Chronic disease and labour force participation among older Australians

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Successive government reports have highlighted population ageing and labour shortages as pressures threatening the Australian Budget.[1,2] As a result, the previous federal government promoted deferred or gradual retirement.[3,4]

However, current labour force participation among older Australians is low compared with other Organisation for Economic Co-operation and Development countries.[5] In Australia, about 75% of men and 50% of women aged 55–59 years, and 45% of men and 25% of women aged 60–64 years, are in the labour force.[6] Furthermore, 50% of men and 20% of women in Australia retire from full-time work early (ie, before the age of 55 years) because of ill health.[7]

Overseas studies have found lower employment rates among older people with musculoskeletal conditions,[8] multiple sclerosis[9] and other chronic diseases.[10-12] Australian and New Zealand studies have found that arthritis,[13] multiple sclerosis,[14] type 2 diabetes,[15] cardiovascular disease[16] and macular degeneration[17] are related to lower labour force participation of older workers.

The current Labor Government's health platform suggests that chronic disease prevention can increase labour force participation and ensure future government revenues are sufficient to fund health care for an ageing population.[18]

However, there have been no Australian studies investigating the overall effect of long-term disease on labour force participation. We undertook a retrospective cross-sectional analysis to examine the association between long-term health conditions and being out of the labour force among Australians aged 45–64 years.

METHODS

We analysed data on people aged 45–64 years from the Australian Bureau of Statistics 2003 Survey of Disability, Ageing and Carers[19] to identify conditions associated with non-participation in the labour force. The use of these data was approved by the Australian Bureau of Statistics Microdata Review Panel.

The labour force was defined as people who are employed or seeking work. People

ABSTRACT

Objective: To examine the association between long-term health conditions and being out of the labour force among older Australians.

Design, setting and participants: Retrospective analysis of cross-sectional data from the Australian Bureau of Statistics 2003 Survey of Disability, Ageing and Carers for people aged 45–64 years.

Main outcome measures: Rates of premature retirement associated with ill health; odds ratios of being out of the labour force associated with each long-term health condition and number of conditions; weighted population estimates; estimates of gross domestic product lost as a result.

Results: 9198 people surveyed were aged 45–64 years, 3010 of whom were not in the labour force. Of these, 1373 (45.6%) had retired because of a chronic health condition, most commonly a back problem (10.4%), or arthritis and related disorders (8.6%). When adjusted for age and sex, all conditions studied except diseases of the ear and mastoid process, other endocrine/nutritional and metabolic disorders, noise-induced deafness or hearing loss, and high cholesterol were significantly associated with being out of the labour force. Extrapolating from these results, an estimated 663 235 older Australians were not working because of ill health, reducing Australia's gross domestic product by around $14.7 billion per annum.

Conclusion: Prevention of long-term health conditions may help older Australians remain in the labour force longer, thereby increasing revenue to fund health care for the ageing population.

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in hospitals and residential care were included in the survey, but those in residential care were assumed to be out of the labour force.

The survey collected demographic and socioeconomic information, including labour force participation and information on participants' long-term health conditions, including the main disabling condition. We focused only on the main condition for this analysis. Participants were asked their reasons for being out of the labour force, with ill health being one response option. The survey data are weighted by the Australian Bureau of Statistics to address the issue of unequal probability of selection in the survey, and to make the survey data a true representation of the whole Australian population. We used these weightings in our analysis to estimate the prevalence for the entire Australian population.

We used logistic regression analysis, adjusted for age and sex, to estimate the odds ratios (ORs) of being out of the labour force associated with each long-term health condition and the risk of being out of the labour force associated with the number of long-term conditions, using "no condition" as the reference group. ORs are presented with 95% confidence intervals. Significance was set at $P < 0.05$.

The number of "missing workers" associated with each condition was estimated as the excess proportion (EP) of people not in the labour force associated with each long-term health condition; that is, the proportion of people out of the labour force among those with the condition that is in excess of people with no condition. The formula was $EP = (OR - 1)/OR$.

