

University of Wollongong

Research Online

Faculty of Science, Medicine and Health -
Papers: part A

Faculty of Science, Medicine and Health

1-1-2018

Are older Australians with chronic diseases online?

Pippa Burns

University of Wollongong, pippa@uow.edu.au

Sandra C. Jones

Australian Catholic University, Sandra.Jones@acu.edu.au

Peter Caputi

University of Wollongong, pcaputi@uow.edu.au

Donald C. Iverson

Swinburne University of Technology, iverson@uow.edu.au

Follow this and additional works at: <https://ro.uow.edu.au/smhpapers>



Part of the [Medicine and Health Sciences Commons](#), and the [Social and Behavioral Sciences Commons](#)

Recommended Citation

Burns, Pippa; Jones, Sandra C.; Caputi, Peter; and Iverson, Donald C., "Are older Australians with chronic diseases online?" (2018). *Faculty of Science, Medicine and Health - Papers: part A*. 5489.
<https://ro.uow.edu.au/smhpapers/5489>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

Are older Australians with chronic diseases online?

Abstract

Issue addressed: Health information can be easily and cheaply provided through the Internet. However, we do not know whether older adults, those people most likely to be living with a chronic disease, are online or whether they use the Internet to find health information. Methods: In order to establish the proportion of older Australians online, the impact of their current health status and chronic disease diagnosis on Internet usage and whether they use the Internet to search for health information, a paper-based survey was developed and mailed to 9000 older adults, resident in New South Wales, Australia (response rate = 46.8%). Results: Results showed that many older Australians are online (52.3%) and that the majority who are use the Internet to find health information (68.5%). Respondents were more likely to use the Internet if they reported good health. The presence of most chronic diseases reduced use of the Internet; however, this was not the case for those reporting asthma, anxiety or sleep apnoea. Internet use decreased as the number of reported co-morbidities increased. However, once online, self-perceived overall health and number of chronic diseases did not affect use of the Internet to find health information. Conclusions: This study is important as there is currently little information available about Internet use for health information by older Australians. Findings show that the provision of health information online has the potential to reinforce existing barriers created by the social determinants of health. So what?: There is a role for the Internet in providing preventative, health promotion information, to older adults, who are already online and younger, computer literate audiences. However, practitioners need to consider the fact that this mode of delivery reinforces existing social divides; requires people to have Internet access and be both literate and e-literate.

Disciplines

Medicine and Health Sciences | Social and Behavioral Sciences

Publication Details

Burns, P., Jones, S. C., Caputi, P. & Iverson, D. (2018). Are older Australians with chronic diseases online?. *Health Promotion Journal of Australia*, 29 (1), 72-78.

Are older Australians with chronic diseases online?

Are Older Australians With Chronic Diseases Online?

Pippa Burns, BSc (Hons), MPH (Dist), PhD

Graduate School of Medicine,
University of Wollongong

Sandra C Jones, BA, MBA (Marketing), Post Grad Dip Hlth Prom, MPH, M Assess Eval, PhD

Director, Centre for Health and Social Research
Australian Catholic University
Sandra.Jones@acu.edu.au

Peter Caputi, BA (Hons), Dip Math, PhD

School of Psychology
University of Wollongong
pcaputi@uow.edu.au

Don Iverson, BSc, MSc, PhD (deceased)

Executive Dean, Faculty of Health, Arts and Design
Swinburne University of Technology

Correspondence:

Pippa Burns
School of Medicine
Northfields Avenue, University of Wollongong
New South Wales 2522
Telephone: +61 2 4221 5475
Email: pippa@uow.edu.au

Are older Australians with chronic diseases online?

Acknowledgements:

This project was funded by an Australian Research Council Linkage Grant (LP0990336), in partnership with Asthma Foundation New South Wales. The electoral roll data was supplied by the Australian Electoral Commission in conformity with sections 91(4 A)(e) and 91(2 A)(c) of the Commonwealth Electoral Act 1918 and regulation 10 of the Electoral and Referendum Regulations.

Conflicts of Interest

The authors declare no conflicts of interest.

ABSTRACT

The issue

Health information can be easily and cheaply provided through the internet. However, we do not know whether older adults, those people most likely to be living with a chronic disease, are online or whether they use the internet to find health information.

