European Journal of Cancer Care

Commentary

Improving access to health information for older migrants by using grounded theory and social network analysis to understand their information behaviour and digital technology use

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GOODALL K.T., NEWMAN L.A. & WARD P.R. (2014) *European Journal of Cancer Care* **23**, 728–738

Improving access to health information for older migrants by using grounded theory and social network analysis to understand their information behaviour and digital technology use

Migrant well-being can be strongly influenced by the migration experience and subsequent degree of mainstream language acquisition. There is little research on how older Culturally And Linguistically Diverse (CALD) migrants who have 'aged in place' find health information, and the role which digital technology plays in this. Although the research for this paper was not focused on cancer, we draw out implications for providing cancer-related information to this group. We interviewed 54 participants (14 men and 40 women) aged 63–94 years, who were born in Italy or Greece, and who migrated to Australia mostly as young adults after World War II. Constructivist grounded theory and social network analysis were used for data analysis. Participants identified doctors, adult children, local television, spouse, local newspaper and radio as the most important information sources. They did not generally use computers, the Internet or mobile phones to access information. Literacy in their birth language, and the degree of proficiency in understanding and using English, influenced the range of information sources accessed and the means used. The ways in which older CALD migrants seek and access information has important implications for how professionals and policymakers deliver relevant information to them about cancer prevention, screening, support and treatment, particularly as information and resources are moved online as part of e-health.

Keywords: e-health, older people, CALD, migrants, social network analysis, grounded theory.

INTRODUCTION

Migrant health and well-being can be strongly influenced by the process of migration, which includes changes to established information networks and sources (Hameed *et al*. 2013). In Australia, older Greek and Italian migrants under-use health services (Marino *et al*. 2005), despite their higher prevalence of certain chronic diseases, such as cancer and diabetes (Holdenson *et al*. 2003; Hodge *et al*. 2004; Dassanayake *et al*. 2011). As many migrants are 'ageing in place' (i.e. they came to the host country in their younger years, and not as old people), the nature of services and the ways in which they are provided will need to change to be both more culturally appropriate and to recognise that many family members are 'time-pressured' and less able to help with providing care (Walker *et al*. 2013).

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Accepted 13 August 2014
DOI: 10.1111/ecc.12241

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This paper explores the perceived information needs of older migrants from non-English-speaking backgrounds, and in particular the potential place of information and communication technology (ICT) in their information-seeking behaviour. The study on which this paper is based did not focus on 'cancer information', although this group's high risk of cancer, given their age alone, means that our data are particularly important to practitioners and policymakers who are attempting to provide information in the most socially, culturally and age-specific manner.

Many countries face the dilemma of finding ways to meet increasing demand for healthcare, in part due to ageing populations, while limiting the rising cost of delivering services. Countries have adopted different measures in an effort to manage these conflicting demands. One such approach is the increasing application of digital technologies for consumer-provider communication within 'e-health' and 'm-health', with the anticipation that this will improve efficiencies and/or reduce costs (Australian Government Information Management Office 2007). Such developments are anticipated to provide new and exciting opportunities to 'empower' consumers, for example through the use of personal electronic health records (Crilly *et al*. 2011), and particularly that they will provide new forms of 'unfettered' access to information for all (Hesse 2009). However, not all decision-makers are convinced that e-health will achieve these aims, or that it will support equity in healthcare access (World Health Organisation 2012).

The application of digital technologies in healthcare can be broadly classified as measures to: improve work practices through better management of clinical records, patient test results and treatments, and provider-to-provider communication; facilitating patient involvement to manage their health outside of hospital settings, for example using tele-health; and improved availability of health information for patients and family members (Newman & Frank 2013). While the potential reach of the Internet in particular is 'every person' in a population, there is little research about what percentage of any given population is able and willing to use this communication method (Bennett & Glasgow 2009). The focus of this paper is to investigate the implications which introducing these measures has for a group in society identified as being at risk of social and informational isolation, especially in the areas of self-management of chronic conditions and access to health information. There is little research on the combined effects of ethnicity, migration, socio-economic status and education of older people from a non-English-speaking background and how this influences their use of traditional modes of communication and information seeking compared with their use of digital technologies to find information. Addressing this gap in knowledge should be a priority in any country which has migrants from countries with a different birth language. This paper reports on how older migrants from Culturally And Linguistically Diverse (CALD) backgrounds find information which they need to function effectively in their everyday lives. While the focus is on 'general' information, the barriers and facilitators which are identified are also applicable to locating health information and hence have implications for how cancer information can be more effectively provided to these groups.

Use of digital technologies is generally lower among older age groups than younger age groups (Selwyn 2004). Despite reports of marked increases in use by older age groups (Australian Bureau of Statistics 2011a), age continues to be a barrier to using ICTs (Heart & Kalderon 2013). Furthermore, computer and Internet use by older people is strongly related to education level. In Australia in 2009, only 29% of those aged 65 or over who had less-than-secondary education used the Internet, compared with 79% of those with a university degree (Australian Bureau of Statistics 2011a). Some groups of older people are therefore at increased risk of not being able to access information as health professionals and health services increasingly implement digital means to provide information (Newman *et al*. 2012; Choudrie *et al*. 2013). This is more likely to happen if a 'digital by default' approach becomes more widespread in the future (Helsper 2008) with the subsequent withdrawal of alternative or more traditional information pathways, in the anticipation of cost savings or increased accessibility. One particular group of older people at risk in an increasingly digital world is older migrants of CALD backgrounds who, in addition to communication barriers, often have low levels of functional skills in the mainstream language of the host society, low levels of education, and disruptions to their information networks caused by the act of migration.