The impact of reduced labour force participation on Australia's gross domestic product (GDP) was estimated with the Commonwealth Treasury's formula:

$$GDP = (GDP/H) \times (H/EMP) \times (EMP/LF) \times (LF/Pop15^+) \times Pop15^+,$$

where GDP = gross domestic product; H = total hours worked; EMP = total number of persons employed; LF = total labour force; and Pop15+ = population aged 15 years and over.[2]

1 People not in the labour force by age group and sex, of 9198 Australians aged 45–64 years surveyed in 2003

Age group (years)	No. not in the labour force in survey group (%)*			Weighted no. not in the labour force (%)* in population†		
	Men	Women	All	Men	Women	All
45–49	178 (13.5%)	313 (22.9%)	491 (18.3%)	73 638 (10.5%)	148 879 (21.3%)	222 517 (15.9%)
50–54	196 (15.1%)	421 (32.6%)	617 (23.8%)	80 694 (12.5%)	200 069 (31.2%)	280 762 (21.8%)
55–59	292 (27.3%)	566 (50.2%)	858 (39.0%)	138 612 (23.9%)	278 178 (49.4%)	416 790 (36.4%)
60–64	406 (47.7%)	638 (72.8%)	1044 (60.4%)	185 283 (43.3%)	298 049 (70.4%)	483 332 (56.8%)
Total	1072 (23.6%)	1938 (41.6%)	3010 (32.7%)	478 226 (20.3%)	925 175 (39.7%)	1 403 402 (30.0%)

* Proportion of each cohort not in the labour force. † Some weighted numbers and percentages do not add up exactly because of rounding. ◆

All analyses were conducted using SAS, version 9.1 (SAS Institute, Cary, NC, USA).

RESULTS

Of 41 233 people surveyed, 9198 (22.3%) were in the 45–64-years age group, 3010 of whom were not in the labour force (Box 1). Of these, 1373 (45.6%) cited a long-term health condition as the reason for this, with the remaining 1637 reporting other reasons.

The most common conditions among survey respondents were back problems, arthritis and related disorders, and hypertension (Box 2). Based on the proportion of people out of the labour force, depression or mood affective disorders, diseases of the respiratory system, diseases of the circulatory system (other than hypertension), heart diseases, and mental and behavioural disorders were the most work-limiting conditions (Box 2). Over 50% of Australians in the 45–64-years age group who reported one of these conditions as their main condition were not in the labour force.

Crude ORs (not shown) revealed a significant association with being out of the labour force for all conditions studied except for noise-induced deafness or hearing loss and high cholesterol. After adjusting for age and sex, all associations apart from diseases of the ear and mastoid process, other endocrine, nutritional and metabolic disorders, noise-induced deafness or hearing loss, and high cholesterol remained significant (Box 3).

Adjusting for age and sex changed the ORs for certain conditions. The major reductions in ORs were observed for respiratory diseases, arthritis, circulatory diseases (other than hypertension), diseases of the musculoskeletal system and connective tissue (other than back problems), neoplasms and heart diseases, as these conditions were more common in older age groups than in younger ones. Conversely, adjusting for age and sex resulted in a rise in ORs for injury and accident, and mental and behavioural disorders because of their higher prevalence among younger people.

The total number of people out of the labour force because of a health condition was estimated at 663 235 for the population aged 45–64 years, reducing Australia's GDP by approximately $14.7 billion per annum. When people who had long-term health conditions but reported that they were out

2 Prevalence of long-term health conditions and labour force participation among 9198 Australians aged 45–64 years surveyed in 2003

