



Affordability of out-of-pocket health care expenses among older Australians



Anthony Carpenter*, M. Mofizul Islam, Laurann Yen, Ian McRae

Australian Primary Health Care Research Institute, The Australian National University, Acton, Australian Capital Territory, 0200, Australia

ARTICLE INFO

Article history:

Received 9 July 2014

Received in revised form 12 February 2015

Accepted 16 March 2015

Keywords:

Health care costs

Health services for the aged

Chronic disease

Health services accessibility

ABSTRACT

Australia has universal health insurance, and provides price concessions on health care and prescription pharmaceuticals through government subsidies. However Australia ranks among the highest OECD nations for out-of-pocket health care spending. With high prevalence of multimorbidity (27% aged 65 and over have 2 or more long-term health conditions) older Australians may face a severe financial burden from out-of-pocket health expenses. We surveyed 4574 members of National Seniors Australia aged 50 years or more on their inability to pay out-of-pocket health-related expenses across categories of medical consultations and tests, medications, dental appointments, allied health appointments (e.g. physiotherapy, podiatry) and transport to medical appointments or tests. Almost 4% of those surveyed were unable to afford out-of-pocket costs in at least one category of health care expenses in the previous 3 months. The odds of being unable to afford out-of-pocket medical costs increased with the number of chronic medical conditions (3 conditions: OR 3.05, 95% CI 1.17–6.30; 4 or more conditions: OR 3.45, 95% CI 1.34–7.28, compared with no chronic medical conditions). Despite Australia's universal health insurance, and safety nets for medical and pharmaceutical contributions, older Australians with multiple chronic conditions are at risk of being unable to afford out-of-pocket health care expenses.

© 2015 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

The prevalence of multiple chronic medical conditions (CMCs) has increased in Australia as the Australian population has aged. Almost 27% of the Australian population

aged 65 and over have 2 or more CMCs, while 15% have 3 or more CMCs [1].

Australia has universal, taxpayer funded health insurance (Medicare) which provides free hospital care in public hospitals, and subsidises services provided by doctors to patients through the Medicare Benefits Schedule (MBS) and prescribed pharmaceuticals through the Pharmaceutical Benefits Scheme (PBS) [2]. Many Australians (47.2%) purchase optional private health insurance to cover admission to private hospitals, or 'ancillary' insurance (55.2%) [3,4] for non-hospital services such as eye glasses, dental services, physiotherapy and ambulance services, most of which are not covered by Medicare [4]. However, patients incur out-of-pocket health care expenses (OOPHE) for many health care items.

Abbreviations: CI, confidence interval; CMC, chronic medical condition; MBS, Medicare Benefits Schedule; OECD, Organisation for Economic Co-operation and Development; OOP, out-of-pocket; OOPHE, out-of-pocket health care expense(s); OR, odds ratio; PBS, Pharmaceutical Benefit Scheme.

* Corresponding author at: Research School of Population Health, The Australian National University, Building 63, Corner Mills & Eggleston Roads, Acton, Australian Capital Territory, 0200, Australia. Tel.: +61 2 6125 6570; fax: +61 2 6125 0740.

E-mail address: anthony.carpenter@anu.edu.au (A. Carpenter).

<http://dx.doi.org/10.1016/j.healthpol.2015.03.010>

0168-8510/© 2015 Elsevier Ireland Ltd. All rights reserved.

Eighty-two percent of General Practitioner (GP) services, 87.7% of pathology services, and 76% of diagnostic imaging services are billed at the level of Medicare subsidy and attract no patient co-payment [5]. However many health services attract significant patient co-payments. For in-hospital services in private hospitals these OOPHE can be mitigated by private health insurance, but some private health insurance policies still attract significant patient co-payments.

Patients are responsible for the cost of services provided outside of public hospitals, Medicare rebatable services, and PBS approved pharmaceuticals. Allied health services, including dental services, durable medical equipment, and non-PBS insured pharmaceuticals are major OOPHE cost categories, especially for those with CMCs [6].

The Pharmaceutical Benefits Scheme (PBS) subsidises government approved pharmaceuticals (concessional & Veterans patients' co-payment \$6.10, non-concessional co-payment \$37.70, per item per month). Both the PBS and MBS have annual safety nets which apply when OOPHE for each scheme reaches prescribed levels each year [2]. Despite these safety nets, there is concern that older Australians with CMCs may incur OOPHE which cause difficulty in paying health care bills [6,7].

