Current Programs and Future Needs in Health Literacy for Older People - A Literature Review

Abstract

In developed countries, older adults are the greatest proportion of the adult population who tend to have inadequate health literacy skills. Lower levels of health literacy in the elderly is caused by factors such as decreased mental processing skills due to aging, having more long-term health condition, co-morbidities and receiving lower levels of formal education. Inadequate health literacy can result in difficulties synthesising information and communicating with health professionals; increased emergency visits and hospitalisations; poor chronic disease and medication management; a lower uptake of preventative interventions, increased mortality; and ultimately greater health care costs. A literature search was conducted to identify articles which discussed and highlighted health literacy and health literacy interventions among older adults. There have been a limited number of studies on the effectiveness of various types of interventions for those who are elderly. As such there needs to be a great emphasis on developing greater models of interventions to improve the evaluation of intervention outcomes, while improving subjective health literacy and maintaining usability and satisfaction of health literacy interventions. Lastly, there is a need to implement health care professional training specifically aimed at improving health literacy the older adult population.
Current programs and future needs in health literacy for older people - A literature review

Introduction

Health literacy is still relatively new as a subject and there is limited attention and literature surrounding this field of research (Johnson, Baur, & Meissner, 2011; Peerson & Saunders, 2009). However, health literacy is a fast growing area of enquiry. The key research which has occurred over the past few years has largely focused on defining and documenting the problem of low health literacy within populations (Institute of Medicine, 2004), its pervasiveness (Kutner, Greenberg, Jin, & Paulsen, 2006) and its association with poor health outcomes (Baker et al., 2007; Berkman, Davis, & McCormack, 2010; Ntiri & Stewart, 2009). As health literacy continues to be increasingly researched and more prominent within policy and amongst practitioners, there is a recognisable shift in the need to recognise not only health literacy prevalence within individuals and communities but also to identify and design best strategies, interventions and solutions to better manage low health literacy (Johnson, et al., 2011).

What is health literacy: Definition and Conceptualisation

Before models to better manage limited health literacy can be discussed, literacy itself must be defined. Literacy has been defined in many ways and remains disputed among many scholars (Gee, 1998). One such meaning of literacy is where it is explained to be “an outcome of cultural transmission… where [literacy is] acquired by individuals only in the course of participation in socially organised activities with written language” (Scribner, 1984, pp. 7-8). This definition also demonstrates that literacy is dependent on the social context in which literacy is viewed and used (Scribner, 1984). As such, there are many other concepts or
metaphors of literacy, which include scientific literacy, intercultural literacy and health literacy.

Health literacy as a recognisable concept and discourse was first developed in the 1970s – 1980s (de Leeuw, 2012; Peerson & Saunders, 2009). One of the very first definitions of health literacy was coined by Nutbeam (1998) which was later defined by Ratzan and Parker (2000). It is this definition which still remains the leading and commonly cited definition of health literacy throughout the literature (Institute of Medicine, 2004). Ratzan and Parker’s (2000) definition states health literature is “the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions” (Ratzan & Parker, 2000, p. vi). It has since been argued that this widely used definition of health literacy has been viewed a more static process, and has the propensity to focus only on the goals of being health literate (Berkman, et al., 2010). Nevertheless, since its inception health literacy has undergone a plethora of delineations and redefinitions. For example, at least seventeen definitions and twelve conceptual models of health literacy have been identified within the literature (Sorensen et al., 2012).

These alternate and varying definitions have included elements such as being able to speak, listen and write effectively; being able to use technology such as the internet; being motivated; possessing a number of cognitive, network and social skills and abilities to navigate health information and system successfully; or to effectively promote and maintain health (Berkman, et al., 2010; Nutbeam, 2008; Peerson & Saunders, 2009; Sorensen, et al., 2012). Across disciplines, different conceptualisations and interpretations of health literacy also exist. Within medicine for example, health literacy is viewed as a ‘identifiable risk factor which can be managed through clinical care. It is viewed “as set of individual capabilities… [which] is partly knowledge based, and may be developed through educational intervention”
(Nutbeam, 2008, p. 2073). Alternatively, in public health, health literacy is viewed as a ‘personal asset’ (Ko, Lee, Toh, Tang, & Tan, 2012; Sorensen, et al., 2012). It is argued to be “an asset to be built, as an outcome to health education and communication that supports greater empowerment in health decision-making” (Nutbeam, 2008, p. 2074). Whereas, Sorensen et al. (2012) provides a more robust definition of health literacy. They argue health literacy requires the incorporation of both medical and public health schools of thought and viewing health literacy as a social practice (Rubin, Parmer, Freimuth, Kaley, & Okundaye, 2011; Sorensen, et al., 2012).

