advantage/disadvantage of people and households within an area compared to the rest of the country, with high scores indicating the respondent resides in a more advantaged area [31].

Three modifiable lifestyle risk factors were investigated: (1) daily walking time in the last 2 weeks (none, up to 15 min, 16–30 min, and 30+ minutes per day); (2) alcohol consumption in any day (never, none (but former drinker), 1–2 drinks/day, 3–4 drinks/day, 5+ drinks/day); and (3) smoking status (never, past < 20 cigarettes, past 20+ cigarettes, current < 20 cigarettes, current 20+ cigarettes).

Data analysis

Percentages (%) were used to describe categorical variables, while mean and standard deviation (SD) were used for numerical variables. Chi-square tests for heterogeneity were used to verify sociodemographic and lifestyle differences between Australia and the US samples.

Due to the differences observed in both samples according to sociodemographic variables, multinomial logistic regression was used to compare the individual results of the 12 items in the SF-12v2 questionnaire. Marginal adjusted prevalence of these variables (adjusted for sex, age, living situation, race/ethnicity, and educational level) was then estimated for Australia and the USA and presented graphically, with the corresponding *p* values to identify differences between countries.

Multiple linear regression models were used to evaluate the association between sociodemographic and lifestyle variables with PCS and MCS. These analyses were conducted separately by country. Variables were included in the models following a hierarchical procedure, considering all sociodemographic variables in the first level of adjustment, and lifestyle variables in the second level. Predicted adjusted means of HRQoL

in each category of the explanatory variables were estimated and reported with their respective 95% confidence intervals (95% CI), and p values from Wald tests for heterogeneity were used to identify differences within countries according to the independent variables.

The variance inflation factor (VIF) was investigated as an indicator of possible collinearity between explanatory variables. Determination coefficients (R^2) were used to evaluate overall model fit and the impact of the explanatory variables on the HRQoL (PCS or MCS) in each country. All analyses were performed using Stata (StataCorp, Texas, USA) version 14.0.

Ethics

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This study was also conducted in accordance with the NHMRC Guidelines on Human Experimentation, the federal patient privacy (HIPAA) law and ICH-GCP guidelines and the International Conference of Harmonisation Guidelines for Good Clinical Practice. We also followed the Code of Federal Regulations as it relates to areas of clinical research. Multiple Institutional Review Board approvals were obtained in Australia and the USA, and all participants signed an informed consent before their enrollment.

Results

The study included 16,703 Australians (mean age 75.3 ± 4.4 years, 45.0% males) and 2,411 Americans (mean age 73.8 ± 5.5 years, 48.2% males). In comparison with national census data (see Online Resource 1), samples included a larger proportion of females (USA), blacks or Hispanics (USA), individuals aged 70–74 years or with a higher educational level (both countries), or living in regional areas (Australia).

Compared with the USA (Table 1), the Australian sample included a higher proportion of individuals living at home with family or friends (67.7 vs 60.8%), whites (98.0 vs 45.1%), or with an education level of less than 12 years (50.3 vs 9.8%). Although the Australian sample included a higher proportion of less educated individuals, the cohort was well distributed in all quintiles of socioeconomic position, 52.3% of them lived in major cities, 35.8% in inner regional/rural locations, and 11.7% in outer/remote areas.

Figure 1 compares the answers to each of the items included in the SF-12v2 questionnaire in Australia and the USA. In general terms, the proportion of participants in both countries reporting poor performance was lower than 10% across all questions. Among the physical health questions, participants reported having the most limitation with ‘climbing stairs’. For the mental health questions, a ‘lack of energy’ was the most affected item. The US sample showed a better performance in three of the physical health questions (general health, moderate activity limitations, and difficulties climbing stairs) than Australians, but no difference was found for any of the mental health questions. These differences in the individual questions were reflected in the summary scores, as the adjusted mean for PCS (adjusted for sex, age, living situation, race/ethnicity, and educational level in each country)

was slightly higher in the USA (49.5, SD = 9.1) than in Australia (48.2, SD = 11.6; $p < 0.001$). For the MCS, the mean was similar in both samples (55.7, SD = 7.5 and 55.7, SD = 9.6; $p = 0.603$) (see Online Resource 2).

