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Health literacy and libraries: a literature review

Purpose
The aim of this article is to assess the involvement of libraries in health literacy programs and initiatives based on a review of the literature.

Methodology
Four databases were searched for articles that described health literacy programs and initiatives within libraries.

Findings
Several themes of health literacy programs in libraries emerged: health literacy for older adults, underserved populations, the general public, healthcare professionals and medical students, and patients. Collaborations between libraries and community organizations were frequently utilized.

Practical implications
Librarians may use this review to understand the history of health literacy efforts and libraries in order to inform future programming. This review will contextualize current research on health literacy and libraries.

Originality/value
Despite the currency and relevance of this topic, there are no literature reviews on health literacy and librarianship.

Keywords
health literacy, health information, information needs, consumer health, libraries, librarianship

Paper type
Literature review

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Introduction

The health of up to 90 million Americans may be at risk because of their inability to understand and act upon health information (Kutner et al., 2006; Nielsen-Bohlman et al., 2004; U.S. Department of Education, 2013; U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2008). Health literacy initiatives from leading organizations brought this issue into the spotlight and created a growing recognition of health literacy as a valid subject of research. Librarians have been involved in the field of health literacy since its inception, contributing through research, teaching, and programmatic efforts. Despite the prevalence of recent scholarship and its topical nature, there are no literature

reviews on health literacy and librarianship. The aim of this article is to assess the involvement of libraries in health literacy projects and initiatives based on a review of the literature.

What is health literacy?

Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (U.S. Department of Health and Human Services, 2000). There are a variety of measurements used to gauge health literacy, but the results are typically categorized as proficient, intermediate, basic, and below basic. The terms limited or low health literacy are often used to describe rates of health literacy below proficient. Individuals with limited health literacy cannot be expected, for example, to understand basic medical concepts after reading clearly written pamphlets (Kutner et al., 2006). According to current estimates, anywhere from 36 to 90 million Americans experience limited health literacy (Kutner et al., 2006; Nielsen-Bohlman et al., 2004; U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2008.). In the National Assessment of Adult Literacy study, 36 percent of participants had basic or below basic health literacy skills (Kutner et al., 2006). Findings from the 1992 National Adult Literacy Survey (NALS), 2003 National Assessment of Adult Literacy (NAAL), and the 2012 Program for the International Assessment of Adult Competencies (PIAAC) show that adult literacy skills have changed relatively little over time. In 2003, NAAL demonstrated that only 12 percent of adults had proficient health literacy skills (Kutner et al., 2006). Almost ten years later, the PIAAC data showed similar patterns: only 12 percent of adults showed the highest proficiency level on literacy tasks and 9 percent showed proficient numeracy skills (U.S. Department of Education, 2013).

These findings are important within a public health context, considering research that shows associations between low health literacy and poor health outcomes (Berkman et al., 2011). Low health literacy is associated with more hospitalizations, greater use of emergency

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care, and poorer ability to demonstrate taking medications appropriately and interpret labels and health messages, and it partly explains racial disparities in a variety of outcomes (Berkman et al., 2011). In older adults, low health literacy is associated with worse overall health status and increased mortality (Berkman et al., 2011). These findings are especially relevant to NAAL data which shows that adults with below basic health literacy (the lowest designation) were more likely to be age 65 or older (Kutner et al., 2006).

Several organizations have created initiatives dedicated to improving health literacy. Health literacy was identified as a priority by the Department of Health and Human Services' "Healthy People 2020" in 2000, the Institute of Medicine's "Prescription to End Confusion" in 2003, and most recently in the National Action Plan by the Office of Disease Prevention and Health Promotion in 2010. A health literacy bibliometric analysis showed a clear upward growth pattern of published literature on this topic after 2003, suggesting that health literacy initiatives undertaken by the Institute of Medicine (IOM), the American Medical Association, and the Medical Library Association (MLA) around this time may be partly responsible for this trend (Bankson, 2009). More recently, the "Health Literacy" MeSH subject heading was added in 2010, and in a PubMed search for articles whose titles contained the phrase "health literacy", 20 percent were published in the past year. The proliferation of recent research on this topic has resulted in the creation of tutorials and toolkits for healthcare professionals as well as new frameworks for integrating health literacy into practice (CDC, 2014; National Patient Safety Foundation, 2016).