Further to this, Manafo and Wong (2012) argue that health literacy needs to be defined by acknowledging the cross disciplinary and cross demographic nature. They assert that health literacy delineated by five categories or sub themes. These are described as;

health promotion (i.e. actions taken to increase control over one’s health), health protection (i.e. actions taken to preserve and protect health), disease prevention (i.e. actions taken to prevent the onset of illness or disease), health care (i.e. actions taken to seek care) and navigation (i.e. actions taken to utilize programs, services and care) (Manafo & Wong, 2012, p. 2).

It must be noted the general term health literacy also includes other areas or types that are becoming increasingly prominent in the health disciplines such as ‘health information literacy’ (HIL), ‘e-health literacy’ and ‘functional health literacy’ (Kickbusch, 2001; Yates, Partridge, & Bruce, 2009). Eriksoon-Backa, Niemela and Huotari (2012: 84) argue that health information literacy is similar to health literacy; however differs slightly in that it concentrates on describing health-related information behaviour, including needs, seeking and use of information related to health or medicine. They define HIL as: ‘the ability to recognise a need for health information, to know how and where to find information about
health, and how to evaluate and use this information in everyday life to make good health decisions’.

Comparatively, the term functional health literacy relates specifically to “reading consent forms, patient labels and inserts, and understanding other written and oral health care information provided by multi-disciplinary health professionals, as well as acting upon necessary procedures and directions” (Kickbusch, 2001, p. 292). While functional health literacy focusses on health prompting behaviours, it is criticised for being too narrow in its scope by focussing upon literacy within health care setting (Kickbusch, 2001).

Even the early definition of health literacy by Ratzan and Parker (2000), was argued by Berkman, et al. (2010) to lack depth and breadth. Berkman, et al (2010) strongly argue that any definition of health literacy needs to be both realistic as well as having flexibility and robustness. Because health literacy was no one defined process, but rather, required the flexibly to allow the definition to be individualised depending on the specific objectives of the researcher, agency or health body. They state health literacy requires the ability to possess additional elasticity to allow for changes over time which occurs within the health sector, in community and within the increased advancement and use of technology to inform and measure health literacy (Berkman, et al., 2010). Sorensen, et al. (2012) further argues recent discussion of health literacy needs to move beyond the individual and consider “health literacy as an interaction between the demands of health systems and the skills of individuals” (Sorensen, et al., 2012, p. 3).

The extent and impact of health literacy

Worldwide, adults aged 65 years and older, in developed countries, are the greatest proportion of the adult population who have inadequate health literacy skills (Albert & Davia, 2011; Bennett, Chen, Soroui, & White, 2009; Speros, 2009). As such, the 2003 National
Assessment of Adult Literacy (NAAL) showed 36% of adults in the United States of America (US) have limited health literacy (Kutner, et al., 2006) with 23% who are functionally illiterate. It is also noted 66% adults over the age of 60 have inadequate or marginal literacy skills (Center for Health Care Strategies, 2006; Sudore et al., 2006) with only 3% of adults aged 65 and older who have proficient health literacy skills (Speros, 2009). Literacy and health literacy skills impact health outcomes and ultimately health care costs. For example, the U.S. Centre for Health Care Strategies estimated in 2001, low functional literacy had led to an estimated $32 to $58 billion in additional health care costs (Center for Health Care Strategies, 2006).

In comparison to the US, the latest data available from Australian is through the 2006 Adult Literacy and Life Skills Survey (ALLS), an international survey to undertake valid, reliable and comparable measures of prose literacy, document literacy, numeracy and problem solving (Canadian Council on Learning, 2008; Satherley & Lee, 2008). The ALLS showed 59% of Australians aged 15–74 had a level of health literacy that was less than adequate (Australian Institute of Health and Welfare, 2010, 2012). For example, from the 2006 ALLS, 68% and 83% of those who were aged 55-64 and 65-74 respectively had less than adequate health literacy (Australian Bureau of Statistics, 2006). The adequacy of health literacy was shown to decrease as the age of the population increased and was also dependent upon the years of school attendance (Australian Bureau of Statistics, 2006; Baker, Gazmararian, Sudano, & Patterson, 2000; Eriksson-Backa, Ek, Niemelä, & Huotari, 2012).