After adjustment for the other sociodemographic variables, PCS in both countries was up to 1.7 points lower in women (Table 2). Moreover, although the mean PCS remained stable between the ages of 65–74 years (the USA only), it showed a progressive reduction after that age (also see Online Resource 3). Regarding the living situation, the PCS mean difference between those living at home with family/friends or alone was small. In contrast, only in the USA, white individuals showed a mean PCS 2.9 points higher (95% CI 2.0; 3.8) than black/African-Americans. Even though the educational level was inversely associated with PCS, the difference between those better and less educated was three times higher in the USA (mean PCS difference = 4.9 points 95% CI 3.1; 6.7) than in Australia (mean PCS difference 1.5 points 95% CI 1.1; 1.7). The PCS differences between the extreme categories of socioeconomic position in Australia were also small (PCS in the top quintile 1.2 points higher than the bottom quintile; 95% CI 0.8; 1.7), and no association was found regarding area of residence.

Table 2 also shows MCS was slightly higher among Australian men or those living at home with family/friends, but there was no association with age in either country (also see Online Resource 3). Race/ethnicity showed a discrepant relationship with MCS in both countries. Among Australians, Indian/Aboriginals had a mean score 4.9 lower than whites, while in the USA the former showed the highest MCS. Only in the USA did better educated individuals show a MCS 1.9 higher (95% CI 0.3; 3.6) than the less educated, while in Australia neither this variable nor socioeconomic position was related to this outcome. However, living in outer/remote Australia was related to a slightly higher MCS.

The proportion of individuals walking more than 30 min/ day was 16% higher in Australia than in the USA (84.6 vs 73.1%), but the former also showed a higher proportion of current drinkers (79.0 vs 60.6%) (Table 3). In contrast, the prevalence of current smokers was twice as high in the USA (7.3%) than in Australia (3.4%).

Although there was a direct trend association between walking time and PCS in both countries (Table 4), the difference between those walking more than 30 min/day compared to 'none' was higher in Australia (5.8 points 95% CI 5.1; 6.4) than in the USA (4.1 points 95% CI 2.8; 5.4). Those having up to two standard drinks per day showed a slightly higher PCS than never drinkers, especially in the USA. However, having five or more alcoholic drinks per day was not associated with a lower PCS in either country. Moreover, the associations between smoking and PCS diverged in both countries. In Australia, smoking 20 or more cigarettes, currently or in the past, was associated with a PCS between 1.9 and 2.5 lower than never smokers. In the USA, regardless of the number of cigarettes smoked, a lower PCS was observed only among those currently smoking (mean difference ranging from 2.4 to 2.7 compared to never smokers).

Examining the associations between lifestyle variables and MCS (Table 4), neither walking time nor alcohol consumption was associated with this outcome in either country. In

Australia, the differences in MCS between current smokers and never/ex-smokers were small, while in the USA current heavy smokers had a MCS 3.7 points lower (95% CI – 7.1 to – 0.4) than never smokers.

Online Resources 4 and 5 present the adjusted regression coefficients (*b*), with the corresponding 95% CI and *p* values for the association between sociodemographic and lifestyle variables with the investigated outcomes. No evidence of collinearity between variables was identified in the analyses (mean VIF ranging from 1.9 to 2.0) and the variability of the outcomes explained by the fully adjusted models (including all sociodemographic and lifestyle variables) was higher for PCS ($R^2_{\text{Aus}} = 11.8\%$ and $R^2_{\text{US}} = 12.6\%$) than for MCS (R^2 0.8% and 1.9%, respectively).

Discussion

This paper reports HRQoL for 19,114 ‘healthy’ elderly people participating in the ASPREE study. At enrollment, they were free from CVD, dementia, significant physical disability or any other condition that was likely to be fatal for 5 years from recruitment. Although there were some differences in the age, sex, race, educational level and living situation of the groups recruited in Australia and the USA, their mean PCS or MCS was very similar. Most participants reported excellent or very good for most items of the HRQoL questionnaire, although just over 40% had difficulty climbing stairs and one-third reported ‘lack of energy’. Differences in HRQoL according to sociodemographic and lifestyle variables were more consistent for PCS than MCS, with males, younger participants, better educated, more active individuals, or those currently drinking 1–2 alcoholic drinks/day showing a better physical HRQoL, while current heavy smokers had the lowest PCS in Australia and the US samples. On the other hand, neither age, walking time, nor alcohol intake were associated with MCS in either cohort. However, some inconsistent associations were also identified, such as a lower PCS among those living in residential/nursing homes or past heavy smokers in Australia but not the USA.