Methods

In order to establish the proportion of older Australians online, the impact of their current health status and chronic disease diagnosis on internet usage and whether they use the internet to search for health information, a paper-based survey was developed and mailed to 9,000 older adults, who were resident in New South Wales, Australia (response rate = 46.8%).

Results

Results showed that many older Australians are online (52.3%) and those that use the internet to find health information (68.5%). Respondents were more likely to use the internet if they reported good health. The presence of most chronic diseases reduced the likelihood that the person would access the internet; however, this was not the case for those that reported asthma, anxiety or sleep apnoea. Internet use decreased as the number of reported co-morbidities increased. However, once

Are older Australians with chronic diseases online?

online, self-perceived overall health and number of chronic diseases did not affect use of the internet to find health information.

Conclusions

This study is important as there is currently relatively little information available about internet use for health information by older Australians.

So What?

These findings suggest that the internet has the potential to provide preventative health information to older adults, who are already online. However, practitioners need to consider the fact that this mode of delivery reinforces existing social divides; requires people to have internet access and be both literate and e-literate; and that men often do not look for health information online.

Keywords

1. Aged
2. Internet
3. Chronic disease
4. Australia

Are older Australians with chronic diseases online?

INTRODUCTION

Older adults consume the greatest amount of health care resources, and are more likely than other age groups to have been diagnosed with a chronic disease, with approximately half of people aged 65–74 living with five or more chronic diseases (1). At an individual level, chronic disease impacts quality of life and can have wide reaching social and economic effects, making them the leading cause of illness, disability and death in Australia (2). In order to reduce their impact, positive self-management strategies can be employed to manage the chronic illness and minimize their consequences for the patient, their family and the health system.

Further, health promotion messages can be used to prevent the development of chronic diseases.

The internet provides an alternate channel of communication that can be used to deliver self-management and health promotion information. It offers flexible delivery of timely, up-to-date information (3). For providers, the development and launch of materials is relatively cheap and the internet offers extensive reach. The content can be constantly updated and can be made engaging through inclusion of interactive components, such as video clips and quizzes. Further, sites can be individually tailored to participants' needs allowing content to be adapted as personal and social circumstances change (4). From a user's perspective, accessing health information online is a relatively low cost activity that can be undertaken at a time and place that is convenient to them.

Internet interventions have shown significant improvements in health outcomes, health knowledge, self-care, adherence to treatment and self-efficacy (3–9). Due to the burden of chronic disease in the population, older adults can potentially benefit most from access to online health information.

Although it is known that internet adoption among older adults lags behind that of other age groups (10), there is a paucity of information on internet use by older adults in Australia. Further, whilst there is plenty of interest in providing online health information and internet interventions to support chronic disease self-management, to date there has been little research looking at the viability of these solutions. We aimed to establish whether older Australians are online and whether they search the internet for health information. Furthermore, we examined the relationship between current health

Are older Australians with chronic diseases online?

status, including presence of chronic disease, and use of the internet both for general information and to find health information.

METHODS

A paper-based survey was developed to examine the health beliefs, behaviours and attitudes of older Australians towards asthma. Initially, think-aloud interviews (11) were conducted with a convenience sample of 13 older adults to ensure the questions were interpreted correctly. Participants were asked to read the survey out loud, verbalising any thoughts they had about the survey questions, response options and the answers they gave. Interviews were conducted in participants' homes and were recorded. The researchers also made notes during each interview. Changes to both the design and content of the research tool were made as a result of the findings.

The survey was subsequently piloted with 118 respondents (115 valid responses). The respondents were accessed either through community groups, or when travelling on trains between two major cities in New South Wales (NSW), Australia. Respondents were offered a coffee voucher to acknowledge their time and effort (Reference removed for peer review). The final paper-based survey contained 79 items and was printed in 14-point font to allow for the deterioration of eyesight that often occurs as people age. Twelve items addressed demographic characteristics; including age, sex, highest level of education achieved and household income. Participants were asked to rate their health on a five-point scale (poor to excellent), and rate their health when compared to last year (much better to much worse). They were asked to indicate whether they had ever been told by a health professional that they had any of the following conditions: heart disease (described as angina/heart attack/heart failure), anxiety or panic attacks, arthritis, asthma, diabetes, emphysema, chronic obstructive pulmonary disorder (COPD), high blood pressure and sleep apnoea. A further 17 items asked about their use of the internet. Ethics approval was obtained from the University's Human Research Ethics Committee; and consent was implied by return of the survey.