Previous research has used the percentage of household income, or nonsubsistence spending, spent on medical bills (10%, 20% or 40%) to define burdensome levels of health spending [8,9]. However there is no consensus on the percentage of household income which is burdensome [9,10], and little information about the impact of OOPHE on individual households. We have previously reported the number of older Australians spending at least 10% (11.8%, 95% CI 10.5–13.1%) and at least 20% (5.1%, 95% CI 4.2–5.9%) of household equivalized income on health care expenses [11]. In those studies we found a positive relationship between the number of CMCs and OOPHE [11,12].

The average percentage of household equivalized income spent on OOPHE across a population does not explicitly measure individual household's financial hardship due to OOPHE. In this study we aimed to capture the financial burden on individual households by investigating participants' inability to afford OOPHE. We also assessed the relationship between inability to afford OOPHE and the number of CMCs, household income, and household coping strategies when unable to afford out-of-pocket medical bills.

2. Materials and methods

2.1. Setting and participants

The study population included all members of National Seniors Australia (NSA), a nation-wide organisation with 285,000 members aged over 50 years [13]. In this paper we refer to our whole sample as older Australians. An opt-in invitation and study questionnaire were mailed to a representative sample ($n=10,000$) of NSA's members in 2009. The sample was stratified by residential location (urban/regional/rural, remote or very remote) and age. Those aged 75 years or older were over-sampled to permit analysis of this age group. The survey and study were

approved by the Australian National University Human Research Ethics Committee (no. 2009/309).

2.2. Questionnaire

A structured questionnaire adapted from Essue et al. [6] that was used for data collection included questions on demographic information, self-reported chronic illness and disability, health service use and OOP health care spending, household economic circumstances and quality of life. The survey questions were drawn from existing validated tools, including: the Australian 45 and Up Study [14], the Household, Income and Labour Dynamics in Australia survey [15] and the Quality Metric Short Form Version 12 (SF-12) survey of health related quality of life [16], which includes a measure of self-assessed health. While information was collected on all conditions that lasted more than 6 months, this study focussed on a sub-set comprising the most common burdensome CMCs in Australia [17]: cancer, heart disease, high blood pressure, stroke, diabetes, bronchitis/emphysema, arthritis, osteoporosis, depression (including anxiety), Parkinson's disease and asthma/hayfever.

2.3. Measurement of out-of-pocket spending

Respondents were asked to report their personal OOPHE over the previous 3 months on 5 categories, including direct expenses (1-medications; 2-medical consultations and tests; 3-costs of home care needed because of your health; 4-medical equipment) and indirect expenses (5-transport to medical consultations and tests). Participants with total OOP costs of \$5000 or over in the last 3 months (e.g. housing modifications, new hearing aids) were considered outliers and excluded from our analysis ($n=26$). Participants who responded 'don't know' in any category were excluded from the calculation of total OOPHE across the 5 categories.

2.4. Measurement of income

Income was adjusted for household size using the modified Organisation for Economic Co-operation and Development equivalence scales [18]. A weight of 1 was applied to the first adult in a household, 0.5 to the second and later adults, and 0.3 to children, yielding 'household equivalized income'.

2.5. Measurement of inability to pay

We asked participants to report whether they had been unable to pay the full amount of OOP health-related expenses in the past 12 months across 5 categories (1-medical consultations and tests; 2-medications; 3-dental appointments; 4-allied health appointments (physiotherapy, podiatry); 5-transport to medical appointments or tests¹). Participants indicated whether they were unable to

¹ Open-ended space was provided to list OOP expenses not in one of these 5 categories.

Table 1

Survey respondents compared with Australian population.

	% surveyed (weighted estimates)	% of Australian population	<i>p</i>
Education [41]			
Total without non-school qualifications	44.2	63.5	***
Total certificate/diploma	34.7	24.8	***
University degree or higher	21.1	11.8	***
Occupational status [42]			
Retired (fully or partially)	51.3	45.1	***
Working (full-time or part-time)	37.2	42.1	***
Other	11.5	12.8	**
Private Health Insurance [43]	80.9	56.5	***
Area of residence [44]			
Major cities	62.1	66.0	***
Inner regional Australia	24.1	22.1	**
Outer regional or more remote Australia	13.8	11.9	***
Self-assessed health [45]			
Excellent or very good	53.3	36	***
Good	32.5	32	
Fair/poor	14.2	33	***
No. of chronic conditions ^a			
0	14.4		
1	25.5		
2	25.1		
3	17.3		
4 or more	18.7		

^a No national comparison due to heterogeneity in chronic condition classification between surveys.** $p < 0.01$; *** $p < 0.001$.

afford an OOPHE in each of the categories over the past 12 months. Thus our participants' responses relate to the fact of their ability or inability to pay. We combined responses across the 5 categories to yield the total number of categories in which participants had reported being unable to afford OOPHE, and refer to this as a measure of 'inability to afford OOPHE' throughout the paper.