Health literacy and libraries

The Medical Library Association has expanded the current definition of health literacy by defining health information literacy as "the set of abilities needed to: recognize a health information need; identify likely information sources and use them to retrieve relevant information; assess the quality of the information and its applicability to a specific situation; and

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analyze, understand, and use the information to make good health decisions" (Kars et al., 2008). MLA calls on librarians in all types of libraries to play a major role in health literacy by helping consumers access and understand health information (Kars et al., 2008). Theoretical and research-based explorations of the ways that people experience health literacy, including a recent study that used a phenomenographic approach, indicate the continued interest and importance of health literacy within librarianship (Yates, 2015). Librarians are perfectly positioned to contribute to the health literacy movement as keepers of information, teachers and champions of information literacy, and liaisons to researchers and healthcare professionals who strive to improve health literacy. It is important for librarians to understand the history of health literacy research, including previous efforts to implement health literacy programs in libraries, in order to inform such efforts in their own organizations.

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Methods

Four databases were searched: Library Literature, Library, Information Science & Technology Abstracts (LISTA), PubMed, and Web of Science. Database searching took place on December 1, 2015 with an update on January 28, 2016. Databases were searched using broad keywords to ensure that a large number of results were found. Keywords included "health literacy", library, and librarian. The vast majority of results focused on libraries in the United States and Canada; for this reason, this review focuses solely on health literacy and libraries within a North American context.

Results

Published literature on health literacy efforts within librarianship has increased since the identification of this issue as a national healthcare priority in the early 2000s (Bankson, 2009). Libraries of all kinds have created educational programs, fostered partnerships with health and community organizations, and used innovative outreach methods to reach their user

populations. Health literacy programs in the published library literature include efforts involving the following populations: older adults, underserved groups, the general public, healthcare professionals and students, and patients. Collaborative efforts between libraries and other organizations are also explored.

Older adults

Older adults are particularly at risk for low health literacy which is associated with poor health outcomes (Kutner et al., 2006). Public libraries have a long tradition of outreach and service to this user population, and incorporating health literacy efforts into programming for older adults is a logical solution. Many of the health literacy efforts conducted in public libraries involve workshops and classes for older adults in the use of consumer health databases. Public librarians in Louisiana, for example, conducted classes for older adults based on the NIHSeniorHealth Toolkit for Trainers (Susic, 2009). Librarians at a large, urban public library in Maryland held collaborative, hands-on computer classes whose curriculum was based upon this toolkit as well (Xie, 2011). Based on pre- and post-test measurements, e-health literacy efficacy improved after the training, as did participants' perceptions of the internet as a useful and important tool for health-making decisions (Xie, 2011). A variety of studies examining learning styles at workshops for older adults at public libraries in Maryland have been conducted by Xie (2011, 2012). In one specific study, two public libraries provided workshops for older adults led by MLS students that focused on training in the use of MedlinePlus and NIHSeniorHealth databases (Xie, 2012). Post-test surveys revealed significant decreases in the levels of computer anxiety, and over 75 percent of participants reported that the workshop impacted their health decision-making (Xie, 2012).

While public libraries are a natural fit for outreach to older adults, academic libraries have also provided these services successfully, often with the aid of partnerships within local communities. SeniorCHAT was a program focused on consumer health awareness training to

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older adults in Louisiana (Strong et al., 2012). In collaboration with local senior centers, academic librarians provided hands-on workshops that trained senior citizens in the use of MedlinePlus and NIHSeniorHealth databases and created a corresponding LibGuide (Strong et al., 2012). Survey and anecdotal data revealed that participants felt empowered by the computer training and their use of these databases had increased (Strong et al., 2012). The Health Literacy Program for Minnesota Seniors was a two-part workshop series that focused on communication with healthcare providers and seeking health information on the internet (Aspinall et al., 2012). This evidence-based program combined health literacy and health information literacy interventions into one curriculum and was delivered by academic librarians to residents at a local senior living community (Aspinall et al., 2012). Another collaboration between academic libraries and senior centers resulted in workshops for seniors on finding and evaluating health information online (Wu et al., 2006). “Healthy aging resources on the web” is an example of a successful collaboration by a public library and an academic library (Marhenke & Howrey, 2014). This partnership led to the creation of several workshops for older adults including training on free e-health online resources and National Library of Medicine (NLM) databases and choosing health insurance (Marhenke & Howrey, 2014). Surveys of participants showed an increase in self-efficacy for searching for and evaluating health information online (Marhenke & Howrey, 2014). A partnership between academic librarians, a senior clinic, and a senior community center resulted in the implementation of workshops for older adults on NLM databases and the creation and maintenance of an online portal related to senior health (Broering et al., 2006).