ASPREE was not intended to be a representative sample of either the Australian or US populations and comparison with national census data demonstrates some inconsistencies (see Online resource 1). However, the study design purposely included enough individuals in each category of sex, age, race/ethnicity, education level or rurality to ensure that the results would inform recommendations and clinical guidelines for minority groups [26].

Compared with other population-based studies of elderly individuals, ASPREE estimates for PCS and MCS are consistently higher. Mean HRQoL scores of individuals aged 65–74 years from nine European countries investigated between 1990 and 1996 ranged from 42.3 to 45.7 (US 43.7) for PCS and 46.4 to 54.1 (US 52.1) for MCS [32]. In later surveys (2001–2003) involving samples from six European countries (mean age ranging from 79.3 to 80.1 years depending on the country), the HRQoL mean ranged from 39.6 to 42.7 points for PCS and from 52.5 to 57.2 points for MCS [33]. In a more recent study conducted in the USA (2008–2009), the mean PCS and MCS for women veterans aged > 75 years were 40.8 (SD 10.9) and 49.1 (SD 9.4), respectively [34]. In Australia, population norms were reported in 2003 for South Australians aged > 75 years, with a mean of 39.4 (SD 12.4) for PCS and 53.6 (SD

9.2) for MCS [35], and these values have remained steady according to a survey conducted in 2015 [9]. Considering both HRQoL scores, the mean PCS observed in the ASPREE study was higher than the average identified in all these surveys. This finding probably reflects the healthy starting point of ASPREE participants, particularly concerning CVD or those at high risk of CVD, who have been consistently associated with a lower physical HRQoL rather than with a lower MCS [4, 10, 20, 21].

Despite the higher average HRQoL found in this study, and although more than a half of participants reported a 'good' level in all items of the HRQoL questionnaire, some participants had more restrictions related to physical HRQoL (20–48% of participants reporting 'some difficulty', especially for climbing stairs) compared to the mental questions (10–15% expressing 'some difficulty', except for 'lack of energy'). These physical limitations may be related to sarcopenia, which is one of major consequences of aging, leading to a loss in muscle mass and strength, reduction in physical capacity, and frailty [36]. Other molecular, metabolic, and physiological changes also occur in the elderly that contribute to physical impairments, lack of energy, and the increased occurrence of chronic diseases [37]. Moreover, although CVD or severe illnesses were exclusion criteria in the ASPREE study, individuals with arthritis or other musculoskeletal problems were included. Arthritis is a common musculoskeletal disease that may affect 35–45% of elderly people and is usually related to chronic pain and physical limitation, which could explain why people affected by this condition have a lower physical HRQoL when compared to those affected by other chronic diseases [19, 24, 37]. On the other hand, attention, memory, and perception are the most affected cognitive functions in the elderly [38], while emotional stability and social limitations (mental aspects investigated in the SF-12) rely more on previous life experiences, personal characteristics, and other psychological and social factors [39]. These explanations are consistent with the reduction in PCS observed in older participants in our sample and previous studies, while the MCS remained stable [6, 7, 35, 40].

Considering the 'healthy' profile of the ASPREE participants, it is not surprising that more than half of our participants walked for at least 30 min daily, as well as the direct trend association of this variable with PCS but not MCS. Although the cross-sectional design of the analyses is a possible explanation for this finding, physical exercise has been found to be beneficial for improving physiological parameters in the elderly, reducing morbidity, and increasing HRQoL [36, 41, 42].

PCS was also lower in women, even after adjustment for socioeconomic variables. This finding has been demonstrated previously [6, 7, 9, 35, 40] and may be due to the increased prevalence of disability and chronic diseases (especially musculoskeletal conditions) in older women [43].