2.6. Statistical analysis

We used ordinal logistic regression to examine the association between the number of CMCs and other explanatory variables on self-reported inability to afford health care expenses during the last 3 months. We used likelihood-ratio tests to find the most parsimonious model at the 5% level of significance, and the Brant test to test the proportional odds assumption [19]. Statistical analysis was performed with STATA version 13.1 (STATACorp, College Station, TX).

3. Results

The survey response rate was 45.7% (male 45.1% vs. female 46.3%; under 65 years 38.9% vs. ≥ 65 years 48.3%) yielding 4574 valid responses. Compared with the Australian population, our respondents had higher average education levels, better self-reported health, and more supplemental private health insurance (Table 1).

After excluding respondents who did not report their household income ($n = 522$ preferred not to answer, $n = 119$ missing; total $n = 641$ (14.0%)), we analysed factors associated with inability to afford OOPHE. In the previous 3 months, 177 respondents (3.9%) reported being unable to afford OOPHE (Table 2), while 223 respondents (4.9%) reported being unable to pay either health care expenses or essential household expenses (rent or utilities). Sixty four percent of those surveyed were receiving a government benefit or concession (4.3% unable to afford OOPHE), while 81% had private health insurance (2.6% unable to afford OOPHE).

Table 2

Association between inability to pay for OOP health-related expenses, household income and number of chronic medical conditions.

No. of categories unable to afford OOP health-related expenses last 3 months	Proportion of households surveyed ^a (%)	Annual household equivalized income (\$'000)		Household equivalized income spent on OOP medical bills (%)		Number of chronic medical conditions	
		Mean	95% CI	Mean	95% CI	Mean	95% CI
0	96.1	36.0	35.2–36.8	4.6	4.1–5.1	2.0	1.9–2.0
1	2.1	23.6	20.8–26.5	12.8	3.9–21.6	2.9	2.7–3.1
2	0.9	24.8	18.5–31.2	24.4	1.5–47.2	2.5	2.1–2.9
3	0.5	25.3	18.7–32.0	13.2	4.5–21.9	3.1	2.6–3.6
4	0.4	19.9	15.3–24.4	17.0	0.0–44.4	2.6	2.0–3.3

^a 641 (14%) missing or excluded due to sequencing of survey questions.

Participants who reported being unable to afford OOPHE were more likely to have drawn on savings, sold assets, or borrowed money to meet household living expenses (Table 3).

Out-of-pocket costs for medications, and medical consultations and tests, were the greatest contributors to OOPHE. Among those reporting inability to afford OOPHE in two categories, four participants reported high medication and medical consultation and test costs,² distorting an otherwise largely monotonic relationship between the number of CMCs and OOPHE.

Compared with those who did not report inability to afford OOPHE, participants who reported being unable to afford OOPHE at least once had lower income (mean household equivalized income \$23,746 vs. \$36,145, $p < 0.001$), were younger (mean age 66.7 vs. 69.4 years, $p < 0.001$), had more CMCs (mean 3.06 vs. 2.02, $p < 0.001$), longer duration of any chronic illness (22.0 vs. 19.1 years, $p < 0.05$), and were less likely to have private health insurance (53% vs. 81%, $p < 0.001$).

In our multivariate ordinal logistic model, employment status, self-rated health, urban/rural residence, state of residence, and country of birth (Australia/overseas) were not significantly associated with inability to afford OOPHE, and their inclusion did not significantly improve model fit. Possession of a government health care concession card or Veterans' health care concession card was not associated with inability to afford OOPHE (Table 4). We report our final model with household equivalized income since it is a potential confounder, although income did not significantly affect the relationship between CMCs and inability to afford OOPHE (Table 3).

Participants with 3 or more CMCs were 3.05 times more likely to be unable to afford health care expenses than those with no CMCs ($p < 0.001$), while those with 4 or more CMCs were 3.45 times more likely to be unable to pay medical expenses compared with those with no CMCs ($p < 0.001$).

Younger age was significantly associated with inability to afford OOPHE. Both 50–64 year olds (OR 4.04, 95% CI 2.03–7.06) and 65–74 year olds (OR 1.94, 95% CI 1.15–3.26) were more likely to report being unable to afford OOP health care expenses than those aged 75 years or more (Table 4; $\chi^2 = 12.66$, $p < 0.01$). More women (4.4%) than men (3.0%) reported being unable to afford OOPHE ($p < 0.05$), but this difference was not statistically significant in our multivariate model (Table 4).