Underserved populations

While there are many different definitions of underserved or vulnerable populations, these populations are typically defined as groups with a higher risk of diseases due to certain socio-economic factors and other social determinants of health. Examples of underserved

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populations can include low-income individuals, racial and ethnic minorities, and refugees, to name a few. Because underserved populations disproportionately suffer from low levels of health literacy, special efforts are often made to target these groups for library outreach. A survey of school and public librarians about attitudes toward health literacy outreach for underserved groups in rural Texas found broad support for community outreach programs for underserved groups by librarians (Lukenbill & Immroth, 2009). Although respondents displayed less support for librarians acting as gatekeepers of health information, several collaborative outreach programs have shown that librarians have been successful in this role (Lukenbill & Immroth, 2009). Public librarians surveyed about their service to underserved populations reported several potential barriers in providing health information to these users such as not knowing where to look for clearly written, up-to-date health information, fear of misinterpreting health questions, and the low level of users' reading or learning ability that may prevent them from understanding complex medical concepts (Mi et al., 2014).

Recent immigrants have special needs related to health literacy; not only may English literacy skills be lacking, but cultural attitudes that influence health beliefs may not align with the American health care system (Allen et al., 2004). Librarians in Wisconsin promoted health literacy among Hmong immigrants in their area by exhibiting at health fairs and conferences, training providers on databases that provided culturally relevant health information, and creating a website featuring Hmong health topics (Allen et al., 2004). The library was also involved in the translation of health information pamphlets and the production of educational videos on a variety of health topics (Allen et al., 2004). Each of these efforts was tailored to the Hmong population by using culturally relevant images and language that this group would relate to (Allen et al., 2004). Patient acceptance of these materials was excellent, and use of the website was good (Allen et al., 2004). In New York, librarians and healthcare workers worked with Somali Bantu refugee groups to learn about their health information needs; this needs assessment resulted in the design of a health education curriculum delivered to refugees during home visits

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(Eisenhauer et al., 2012). In both of these projects, collaborations with local providers and healthcare workers were sought in order to raise awareness among healthcare professionals of the health information needs of the immigrant populations (Allen et al., 2004; Eisenhauer et al., 2012).

Librarians in Montana designed a unique health literacy program for inmates in a county detention center (Kouame & Young, 2014). Incarcerated adults experience worse health outcomes and lower levels of health literacy than the normal population, making them an ideal choice for health literacy outreach (Kouame & Young, 2014). Because inmates did not have access to live internet sites, an “internet in a box” was created with content from MedlinePlus and other health information sources that simulated the experience of searching for online information on a variety of health topics (Kouame & Young, 2014). In addition to receiving health information, participants learned how to use these databases in order to replicate the experience of searching in the future (Kouame & Young, 2014). Educational materials on health topics like stress, drug abuse treatment, and provider communication were also provided (Kouame & Young, 2014). Surveys showed improvements in computer skills and confidence in understanding the healthcare system (Kouame & Young, 2014).

Underserved patient populations, especially uninsured patients, are a hard to reach population with potentially low health literacy. To address the unique needs of this group, a medical library in Tennessee utilized a pictorial touch-screen kiosk that displayed several image-based tutorials on a variety of health topics (Teolis, 2010). The tutorials were based on information from MedlinePlus that had been converted into easy-to-read modules for non-English speakers and users with low health literacy (Teolis, 2010). Most participants were first-time MedlinePlus users, indicating that this service identified a need for information that was previously unfulfilled (Teolis, 2010).