Long-term health condition*	Total		Not in labour force	
	No. in survey	Weighted no. (%)†	No. in survey	Weighted no. (%)‡
No long-term health condition	3781	2 033 476 (43.4%)	639	345 180 (17.0%)
Back problems (dorsopathies)	929	485 085 (10.4%)	385	200 673 (41.4%)
Arthritis and related disorders	773	402 898 (8.6%)	387	199 418 (49.5%)
Hypertension (high blood pressure)	596	311 465 (6.6%)	162	85 925 (28.0%)
Diseases of the nervous system	335	142 123 (3.0%)	178	57 759 (40.6%)
Mental and behavioural disorders	393	132 186 (2.8%)	269	67 598 (51.1%)
Asthma	247	127 766 (2.7%)	72	35 737 (27.9%)
Diabetes	224	118 147 (2.5%)	91	44 793 (37.9%)
Injury/accident	233	109 181 (2.3%)	99	41 511 (38.0%)
All other conditions	219	105 126 (2.2%)	110	46 875 (44.6%)
Other diseases of the musculoskeletal system and connective tissue	192	97 403 (2.1%)	92	46 016 (47.2%)
Diseases of the ear and mastoid process	181	92 376 (2.0%)	51	24 669 (26.7%)
Heart diseases	152	79 676 (1.7%)	78	41 142 (51.6%)
Depression/mood affective disorders (excluding postnatal depression)	143	67 161 (1.4%)	88	38 457 (57.3%)
Deafness/hearing loss — noise-induced	118	64 172 (1.4%)	15	8 651 (13.5%)
Diseases of the digestive system	117	56 684 (1.2%)	38	17 168 (30.3%)
High cholesterol	112	53 641 (1.2%)	25	10 860 (20.2%)
Neoplasms (tumours/cancers)	95	46 011 (1.0%)	50	22 744 (49.4%)
Diseases of the respiratory system	79	38 857 (0.8%)	44	21 986 (56.6%)
Other endocrine/nutritional and metabolic disorders	76	35 091 (0.7%)	25	9 483 (27.0%)
Other diseases of the circulatory system	94	32 392 (0.7%)	67	17 178 (53.0%)
Diseases of the genitourinary system	61	28 262 (0.6%)	26	11 125 (39.4%)
Diseases of the eye and adnexa	48	25 508 (0.5%)	19	8 451 (33.1%)

* Some respondents had more than one condition. † People with each condition as a percentage of the weighted population. ‡ Proportion of people with each condition who were out of the labour force. ◆

3 Long-term health conditions associated with being out of the labour force and the lost workforce because of each condition

Condition	Adjusted OR* (95% CI)	P	EP†	Lost workforce‡
Back problems (dorsopathies)	3.59 (2.98–4.33)	< 0.001	0.721	144 764
Arthritis and related disorders	3.06 (2.52–3.73)	< 0.001	0.674	134 318
Mental and behavioural disorders	5.71 (4.16–7.84)	< 0.001	0.825	55 757
Diseases of the nervous system	3.25 (2.42–4.35)	< 0.001	0.692	39 976
All other conditions	3.42 (2.43–4.82)	< 0.001	0.708	33 169
Depression/mood affective disorders (excluding postnatal depression)	6.71 (4.44–10.14)	< 0.001	0.851	32 724
Other diseases of the musculoskeletal system and connective tissue	3.16 (2.25–4.44)	< 0.001	0.683	31 452
Heart diseases	4.21 (2.77–6.40)	< 0.001	0.762	31 363
Injury/accident	3.71 (2.63–5.23)	< 0.001	0.730	30 311
Diabetes	2.52 (1.85–3.43)	< 0.001	0.603	27 004
Hypertension (high blood pressure)	1.29 (1.03–1.62)	0.03	0.227	19 546
Neoplasms (tumours/cancers)	3.66 (2.19–6.11)	< 0.001	0.727	16 525
Diseases of the respiratory system	3.68 (2.07–6.54)	< 0.001	0.728	16 014
Other diseases of the circulatory system	4.13 (2.30–7.43)	< 0.001	0.758	13 019
Asthma	1.44 (1.04–1.98)	0.03	0.304	10 858
Diseases of the ear and mastoid process	1.43 (0.97–2.11)	0.07	0.302	7 459
Diseases of the digestive system	1.67 (1.06–2.62)	0.03	0.401	6 880
Diseases of the genitourinary system	2.21 (1.17–4.17)	0.01	0.548	6 092
Diseases of the eye and adnexa	2.77 (1.41–5.47)	0.003	0.640	5 405
Other endocrine/nutritional and metabolic disorders	1.07 (0.64–1.78)	0.80	0.063	599
Deafness/hearing loss — noise-induced	0.97 (0.55–1.70)	0.91	–0.032	–273§
High cholesterol	0.93 (0.56–1.55)	0.78	–0.073	–796§

OR = odds ratio.