Those with private health insurance were the least likely to be unable to afford OOPHE (OR 0.28, 95% CI 0.19–0.41) in our model. However there was no difference in prevalence of private health insurance among those who reported being unable to afford at least one category of OOP health care expense ($p = 0.34$).

Higher household equivalized income (OR 0.96, 95% CI 0.95–0.98), higher SF-12 mental health score (OR 0.93, 95% CI 0.90–0.95) and higher SF-12 physical health score (OR

² Four participants reported OOP payments of \$1000 or more for medical consultations or tests, and 5 participants reported OOP payments of \$450 or more for medications over the prior 3 months. These participants affected the mean due to the small group size.

Table 3
Household financial strategies to cope with inability to afford OOP health-related expenses.

No. of categories unable to afford health-related expenses last 3 months	To meet household living expenses in last 12 months						Mean of OOP health care spending last 3 months						Total OOP health-related expenses ^{a,b}					
	Draw on savings			Borrow money			Sell assets			Medical consultations & tests			Medications			Medical equipment		
	n	%	n	n	%	n	n	%	n	Mean	n	Mean	Mean	n	Mean	Mean	n	Mean
0	483/837	58	56/832	7	89/836	11	\$151	3162	\$125	3129	\$48	4364	\$13	3517	\$369	2575		
1	82/93	88	30/93	32	28/93	30	\$180	63	\$180	59	\$92	96	\$75	64	\$776	41		
2	37/39	95	21/38	55	16/39	41	\$638	29	\$235	28	\$51	38	\$85	29	\$1188	19		
3	20/23	87	12/23	52	15/23	65	\$133	14	\$200	13	\$62	22	\$35	18	\$661	10		
4	13/17	76	8/17	47	7/17	41	\$542	8	\$321	10	\$51	17	\$63	8	\$926	6		
χ^2 test for trend	37.2***		146.9***		88.8***		3239		3276		4537		3636					

^a Home care costs not shown – from 0 to 4 categories unable to afford health-related expenses, the mean and number of observations (n) for home care costs were \$10 (3815), \$2 (80), \$19 (35), \$44 (18) and \$31 (13), respectively.

^b Participants with missing responses were excluded from calculation of total OOP health-related expenses.

*** $p < 0.001$.

Table 4

Factors associated with being unable to afford OOP health care expenses in the last 12 months (ordinal logistic regression, odds ratios).

	Household equivalized income included	<i>p</i>	Household equivalized income excluded	<i>p</i>
Female	1.28		1.34	
Age group				
50–64	4.04	***	3.22	***
65–74	1.94	**	1.93	***
≥75	1		1	
Household equivalized income	0.96	***		
Qualifications				
No school certificate or other qualification	1		1	
School, intermediate or higher school; or Leaving certificate, trade, apprenticeship, certificate or diploma	2.24	**	2.26	**
University degree or higher	2.66	**	1.99	*
Any government concession or benefit	0.71		1.15	
Private health insurance	0.28	***	0.27	***
Number of chronic medical conditions				
0	1		1	
1	1.32		1.45	
2	1.35		1.46	
3	2.71	**	3.05	**
4 or more	3.13	***	3.45	***
SF 12 mental health score	0.93	***	0.92	***
SF 12 physical health score	0.95	***	0.95	***
<i>n</i>	3572		4106	
McFadden adjusted <i>R</i> -squared	0.16		0.13	

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

0.96, 95% CI 0.93–0.97) were statistically significant predictors against inability to afford OOPHE.

4. Discussion

We observed a strong association between the number of CMCs among older Australians and inability to afford OOPHE. Those at highest risk in our survey had multiple CMCs, tended to be younger (50–64 years), and have longer duration of chronic illness. Our research also identifies important household financial consequences (drawing on savings, borrowing money, and selling assets) of OOPHE in Australia, despite universal health insurance. Among our participants who could not afford at least one category of OOPHE, 42% borrowed money and 38% sold assets (Table 3).

Our study cohort is comprised of members of National Seniors Australia, who have higher average household income and were more likely to hold supplemental private insurance than the age-matched Australian population. Previous disease-specific research has identified the financial impact of OOP health care costs among adults with chronic obstructive pulmonary disease [6], rheumatoid arthritis [20], and kidney disease [21].