The general public

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Public libraries are perfectly positioned to provide health literacy education to members of the general public. Despite the potential pitfalls of wading into political controversy, many public libraries have been involved in efforts to educate their patrons about the Affordable Care Act (Malachowski, 2014; Real et al., 2015). The creation of health information portals for the public is another important health literacy effort, especially when these portals address barriers to the access, comprehension, and use of health information (Austvoll et al., 2013; Radick, 2015). Consumer health centers in public libraries are another potential place for health literacy outreach to local communities. At these centers, librarians help patrons search for and understand health information and provide health materials. A survey of public library patrons about a consumer health center in Virginia revealed a lack of knowledge about the center and an interest in utilizing this resource in the future (Ports et al., 2015). Despite its underuse, the overwhelmingly positive feedback about this resource from patrons that had used its services indicated its potential value in the library (Ports et al., 2015).

Many published articles that highlight health literacy efforts to the general public focus on collaboration between public libraries and other organizations. Public libraries may be better positioned to leverage partnerships with community organizations than other types of libraries which may explain why many of the following examples feature these types of collaborations. Public libraries have often utilized the expertise of the National Library of Medicine in training librarians to find health information and increase the health literacy skills of patrons. Librarians report increased confidence and proficiency in finding health information from a variety of sources after attending such workshops (Noh, 2013; Radick, 2015; Sandstrom, 2004). A recent project by the National Network of Libraries of Medicine, New England Region (NN/LM NER), trained public librarians to use MedlinePlus; these librarians were able to then teach these skills to their patrons (Radick, 2015). The training that resulted from this project reached over half of the libraries in New Hampshire (Radick, 2015). Public libraries in New York have also worked

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with NN/NLM to train librarians on NLM database instruction and community health outreach using these resources (Radick, 2015).

Health literacy efforts involving partnerships between academic and public libraries have also been successful. Academic librarians in Massachusetts collaborated with a local public library to offer monthly classes that instructed members of the public on finding reliable health information on MedlinePlus (Malachowski, 2011). Although these classes received positive feedback from participants, they experienced low enrollment (Malachowski, 2011). “Train the trainer” classes that resulted from a collaboration of academic and public libraries educated public librarians on mental health resources intended to increase awareness of the importance of teaching mental health literacy to library patrons (Radick, 2015). One innovative initiative called the Health Information Fellowship allowed public librarians to obtain a Consumer Health Information Specialist certificate from MLA with the help of local hospitals and healthcare centers which were integrated into the curriculum (Zionts et al., 2010). The newly expert librarians created many health literacy efforts such as a consumer health portal, a staff training module, and a workshop for patrons about preparing for medical visits (Zionts et al., 2010). Librarians that participated in this program reported increased familiarity with consumer health information resources and increased ability to direct patrons to appropriate online health information resources (Zionts et al., 2010). The Delaware Health Source, another collaborative effort, employed consumer health librarians through a partnership between the public library, the local health department, and the Delaware Academy of Medicine (LaValley, 2009). These librarians worked at public libraries and served users throughout the state through consultations, workshops, exhibits at health fairs where they raised awareness and provided resources related to finding health information (LaValley, 2009). One unique partnership with a local law center resulted in a public workshop about advance directives involving rights, responsibilities and decision-making while a collaboration with children’s librarians led to a wellness program that educated kids and parents about healthy living choices (LaValley, 2009). Librarian involvement

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with a Mini-Med School program, a series of lectures by medical faculty presented to a local public audience, resulted in the incorporation of tools to search and evaluate online health information into this program (Van Moorsel, 2001).

Healthcare professionals and students

Health literacy efforts often go beyond educating consumers and target healthcare professionals and students in the health sciences field. These efforts aim to increase the level of understanding between healthcare providers and patients and, in the form of outreach to students, educate the future healthcare workforce. In a study that examined the perceived importance of health literacy efforts in healthcare settings, hospital administrators and healthcare providers reported the necessity of increasing awareness about the barriers to health literacy and its impact on patient care by training healthcare professionals (Shipman et al., 2009).