Lower levels of health literacy in the elderly may be caused by a various factors, which can vary between individuals (Speros, 2009). As such factors include a decrease in mental processing skills due to age (Pettigrew, 2004), having a greater number of long-term health conditions (Albert & Davia, 2011) and being a population who received lower levels
of formal education when compared to all other generations (Australian Bureau of Statistics, 2009; Kondilis, Kiriaze, Athanasoula, & Falagas, 2008; Tooth, Clark, & McKenna, 2000). It has been shown education levels influence health literacy (Albert & Davia, 2011). However, education levels also affect employment, earning capacity, the ability to seek a number of health care options and it also influences health behaviours such as alcohol and tobacco use (Australian Bureau of Statistics, 2009; Australian Institute of Health and Welfare, 2010; Baker, et al., 2007; Canadian Council on Learning, 2008). Particularly amongst the elderly, lower levels of health literacy, can result in poorer personal empowerment and self-efficacy (Baker, et al., 2007; Wolf, Gazmararian, & Baker, 2005). In addition low health literacy also causes difficulties synthesising information (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004) and communicating with health professionals (McCray, 2005); increased department of emergency visits and hospitalisations (DeWalt et al., 2006; Kondilis, et al., 2008; Wolf, et al., 2005); poor chronic disease management and preventative service use (Baker, et al., 2007; Ntiri & Stewart, 2009); poor medication management and greater errors (McCray, 2005; Ntiri & Stewart, 2009; Williams et al., 1995); a lower uptake of preventative interventions and an increase in mortality (Baker, et al., 2007; Wolf, Feinglass, Thompson, & Baker, 2010).

**Current research examining health literacy in older adults**

Current research regarding the design, strategies, interventions and solutions to better manage health literacy has improved over the past decade. However, it is less common than research defining and documenting its association with poor health outcomes (Berkman, et al., 2010; Ntiri & Stewart, 2009; Pignone, DeWalt, Sheridan, Berkman, & Lohr, 2005). Recent research on the impact low literacy interventions have on health status, health care cost, those individuals from a cultural and linguistic diverse background or older age remains limited (Bennett, et al., 2009; Manafo & Wong, 2012; Pignone, et al., 2005; Schwartz, Mosher, Wilson, Lipkus, & Collins, 2002). In addition, there have been a limited number of studies on
the effectiveness of various types of interventions, such as brochure, oral education, DVD, online and computer based tools, especially for those who are elderly (Broering, Chauncey, & Gomes, 2006; Campbell & Nolfi, 2005; Hoffman-Goetz, Friedman, & Celestine, 2006; Manafo & Wong, 2012; Pignone, et al., 2005; Schwartz, et al., 2002). Nevertheless, there are online development programs now available to aid public health and health professionals and web designers to develop specifically for the needs of those with low health literacy skills (Hou, 2012). The intervention research which is available remains aloof and unable to provide concrete recommendations other than developing a greater suite of evidence-based interventions which improve health literacy across many populations (Bennett, et al., 2009; Manafo & Wong, 2012).

Much of the current research has stemmed from the US with Europe reported to be less focused on health literacy research which is demonstrated with 30% less production of research in this field (Kondilis, et al., 2008). Ntiri & Stewart (2009) have stated adult pedagogical research in health care has often been motivated by health risk, such as the increased prevalence of chronic illnesses and greater life expectancy rather than health literacy itself. Notwithstanding, there has been only a small number of health literacy studies in Australia (Parker & Jamieson, 2010; Yates, et al., 2009). As such, within the Australian studies very few are focussed on health literacy intervention or health literacy among older adults. Nevertheless, have focussed more on the how people use information to learn about their health (Yates, et al., 2009) or are focussed on Indigenous Australian oral health literacy relating to oral health outcomes (Parker & Jamieson, 2010).

‘Measuring’ Health Literacy

Regardless of the debate which surrounds the definition and conceptualisation of health literacy, what it noted within the current research is the lack of development caused by
this ambiguity, in measuring health literacy, which has limited its advancement (Berkman, et al., 2010; Johnson, et al., 2011). It has been stated, there is a need to develop newer tools to assess the health literacy in the future, due to the current limited ability to assess and capture all aspects of health literacy (Bennett, et al., 2009; Sorensen, et al., 2012). Nevertheless, even if a lag in the ability to measure exists, there remain other challenges. These include the potential for screening tools and health literacy measurements to cause harm through stigma, embarrassment or shame of the individual when used in research or clinical care, which may lead to poorer rather than better health outcomes (An & Muturi, 2011; Lee, Gazmararian, & Arozullah, 2006; Paasche-Orlow & Wolf, 2007, 2008).