Nine thousand older adults were sent a package that included the survey, a letter explaining the research and a reply paid envelope. The sample was randomly selected by the Australian Electoral Commission (AEC) and consisted of people aged 55 years or over, equally divided between males

Are older Australians with chronic diseases online?

and females and living in three distinct regions of NSW, Australia. In order to maximise the response rate, participants who completed and returned the survey were able to opt into a draw to win one of ten \$100 gift vouchers.

Surveys were coded, allowing the contact details of participants who responded to be removed from the database. This allowed the implementation of an amended version of Dillman's tailored design method to maximise the response rate (12). Reminder postcards were sent out after three weeks, when receipt of completed surveys slowed down. A second copy of the survey package was sent out four weeks later.

After three months, 4,131 surveys had been returned: surveys marked "no longer at this address" or completed by people less than 55 years were excluded, leaving 4,060 eligible surveys (response rate = 46.8%). The data were entered into SPSS Statistics 17.0 by three researchers. Five percent of survey data was re-entered to check for accuracy (error rate = 0.175%). Pearson's chi-square test of contingencies were conducted to examine associations between personal demographics, and both general internet use and use of the internet to find health information. Direct logistic regressions were subsequently performed to predict use of a computer to access the internet and use of the internet to find health information.

RESULTS

Survey respondents

Over half the respondents reported being female (54.8%) and most were aged between 55-64 years (42.6%). The majority spoke English at home (93.6%), and just over one percent self-identified as being of Aboriginal or Torres Strait Islander origin. While more than a third of participants had completed tertiary education (35.7%), over half reported a household income of \$40,000 or less (56%) and two-thirds reported being retired (66.1%).

The majority of respondents reported that their health was good, very good or excellent (78.4%) and most thought that their health was the same as last year (75.8%). Only 20% did not report having a

Are older Australians with chronic diseases online?

chronic disease, with nearly half reporting between two and five chronic diseases (45.3%); high blood pressure and arthritis were the two most frequently reported diagnoses (46.7% and 44.5% respectively).

Internet use

Over half of all respondents had used a computer to access the internet during the past 12 months (52.3%). Table 1 shows internet use by demographic variables.

Table 1: Proportion of respondents online and looking for health information

	Proportion of respondents	Percentage online	Percentage of those online looking for health information
Gender			
Male	45.2%	53.7%	63.9%
Female	54.8%	51.1%	72.5%
Age			
55-64 years	42.6%	72.9%	72.2%
65-74 years	33.1%	48.2%	65.6%
75+ years	24.3%	21.2%	54.5%
Education			
No school/primary school	6.1%	11.4%	48.1%
Some secondary school	29.4%	35.9%	62.5%
Completed secondary school	28.8%	47.0%	59.5%
Completed tertiary studies	35.7%	78.0%	75.7%
Income			
<\$40K	56.0%	43.2%	65.8%
\$40K - \$80K	20.1%	75.1%	71.4%
>\$80K	11.0%	88.9%	78.5%
Don't know/ did not answer	11.9%	-	-
Chronic disease			
None	20.4%	63.3%	69.2%
One	33.6%	56.3%	66.9%
Two or more	46.0%	44.8%	69.3%
Number of respondents	4066	4066	2092

While internet use decreased with increasing age, it was more likely amongst those who were employed, had completed tertiary studies and had a higher household income (Table 2). Respondents' sex was not associated with internet use (Table 2).

Respondents were more likely to use the internet if they reported good, very good or excellent health and if their health was the same or better than last year (Table 2). Internet use decreased significantly as the number of co-morbidities increased (Table 2). A chronic disease diagnosis was significantly associated with less internet use, except when a participant reported a diagnosis of anxiety, sleep apnoea or asthma (Table 3).

Are older Australians with chronic diseases online?