Medical librarians working in healthcare settings are often at the forefront of health literacy awareness efforts for healthcare professionals and students. Online tutorials and in-person workshops for physicians, nurses, medical residents, and students have focused on understanding the needs of health literacy-challenged patients, screening for health literacy, awareness of consumer health resources, and demonstrating communication strategies to utilize in practice including plain language and active listening (Crampton et al., 2010; Macdonald, 2015; Shipman et al., 2009; Szwajcer et al., 2014; Wickline & Rosenthal, 2010). Healthcare professionals that have participated in such workshops reported increased understanding of health literacy issues and interest in using strategies like plain language (Crampton et al., 2010; Shipman et al., 2009; Szwajcer et al., 2014). Health literacy programs in medical libraries have also highlighted the need to refer patients to librarians for further information and used displays to reach medical students (Shipman et al., 2009, Wickline & Rosenthal, 2010).

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A notable health literacy initiative is the Plain Language Program at Massachusetts General Hospital (Paul & Schneider, 2006). This program consisted of librarian-led workshops for hospital staff that used examples of current hospital documents to illustrate the need for plain language and demonstrate strategies for writing and evaluation (Paul & Schneider, 2006). These workshops led to collaborations with researchers, nurses, and interpreters that resulted in plain language usage in hospital informed consent forms and patient education materials (Paul & Schneider, 2006). In another instance of library and researcher collaboration, librarians at the University of Maryland offered workshops for researchers about patient literacy and informed consent (Raimondo, 2014). This led to the development of a review service for IRB informed consent forms that aimed to simplify the language used for ensured participant understanding (Raimondo, 2014). Users reported satisfaction with the service and positive changes regarding simplified language on informed consent forms (Raimondo, 2014). An innovative health literacy course at Harvard Medical School paired medical students with adult learners in order to illustrate the importance of plain language use in real-world patient encounters (Hess & Whelan, 2009). A similar assignment given to undergraduate health sciences students at James Madison University illustrated the concepts of plain language and cultural health beliefs by placing students in the role of health information-seeking patients (McCabe, 2006).

Patients

The health information literacy needs of patients have been described in four broad categories: consumer health information, informed consent, information literacy, and critical thinking techniques (Cullen, 2005). Medical librarians have designed health literacy efforts focused on each of these needs using traditional and nontraditional approaches. Health literacy outreach to patients is traditionally delivered by medical librarians via hospital or consumer health libraries in the form of training on the use of medical databases and consultations about a

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variety of health topics (Burnham & Peterson, 2005; Duhon & Jameson, 2013; Neal & Brower, 2013). A survey of academic health sciences libraries revealed that 86 percent of libraries affiliated with hospitals or medical centers reported participating in health information outreach, compared to 49 percent of academic libraries unaffiliated with healthcare centers and 28 percent of general academic libraries (Duhon & Jameson, 2013). Because of their proximity to clinical environments, hospital libraries have a unique opportunity to provide patient bedside delivery of information, facilitate partnerships with clinical staff like nurses, social workers and residents, and participate in outreach activities such as patient information rounds, health education lectures, and health fairs (Duhon & Jameson, 2013; Oelschlegel et al., 2014; Vaughn et al., 2014). Online portals containing health information are another health literacy effort for patients which require librarian involvement, both in the provision and curation of content and in addressing barriers involving patients' ability to find and evaluate information within the portal (Jurczyk, 2012).

There are several examples of novel health literacy efforts that expand the traditional role and services of hospital librarians. A program at the University of Florida placed librarians in a university clinic in order to assist patients with finding health information and formulating questions about their health concerns to communicate to their healthcare providers (Butson & Pauly, 2013). Questions were created that related to areas of disease/diagnosis, medications, symptoms, treatment, support, nutrition, and lab tests, indicating information needs in each of these areas (Butson & Pauly, 2013). Most patients expressed satisfaction with the librarian's assistance in finding information and developing questions, indicating the potential value of this service (Butson & Pauly, 2013). Many health literacy efforts have been implemented at Preston Medical Library in Tennessee, including the recent use of the hospital's in-room television service for patients to request health information (Vaughn et al., 2014).