Currently health literacy is often measured by using the standardised Rapid Estimate of Adult Literacy in Medicine (REALM) or the Test of Functional Health Literacy in Adults (TOFHLA), however the most commonly used is a short-form version of the TOFHLA, known as the s-TOFHLA (Eriksson-Backa, et al., 2012). There have been new additions, which include new cultural specific assessments emerging such as the Health Literacy Test for Singapore (HLTS) (Ko, et al., 2012), the Chinese version of short-form Test of Functional Health Literacy in Adolescents (c-sTOFHLAd) (Chang, Hsieh, & Liu, 2012) or the Short Assessment of Health Literacy for Portuguese-speaking Adults (SAHLPA) (Apolinario et al., 2012). There are many more, all of which are often adapted versions of the s-TOFHLA (Chew, Bradley, & Boyko, 2004). Also there is the Health Activities Literacy Scale (HALS) and the Health Literacy Item Set (HLIS) as a supplement to the Consumer Assessment of Healthcare Providers and Systems (CAHPS®)(Rubin, et al., 2011) amongst others such as eHealth literacy assessment tools (Norman & Skinner, 2006). As a side note, currently, there are no standardised tests to evaluate HIL which continues to be measured in various ways (Eriksson-Backa, et al., 2012).
Regarding the REALM, TOFHLA and the s-TOFHLA, each test focusses on reading comprehension or correctly reading words (An & Muturi, 2011). These well recognised measures are used in many studies to determine and define individual’s “abilities in reading, writing, speaking, listening, and math skills; cultural and conceptual knowledge components; and comprehension of health terms, using actual materials patients might encounter in a health care setting” (An & Muturi, 2011, p. 245). As such, in the absence of other contemporary health literacy assessment measures, these tools continue to be widely used.

**Methods**

**Literature search strategies**

An online literature search was conducted in July 2012, where a primary online search of MEDLINE, Cumulative Index to Nursing and Allied Health (CINAHL), Educational Resources Information Centre (ERIC), PubMed and PsycInfo databases was searched from 1996 – 2012. This was to identify journal articles which discussed and highlighted health literacy and health literacy interventions among older adults. Key word searches were used and included word combinations of health literacy; literacy; functional; interventions; health education; TOFHLA; s-TOFHLA and; REALM. The aim was to identify health literacy and adjunct articles. A secondary manual search of the identified article’s reference list also was undertaken to identify any other studies which were not captured within the online databases. In addition, a subsequent online search was conducted by searching Google Scholar and Summon Search through the University of Tasmania’s library for generic literature related the subject area. This type of search was worthy as an additional search method as it highlighted literature which was closely related the key words and terms used. Each of these methods yielded 63 articles and reports.
**Inclusion criteria**

The inclusion criteria for the current literature review included articles which were in English. The research also needed to be conducted among those with low health literacy in the older adult population (65+ years), however inclusion age for indigenous, African American and Latino populations was from 50+ years of age. Lastly, the inclusion criteria for each of the articles were they needed to report on the implementation of an intervention or program aimed at improving health literacy in the older adult population.

**Results**

The literature search undertaken captured 63 articles and reports which were screened and selected for their content regarding health literacy. Each of these articles were further reviewed with 34 articles and reports excluded as they were government and organisational reports or articles which did not contain research regarding intervention, but were surveys, supplementary research or discussed health literacy definitions and health outcomes. A further nine articles were excluded as they were systematic or integrative literature reviews, three of which were reviews regarding interventions and programs for individuals with low health literacy skills (Berkman, et al., 2010; DeWalt, et al., 2004; McCray, 2005; Pignone, et al., 2005; Sorensen, et al., 2012), including the older adult population and their health care providers (Cutilli, 2007; Schaefer, 2008; Sheridan et al., 2011). Lastly, one was a recent systematic review of educational programs which focus on health literacy in the older adult population (Manafo & Wong, 2012). The remaining 21 articles were read and reviewed; many researched the effect interventions had on adults with low literacy skills. Nine were later excluded as they did not report age of the adults or age was not reported or used as a variable within the study. Of the remaining 12 identified articles, 11 were research conducted in the US, while the remaining study was conducted in Canada, outlined below and in Table
1. These articles were subsequently reviewed and further divided into two main groups due to the method in which health literacy was measured.