Table 2: The relationship between demographic variables, Internet use and use of the Internet to find health information

	N	df	χ^2	p
Internet use				
Gender	4,002	1	2.78	.095
Age	4,003	2	674.15	.000
Employed	3,954	6	452.67	.000
Tertiary educated	3,953	2	624.96	.000
Higher household income	3,247	1	410.79	.000
Current health status	3,949	4	261.33	.000
Health status compared to last year	3,939	2	31.92	.000
Number of chronic diseases	3,954	2	87.99	.000
Use of the internet to find health information				
Gender	2,082	1	17.65	.000
Age	2,082	2	28.74	.000
Tertiary educated	2,077	2	55.95	.000
Higher household income	1,831	2	15.00	.000
Current health status	2,070	2	4.82	.090
Health status compared to last year	2,063	2	4.98	.083
Number of chronic diseases	2,065	2	1.21	.547

Table 3: Respondents with chronic disease, their Internet use and use of the Internet for health information

Chronic disease	Number of respondents			Internet use			Internet use for health information		
	n	%	rank	n	%	p	n	%	p
Angina	450	11.2	5	160	36.4	.000*	111	69.4	.808
Anxiety	418	10.4	6	224	54.9	.302	171	77.0	.004*
Arthritis	1796	44.5	2	824	46.8	.000*	558	67.9	.614
Asthma	646	16.1	3	329	53.5	.581	228	69.5	.658
Diabetes	574	14.3	4	246	43.5	.000*	157	64.1	.113
Emphysema	149	3.7	8	54	37.5	.000*	35	66.0	.694
COPD	97	2.4	9	37	39.4	.010*	31	86.1	.022*
High blood pressure	1881	46.7	1	878	47.4	.000	602	69.0	.664
Sleep apnoea	250	6.2	7	118	47.8	.126	80	67.8	.862

Are older Australians with chronic diseases online?

Internet user characteristics

Among the sub-group of respondents that used the internet (n=2092), most were long-term internet users (68.5% reported using the internet for more than five years) with high comfort levels (52.8% reported being quite or very comfortable with using the internet). Most respondents accessed the internet at home (83.3%) or in the workplace (30.9%). Most respondents had broadband access (84%) and reported spending between one and five hours online each week (49%). Internet Explorer was the most commonly used web browser (79%).

Internet use for health information

Over two-thirds of respondents, who reported using the internet, had searched for health information (68.5%). Table 1 shows the proportion of health information seekers by demographic variables.

Pearson's chi-square test of contingencies showed that people who had used the internet to look for health information were significantly more likely to be younger, female, have completed tertiary education, and have a higher household income (Table 2). Current self-perceived overall health status, health status compared to last year and number of chronic diseases were not significantly associated with using the internet to find health information (Table 2). The presence of specific chronic diseases did not affect respondents' use of the internet to look for health information, with the exception of anxiety and COPD, both of which made this more likely (Table 3).

A direct logistic regression analysis using six independent predictors was performed to predict use of the internet to find health information. The predictors were sex, age, education level attained, household income, health rating and number of chronic diseases.

A test of the full model distinguished between people online who search for health information and those who do not (χ^2 (10, N = 2092) = 109.32, p = .000). The overall prediction success rate was 69.8%. The set of variables was also successful at identifying those respondents who had used the internet to find health information (95.8%). According to the Wald criterion, the following variables made a significant contribution to the prediction: age category, 55-64 years (z=13.15, p=.001); age category 65-74 years (z=12.99, p=.000); age category, 75 years and over (z=6.43, p=.011); sex

Are older Australians with chronic diseases online?

($z=20.89$, $p=.000$); education level attained, no school/primary school or some secondary school ($z=52.07$, $p=.000$); education level attained, completed secondary school ($z=24.69$, $p=.000$); education level attained, completed tertiary studies ($z=44.94$, $p=.000$); very good or excellent health status ($z=7.447$, $p=.024$); and income ($z=5.30$, $p=.021$).

DISCUSSION

Our study demonstrates that older adults who are online are confident, long-term users who look for health information on the internet. Perceived good health was associated with internet use. Chronic disease diagnosis was associated with less internet use for all diseases except anxiety, sleep apnoea and asthma. However, reported health status and chronic disease diagnosis did not negatively affect searching for health information amongst those who were online.