Our prior expectation is that more socio-economically disadvantaged populations with multiple CMCs would be at higher risk of being unable to afford OOPHE. We believe this makes the observed strength of our association between the number of chronic CMCs and inability to afford OOPHE conservative with respect to the Australian population, given that our cohort is less likely to be socio-economically disadvantaged.

Our research adds household level information about financial stress due to OOPHE among older Australians with CMCs. We did not observe a consistent relationship between percentages of household equivalized income spent on OOPHE and reported inability to afford health care expenses, which suggests that idiosyncratic household level factors contribute to inability to afford health care expenses. Our results therefore extend and complement information contributed by existing research on population levels of OOPHE relative to average income [9,11].

Our findings suggest that a sub-group of older Australians with multimorbidity are at risk of severe financial stress due to OOPHE, despite financial safety nets. This is consistent with prior research which found that Australians with CMCs forgo doctor's visits (18%), recommended tests (20%) and prescribed medicines (22%) because of cost [22].

The higher risk among 50–64 year olds of being unable to afford OOP health care expenses partly reflects eligibility for the age pension (in 2009 this was 63.5 years for women and 65 years for men) in Australia [23]. Households with respondents aged ≥65 years had a higher prevalence of government health concession (89% of households) than those <65 years (29% of households). Health concession cardholders are subject to reduced MBS (\$624 vs. \$1429) and PBS (\$360 vs. \$1421) annual financial safety nets.

Private health insurance was a significant predictor of inability to afford OOPHE in our final model, but there was no difference in the proportion of private health insurance among those who could not afford at least one category of OOPHE. Supplemental private health insurance in Australia may cover services such as dental treatment, hearing aids,

eyeglasses, and allied health services [24]. However, private health insurance does not insure the cost of doctor's visits or prescription medicines, which made up the majority of OOPHE for our participants.

Affordability of health care among ageing populations is an important area of health policy, and both the level and distribution of OOPHE have been used to evaluate health system performance [25]. Between 2006–2007 and 2011–2012, real out-of-pocket contributions by individuals in Australia have grown by 3.8% per annum on patient transport, 5.6% per annum on medical services, 3.4% per annum on medications covered by the PBS, and 9.8% per annum on over-the-counter medications [26]. Australia's out-of-pocket health care contributions by individuals (19.9%) are already above the OECD median (16.2%).

The Australian Government has proposed additional patient co-payments for patients who do not hold concession cards in an effort to improve the fiscal sustainability of Medicare, citing rising Medicare expenditure (\$8 billion in 2004, \$20 billion in 2014 [27]). The Government also proposed a 3-year inflation indexation freeze for Medicare reimbursement rates for GP and specialist services to July 2018 [28]. These proposed reforms have been opposed by health professional [29–31], academic [32,33] and consumer groups [34] for adding further financial burden to patients with CMCs. The proposed \$5 co-payment for non-concessional patients from July 2015 [35] could adversely affect health care access for those with multiple CMCs. These groups were at higher risk of being unable to afford OOPHE in our study.

Our results suggest that Australia's financial safety nets may not be adequately protecting older Australians with multiple CMCs from burdensome OOPHE. While different Australian states provide different services to protect older Australians from OOPHE (e.g. transport to health services), we found no significant difference in inability to afford OOPHE difference between states.

In most OECD nations, including Australia, there are policies to protect vulnerable populations from excessive OOPHE. These consist of partial or total exemptions for sub-group such as seniors and people with CMCs, and limits on OOPHE (in dollars or by proportion of income) [36,37]. The level of OOPHE, and inability to afford OOPHE, in our study may not be applicable across the OECD. However older people with CMCs in OECD countries with health care systems similar to Australia may also experience high OOPHE, and have difficulty accessing timely, affordable health care. Similar studies in other OECD countries may provide further information.

Our observation that patients with multiple chronic conditions who had poor physical and mental health are more likely to report inability to afford OOPHE (Table 4) suggests one sub-group for targeted policy intervention. Similarly, 50–64 year olds in our study, many of whom are ineligible for health care concessions, were more likely to report inability to afford OOPHE. This working age group with multiple CMCs may be adversely affected by proposed health policy changes, and warrant policy attention to ensure that they have equitable access to medical services and therapeutics.