Utilising a qualitative research design, the specific aims of this study were to explore the relative use of traditional information sources (e.g. paper, radio, friends and family) compared with computers, the Internet and mobile phones, along with the implications of preferences for these various sources for providing information about cancer to older migrants from a CALD background.

METHOD

Participant recruitment

Participants were recruited in South Australia via ethno-specific service providers. These are organisations who

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focus on service provision to populations from specific ethnic backgrounds, and which are often run by staff who share the language and cultural background of the group in question. The recruitment for this study was carried out through such organisations which were located in metropolitan Adelaide and throughout the rural Riverland region of South Australia. The organisations assisted by distributing information about the project to potential participants and providing bilingual staff to help arrange venues to hold focused interviews, as well as interpreting and translating questions and participants' responses. Further recruitment strategies involving snowballing and purposive sampling which were applied as per the study's objectives and theoretical framework. The Social and Behavioural Research Ethics Committee, at the Flinders University of South Australia approved the project (Project Number 4322). Participants provided informed consent prior to participating in the study. The introductory letter and consent form were presented in English or translated into Greek or Italian by a government-funded professional translation service. Prior to the interviews a translator read the project material to participants who were illiterate in English and their birth language to enable them to give informed consent.

Theoretical and sampling framework

A constructivist grounded theory method (CGTM), as described by Charmaz (2006), guided the conduct of the study throughout and was used in analysing the transcribed files, field notes and memos to identify themes and categories. Constant comparison of data guided the collection of subsequent data and analyses until theoretical saturation occurred. From the early group interviews, social networks emerged as important to participants in finding everyday information, especially for those not actively involved with ethno-specific service providers. Thus, we consequently adopted a qualitative form of social network analysis (Tobin & Begley 2004) to map and understand how participants use social networks to obtain information, rather than a form of triangulation to confirm existing data. By adopting a bottom up perspective using an egocentric network (Alexander 2009), individual participants were the node, while their ties were the connections they had with their sources of information. Consistent with CGTM, further participants were purposively recruited using principles of theoretical sampling to investigate this issue further.

For each network, we recorded:

- Sources of information needed or used in everyday activities
- The direction of flow of the information depicted by one or two way arrows
- Participants' assessment of the absolute importance of a tie on a scale of 1–5 (with 1 being least important and 5 most important)
- The type of tie as described by Borgatti and Halgin (2011):
  - State-type – kinship (family relation) or cognitive (knows)
  - Event-type – interaction (giving receiving advice)
- Nature of the flow of information along each tie (e.g. exchange of news, advice related to health services)
- The language used in gathering and sharing information.

Each participant was sent a copy of their network diagram and asked to review and comment on its accuracy and completeness.

Data collection and analysis

Thirteen semi-structured interviews (seven group, two couples and four individual interviews) were conducted by KTG during the period late 2008 to 2012 at various locations around Adelaide and the rural Riverland region of South Australia. Group interviews were developed on the basis of language and arranged with the assistance of ethno-specific service providers. Interview locations were chosen by participants and included day care centres, service provider offices or private homes. All participants were offered a choice of using their birth language or English during interview. At nine of the interviews bilingual employees of the services or adult children provided interpreter services. All other participants used English language (but did not necessarily have good command of English). Interviews lasted approximately 60 min.

Data collection and analysis proceeded in three stages – the first was to understand information experiences; then to consider more social sources of information and finally, the effects of English language acquisition and/or social isolation on information gathering. Topics of inquiry for later stages emerged from analysis of data collected during the initial round of interviews. Since data collection and analysis occurred concurrently, findings from the analysis of earlier data guided subsequent data collection. KTG conducted the analysis with ongoing guidance and input from LAN and PRW. Interviews were digitally recorded and the English language sections were transcribed by a professional transcription service. Pseudonyms and codes were used when referring to data to protect participant identity.

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RESULTS

This section presents the results of the data analysis from the group and individual interviews, along with a comparison of two individuals from the social network analysis which provides more in-depth illustration of contrasting information contexts for different people. All names used are fictitious to protect the anonymity of the participants.

The study involved 54 participants (14 men and 40 women) who were born in Italy ($n = 22$) or Greece ($n = 32$) and who had migrated to Australia in their younger years during the post-World War II migration boom. Participants had an average age of 74.1 years at the time of interview and had lived in Australia for an average of 47 years. All participants were living in the community (i.e. not in residential aged care) and most enjoyed good health for their age.

Participants identified 31 discrete information sources which they used to find everyday information. Sources included both the expected, such a doctors and adult children, as well as others associated with individual circumstances, such as a local gym. The six most important sources were: their usual doctor, adult children, local English language television, their spouse, and (equally) local English language newspapers and radio.

In terms of communication types with these sources, the use of computers and the Internet was low to non-existent (Goodall *et al.* 2010). This situation is unlikely to change because some participants perceived computers to be 'too dangerous' or too difficult to use, despite their lack of actual experience in using computers, or because they felt that computers were only suitable for use by younger people and not older age groups:

> The Internet and the computers is [sic] for the young people – old people don't understand, they don't have computers, they don't know how to use them even if we have them. (Sotiris, Greek male)

> We've got a telephone – a mobile phone – and we can't use that. I can't read the numbers let alone using a computer. (Interpreter for Alexandros, Greek male)

A small number of participants were making efforts to learn about computers through attending introductory classes held by ethno-specific service providers.