**Group One – Interventions with Non-Health Literacy Measures**

Both groups related to low health literacy and implementing interventions and programs within the older adult population. However, within the first group all of the studies were held within libraries with each conducting pre and post knowledge tests or satisfaction surveys (Broering, et al., 2006; Campbell & Nolfi, 2005; Hoffman-Goetz, et al., 2006; Schwartz, et al., 2002). However, one study, which taught specifically health literacy based on the US National Institute for Literacy’s Health Literacy Curriculum conducted only post education interviews (Freedman, Miner, Echt, Parker, & Cooper, 2011). Five of the seven studies were focussed on improving internet competence and usage (Broering, et al., 2006; Campbell & Nolfi, 2005; Gross, Famiglio, & Babish, 2007; Hoffman-Goetz, et al., 2006; Schwartz, et al., 2002); while one study was researching the improvement of health literacy using photo novels within the Spanish speaking population (Valle, Yamada, & Madiella, 2006); and the last study was examining the effectiveness of using adult education courses to teach functional health literacy skills individuals with low literacy (Freedman, et al., 2011).

Each of the seven studies did not use any of the current health literacy measures, such as the REALM, TOFHLA or the s-TOFHLA. These tools can be used to determine the health literacy of the participants or an improvement in levels and to measure program success (Manafo & Wong, 2012). Without such tools, the generalizability of the studies is much weaker in terms of overall health outcome improvements (Pettigrew, 2004). Only one of the seven studies used any method of measurement (Campbell & Nolfi, 2005). This was the multidimensional Health Locus of Control Scale (MHLCs) which measures internal, external, and chance locus of control (Campbell & Nolfi, 2005); the Krantz Health Opinion Survey (HOS)
which was used to measure older adult’s desire for more health information and to participate in self-treatment (Krantz, Baum, & Wideman, 1980); and the Lau, Hartman, and Ware Health Value Survey which was used to measure adults value which they place on their health (Campbell & Nolfi, 2005; Lau, Hartman, & Ware, 1986). It must be noted the data from these seven studies is valuable as to the subjective satisfaction level and post participation recall of education and training. However, limitations exist as there are small sample sizes and the study designs are limited and do not provide clear measures and outcomes of the interventions or programs (Manafo & Wong, 2012). There is not a control group to provide comparison and each study lacks follow-up to determine the long-term effect of such programs in improving health literacy (Manafo & Wong, 2012).

**Group Two – Interventions with Health Literacy Measures**

The five articles in the second group of the 12 identified studies were viewed as higher quality studies with clearer and stronger research methodologies, which evaluated interactive health literacy programs for older adults. In each of the studies the s-TOFHLA was used to measure literacy with additional measure such as the TOFHLA, or the Literacy Assessment for Diabetes (LAD) (Ntiri & Stewart, 2009). These were specifically used with regard to the studies being undertaken. As such, three of the five studies were identified as randomised control trials, of those; two were specifically evaluating the efficacy of education sessions (DeWalt, et al., 2006; Kandula, Malli, Zei, Larsen, & Baker, 2011).

**Randomised control trial studies**

As such, there was a contrast in the outcomes within each of these studies. For example, in the study conducted by DeWalt et al. (2006), the intervention group received education sessions, picture based educational materials and regularly scheduled telephone follow-ups for individuals with heart failure had positive outcomes. It was found the
individuals in the intervention group had lower rate of hospitalization or death when compared to those who received the current or ‘regular’ intervention (DeWalt, et al., 2006). Whereas, the second study by Kandula et al. (2011) was dissimilar, as those individuals with diabetes who participated in a multimedia diabetes education program (MDEP) demonstrated, regardless of their literacy levels, only retained at least 50% of the information learned two weeks after the MDEP. The additional teach-back procedure also did not improve knowledge retention in the intervention group (Kandula, et al., 2011). Nevertheless, it must be noted the age group of the participants of these study ranged from 30-80 and 35-75 respectively. Nevertheless, even with differing research designs, cohorts and disease processes, these two studies demonstrate various interventions produce quite alternate outcomes.

The remaining randomised control trial conducted by Seligman et al (2005), was slightly different, as it examined the effect of informing doctors of their patients’ low health literacy to see if this impacted on the doctor’s behaviour. Although not specifically assessing outcome of the intervention on the patient, it was felt this particular study was poignant as it impacted on the doctor’s perception to provide intervention for a patient. Within this study, it was found doctors who were informed of their patients low health literacy, had a higher propensity to use strategies to improve communication with these patients, however, were less satisfied and felt less effective than the doctors in the control group. It was also noted patients considered health literacy screening beneficial yet, the increased management provided by the doctors did not improved patient self-efficacy (Seligman, et al., 2005). Nevertheless there were a number of limitations to this study. This included such things as researchers relying on the self-reporting of doctor’s rather than objective assessment with pre and post assessments, which were not being conducted in all aspects of the study. Lastly, due to a number of patients refusing to participate in the study, the health literacy assessment
acceptability of patients may have been overestimated as those with very low literacy may have elected not to participate (Seligman, et al., 2005).