Collaborations

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Collaborations with community organizations are often essential for libraries planning health literacy efforts, especially when targeting hard to reach populations. Libraries working with older adults have collaborated with senior centers and senior living facilities, while libraries targeting underserved populations have collaborated with prisons, homeless shelters, public health departments, and other community health organizations. One creative method of community outreach involved a librarian working with local hair salons to advertise library programs and distribute health literacy educational materials (Radick, 2015). Another outreach program partnered a medical librarian with a baptist church to provide hands-on health literacy workshops which focused on health issues that were relevant to the community (Stephenson et al., 2004). Collaborations between hospital, academic, and public libraries have resulted in health literacy outreach activities to a variety of users, and many of these efforts are detailed earlier in this review.

The GetHELP health literacy program is an example of a multifaceted collaborative effort between librarians, healthcare professionals, and community organizations that resulted in increased health literacy awareness among librarians, healthcare workers, and the public (Jacobson, 2008). “Train the trainer” classes prepared librarians in a variety of settings to serve low-income residents of a Washington county (Jacobson, 2008). Librarians from public libraries, community college libraries, and medical libraries were trained on health literacy issues and finding health information in order to provide these services to their patrons, and a collaborative referral system was developed for complex health questions to be forwarded to experienced medical librarians (Jacobson, 2008). Similarly, “train the trainer” classes were designed for local healthcare professionals including community health workers, hospital employees, and public health workers (Jacobson, 2008). Finally, public classes that focused on finding health information, communicating with providers, and personal organization and responsibility in health records were held at community senior centers (Jacobson, 2008). Few other comprehensive collaborative efforts like this exist, but there are many health literacy efforts,

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including several noteworthy collaborative projects in Tennessee (Quesenberry, 2015; Stephenson et al., 2004) involving collaborations with community organizations that operate on a smaller scale.

There are several examples of partnerships between libraries and other organizations to improve health literacy among adolescents. Librarians at a university in Massachusetts developed a health information curriculum for students at a local elementary school that introduced students to the concept of health information literacy with the help of interactive activities facilitated by PharmD students (Friel, 2015). In five sessions, students were instructed on the concept of health information literacy and the use of MedlinePlus to find and evaluate health information (Friel, 2015). Surveys showed increased awareness of MedlinePlus as an online health information resource and increased knowledge of evaluating reliable health information sources (Friel, 2015).

An important component of collaborative projects is the support of the targeted population. A collaborative project called Health Information @ Preuss aimed to integrate guidance for online health information-seeking into a middle school curriculum (Haynes, 2004). The accomplishment of this integration was partly accountable to the relationships formed with school administrators before the submission of the project proposal. Ensuring the school administration's support for the project facilitated faculty buy-in and ownership which was evidenced by faculty members volunteering to teach health literacy in their classes and the inclusion of a health literacy training session for faculty during an in-service day (Haynes, 2004). Students and faculty gave positive feedback about the training sessions and reported increased awareness of reliable online health information sources (Haynes, 2004). Taking collaborative projects one step further in involving the target population, a project called Healthflicks sought input from teenagers when designing peer-to-peer health literacy videos for teens (Greenberg & Wang, 2012). Librarians recruited high school students to participate in a two-day workshop about health literacy, and these students worked with a university student mentor to create short

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videos on a variety of health topics of interest to them (Greenberg & Wang, 2012). Buy-in from students and teachers not only increased ownership of the project and relevance to local concerns but ensured its sustainability in the future (Greenberg & Wang, 2012).

Collaborations between libraries and public health departments have led to fruitful health literacy programs. The Library Nurse Project placed public health nurses into public libraries in Arizona (Malkin & Feingold, 2014). The nurses presented educational sessions on health and safety topics, many of which had been identified as unmet health needs by the patron population (Malkin & Feingold, 2014). In rural Maine, librarians, teachers, and public health workers collaborated on the integration of a health literacy curriculum into local schools which resulted in increased knowledge of online health information resources among students and teachers involved in the program (Kurtz-Rossi & Duguay, 2010). A collaborative partnership made up of librarians, public health workers, and healthcare providers led to the formation of a coalition called Health Information Partners (Pomerantz et al., 2010). This coalition held outreach activities to increase health literacy in local communities including training sessions for online health information finding, distribution of health information to local neighborhoods, and other outreach and community health advocacy activities (Pomerantz et al., 2010). Evaluations of the health literacy training sessions revealed that less than half of participants had used the internet and only 1 out of 52 participants had used the internet to find health information; these training sessions provided access to a heretofore unknown source of knowledge for this population and empowered participants to use this resource (Pomerantz et al., 2010). Building relationships with schools, public health departments, healthcare centers, and adult education providers was key to the program's success (Pomerantz et al., 2010).