4.1. Limitations

The response rate was 45.7%. However, this rate is highly acceptable for a mail survey in the Australian context, and leads to a reasonably large sample of 4574 respondents, although there is the possibility of response bias. The participants had above average income (AUD\$ 35,505 vs. \$30,888 [38]) and higher prevalence of supplemental private insurance than the age-matched Australian population, which could mean our sample under-represents lower socio-economic groups (including the Indigenous population) who are most likely to face higher cost burdens. We therefore believe our observed association between CMCs and inability to afford OOPHE is likely conservative with respect to the overall Australian population. Our OOPHE estimate consists of a set of five major categories, but does not include other possible expenditure such as costs for time off work or assistance with transport. While we analyse self-reported measures of health care utilisation and cost, previous research has found good reliability between self-reported and administrative database measures of health care utilisation among older individuals [39]. Recall bias may affect surveys of household expenditure, however patient recall of expenditure may be more accurate over shorter recall periods [40] as utilised in our study. Measures of medical and pharmaceutical costs may be minimally overstated as our survey was conducted in the third quarter of the year and many individuals who reach annual MBS and PBS co-payment thresholds do so later in the calendar year.

5. Conclusion

Our study demonstrates an association between the number of chronic medical conditions and inability to afford OOPHE among older Australians, despite safety net protections. As the Australian population ages and the prevalence of chronic medical conditions increases, the financial burden on older Australians from OOPHE is likely to increase. Our research suggests older Australians who are vulnerable to financial burden from OOPHE due to multiple CMCs may need additional financial support. Failure of people facing CMCs to access necessary medical care will lead to disease progression and potentially higher health care costs, to both individuals and the health system, due to acute complications of CMCs. This issue warrants further investigation and consideration by policy makers.

Conflicts of interest

None declared.

Acknowledgements

We gratefully acknowledge the support of National Seniors Australia to undertake this research among its members. We are grateful to the anonymous reviewers for their thoughtful comments to improve our manuscript.