Educational level was inversely associated with PCS in both countries, more strongly in the USA, where it was also negatively correlated with MCS. These results are intriguing, given that the Australian sample included a larger proportion of individuals with lower educational attainment. The findings might be related to lower inequalities, improved access to a universal and more efficient health system, and to primary healthcare) when compared to the USA [44–46]. Given the purposeful recruitment in the USA of minorities and a younger age

group, despite adjustment of the results for sociodemographic variables it may be that confounding factors such as BMI, income or the social environment (for instance, legislated restrictions on where people can smoke in Australia might account for the reported differences in the prevalence of smoking) could help explain some of the observed trends. Furthermore, while participants in the USA had better PCS on average, more Australians walked for > 30 min/day which appears to be counterintuitive. A better understanding of the physical environment for participants, which might enable such activity, such as favorable weather conditions, safe walking areas, or lack of transport alternatives, might explain these differences [47]. However, further studies will be required to investigate the underlying factors in more detail.

It has been proposed that a higher educational level reduces emotional and physical distress as a result of better personal control, largely because of paid work and economic resources, thus affecting HRQoL [48]. Indeed, a study in three European countries demonstrated that the most important factors adversely affecting HRQoL were sociodemographic characteristic (advanced age and lower education level), negative health habits (smoking status and physical inactivity), and the presence of chronic conditions [49].

Similar to other studies, smoking was associated with reduced HRQoL. Individuals currently smoking 20+ cigarettes had reduced PCS in both Australia and the USA, which is consistent with a French study that found a substantial negative association with heavy smoking [50]. In the USA, current heavy smokers also had much lower MCS, which has been found in other US, Australian and UK studies [51–53]. On the other hand, current intake of 1–2 standard drinks/day of alcohol was associated with a higher PCS but not MCS, which has been previously reported and may be related to the acute pain-inhibitory effects of alcohol [4, 54].

Strengths and limitations

Major strengths are the completeness of data collection, outcome verification procedures, and data analysis that are required for a large multi-centered randomised controlled trial.

However, some limitations should be recognized. As previously stated, ASPREE was not intended to be a representative sample of either the Australian or US elderly populations. Notwithstanding this limitation, the sampling process ensured inclusion of a healthy cohort of individuals free of CVD with a large number of minority participants to increase the external validity of the study [26]. The cross-sectional design of the analyses does not allow evaluation of the temporality for the associations with lifestyle variables (i.e., a better lifestyle leading to a higher HRQoL, or vice-versa, or even mutual influence), although longitudinal studies have identified similar findings [36, 42]. The lack of information regarding sociodemographic indicators in the USA also limited the possibility of comparisons with associations found in Australia. Additionally, among the lifestyle variables, no information was collected regarding moderate or vigorous physical activities or diet, which are relevant CVD prevention strategies and are related to HRQoL [4]. Finally, the findings of significant differences for some factors between countries (i.e., living situation associated in Australia but not in USA or lack of association between race/

ethnicity and PCS in Australia) may be attributable in part to limited power (e.g., up to 1.0% in some categories).

Conclusion

ASPREE has recruited a unique and large ‘healthy’ cohort of elderly people in Australia and the USA. Baseline HRQoL of ASPREE participants was higher than the reported in population-based studies including samples of older individuals (with or without chronic conditions), but the associations between sociodemographic and lifestyle variables were consistent with the published literature. As the cohort ages and develops chronic disease, ASPREE will be able to document HRQoL changes. These results will inform interventions to maintain and improve this important aspect of a person’s well-being.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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SF12 - Mental health questions

Aus=Australia (n=16,703); US=United States (n=2,411)

* p-value <0.05 for the comparison between countries

Fig. 1.