If technologies are defined more broadly to include the fixed-line telephone, then many participants frequently use technologies to access the information they need purposively in their everyday lives, as well as for social contact and to get information of an incidental nature. It was particularly common among participants who had functional English language skills to use their landline telephone to contact government departments and local councils on specific matters, or to access information more generally:

> We are used to talk to [on] the phone [sic], you know what I mean? (Angela, Italian female)

Fixed-line telephones were preferred to mobile phones due to their lower costs and greater ease of use because of their being physically larger and having fewer features than most mobile phones. Many participants maintained family ties and exchanged information with friends and family living locally and overseas through regular landline telephone calls, which enabled them to maintain family ties and exchange information:

> When you buy a long-distance call card [to make calls from your landline phone] – $10 you can talk 300 minutes. Yes, even one [relative is] in Argentina, and . . . Canada, because she [wife's] got a sister there but it's very handy to call. I never believed when I was young man that this would happen. (Carlo, Italian male)

Comparatively, participants with low or no functional English language skills required mediated access to information and services through intervention by third parties; in many cases these were their adult children:

> We've got our children who we ask on many occasions to find out things. Sometimes we'll get letters or things like that in the post and we keep them, we hold on to them, and at night-time when the children come home we get them to read them to us. (Irene, Greek female)

> [Name] said to me that all of her appointments and things like that are all dealt with by the children. (Interpreter for Alberta, Italian female)

On the other hand, ethno-specific service providers were also common sources of information:

> I just want to add [that], to us, to the Greek community, they [ethno-specific service provider] are lifesavers . . . Anything we want, we come here [to ethno-specific service provider], some people even ring and say 'What bus do I have to get to go to [suburb x]? (Pavlos, Greek male)

Less acculturated migrants were more heavily dependent on health professionals who shared their culture and language, although others could still prefer this even if they did have some English proficiency:

> Usually we go to our doctor and he's Greek spoken [sic], you know, so he's explained to us exactly what's

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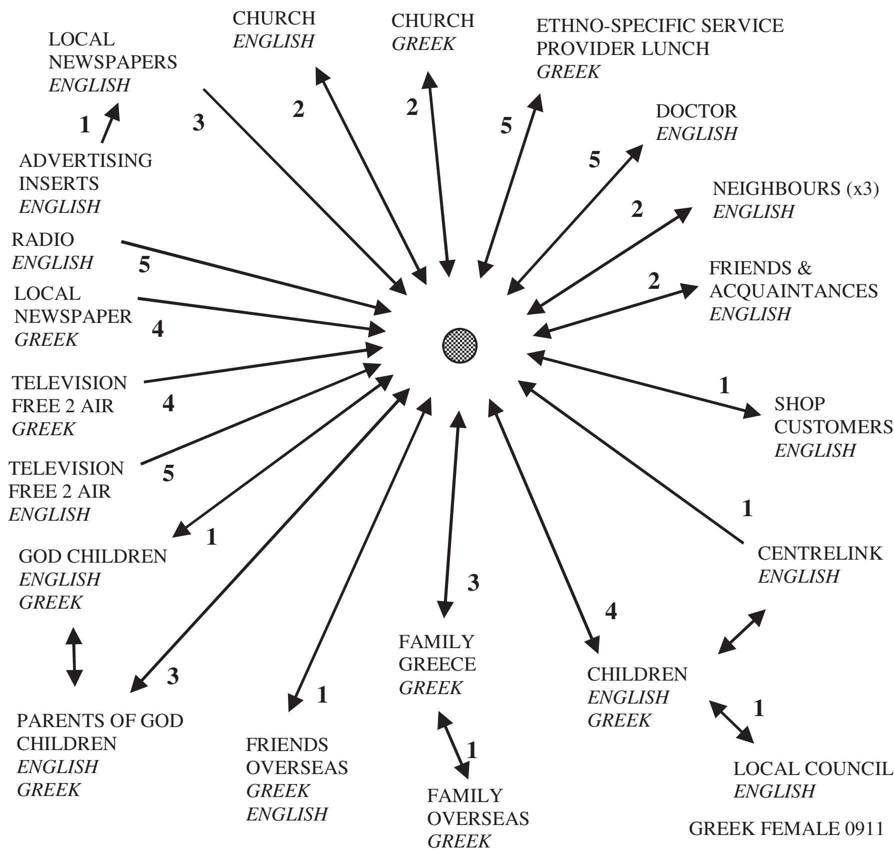

Figure 1. Eleni's social and information network.

happening. I do understand the other [English-speaking] doctors as well, but to be sure, I always visit my own doctor. (Despina, Greek female)

Personally I feel sorry for [people who don't have command of English] because has happened two or three times, somehow one person was complaining, couldn't speak English and he couldn't make himself understood to the nurse or to the doctor or whoever. (Carlo, Italian male)

The following contrasting examples illustrate the influence that English language acquisition has on information gathering. Two participants of similar ages (in their 80s) were both living in the community, experienced good health and enjoyed the social and emotional support of family and friends. A noted difference was the extent of acculturation – one (Eleni) spoke and understood English well, the other (Giulia) had a limited understanding of spoken English and did not speak English at all well herself. Eleni exhibited a generally positive outlook on life, participating in a variety of social events. She actively engaged numerous sources to gather information and acknowledged the need to do so to keep informed and to learn about issues:

If you stay here [at home] with no knowledge from no-one else, how you're going to learn [sic] if you're not going to open [watch] the TV, if you are not going to open [listen to] the radio, you not going to listen to people, how are you going to learn? (Eleni, Greek female)

Her social and information network (Fig. 1) contained 21 sources, many of which were diverse and involved a variety of communication means that reflected Eleni's enthusiastic approach to life. Within the diagram, many of the individual sources belie the full extent of her network because they represent multiple contacts. For example, alongside several neighbours, many friends and acquaintances, she also had casual exchanges of information with fellow passengers on regular trips to the city by public transport. Eleni also interacted with her many godchildren and, more importantly with their parents, which contributed to her diverse and extensive network.

Giulia's social and information network (Fig. 2) is similar in appearance to Eleni's but is much less extensive and less diverse in composition of sources and communication means. It differs from Eleni's network in that

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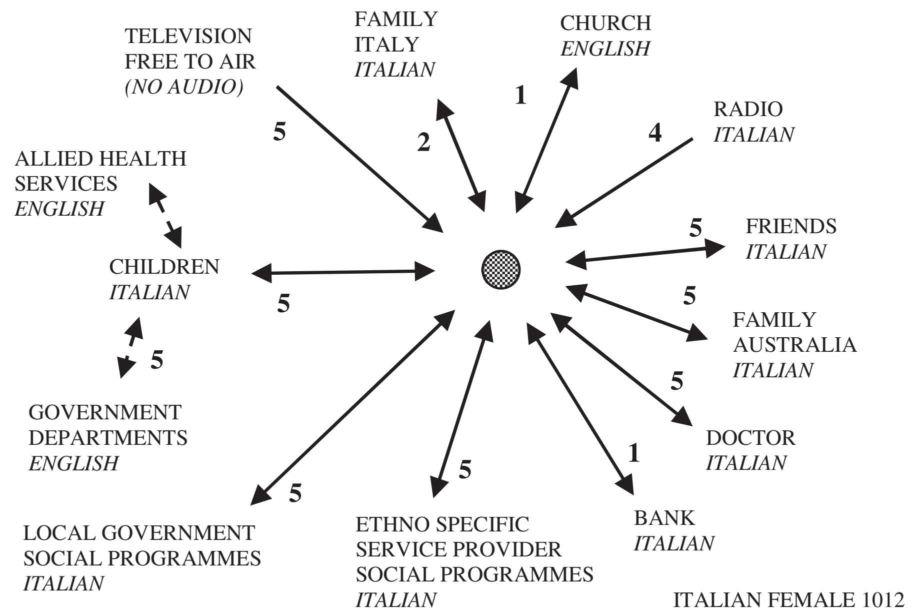

Figure 2. Giulia's social and information network. Dashed lines indicate use of English language.

Giulia had fewer links to English language information sources and services, and she required mediators to provide language translation to access information and services. Currently, Giulia regularly attends social events arranged by an Italian community service provider and occasionally listens to Italian language programmes on community radio.

More acculturated participants – as assessed by their degree of English language acquisition and use (Hunt *et al*. 2004) – engaged a broader range of information sources, as demonstrated by Eleni. This included identifying various English language electronic and print media as important information sources which they used often instead of, or in addition to, birth language sources. These included local free-to-air television services, radio programmes and a local newspaper.

By comparison, for less acculturated participants such as Giulia, these information sources featured less frequently, or not at all in the case of newspapers. When Giulia does use them, it is in a different manner. For example, local Italian language radio rated highly as a source for her, but one she used infrequently. Surprisingly, free- to-air English language television featured as an important source of information, which – due to Giulia's lack of understanding of spoken English – she used in a unique and interesting manner: with the audio turned off. Giulia's perceptions of images alone provided information about events occurring locally and internationally that she felt enabled her to understand, in the absence of any accompanying English language commentary.

DISCUSSION

The ways in which older CALD migrants seek and access information has important implications for how health professionals and policymakers reach these groups to provide information about cancer prevention, cancer screening, cancer support, cancer treatment and survivor support. This is all the more important as many cancer organisations move towards what is seen as increasing efficiency by reducing, and in some instances eliminating, paper-based resources and instead disseminating resources online.

A comparison of the social and information networks of two particular participants offered theoretical insights into factors that influence the manner in which individuals gather information, the extent of networks and, hence, sources of information.

The ties that Eleni had with many of these interpersonal sources are consistent with Granovetter's (1973) theory of the strength of weak ties, in that weak ties act as bridges into other loosely connected networks and so facilitate information flow between interpersonal sources. Nonpersonal sources, such as printed material, act as bridges into loosely connected networks and, as such, Genuis (2006) argues that they behave in a manner consistent with Granovetter's strength of weak ties theory for interpersonal sources in providing access into other loosely connected networks.

Johnson's (2007) study in the capital city of Mongolia also found that people use their social and information networks to gather what they need to know for everyday

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activities. Some of our participants identified many sources other than interpersonal ones, including television, radio and printed material such as daily newspapers.