*Pilot studies*

The remaining two studies in group two were pilot studies. The first examined the benefits and outcomes of transformative learning (TL) among older African American adults, with diabetes, aged 55+ (Ntiri & Stewart, 2009). They participated in the intervention twice a week over a three week period. Transformative learning can be used for the self-development of individuals (Tennant, 2000) as it is “social process by which one can construct and apply new meaning to one’s experience as a guide to action” (Ntiri & Stewart, 2009, p. 101). In addition TL “is the essence of adult learning… it is to help the individual become a more autonomous thinker by learning to negotiate his or her own values, meanings, and purposes” (Mezirow, 1997, p. 11). As such, TL within this study was shown to have a positive effect on the health literacy of older African American adults. Nevertheless it must be noted most of the participants were identified to have baseline or adequate functional health literacy prior to commencing the study (Ntiri & Stewart, 2009).

The second pilot study, which was also not a randomised control trial, examined the impact of the educational value of direct-to-consumer (DTC) advertising for prescription medications among older adults, aged 66–99. These participants were from nursing homes or who were church goers and had a college degree or higher (An & Muturi, 2011). The researcher’s aim was to examine other factors unrelated to educational levels of older adults which may influence health literacy. It was found that subjective health literacy among individuals was the strongest factor to predict an older adult’s assessment of information in DTC ads, when education levels are excluded (An & Muturi, 2011).
Discussion

Within the literature very few papers exist, which highlight health literacy programs and outcomes that specifically target the older adult population. This may be due to health literacy only being in its early stages of being sufficiently well-defined and developed (Berkman, et al., 2010; Johnson, et al., 2011). Nevertheless, 12 studies were identified, which examined the effectiveness of interventions or programs aimed at the older adult population. It was noted there were two distinct groups of studies, those which assessed participant learning outcomes, satisfaction and usability of health literacy programs, while the other group of studies examined effectiveness of health literacy programs by using clear and measurable outcomes.

Many of these interventions or programs were still in their initial stages of development and evaluation. Also what is evident from the literature, is evidence-based best-practice models of health literacy interventions are required to be developed to meet the health literacy needs of particular populations such as individuals from CALD backgrounds or as the elderly (Manafo & Wong, 2012; Paasche-Orlow & Wolf, 2007; Pignone, et al., 2005).

Conclusion

Health literacy remains relatively new, yet an ever expanding field of research (Johnson, et al., 2011; Peerson & Saunders, 2009). Much of the current research which has occurred over the past few years has focused on defining and documenting the problem of low health literacy within populations, its pervasiveness and its association with poor health outcomes (Baker, et al., 2007; Berkman, et al., 2010; Institute of Medicine, 2004; Kutner, et al., 2006). As health literacy becomes more prominent within policy, among practitioners and increasingly researched, it has moved beyond recognising health literacy prevalence and
individual and community issues, to the need to identify and design best practice strategies, interventions and solutions to better manage low health literacy, particularly among the elderly (Johnson, et al., 2011).

The older adult population is becoming one of the larger populations in developed counties and remains the greatest proportion of adults who have inadequate health literacy skills (Albert & Davia, 2011; Bennett, et al., 2009). Nevertheless, the research and development of interventions and programs for the older adult population remains still in its infancy. As such, the studies which have been identified have focussed on older adult programs and interventions. The interventions and outcome have been reviewed and examined. It is noted there needs to be a great emphasis on developing greater experimental designs to improve the evaluation of intervention outcomes, while needing to improve subjective health literacy levels of individuals and maintain usability and satisfaction of the interventions which are implemented. Also noted within the literature there is a need to implement health care professional training using the principles of health literacy specifically aimed at the older adult population (Manafo & Wong, 2012; Speros, 2009). This is to ensure there is improved communication with patients who have low literacy level while ensuring a greater satisfaction effective encounter is experienced by both the health professional and patient (Speros, 2009).