Distribution of the 12 questions in of the SF-12v2 health-related quality of life questionnaire among individuals 65 years in Australia ($N=16,703$) and the USA ($N=2,411$). ASPREE study, baseline (2010–2014). Results adjusted for sociodemographic differences between both countries (sex, age, living situation, race/ethnicity, and educational level)

Table 1

Sample distribution according to sociodemographic variables among individuals 65 years in Australia ($N=16,703$) and the USA ($N=2411$). ASPREE study, baseline (2010–2014)

	Australia		USA		<i>p</i> value [*]
	<i>n</i>	%	<i>n</i>	%	
Sex					
Male	7523	45.0	808	33.5	< 0.001
Female	9180	55.0	1603	66.5	
Age group ^a					
65–69 years	0	0.0	564	23.4	< 0.001
70–74 years	9668	57.9	931	38.6	
75–79 years	4432	26.5	591	24.5	
80 years	2603	15.6	325	13.5	
Living situation					
At home alone	5332	31.9	920	38.2	< 0.001
At home with family	11,313	67.7	1466	60.8	
Residential/nursing home	58	0.4	25	1.0	
Race/ethnicity					
White	16,362	98.0	1088	45.1	< 0.001
Black/African-American	16	0.1	897	37.2	
Hispanic	115	0.7	373	15.5	
Asiatic	128	0.8	36	1.5	
Indian/aboriginal/native	12	0.1	5	0.2	
Mixed/other	61	0.4	10	0.4	
Not reported	9	0.1	2	0.1	
Educational level					
< 9 years	2886	17.3	116	4.8	< 0.001
9–11 years	5513	33.0	121	5.0	
12–15 years	4379	26.2	1195	49.6	
> 15 years	3924	23.5	979	40.6	
SEIFA-IRSAD (quintiles) ^b					
Very low	2748	16.5	–		
Low	2840	17.0	–		
Middle	3162	18.9	–		
High	3113	18.6	–		
Very high	4792	28.7	–		
No available data	48	0.3	–		
Residence area ^b					
Major cities	8730	52.3	–		
Inner regional	5984	35.8	–		

	Australia		USA		<i>p</i> value [*]
	<i>n</i>	%	<i>n</i>	%	
Outer/remote	1954	11.7	–		
Not available data	35	0.2	–		

SEIFA-IRSAD Socio-Economic Indexes for Areas Index of Relative Socio-economic Advantage and Disadvantaged

^aThe sample in Australia included individuals aged 70 + years

^bInformation estimated based on postcodes areas of residence (data available only for the Australian sample)

^{*}Chi-square *p* values for the difference between Australia and the USA on the distribution of sociodemographic variables

Physical and mental component summary scores of health-related quality of life among individuals 65 years according to sociodemographic variables in Australia ($N = 16,703$) and the USA ($N = 2411$). ASPREE study, baseline (2010–2014)

Table 2

	PCS		MCS	
	Australia	USA	Australia	USA
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
Sex	‡	‡	‡	
Male	49.2 (49.0; 49.4)	49.7 (49.2; 50.3)	56.2 (56.1; 56.4)	55.0 (54.5; 55.6)
Female	47.5 (47.3; 47.7)	48.2 (47.8; 48.7)	55.4 (55.3; 55.6)	55.0 (54.6; 55.3)
Age group ^a	‡	‡		
65–69 years	–	49.6 (48.8; 50.4)	–	54.7 (53.9; 55.4)
70–74 years	49.1 (49.0; 49.3)	49.5 (49.0; 50.1)	55.8 (55.6; 55.9)	54.9 (54.4; 55.4)
75–79 years	47.8 (47.5; 48.0)	48.0 (47.3; 48.7)	55.7 (55.5; 55.9)	55.3 (54.6; 55.9)
80 years	45.9 (45.6; 46.2)	46.5 (45.5; 47.4)	55.9 (55.7; 56.2)	55.4 (54.5; 56.2)
Living situation	*		*	
At home alone	48.0 (47.8; 48.3)	48.5 (47.9; 49.0)	55.5 (55.4; 55.7)	54.7 (54.2; 55.3)
At home with family	48.4 (48.2; 48.6)	48.9 (48.5; 49.4)	55.9 (55.8; 56.0)	55.2 (54.8; 55.6)
Residential/nursing home	46.9 (44.7; 49.1)	49.2 (45.9; 52.6)	55.2 (53.4; 57.0)	52.3 (49.2; 55.3)
Race/ethnicity	‡	‡	*	*
White	48.3 (48.1; 48.4)	50.0 (49.4; 50.5)	55.8 (55.7; 55.9)	55.5 (55.0; 56.0)
Black/African-American	48.4 (44.2; 52.6)	47.1 (46.5; 47.7)	55.6 (52.1; 59.0)	54.7 (54.1; 55.2)
Hispanic	50.0 (48.5; 51.6)	49.1 (48.1; 50.1)	55.1 (53.8; 56.4)	54.0 (53.2; 54.9)
Asiatic	48.2 (46.7; 49.7)	50.9 (48.1; 53.7)	55.2 (53.9; 56.4)	56.7 (54.1; 59.2)
Indian/aboriginal/native	44.6 (39.7; 49.4)	44.8 (37.3; 52.2)	50.9 (47.0; 54.9)	60.4 (53.6; 67.2)
Mixed/other	47.3 (45.2; 49.5)	48.0 (42.8; 53.3)	53.6 (51.9; 55.4)	50.7 (45.9; 55.5)
Not reported	47.1 (41.5; 52.7)	52.3 (40.5; 64.2)	55.9 (51.3; 60.5)	55.5 (44.6; 66.3)
Educational level	‡	‡		*
< 9 years	47.4 (47.1; 47.7)	45.1 (43.4; 46.8)	55.9 (55.7; 56.2)	53.6 (52.0; 55.1)
9–11 years	48.1 (47.8; 48.3)	46.3 (44.8; 47.9)	55.7 (55.5; 55.9)	54.8 (53.4; 56.2)
12–15 years	48.6 (48.3; 48.8)	48.3 (47.9; 48.8)	55.7 (55.5; 55.9)	54.7 (54.3; 55.1)