The older CALD migrants in our study faced a range of barriers to using various sources of information, particularly lack of English language skills for speaking, understanding or reading. It is highly likely that this is linked to their low levels of education and low levels of literacy in their birth language, which are common in this cohort (Tsianikas *et al.* 2011). When combined with low levels of literacy in the birth language, this results in higher levels of oral, audio and visual communication in the birth language. Our findings therefore support Cheong *et al.*'s (2007) conclusion that people with lower levels of education, lower basic literacy, or who are from a non-English-speaking background prefer verbal/visual channels and formats for communication with service providers, that is, radio, television and face-to-face. We found similar results for African refugees who used the Internet to access news about Australia from overseas sources in their birth language, and who criticised Australian government websites (e.g. Immigration) for the lack of non-English language options (Baum *et al.* 2014). Among persons born overseas who came to Australia before 1997 and were still living in Australia at the 2011 Census (and bearing in mind that a significant proportion of these would be from traditional sending-countries which are English-speaking, such as England, Ireland etc.) it is important to note that considerable proportions of the over 65 age group do not speak English at all or do not speak it well: 28% of the 65–74 years age group, 40% of the 75- to 84-year-olds, and 44% of the 85+ years age group (Australian Bureau of Statistics 2011b).

Participants in the current study often used adult children or service providers as mediators to access information. This suggests that health information may be better targeted to these groups, who can pass on the relevant information to the older person. The children of immigrants, having learned English at school and often from a young age, provide language and cultural translations for immigrant parents (Chu 1999). Never having had cause or opportunity to learn English, some of our participants still strongly rely on their now-adult children and other bilingual speakers for language mediation when they need information. This reliance on children as language mediators presents a further barrier to language acquisition that delays and inhibits dealing directly with the dominant culture (Fisher *et al.* 2004) and is important for those providing health information to take into account. It may be imagined that the experience of the older Greeks and Italians in our study will not be repeated among current day CALD migrants as the latter should have better access to English language learning. However, recent research in South Australia with new CALD migrants aged in their 20s and 30s (who are likely to 'age in place') shows that they are already following the same pathway as their Greek and Italian counterparts who arrived in the 1950s and 1960s, in terms of relying on their young children as unofficial interpreters, translators and information mediators and having poor access to opportunities to acquire English proficiency (Newman 2011).

One study with older migrants has shown that adult children can assist in promoting cancer screening programmes to their ageing parents, and that adult daughters especially can be willing to inform their mothers about breast cancer screening and to motivate them to attend screening (Durmaz 2011). Unlike their parents, adult children are also willing to receive information via social media but the type of social media needs to differ according to age and education level (Durmaz 2011). As interpreters, adult children accept a responsible role, but one that is not without consequences. Our study found the close family relations between parent and child place an additional emotional burden on children if required to translate distressing information of a personal nature to a parent: acting as interpreters, adult children become ethno-linguistic gatekeepers and in so doing may exercise power in their potential to filter information (Barzilai-Nahon 2009). This has significant implications for the provision of sensitive cancer information, including the provision of cancer care, and gaining indirect consent from the patient.

In our study, it was evident that family members play an integral role in mediating and communicating both general information on a range of topics and health information more specifically. In other research where we aimed to interview individual older Greeks about their views on service provision related to health and well-being, we found that a spouse who was present would also contribute comments, an adult daughter who was visiting decided to join in during another interview, and in another interview the person's adult daughter in fact responded on behalf of her widowed mother (Hurley *et al.* 2013). These findings suggest the need to be aware that information provision and related decisions may be shared among the individual and family, sometimes without the older person having any direct say, and especially if they do not speak the host country language. In addressing this issue, findings from our other research (Walker *et al.* 2013) suggest the need to engage older migrants' family members as well as the older person themselves (i.e. if they have family and if family is available) in providing health information and discussing healthcare options.

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Not all people have the same degree of ability or desire to use digital technologies as a source of health information (Usher 2011) and our study shows that older CALD migrants are one such group. Adopting technological determinism suggests that digital technology access and use are readily adoptable by everyone in a population, that people possess the necessary functional skills and technology, and have sufficient levels of literacy to seek, find and understand information. Consistent with previous reports (Wicks 2004), our study found that older CALD migrants prefer in-person and print resources over electronic information delivery. In particular, our study complements Greenstock *et al.*'s (2012) findings among CALD Australians who reported overall low use of telecommunications for healthcare: 35% used landline phones to find health information, 22% used mobile phones and 16% used the Internet, whereas most (71%) reported that they did not use the Internet to find health information and most participants did not have a home Internet connection. Other studies suggest that a major barrier for non-English speakers is the significant proportion of the Internet's content usually being in English (Greenstock *et al.* 2012). The participants in our study were also similar to Latino Americans who still mainly obtain health information from Spanish language 'health storytelling networks' such as the mass media (Wilkin & Ball-Rokeach 2011). It is particularly important therefore to investigate the effectiveness (or otherwise) of the increasing use of digital technologies in providing health information or services from the perspectives of patients as well as their families, and to identify and respond to in-group differences.