Internet use

Internet use was found to be slightly lower (52.3%) than the levels reported in other recent Australian studies: 62% (13) and 68% (14). Our results suggest that younger respondents (55 – 64 years), with a tertiary education, a higher household income and a job were more likely to be online, which is consistent with findings from other studies (13–17). It is evident from these findings that a digital divide still exists when it comes to internet use; therefore, caution should be shown when utilising this medium for health education delivery as it may serve to reproduce existing social divides (18). While other studies have reported that males are more likely to access the internet, this was not replicated in our results (14,19).

There were high reported rates of broadband use (84%) amongst internet users, which has previously been shown to predispose users to search for health information (20). This is likely to be due to the increased speed at which information can be viewed and the reduced cost of accessing information through broadband.

Are older Australians with chronic diseases online?

Internet use, health and chronic disease

Respondents who reported better health status were more likely to access the internet than those who reported fair or poor health; this finding is in keeping with other research (17). It is unclear as to why this differential occurs, and further qualitative research is required to adequately address this question. Eighty percent of respondents reported having at least one chronic disease, and 45.3% reported having between two and five chronic diseases. These rates are very similar to those reported elsewhere; 49.6% reported two or more co-morbidities (21). Internet use significantly decreased as the number of chronic diseases reported increased. Again, this is consistent with other research which found 81% of those with no chronic diseases were online compared to 62% of people with chronic disease (22). This suggests that people with chronic disease are disproportionately offline (20,22) and that the internet may have a more useful role in providing preventative, health promotion information.

Internet use for health information

Our study found rates of internet use for health information (68.5%) that were considerably higher than rates found by Australian studies conducted between 2006 and 2008 (12.6% - 49%) (14,23). It is likely that this is due to people gaining internet access over time. However, internet usage for health information (68.5%) was found to be similar to a recent, small study (64%) (13). Like internet use, rates of searching for health information decreased with increasing age; this is in accordance with other research (20,24). Women were significantly more likely to search for health information than men, which again is consistent with other findings (14,20,25–27), but raises the question of how health practitioners can effectively use the internet to target men.

The other social divides, high household income and tertiary education, that were seen to affect internet use also affected use of the internet to access health information; these results were again consistent with findings from other studies (20,24,26,28). Again, caution is urged when using the internet to deliver health information as it may reinforce existing social divides (18).

Are older Australians with chronic diseases online?

Internet use for health information and chronic disease diagnosis

Self-perceived overall health status, health status compared to last year and number of chronic diseases did not affect the likelihood of a respondent using the internet to access health information once they were online. Previous research findings are divided on the impact of health status on use of the internet to find health information. Some studies have found that better self-reported health status or absence of chronic disease(s) equated to less internet health information seeking (14,20,29); others that health status has no impact (16); and a third group that people with multiple chronic conditions are the most frequent users of the internet for health information (30,31). Our results show that the majority of older adults with internet access look for health information online. This finding indicates that the internet has the potential to support mainstream health services by providing online health information for older adults. Online health information is especially pertinent for those living in rural and remote locations who often lack access to health services; which is relevant to Australia's geography. However, in order for people to benefit from such information they need to have internet access and computer skills as well as being both literate and e-literate.

Although the proportion of older adults online will increase with time, resulting in greater numbers of older adults looking to the internet to provide health information; it is worth noting that older adults may still have problems adopting new technologies (15). Further, the physical changes experienced through ageing— including reduced visual and auditory acuity, declining motor skills and changes in cognitive processes can impact the use of the internet (15). These issues highlight the need for formative research when developing online resources for older adults to ensure that the target audience can effectively use the site.

This study had a number of strengths, including a large sampling frame and a high response rate. However, the low number of respondents that did not speak English at home was not representative of the population (32); this anomaly can be attributed to the format of the tool – a lengthy survey in English. A further limitation was the use of self-report measures as answers can be subjective and some questions relied on participants' memories, which can be flawed, particularly in older age, affecting reliability.

Are older Australians with chronic diseases online?

There is currently a paucity of information around Australians' use of the internet. Specifically, there is a need for additional research investigating the digital skills of older adults who are online and the reasons why a proportion of older Australians remain off-line. Further, there is scope to investigate the type, function and frequency of health information searching across age groups, in order to understand the potential role of the internet for providing health information and self-management support.