* Adjusted for age group and sex. The reference group was "no condition".

† EP (excess proportion) based on adjusted OR.

‡ Lost workforce is the number of people out of the labour force because of the long-term health condition among people with that condition.

§ The negative lost workforce was because of the estimated ORs of < 1.0, implying that the rates of premature retirement for those conditions are less than for "no condition" group. These estimates were not statistically significant, so caution must be exercised in interpreting these results. ◆

4 Association of number of long-term health conditions with being out of the labour force

No. of conditions	Adjusted odds ratio* (95% CI)	P
1	1.63 (1.41–1.89)	< 0.001
2	2.31 (1.96–2.73)	< 0.001
3	3.90 (3.20–4.75)	< 0.001
4–5	5.44 (4.42–6.70)	< 0.001
6 +	16.10 (11.45–22.5)	< 0.001

* Adjusted for age group and sex. The reference group was "no condition". ◆

self-reported health is regarded as a valid measure,[20] a possible bias in the results cannot be excluded. Secondly, as the data are cross-sectional, it is possible to identify associations, but not causal relationships. Although it is unlikely that being out of the labour force could cause most of the conditions reported, it is possible that depression and other affective disorders may be caused or exacerbated by unemployment; therefore, caution must be exercised in interpreting the results. Finally, the study did not capture mortality, and therefore could not estimate the impact of mortality on the labour force.

In the past, government policy has focused on increasing employment of older people. An Age Discrimination Bill was passed[21] and the 15% tax on lump sums and pensions from superannuation schemes after the age of 60 years removed, effectively making them tax-free.[22] However, these economic measures have not addressed the health conditions associated with much of the low labour force participation of older workers, and are unlikely to have a major impact on the labour force participation of people who are ill.

Traditionally, health care has focused on provision of services to improve health for its own sake, and employment policies and priorities have been determined independently from health priorities.

This study provides further support for the Australian Government's health platform — to increase the opportunity for older people to participate in the workforce.[18] For example, optimal treatment of depression involving maintenance cognitive behaviour therapy or drug treatment following an episode of major depression has been shown to avert 50% of associated disability.[23] The increase in obesity, a risk factor for numerous chronic conditions,[24] needs to be addressed. Internationally, lifestyle interven-

of the labour force for reasons other than their health were excluded from the analysis, 541 391 older Australians were estimated to be not working because of ill health, resulting in a loss of around $12 billion per annum.

The number of long-term health conditions reported increased with age. The OR of being out of the labour force rose with an increase in the number of conditions reported (Box 4).

DISCUSSION

Using data from the Australian Bureau of Statistics, we estimated that 663 235 older Australian workers were missing from the labour force because of ill health in 2003.

Back injuries, arthritis and mental health disorders accounted for approximately half the missing workers. This profile is similar to the profile of disorders accounting for most Disability Support Pension payments; musculoskeletal disorders, psychological problems and diseases of the circulatory system are the top three long-term conditions reported (Centrelink, Performance and Information Branch, data request BI3268: health conditions associated with sickness benefits and Disability Support Pension, 13 Jan 2006).

Our study had limitations that must be considered. Firstly, the impact on labour force participation is based on respondents' self-reported main conditions. Although

tions, involving weight loss through improved diet and physical activity, have been shown to reduce the incidence of diabetes among people identified as high risk.[25,26]

With emerging skills shortages and an ageing workforce, Australia needs a more holistic approach to increase labour force participation among older people that considers the interaction of health, illness prevention and labour force priorities.

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