Discussion

Although this review identified a variety of types of libraries that participated in health literacy efforts, several gaps remain in the literature. School librarians have a unique opportunity

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to improve the health literacy of children and teachers, but these libraries are underrepresented in the literature. Community college libraries are well-positioned to reach nontraditional students, older adults, and underserved groups that use their services; unfortunately, health literacy efforts in these libraries were also absent from the literature. Collaborations between academic libraries and university health services were not present in the literature; this partnership has many potential advantages, including outreach to students who may not visit the traditional library space. More research is needed on health literacy efforts in these environments, and librarians in these types of libraries should be encouraged to share successful programs in the published literature.

One area of potential improvement for libraries providing health literacy programs is the measurement of the impact of library efforts. Assessment, including the identification and measurement of outcomes, is often an afterthought of library programs, and previous reviews of library outreach efforts have highlighted weaknesses in the quality of measurement, analysis, and design (Whitney, 2013). The most common form of evaluation for health literacy programs in libraries remains the pre- and post-test survey that uses self-report to gauge impact and effectiveness (Aspinall et al., 2012; Kouame & Young, 2014; Strong et al., 2012; Xie, 2011). While this method can be useful for pilot studies, more robust methods of assessment should be considered, including significance testing, systematic thematic analysis, and measuring long-term outcomes or impact. Utilizing such methods may be challenging for librarians who deliver one-shot sessions; for this reason, integration of health literacy into all library services is ideal in order to measure comprehensive impact.

Partnerships with community groups should not be overlooked when creating health literacy efforts. Many successful collaborative programs were facilitated by NLM grants that encouraged partnerships between libraries and community organizations (Allen et al., 2004; Aspinall et al., 2012; Crampton et al., 2010; Haynes, 2004; Jacobson, 2008; Kouame & Young, 2014; Malachowski, 2011; Marhenke & Howrey, 2014; Paul & Schneider, 2006; Radick, 2015;

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Strong et al., 2012; Wu et al., 2006). Librarians should consider forming similar partnerships when designing health literacy efforts.

Conclusion

Innovative health literacy efforts can be found in many types of libraries that serve a variety of users. There is no standard health literacy library program, but most involve instruction in health information-seeking and critical evaluation of online sources. Workshops for patrons and “train the trainer” classes have been implemented in a variety of settings, and feedback has been consistently positive from all participant groups. Given the importance of this issue to national health priorities, librarians will continue to be involved in the promotion of health literacy by spearheading efforts and initiatives to their local user populations. Librarians involved in health literacy efforts should consult the published literature when designing new services and reporting on successful efforts; engaging with the evidence base will ensure the continued success of health literacy efforts in libraries.

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References

Allen, M., Matthew, S., & Boland, M. J. (2004). “Working with immigrant and refugee populations: issues and Hmong case study”. *Library Trends*, 53(2), 301-328.

Aspinall, E. E., Beschnett, A., & Ellwood, A. F. (2012). “Health literacy for older adults: using evidence to build a model educational program”. *Medical Reference Services Quarterly*, 31(3), 302-314.

Austvoll-Dahlgren, A., Danielsen, S., Opheim, E., Bjørndal, A., Reinar, L. M., Flottorp, S., Oxman, A. D., & Helseth, S. (2013). “Development of a complex intervention to improve health literacy skills”. *Health Information & Libraries Journal*, 30(4), 278-293.

Bankson, H. L. (2009). “Health literacy: an exploratory bibliometric analysis, 1997-2007”. *Journal of the Medical Library Association*, 97(2), 148-150.

Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011). “Low health literacy and health outcomes: an updated systematic review”. *Annals of Internal Medicine,* 155(2), 97-107.