CONCLUSIONS

Although these results show that some older adults are online, these numbers are likely to increase as the population ages. It was found that those older Australians who were online often search for health information.

However, people with chronic diseases are more likely to be offline – with the exception of those with a diagnosis of asthma, anxiety and sleep apnoea. Therefore the internet may be best used to provide health promotion materials that will help to stall the development of chronic diseases, rather than providing self-management information to this population. However, based on these findings, practitioners should think carefully about how to target older men, who appear less likely to be online or to be looking for health information when online. Further, the provision of online health information has the potential to reinforce existing barriers created by the social determinants of health, and needs to be carefully considered. In conclusion, the internet has potential to help older adults understand and manage their health and this potential will increase as the population ages.

REFERENCES

1. Australian Institute of Health and Welfare. Australia's Health 2012. Australia'. Canberra, ACT: AIHW; 2012. 182-5 p.
2. AIHW. Australia's Health 2014. Cat. no. AUS 99. Canberra: AIHW. 2014. <http://www.aihw.gov.au/publications/aus/ah08/ah08-p>.
3. Griffiths F, Lindenmeyer A, Powell J, Lowe P, Thorogood M. Why are health care interventions delivered over the internet? A systematic review of the published literature. *J Med Internet Res* [Internet]. *Journal of Medical Internet Research*; 2006 Jan 23 [cited 2011 Jun 13];8(2):e10. Available from: <http://www.jmir.org/2006/2/e10/>
4. Lewis D. Computer-based Approaches to Patient Education: a review of the literature. *Comput Patient Educ*. 1999;6(4):272–82.
5. Eland-de Kok P, van Os-Medendorp H, Vergouwe-Meijer A, Bruijnzeel-Koomen C, Ros W. A systematic review of the effects of e-health on chronically ill patients. *J Clin Nurs* [Internet]. 2011 Nov [cited 2012 Mar 25];20(21-22):2997–3010. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21707807>
6. Hassan NM, Win KT, Hyland P. Benefits of online patient education (OPE) for chronic disease. In: Grout V, Picking R, Oram D, Cunningham S, Houlden N, editors. *Fourth International Conference on Internet Technologies and Applications (ITA11)*. Wrexham, North East Wales, UK: Glyndwr University; 2011.
7. Lorig K, Ritter PL, Plant K, Laurent DD, Kelly P, Rowe S. The South Australia Health Chronic Disease Self-Management Internet Trial. *Heal Educ Behav* [Internet]. 2012 Apr 4 [cited 2012 Jun 7];(April). Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22491008>
8. Murray E. Internet-delivered treatments for long-term conditions: strategies, efficiency and cost-effectiveness. *Expert Rev Pharmacoecon Outcomes Res*. 2008;8(3):261–72.
9. Wantland DJ, Portillo CJ, Holzemer WL, Slaughter R, McGhee EM. The effectiveness of Web-based vs. non-Web-based interventions: a meta-analysis of behavioral change outcomes. *J Med Internet Res* [Internet]. 2004 Nov 10 [cited 2012 Mar 10];6(4):e40. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1550624&tool=pmcentrez&render type=abstract>
10. Australian Bureau of Statistics. 8146.0 Household Use of Information Technology, Australia 2014-2015 [Internet]. 2016 [cited 2016 Jul 21]. Available from: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/8146.0Main+Features12014-15?OpenDocument>
11. Drennan J. Cognitive interviewing: verbal data in the design and pretesting of questionnaires. *J Adv Nurs*. 2003;42(1):57–63.
12. Dillman DA. *Mail and internet surveys: The Tailored Design Method*. 2nd editio. John Wiley & Sons, Inc.; 2000.
13. Burns P, Jones SC, Iverson D, Caputi P. Riding the wave or paddling in the shallows? Understanding older Australians' use of the internet. *Heal Promot J Aust*. 2012;23(2):145–8.
14. Reinfeld-Kirkman N, Kalucy E, Roeger L. The relationship between self-reported health status and the increasing likelihood of South Australians seeking internet health information. *Aust N Z J Public Health*. 2010;34:422–6.
15. Czaja SJ, Sharit J. *The Aging of the population: opportunities and challenges for human factors engineering*. Bridg. 2009;Spring:34–40.
16. Koch-Weser S, Bradshaw YS, Gualtieri L, Gallagher SS. *The Internet as a health information*

Are older Australians with chronic diseases online?