The slower uptake or reluctance on the part of older CALD migrants to engage with computers, the Internet and mobile phones as a means to gather information suggests that certain groups of older people may never use electronic services. Our study suggests that this is particularly the case for those with lower levels of education and proficiency in the mainstream language of the host country. While there are studies supporting older people in general to use digital technologies and work with them to identify their required supports (e.g. Righi *et al.* 2011), our findings support calls for simultaneous ongoing funding of 'non-electronic' options, such as landline telephone access (Choudrie *et al.* 2013). Despite their non-existent to low direct use of digital technologies, our participants did not report or demonstrate a lack of knowledge about everyday issues or access to sources of information, due to alternatives being available offline. It is therefore likely that for older CALD migrants who are without Internet access, or who have lower ability to manage online health information, the primary source of medical information will remain the health professional (Hou & Shim 2010). Since health services and professionals often act as mediators of health information, they can also directly help inexperienced Internet users make sense of the large amounts of online health information from different sources (Chiu & Eysenbach 2011). Nevertheless, this requires that health professionals themselves become competent in Internet use and online information searching.

Expected efficiencies from the adoption of digital communication by services, health professionals and government have not yet been fully realised in general practice, hospitals and government (Pearce & Haikerwal 2010). This shortfall in expected gains appears to be due to the main approach involving the automation of current work practices, rather than encouraging new and innovative practices (Westbrook & Braithwaite 2010), and especially those that can match consumers information-seeking behaviours. Thus, there appears to be considerable work required in moving towards developing innovative measures to increase the acceptability and reach of digital communication technologies. Previously, Berland *et al.* (2001), in a review of the readability of 25 health information websites, found that all English language sites and 86% of Spanish language sites required a reading level of high school or greater. Furthermore, the availability of translated material online may be less than expected, since a recent survey of council websites in the UK found less than one in four sites (23%) translated content into languages other than English (Choudrie *et al.* 2013, 17). The role of ethnic service providers, which were identified as being important as an information source in our study, may well be transferable to providing information and training for ICT access and use.

A frequently applied approach used by health professionals to address language barriers in informing CALD groups is to translate information into a respective birth language. This of course assumes that recipients are literate in the birth language and, even if this is so, that they also have sufficient education to comprehend the information and convert it to functional knowledge. A national US study found that Asians were significantly more likely than others to prefer cancer information to be provided in print material than online (Nguyen & Bellamy 2006). Our study has highlighted that there exists a degree of variation in literacy in English and/or birth language among the older CALD migrants we interviewed. Consequently, low levels of reading ability and/or comprehension restrict access to text-based information, whether provided online or as printed material

in any language. As such, bilingual personal contact offered by ethno-specific organisations, General Practitioners and other health providers seem necessary to continue to offer effective pathways for older CALD migrants to access health information.

The concept of functional knowledge is the idea that different people require different levels of knowledge (and hence information) to function within their social milieu (Ungar 2008). At the time of the interviews, participants of this study did not perceive or display any functional knowledge deficits, rather the information that they gathered by various means from a variety of sources was perceived by them as adequate for their needs. However, in relation to engaging in cancer control activities such as screening, older people in these groups may be unaware of what their information needs are and hence may be unable to know if they have a functional deficit of such information. Health professionals, policymakers and others responsible for the dissemination of information (e.g. not-for-profit community organisations) should therefore consider carefully the consequences of further moves to make cancer-related information available via digital technologies at the expense of a wider range of sources, because our study suggests that this will lead to information exclusion and the formation of health information deficits in certain groups of older CALD migrants. To avoid loss of access to cancer-related information and services for these groups, arising from further adoption of a 'digital by exclusion' approach, Estabrook *et al.* (2007) suggest that information should be created and delivered in 'all shapes and sizes', recognising that population groups are not homogenous and that people have different preferences for dealing with formal services, depending on the issue and whether they prefer personal/verbal information.

It is important to acknowledge that the study has some limitations. First, qualitative research does not aim to select a random sample, but aims to select a diversity of people who can provide in-depth insights into experiences related to a particular topic – in this case information behaviours. It is of course possible that had we had different groups of participants from the same backgrounds who were recruited via different pathways, we could have had different results. Nevertheless, other research which we have conducted with other groups of older migrants from these birth countries (e.g. Newman *et al.* 2011), along with more recent fieldwork by one of our PhD students, and a literature review on service provision among these groups (Tsianikas *et al.* 2011), all identify the generally low levels of literacy both in English and in the birth language which were identified in this paper. They also identified the same general reliance on adult children and ethno-specific health professionals and service providers for information access.

CONCLUSION

The focus of this paper was the relative use by older people from a CALD background of a variety of traditional information sources compared with computers, the Internet and mobile phones, and the implications of these uses for providing information about cancer. The study used qualitative research methods to collect data from groups and individuals of older Greek and Italian migrants who came to Australia in their youth after World War II and who have 'aged in place'. The paper has a number of implications for effective communication between cancer professionals and older CALD migrants. In particular, it will continue to be important to conduct evaluations of the effectiveness of different forms of communicating cancer information to these groups. This is especially the case as communication and information provision are undertaken using new digital technologies, and for these evaluations to include consumer perspectives both from the older people and from their families, since families were found to play a significant role in information access. The language in which information is provided is also important, as older patients from CALD backgrounds may not be able to read even in their birth language, and this in turn means that audio and visual formats are preferred. Where older migrants have adult children, they are potential mediators of providing cancer information in a variety of formats. Future research could investigate their potential role as mediators of digital access to cancer information screening, treatment and survivor support. For other migrants it seems likely that ethno-specific service providers and GPs will continue to play a key role in information access and could be resourced to provide ICT access and skills training for older migrants, both for general purposes and to ensure culturally appropriate access to health information.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

ACKNOWLEDGEMENTS

The authors thank the participants who took part in this study, and the organisations and people who assisted with their recruitment. They also thank the anonymous reviewers and editors for their support in strengthening the paper's content.