References

- [1] Australian Institute for Health and Welfare. How many people have chronic disease? (AIHW analysis of the 2004–05 National Health Survey). Australian Institute for Health and Welfare; 2013. <http://www.aihw.gov.au/chronic-diseases/> (accessed 06.02.15).
- [2] Duckett S, Wilcox S. The Australian health care system. Oxford University Press; 2011.
- [3] Private Health Insurance Administration Council. Private health insurance Australia: quarterly statistics – June 2014. Canberra: PHIAC; 2014. <http://phiac.gov.au/wp-content/uploads/2014/08/Report-06-2014.pdf> (accessed 06.02.15).
- [4] Private Health Insurance Ombudsman. What is covered by Medicare? Canberra: Private Health Insurance Ombudsman; 2014. <http://www.privatehealth.gov.au/healthinsurance/whatiscovered/medicare.htm> (accessed 06.02.15).
- [5] Department of Health. Quarterly Medicare statistics – March quarter 2007 to June quarter 2014. Canberra: Department of Health; 2014.
- [6] Essue B, Kelly P, Roberts M, Leeder S, Jan S. We can't afford my chronic illness! The out-of-pocket burden associated with managing chronic obstructive pulmonary disease in western Sydney, Australia. *Journal of Health Services Research & Policy* 2011;16:226–31. <http://hsr.sagepub.com.ezproxy2.library.usyd.edu.au/content/16/4/226.full.pdf> (accessed 06.02.15).
- [7] Yusuf F, Leeder S. Can't escape it: the out-of-pocket cost of health care in Australia. *Medical Journal of Australia* 2013;199:475–8. https://www.mja.com.au/system/files/issues/199_07/071013/yusuf11638_fm.pdf (accessed 06.02.15).
- [8] Xu K, Evans DB, Carrin G, Aguilar-Rivera AM, Musgrove P, Evans T. Protecting households from catastrophic health spending. *Health Affairs* 2007;26:972–83. <http://content.healthaffairs.org/content/26/4/972.short> (accessed 06.02.15).
- [9] Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ. Household catastrophic health expenditure: a multicountry analysis. *The Lancet* 2003;362:111–7. <http://www.sciencedirect.com/science/article/pii/S0140673603138615> (accessed 06.02.15).
- [10] Ataguba JE. Reassessing catastrophic health-care payments with a Nigerian case study. *Health Economics, Policy, and Law* 2011;1:1–18. <http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=672> (accessed 06.02.15).
- [11] McRae I, Yen L, Jeon Y-H, Herath PM, Essue B. Multimorbidity is associated with higher out-of-pocket spending: a study of older Australians with multiple chronic conditions. *Australian Journal of Primary Health* 2013;19:144–9. <http://www.publish.csiro.au/?paper=PY12035> (accessed 21.05.14).
- [12] Islam MM, Yen L, Valderas JM, McRae IS. Out-of-pocket expenditure by Australian seniors with chronic disease: the effect of specific diseases and morbidity clusters. *BMC Public Health* 2014;14:1008.
- [13] National Seniors Australia. National Seniors Australia – About Us; 2013. <http://nationalseniors.com.au/about-us> (accessed 06.02.15).
- [14] Banks E, Redman S, Jorm L, Armstrong B, Bauman A, Beard J, Beral V, Byles J, Corbett S, Cumming R. Cohort profile: the 45 and up study. *International Journal of Epidemiology* 2008;37:941. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2557061/> (accessed 06.02.15).
- [15] Wooden M, Freidin S, Watson N. The household, income and labour dynamics in Australia (HILDA) survey: wave 1. *Australian Economic Review* 2002;35:339–48. <http://onlinelibrary.wiley.com/doi/10.1111/1467-8462.00252/full> (accessed 06.02.15).
- [16] Ware Jr J, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical Care* 1996;34:220–33. http://journals.lww.com/lww-medicalcare/Abstract/1996/03000/A_12_Item_Short_Form_Health_Survey_Construction.3.aspx (accessed 06.02.15).
- [17] Australian Bureau of Statistics. National Health Survey: Summary of Results, 2007–2008 (Reissue). Canberra: ABS; 2009. <http://www.abs.gov.au/AUSSTATS/abs@.nsf/productsbyCatalogue/1A1B89187E1D2B13CA2575B0001399C8?OpenDocument> (accessed 06.02.15).
- [18] Organisation for Economic Cooperation and Development. <http://www.oecd.org/eco/growth/OECD-Note-EquivalenceScales.pdf> (accessed 21.05.14) What are equivalence scales? Paris: OECD; 2013.
- [19] Brant R. Assessing proportionality in the proportional odds model for ordinal logistic regression. *Biometrics* 1990;46:1171–8. <http://www.jstor.org/stable/2532457> (accessed 06.02.15).
- [20] Lapsley H, March L, Tribe K, Cross M, Courtenay B, Brooks P. Living with rheumatoid arthritis: expenditures, health status, and social impact on patients. *Annals of the Rheumatic Diseases* 2002;61:818–21. <http://ard.bmj.com/content/61/9/818.full> (accessed 06.02.15).
- [21] Hirth RA, Greer SL, Albert JM, Young EW, Piette JD. Out-of-pocket spending and medication adherence among dialysis patients in twelve countries. *Health Affairs* 2008;27:89–102. <http://content.healthaffairs.org/content/27/1/89.short> (accessed 06.02.15).
- [22] Schoen C, Osborn R, Huynh PT, Doty M, Zapert K, Peugh J, Davis K. Taking the pulse of health care systems: experiences of patients with health problems in six countries. *Health Affairs* 2005;24:W5. <http://content.healthaffairs.org/content/early/2005/11/28/hlthaff.w5.509.citation> (accessed 21.05.14).
- [23] Department of Human Services. Age Pension. Canberra: Australian Government; 2014. <http://www.humanservices.gov.au/customer/services/centrelink/age-pension> (accessed 21.05.14).
- [24] Australian Government Private Insurance Ombudsman. What is covered by private health insurance? Australian Government; 2014. <http://www.privatehealth.gov.au/healthinsurance/whatiscovered/privatehealth.htm> (accessed 06.02.15).
- [25] Murray CJ, Xu K, Klavus J, Kawabata K, Hanvoravongchai P. Assessing the distribution of household financial contributions to the health system: concepts and empirical application. In: Murray CJ, Evans DB, editors. *Health systems performance assessment: debates methods and empiricism*. Geneva: World Health Organization; 2003. http://www.who.int/health.financing/HSPA_ch38.pdf (accessed 06.02.15).
- [26] Australian Institute for Health Welfare. Health expenditure Australia 2009–10. Canberra: AIHW; 2011. <http://www.aihw.gov.au/publication-detail/?id=10737420435> (accessed 06.02.15).
- [27] Australian Government Department of Health. Outcome 3: access to medical and dental services. Australian Government 2014–15 health portfolio budget statements. Canberra: Australian Government; 2014. [http://www.health.gov.au/internet/budget/publishing.nsf/Content/2014-2015_Health.PBS_sup1/\\$File/2014-15_Health.PBS.2.03_Outcome_3.pdf](http://www.health.gov.au/internet/budget/publishing.nsf/Content/2014-2015_Health.PBS_sup1/$File/2014-15_Health.PBS.2.03_Outcome_3.pdf) (accessed 06.02.15).
- [28] Office of the Prime Minister of Australia. A strong and sustainable Medicare: what it means for doctors. Canberra: Australian Government; 2015. <http://www.health.gov.au/internet/main/publishing.nsf/Content/strongmedicare-factsheet-doctors> (accessed 06.02.15).
- [29] Royal Australian College of General Practitioners. RACGP #CoPayNoWay awareness campaign. East Melbourne: RACGP; 2015. <http://www.racgp.org.au/yourracgp/news/news/racgp-copaynoway-awareness-campaign/> (accessed 06.02.15).
- [30] Australian Medical Association. AMA model protects vulnerable patients from co-payment plan. Sydney: Australian Medical Association; 2014. <https://ama.com.au/media/ama-model-protects-vulnerable-patients-co-payment-plan> (accessed 06.02.15).
- [31] Royal Australian College of General Practitioners. RACGP Submission to the Community Affairs References Committee. Canberra: RACGP; 2014. <http://www.aph.gov.au/DocumentStore.ashx?id=afb198ad-2f9d-4580-b874-ce27605&subId=252554> (accessed 06.02.15).
- [32] Menzies Centre for Health Policy, The University of Sydney & The George Institute for Global Health. Submission to the Senate Standing Committee on Community Affairs: out-of-pocket costs of health care in Australia. Canberra: Australian Government; 2014. <http://www.aph.gov.au/DocumentStore.ashx?id=cbf762be-1c17-4daa-9c80-da72c68ad704&subId=252554> (accessed 06.02.15).
- [33] The Grattan Institute. Grattan Institute submission to the Senate Standing Committee on Community Affairs: Inquiry into the out-of-pocket costs in Australian healthcare. Canberra: Australian Government; 2014. <http://www.aph.gov.au/DocumentStore.ashx?id=d4c5382a-c8f0-40b5-88ee-9754d2f6c34a&subId=252956> (accessed 06.02.15).
- [34] Consumers Health Forum of Australia. Time for a national summit on Medicare; 2015. <https://www.chf.org.au/pdfs/chf/20150115-Call-for-Medicare-summit.pdf> (accessed 06.02.15).
- [35] Department of Health. How is the co-payment changing. Canberra: Department of Health; 2015. <http://www.health.gov.au/internet/main/publishing.nsf/Content/strongmedicare-factsheet-co-payment-changing> (accessed 06.02.15).
- [36] Thomson S, Mossialos E. Primary care and prescription drugs: coverage, cost-sharing and financial protection in six European countries. New York: The Commonwealth Fund; 2010. <http://www.commonwealthfund.org/Publications/Issue-Briefs/2010/Mar/Primary-Care-and-Prescription-Drugs-Coverage-Cost-Sharing-and-Financial-Protection.aspx#citation> (accessed 06.02.15).