References


## Table 1: Research examining health literacy interventions

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Author</th>
<th>Location</th>
<th>Population (sample size)</th>
<th>Intervention and Literacy measure</th>
<th>Study Results</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Broering, et al., 2006)</td>
<td>USA</td>
<td>Older adults, aged 65+ (n=3500) attended presentations and exhibits; (n=350) attended class sessions</td>
<td>The study examined functional health literacy to improve health and health care by accessing Information using technology. Internet use and participant satisfaction was measured within single workshops. No Literacy measures.</td>
<td>The development and use of a functional health literacy tool is encouraging in promoting health literacy in seniors</td>
<td>Further studies to address use of the internet to locate health information is a behaviour determined by variables such as gender, computer ownership, economic status, and academic background, or variables, such as health status, type of office visit, and preferences for participation in one's health. In addition further research to examine if participants' attitudes toward their health and health care providers change as information-seeking skills improve.</td>
</tr>
<tr>
<td></td>
<td>(Campbell &amp; Nolfi, 2005)</td>
<td>USA</td>
<td>Older adults, aged 65+ (n=42).</td>
<td>Participating in a course based on the National Institute for Literacy’s Health literacy Curriculum and was taught by adult educators. Classes met twice a week for two hours at a time over a 12-week semester. Interviewed post-intervention.</td>
<td>Adult education health literacy reached not only students, but also a high diffusion of information to friends and families of students</td>
<td>The medical and public health communities need to begin to find non-traditional avenues through which to impart health knowledge and functional skills. The significance of this study is that it demonstrates the strength of a non-traditional partner—the adult education system—as a very powerful vehicle for health communication beyond the walls of the classroom.</td>
</tr>
<tr>
<td></td>
<td>(Freedman, et al., 2011)</td>
<td>USA</td>
<td>Adults aged 20-50+ (n=21) (38% 50+) from adult literacy centre</td>
<td>Participating in a course based on the National Institute for Literacy’s Health literacy Curriculum and was taught by adult educators. Classes met twice a week for two hours at a time over a 12-week semester. Interviewed post-intervention.</td>
<td>Improved ease searching internet for cancer information; difficulty searching decreased between pre and post-workshop. Self-rated satisfaction reported</td>
<td>Future community-based projects anticipated</td>
</tr>
<tr>
<td></td>
<td>(Gross, et al., 2007)</td>
<td>USA</td>
<td>Older adults, aged 65+ at twenty-five (n=25) senior centres and public libraries.</td>
<td>The study examined functional health literacy by using librarian-health care professional team. They presented a blended educational program regarding access to trusted stroke information to a community of seniors via the internet. Pre and post-test knowledge scores. No Literacy measures.</td>
<td>Improvement observed on post-test knowledge scores over pre-test scores, which assessed learner mastery of the subjects presented in the program. In addition improvement observed in knowledge of internet resources and usage and good participant satisfaction reported</td>
<td>Future community-based projects anticipated</td>
</tr>
<tr>
<td></td>
<td>(Hoffman-Goetz, et al., 2006)</td>
<td>Canada</td>
<td>Older adults, aged 50-75 years (n=44).</td>
<td>Participants attended training course for computer and internet training regarding accessing cancer information. Pre and post-test knowledge scores. No Literacy measures.</td>
<td>Improved ease searching internet for cancer information; difficulty searching decreased between pre and post-workshop. Self-rated satisfaction reported</td>
<td>Older adults need guidance when using the Internet so they are able to access high quality information regarding cancer. Future</td>
</tr>
<tr>
<td>Reference</td>
<td>Location</td>
<td>Intervention Details</td>
<td>Findings</td>
<td>Notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>----------</td>
<td>----------------------</td>
<td>----------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Schwartz, et al., 2002)</td>
<td>USA</td>
<td>African American and Hispanic older adults, aged 65+ (n=81). Participants attended 14 session training course for computer and internet training regarding accessing health information. Pre and post-test measuring participant internet usage regarding accessing relevant health information and health literacy skills</td>
<td>Improvement observed on post-test knowledge scores over pre-test scores, which assessed knowledge of the subjects presented. Satisfaction with program, information gained and trainer skills reported.</td>
<td>Research is required regarding the cancer comprehension levels of older adults from diverse ethnic populations. In addition cancer comprehension levels of older adults when information is provided in print.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Valle, et al., 2006)</td>
<td>USA</td>
<td>Spanish-speaking Latino older adults, aged 55+ (n=111) To provide pictorial story magazines (photonovelas) in two session workshops to improve awareness of Alzheimer’s disease. Pre and post-test knowledge scores. No Literacy measures.</td>
<td>Improvement observed on post-test knowledge scores over pre-test scores, which assessed knowledge of the subjects presented. Satisfaction with education material reported.</td>
<td>Photonovelas to be used in future educational programs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(An &amp; Muturi, 2011)</td>
<td>USA</td>