	PCS				MCS			
	Australia		USA		Australia		USA	
	Mean (95% CI)		Mean (95% CI)		Mean (95% CI)		Mean (95% CI)	
> 15 years	48.9 (48.6; 49.2)		50.0 (49.4; 50.5)		55.8 (55.6; 56.1)		55.5 (55.0; 56.0)	
SEIFA-IRSAD (quintiles) ^b								
Very low	47.8 (47.4; 48.1)	‡	–		55.8 (55.5; 56.1)	–	–	
Low	47.6 (47.2; 47.9)	–	–		55.9 (55.6; 56.2)	–	–	
Middle	47.8 (47.5; 48.1)	–	–		55.9 (55.6; 56.2)	–	–	
High	48.7 (48.3; 49.0)	–	–		55.7 (55.5; 56.0)	–	–	
Very high	49.0 (48.8; 49.3)	–	–		55.6 (55.4; 55.8)	–	–	
No available data	50.9 (46.3; 55.6)	–	–		58.5 (54.7; 62.3)	–	–	
Residence area ^b					‡			
Major cities	48.2 (48.0; 48.4)	–	–		55.6 (55.4; 55.8)	–	–	
Inner regional	48.3 (48.1; 48.5)	–	–		55.9 (55.7; 56.1)	–	–	
Outer/remote	48.6 (48.1; 49.0)	–	–		56.3 (56.0; 56.7)	–	–	
Not available data	45.8 (40.4; 51.3)	–	–		55.1 (50.7; 59.6)	–	–	

PCS physical component score, MCS mental component score, SEIFA-IRSAD Socio-Economic Indexes for Areas Index of Relative Socio-economic Advantage and Disadvantage

Means and 95% CI are adjusted for all sociodemographic variables in each country

^aThe sample in Australia included individuals aged 70+ years

^bInformation estimated based on postcodes areas of residence (data available only for the Australian sample)

p values for the differences in PCS or MCS according to sociodemographic variables within each country

* < 0.05;

‡ < 0.01;

‡ < 0.001

Table 3

Sample distribution according to lifestyle variables among individuals 65 years in Australia ($N = 16,703$) and the USA ($N = 2411$)