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REFERENCES

Alexander M.L. (2009) Qualitative Social Network Research for Relational Sociology. Paper presented to The Annual Conference of The Australian Sociological Association, Canberra, 1–4 December 2009.

Australian Bureau of Statistics (2011a) *Household use of information technology, Australia 2010–11*. [Online]. Available at: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/D11394A54F8B9ED1CA25796600152C62?opendocument (accessed 29 May 2014).

Australian Bureau of Statistics (2011b) *2011 Census of Population and Housing*. Table X04, Proficiency in Spoken English/Language by Year of Arrival in Australia by Age, Expanded Community Profiles for Australia. Available at: http://www.censusdata.abs.gov.au

Australian Government Information Management Office (2007) *Australians' Use of and Satisfaction with e-Goverment Services – 2007* Canberra, Commonwealth of Australia.

Barzilai-Nahon K. (2009) Gatekeeping: a critical review. *Annual Review of Information Science and Technology* **43**, 1–79.

Baum F., Newman L. & Biedrzycki K. (2014) Vicious cycles: digital technologies and determinants of health. *Health Promotion International* **29**, 349–360.

Bennett G. & Glasgow R. (2009) The delivery of public health interventions via the Internet: actualizing their potential. *Annual Review of Public Health* **30**, 273–292.

Berland G.K., Elliott M.N., Morales L.S., Algazy J.I., Kravitz R.L., Broder M.S., Kanouse D.E., Muñoz J.A., Puyol J.A., Lara M., Watkins K.E., Yang H. & McGlynn E.A. (2001) Health information on the Internet: accessibility, quality, and readability in English and Spanish. *JAMA* **285**, 2612–2621.

Borgatti S.P. & Halgin D.S. (2011) On network theory. *Organization Science* **5**, 1168–1181.

Charmaz K. (2006) *Constructing Grounded Theory a Practical Guide through Qualitative Analysis*. Sage, Los Angeles, CA, USA.

Cheong P., Edwards R., Goulbourne H. & Solomos H. (2007) Immigration, social cohesion and social capital: A critical review. *Critical Social Policy* **27**, 24–49.

Chiu T.M.L. & Eysenbach G. (2011) Theorizing the health service usage behavior of family caregivers: a qualitative study of an internet-based intervention. *International Journal of Medical Informatics* **80**, 754–764.

Choudrie J., Ghinea G. & Songonuga V.N. (2013) Silver surfers, e-government and the digital divide: an exploratory study of UK local authority websites and older citizens. *Interacting with Computers Advance Access* [Online] **25**, 417–422. Available at: http://iwc.oxfordjournals.org/ (accessed 11 February 2013).

Chu C.M. (1999) Immigrant children mediators (ICM): bridging the literacy gap in immigrant communities. *The New Review of Children's Literature and Librarianship* [Online] **5**, 85–94. Available at: http://libres.uncg.edu/ir/uncg/f/C_Chu_Immigrant_1999.pdf (accessed 27 September 2012).

Crilly J.F., Keefe R.H. & Volpe F. (2011) Use of electronic technologies to promote community and personal health for individuals unconnected to health care systems. *American Journal of Public Health* **101**, 1163–1167.

Dassanayake J., Dharmage S.C., Gurrin L., Sundararajan V. & Payne W.R. (2011) Are Australian migrants at risk of being physically inactive? *International Journal of Behavioral Nutrition and Physical Activity* **8**, 1–6.

Durmaz M. (2011) *Young adult migrants' role in stimulating participation in breast cancer screening of older female family members*. Published MSc Thesis, Free University, Amsterdam. Available at: http://www.mighealth.net/nl/images/3/3c/Rapport_MDurmaz_Borstkankerondderzoek.pdf

Estabrook L., Witt E. & Raine L. (2007) *Information searches that solve problems*. Urbana-Champaign, University of Illinois.

Fisher K.E., Marcoux E., Miller L.S., Sanchez A. & Cunningham E.R. (2004) Information behaviour of migrant Hispanic farm workers and their families in the Pacific Northwest. *Information Research* [Online] **10**. Available at: http://InformationR.net/ir/10-1/paper199.html (accessed 14 April 2008).

Genuis S.K. (2006) Exploring the role of medical and consumer literature in the diffusion of information related to hormone therapy for menopausal women. *Journal of the American Society for Information Science and Technology* **57**, 974–988.

Goodall K., Ward P. & Newman L. (2010) Use of information and communication technology to provide health information: what do older migrants know, and what do they need to know? *Quality in Primary Care* **18**, 27–32.

Granovetter M.S. (1973) The strength of weak ties. *The American Journal of Sociology* **78**, 1360–1380.

Greenstock L., Naccarella L., Woodwood Kron R., Elliott K., Bingham A., Kelly P., Fraser C. & Wickham B. (2012) *Telecommunications and Health Information for Multicultural Australia*. Report by Australian Health Workforce Institute and General Practice Victoria. Australian Communications Consumer Action Network, Sydney.

Hameed S.S., Kutty V.R., Vijayakumar K. & Kamalasanan A. (2013) Migration Status and Prevalence of Chronic Diseases in Kerala State, India. *International Journal of Chronic Diseases* [Online], 2013, 6 pages Article No 431818 Available: http://dx.doi.org/10.1155/2013/431818 Accessed 26 May 2014.