<td>Older residents of retirement centres, nursing home residents and churches, aged 66–99 years (n=170). 79% having a college degree or higher. Interview with a paper and pencil questionnaire using the short-form Test of Functional Health Literacy in Adults (s-TOFHLA). To examine the spectrum of health literacy levels, which should not be equated with education, therefore the study was to measure the health literacy skills demonstrated even by very educated seniors. The assessment of the educational value of direct-to-consumer (DTC) advertising for prescription medications depended on their level of subjective health literacy.</td>
<td>Older adult consumers with low subjective health literacy found the communication contents of DTC ads less effective in terms of addressing key medical information. Subjective health literacy was the strongest factor in predicting older participant’s assessment of information in DTC ads, while education was not.</td>
<td>There is a need to give more attention to how those with low subjective health literacy understand DTC ads contents. The results suggest the need to systematically review DTC ad contents to better understand the informational benefits of DTC ads toward those with low health literacy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(DeWalt, et al., 2006)</td>
<td>USA</td>
<td>Adults aged 30-80 (n=123, n=64 control, n=59 intervention. 41% had inadequate literacy Randomised Control Trial. Intervention group received education on self-care. Picture-based educational materials, a digital scale, and scheduled telephone follow-up were provided to reinforce adherence. The s-TOFHLA was used to measure literacy.</td>
<td>Patients in the intervention group had a lower rate of hospitalization or death. This difference was larger for patients with low literacy than for higher literacy, but the interaction was not statistically significant. A primary care-based heart failure self-management program designed for patients with low literacy reduces the risk of hospitalizations or death.</td>
<td>Patients with low literacy, and other vulnerable patients, may stand to benefit most from such programs. Further research is required regarding the design, implementation, and dissemination of disease management programs is needed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Kandula, et al., 2011)</td>
<td>USA</td>
<td>Adults aged 35-75 without type two diabetes mellitus, (n=115) Randomised Control Trial. Completed pre and post-test after literacy-appropriate, multimedia diabetes education program (MDEP) with n=58 (50%) provided with teach-back education. A 2-week repeated post-test with all participants. The s-TOFHLA was used to measure literacy.</td>
<td>All patients, regardless of their literacy level, had trouble remembering a significant amount of newly learned information 2 weeks after viewing an MDEP. The additional teach-back procedure also did not improve knowledge retention. Few patients are able to achieve long-term retention of a longer set of learning goals. Low education was independently associated with less knowledge retention at follow-up.</td>
<td>Health education interventions must incorporate strategies that can improve retention of health information and actively engage patients in long-term learning. Of note diabetes education in the study was delivered through an MDEP and not by the patients’ doctor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Country</td>
<td>Participants</td>
<td>Intervention Details</td>
<td>Findings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>--------------</td>
<td>----------------------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ntiri &amp; Stewart, 2009</td>
<td>USA</td>
<td>Older African American diabetic adults from senior community centres, aged 55+ (n=20)</td>
<td>Participating in a transformative learning (TL) intervention consisting of six-session intervention. The s-TOFHLA, Literacy Assessment for Diabetes (LAD), and Diabetes Knowledge Test (DKT) were used to perform pre- and post-measurements. Transformative learning intervention focused on interactive communication related to common diabetes terminology and was divided into six sessions. The objectives and content of the intervention were developed and facilitated by an African American advanced practice nurse educator. Scheduling the intervention was selected by the participants. Sessions were scheduled 1 hour twice a week over three consecutive weeks. Post-intervention s-TOFHLA scores and DKT scores were significantly increased (p &lt; .05). Participants’ verbal responses further affirmed the positive influence of the TL principles. However age was found to correlate inversely with the s-TOFHLA scores.</td>
<td>TL is viewed as an effective method to expand one’s consciousness and bring about the required social change. TL is one approach which has shown a positive effect on the health literacy of older adults. However, TL intervention in this study was conducted with active older African American seniors; most were identified at baseline as having adequate functional health literacy levels.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seligman, et al., 2005</td>
<td>USA</td>
<td>Adults aged 51-74, (n=182, n=87 control, n=95 intervention). Doctors (n=63, n=32 control, n=31 intervention)</td>
<td>Randomised Control Trial. Notifying doctors of their patients’ limited health literacy to determine if this affects physician behaviour. Including satisfaction of doctor and patient. The s-TOFHLA was used to measure literacy. Doctor notified of their patients’ limited health literacy were more likely to use management strategies recommended to improve communication with these patients, but felt less satisfied and perceived themselves as marginally less effective than the doctors in the control group. Patients felt health literacy screening useful, the increased intensity of physician management did not result in improved patient self-efficacy.</td>
<td>The lack of patient benefits may illustrate the need to refine our understanding of the mechanisms whereby notification of patients’ limited health literacy could lead to improved health outcomes. Greater training programs and support for doctors to assist patients with lower levels of health literacy.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>