	Australia		USA		<i>p</i> value*
	<i>n</i>	%	<i>n</i>	%	
Walking time/day (last 2 weeks)					
None	660	4.0	179	7.4	< 0.001
15 min/day	1881	11.3	462	19.2	
16–30 min/day	3638	21.8	505	21.0	
> 30 min/day	10,491	62.8	1257	52.1	
Data not available	33	0.2	8	0.3	
Alcohol consumption (drinks)					
Never	2706	16.2	6301	26.1	< 0.001
None	814	4.9	322	13.4	
Current—1–2 drinks	10,653	63.8	1332	55.3	
Current—3–4 drinks	2081	12.5	100	4.2	
Current—5+ drinks	449	2.7	27	1.1	
Smoking status					
Never	9290	55.6	1290	53.5	< 0.001
Past < 20 cigarettes	4183	25.0	615	25.5	
Past 20+ cigarettes	2669	16.0	332	13.8	
Current < 20 cigarettes	409	2.5	153	6.4	
Current 20+ cigarettes	152	0.9	21	0.9	

* Chi-square *p* values for the difference between Australia and the US samples on the distribution of lifestyle variables

Physical and mental component summary scores of health-related quality of life among individuals 65 years according to lifestyle variables in Australia ($N = 16,703$) and the USA ($N = 2411$). ASPREE study, baseline (2010–2014)

Table 4

	PCS		MCS	
	Australia	USA	Australia	USA
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
Walking time/day (last 2 weeks)	$\ddagger$	$\ddagger$		
None	44.1 (43.5; 44.7)	46.4 (45.2; 47.6)	55.4 (54.8; 55.9)	54.5 (53.3; 55.6)
15 min/day	43.7 (43.4; 44.1)	45.1 (44.3; 45.8)	55.4 (55.1; 55.8)	55.0 (54.2; 55.7)
16–30 min/day	46.7 (46.5; 47.0)	48.7 (48.0; 49.4)	55.7 (55.5; 55.9)	54.3 (53.7; 55.0)
> 30 min/day	49.9 (49.7; 50.0)	50.5 (50.0; 50.9)	55.9 (55.7; 56.0)	55.4 (54.9; 55.8)
Data not available	49.2 (46.4; 52.0)	50.2 (44.5; 55.9)	56.1 (53.7; 58.5)	52.8 (47.4; 58.1)
Alcohol consumption (drinks)	$\ddagger$	$\ddagger$		
Never	48.0 (47.7; 48.4)	47.9 (47.2; 48.6)	55.9 (55.6; 56.1)	55.0 (54.3; 55.6)
None	46.9 (46.3; 47.5)	47.8 (46.9; 48.7)	55.6 (55.1; 56.1)	54.6 (53.7; 55.5)
Current—1–2 drinks	48.5 (48.4; 48.7)	49.4 (48.9; 49.9)	55.8 (55.6; 55.9)	55.1 (54.7; 55.5)
Current—3–4 drinks	48.0 (47.6; 48.4)	48.6 (47.0; 50.3)	55.9 (55.6; 56.2)	54.7 (53.1; 56.2)
Current—5+ drinks	47.4 (46.6; 48.2)	48.6 (45.4; 51.7)	55.2 (54.6; 55.9)	55.6 (52.6; 58.5)
Smoking status	$\ddagger$	*	$\ddagger$	$\ddagger$
Never	48.8 (48.6; 48.9)	49.1 (48.6; 49.5)	55.9 (55.8; 56.1)	55.0 (54.6; 55.5)
Past < 20 cigarettes	48.2 (48.0; 48.5)	48.9 (48.2; 49.5)	55.6 (55.4; 55.8)	54.9 (54.3; 55.5)
Past 20+ cigarettes	46.9 (46.5; 47.2)	48.4 (47.5; 49.3)	55.7 (55.4; 56.0)	55.9 (55.0; 56.7)
Current < 20 cigarettes	48.1 (47.3; 48.9)	46.7 (45.3; 48.0)	54.7 (54.0; 55.4)	53.6 (52.3; 54.9)
Current 20+ cigarettes	46.3 (44.9; 47.6)	46.4 (42.8; 49.9)	55.4 (54.3; 56.5)	51.3 (48.0; 54.6)

PCS physical component score, MCS mental component score

Means and 95% CI are adjusted for all sociodemographic in each country and mutual adjustment of all lifestyle variables

p values for the differences in PCS or MCS according to lifestyle variables within each country

* <0.05,

$\ddagger$ <0.01,

1000⁺
*

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