Heart T. & Kalderon E. (2013) Older adults: are they ready to adopt health-related ICT? *International Journal of Medical Informatics* **82**, e209–e231.

Helsper E.J. (2008) *Digital Inclusion: An Analysis of Social Disadvantage and the Information Society*. London, Department for Communities and Local Government.

Hesse B.W. (2009) Enhancing consumer involvement in health care. In: *Health communication in the new media landscape* (eds Parker J.C. & Thorson E.). Springer Publishing Company, New York.

Hodge A., English D.R., O'Dea K. & Gilles G.G. (2004) Increased diabetes incidence in Greek and Italian migrants to Australia. *Diabetes Care* **27**, 2330–2334.

Holdenson Z., Catanzariti L., Phillips G. & Waters A.M. (2003) *A Picture of Diabetes in Overseas-born Australians*. AIHW Bulletin Cat. No. AUS 38. Australian Institute of Health and Welfare, Canberra.

Hou J. & Shim M. (2010) The role of provider-patient communication and trust in online sources in Internet use for health-related activities. *Journal of Health Communication* **15** (S3), 186–199.

Hunt L.M., Suzanne S. & Comer B. (2004) Should 'acculturation' be a variable in health research? A critical review of research on US Hispanics. *Social Science & Medicine* **59**, 973–986.

Hurley C., Panagiotopoulos G., Tsianikas M., Newman L. & Walker R. (2013) Access and acceptability of community-based services for older Greek migrants in Australia: user and provider perspectives. *Health and Social Care in the Community* **21**, 140–149.

Johnson C.A. (2007) Social capital and the search for information: examining the role of social capital in information seeking behavior in Mongolia. *Journal of the American Society for Information Science and Technology* **58**, 883–894.

Marino R. & Al E. (2005) Factors associated with self-reported use of dental health services among older Greek and Italian immigrants. *Specialist Care Dentist* **25**, 29–36.

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Newman L. (2011) *Families Learning Together 2011: Raising Parental Engagement with Literacy to Improve Literacy Outcomes for Children in the Early Years of Schooling*. A report on research conducted under the Health in All Policies program for the Department of Education and Children's Services and the Department of Health South Australia. Southgate Institute for Health Society & Equity, Flinders University, Adelaide, 45 pp.

Newman L. & Frank O. (2013) The rhetoric and reality of e-health: a critical assessment of the benefits of e-health in primary health care. *Australian Journal of Primary Health* **19**, 265–269.

Newman L., Tsianikas M., Panagiotopoulos G., Walker R. & Hurley C. (2011) The social support and service needs of Australia's ageing Greek migrants: a pilot project. *Modern Greek Studies Australia & New Zealand* **15**, 287–306. Available at: http://hdl.handle.net/2328/26691

Newman L., Patel K. & Barton E. (2012) *The Impact of Traditional and Digital Communication on User Access to Rural Health Services. Report for Country Health SA's Falls Prevention Project*. 30 pp. Adelaide. Available at: http://hdl.handle.net/2328/27192L

Nguyen G.T. & Bellamy S.L. (2006) Cancer information seeking preferences and experiences: disparities between Asian Americans and Whites in the Health Information National Trends Survey (HINTS). *Journal of Health Communication* **11** (S-001), S173–S180.

Pearce C. & Haikerwal M.C. (2010) E-health in Australia: time to plunge into the 21st century. *Medical Journal of Australia* **193**, 397–398.

Righi V., Malon G., Ferreira S., Sayago S. & Blat J. (2011) Preliminary findings of an ethnographical research on designing accessible geo-located services with older people. *Universal Access in Human-Computer Interaction User Diversity Lecture Notes in Computer Science* **6766**, 205–213.

Selwyn N. (2004) The information aged: a qualitative study of older adults' use of information and communications technology. *Journal of Aging Studies* **18**, 369–384.

Tobin G.A. & Begley C.M. (2004) Methodological rigour within a qualitative framework. *Journal of Advanced Nursing* **48**, 388–396.

Tsianikas M., Hurley C., Skaltsas M., Newman L. & Walker R. (2011) The social support and service needs of Australia's ageing Greek migrants: a literature review. *Modern Greek Studies Australia & New Zealand* **15**, 274–286. Available at: http://hdl.handle.net/2328/26690

Ungar S. (2008) Ignorance as an under-identified social problem. *British Journal of Sociology* **59**, 301–326.

Usher W. (2011) Developing policies for e-health: use of online health information by Australian health professionals and their patients. *Health Information Management Journal* **40**, 15–22.

Walker R., Newman L., Tsianikas M., Panagiotopoulos G. & Hurley C. (2013) The perspectives of older Greek-Australians toward changes in the nature of family support: implications for family care policies. *Journal of Aging and Social Policy* **25**, 320–334.

Westbrook J.I. & Braithwaite J. (2010) Will information and communication technology disrupt the health system and deliver on its promise? *Medical Journal of Australia* **193**, 399–400.

Wicks D.A. (2004) Older adults and their information seeking. *Behavioral and Social Sciences Librarian* **22**, 1–26.

Wilkin H. & Ball-Rokeach S. (2011) Hard-to-reach? Using health access status as a way to more effectively target segments of the Latino audience. *Health Education Research* **26**, 239–253.

World Health Organisation (2012) Health. In: *Accelerating development using the Web: empowering poor and marginalized populations* (ed. Sadowsky G.). World Wide Web Foundation, San Francisco.

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