- source: findings from the 2007 Health Information National Trends Survey and implications for health communication. *J Health Commun* [Internet]. 2010 Jan [cited 2012 Apr 7];15 Suppl 3(May 2012):279–93. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21154099>
17. Fox S. Who doesn't gather health information online? [Internet]. Pew Internet & American Life Project. 2011 [cited 2011 Nov 14]. Available from: <http://pewinternet.org/Commentary/2011/October/Who-Doesnt-Gather-Health-Information-Online.aspx>
 18. Korp P. Health on the Internet: implications for health promotion. *Health Educ Res*. 2006;21(1):78–86.
 19. Gauld R, Williams S. Use of the Internet for health information: a study of Australians and New Zealanders. *Inform Health Soc Care* [Internet]. 2009 Sep [cited 2012 May 25];34(3):149–58. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19670005>
 20. Fox S. Health Topics [Internet]. Washington DC; 2011. Available from: <http://pewinternet.org/Reports/2011/HealthTopics.aspx>
 21. Australian Institute of Health and Welfare. Chronic Diseases [Internet]. 2010 [cited 2012 Feb 24]. Available from: <http://www.aihw.gov.au/chronic-diseases/>
 22. Fox S, Purcell K. Chronic Disease and the Internet [Internet]. Washington DC; 2010. Available from: <http://pewinternet.org/Reports/2010/Chronic-Disease.aspx>
 23. Gauld R. Factors Associated With E-mail and Internet Use for Health Information and Communications Among Australians and New Zealanders. *Soc Sci Comput Rev* [Internet]. 2010 Feb 10 [cited 2012 Mar 7];29(1):161–71. Available from: <http://ssc.sagepub.com/cgi/doi/10.1177/0894439309358239>
 24. Gallagher S, Doherty DT. Searching for health information online: characteristics of online health seekers. *J Evid Based Med* [Internet]. 2009 May [cited 2012 Apr 7];2(2):99–106. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21348996>
 25. Fox S, Jones S. The social life of health information [Internet]. Washington DC; 2009 [cited 2012 May 25]. Available from: pewinternet.org
 26. Cohen R, Adams PF. Use of the internet for health information: United States, 2009. *NCHS Data Brief* [Internet]. 2011 Jul;(66):1–8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22142942>
 27. Ybarra M, Suman M. Reasons, assessments and actions taken: sex and age differences in uses of Internet health information. *Health Educ Res* [Internet]. 2008;23(3):512–21. Available from: <http://her.oxfordjournals.org/cgi/content/abstract/23/3/512>
 28. McDaid D, Park A. Online Health: Untangling the web [Internet]. BUPA Health Plus 2010; 2010. Available from: www.bupa.com/healthplus
 29. Bundorf MK, Wagner TH, Singer SJ, Baker LC. Who searches the internet for health information? *Health Serv Res* [Internet]. 2006 Jun [cited 2012 Apr 7];41(3 Pt 1):819–36. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1713205&tool=pmcentrez&render type=abstract>
 30. Wagner TH, Baker LC, Bundorf MK, Singer S. Use of the Internet for health information by the chronically ill. *Prev Chronic Dis* [Internet]. 2004 Oct;1(4):A13. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1277953&tool=pmcentrez&render type=abstract>
 31. Ayers SL, Kronenfeld JJ. Chronic illness and health-seeking information on the Internet. *Health*: [Internet]. 2007 Jul [cited 2012 Jun 4];11(3):327–47. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/17606698>
 32. Australian Bureau of Statistics. 2006 Census QuickStats: New South Wales [Internet]. 2007.

Are older Australians with chronic diseases online?

Available from:

<http://www.censusdata.abs.gov.au/ABSNavigation/prenav/ViewData?method=Place of Usual Residence&subaction=-1&producttype=QuickStats&areacode=1&action=401&collection=Census&textversion=false&breadcrumb=PL&period=2006&javascript=true&navmapdisplayed=true&>