- [37] Paris V, Devaux M, Wei L. Health systems institutional characteristics: a survey of 29 OECD countries; 2010 http://www.oecd-ilibrary.org/social-issues-migration-health/health-systems-institutional-characteristics_5kmfxfq9qbmr-en (accessed 06.02.15).
- [38] Australian Bureau of Statistics. Household income and income distribution, Australia, 2005–06. Canberra: ABS; 2007 <http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/CC27C0081A1577EBCA25761700192C51?opendocument> (accessed 06.02.15).
- [39] Carsjo K, Thorslund M, Warneryd B. The validity of survey data on utilization of health and social services among the very old. *Journal of Gerontology* 1994;49:S156–64 <http://geronj.oxfordjournals.org.ezproxy1.library.usyd.edu.au/content/49/3/S156.full.pdf> (accessed 06.02.15).
- [40] Xu K, Ravndal F, Evans DB, Carrin G. Assessing the reliability of household expenditure data: results of the World Health Survey. *Health Policy* 2009;91:297–305 <http://dx.doi.org/10.1016/j.healthpol.2009.01.002> (accessed 06.02.15).
- [41] Australian Bureau of Statistics. Census of population and housing, non-school qualification level of education by age and sex. Canberra: Australian Bureau of Statistics; 2007.
- [42] Australian Bureau of Statistics. Australian labour market statistics, July 2009. Australian Bureau of Statistics, editor. Canberra: ABS; 2009.
- [43] Private Health Insurance Administration Council. Private Health Insurance Australia: Quarterly Statistics – June 2014. Canberra: PHIAC; 2014.
- [44] Australian Bureau of Statistics. Census of population and housing, CDATA 2006. Canberra: Australian Bureau of Statistics; 2007.
- [45] Australian Bureau of Statistics. National health survey 2004–05. Canberra: ABS; 2006.