Broering, N. C., Chauncey, G. A., & Gomes, S. L. (2006). “Outreach to public libraries, senior centers, and clinics to improve patient and consumer health care”. *Journal of Consumer Health on the Internet*, 10(3), 1-19.

For Peer Review

Burnham, E., & Peterson, E. B. (2005). “Health information literacy: a library case study”. *Library Trends*, 53(3), 422-433.

Butson, L. C., & Pauly, R. R. (2013). “A librarian's role in enhancing patients’ knowledge and self-advocacy”. *Journal of Hospital Librarianship*, 13(4), 362-372.

Centers for Disease Control and Prevention (CDC). (2014). Health literacy for public health professionals course. Accessed on February 3, 2016 from http://www.cdc.gov/healthliteracy/findtraining/onlinecourse.html.

Crampton, K., Orebaugh, M., Doherty, D., Lensch, E., & Temple, J. (2010). “Health-e people: a community collaborative for health literacy awareness”. *Journal of Hospital Librarianship*, 10(4), 349-362.

Cullen, R. (2005). “Empowering patients through health information literacy training”. *Library Review*, 54(4), 231-244.

Duhon, L., & Jameson, J. (2013). “Health information outreach: a survey of U.S. academic libraries, highlighting a midwestern university's experience”. *Health Information & Libraries Journal,* 30(2), 121-137.

Eisenhauer, E. R., Mosher, E. C., Lamson, K. S., Wolf, H. A., & Schwartz, D. G. (2012). “Health education for Somali Bantu refugees via home visits”. *Health Information & Libraries Journal*, 29(2), 152-161.

For Peer Review

Friel, C. J., Bond, I., & Lahoz, M. R. (2015). “Improving health information literacy of early adolescents using a lead poisoning curriculum”. *Journal of Consumer Health on the Internet*, 19(3/4), 149-160.

Greenberg, C. J., & Wang, L. (2012). “Building health literacy among an urban teenage population by creating online health videos for public and school health curriculum use”. *Journal of Consumer Health on the Internet*, 16(2), 135-146.

Haynes, C. (2004). “Health information @ Preuss (HIP): integrating online health information into the curricula of a middle school”. *Journal of Hospital Librarianship*, 4(2), 1-18.

Hess, J., & Whelan, J. S. (2009). “Making health literacy real: adult literacy and medical students teach each other”. *Journal of the Medical Library Association*, 97(3), 221-224.

Jacobson, S. (2008). “GetHELP health literacy in Skagit Valley, WA”. *Journal of Hospital Librarianship,* 8(1), 53-60.

Jurczyk, E. (2012). “Using a customized search engine to address low health literacy: a program description”. *Journal of the Canadian Health Libraries Association*, 33(2), 112-118.

Kars, M., Baker, L. M. & Wilson, F. L. (2008). *The Medical Library Association guide to health literacy.* New York: Neal-Schuman Publishers.

For Peer Review

Kouame, G., & Young, D. (2014). “Promoting health literacy and personal health management with inmates in a county detention center”. *Journal of Hospital Librarianship,* 14(2), 172-179.

Kurtz-Rossi, S. & Duguay, P. (2010). "Health information literacy outreach: improving health literacy and access to reliable health information in rural oxford county Maine." *Journal of Consumer Health on the Internet,* 14(4), 325-40.

Kutner, M., Greenberg, E., Jin, Y., & Paulsen, C. (2006). *The Health Literacy of America’s Adults: Results from the 2003 National Assessment of Adult Literacy.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

LaValley, S. (2009). “Delaware health source: consumer health libraries and health literacy outreach”. *Journal of Consumer Health on the Internet*, 13(2), 180-186.

Lukenbill, B., & Immroth, B. (2009). “School and public youth librarians as health information gatekeepers: research from the Lower Rio Grande Valley of Texas”. *School Library Media Research*, 12, 3-3.

Macdonald, K. (2015). “Collaborative partnerships for library services: examples from a hospital library”. *Journal of Hospital Librarianship*, 15(4), 365-372.

Malachowski, M. (2011). “Public libraries and health literacy”. *Computers in Libraries*, 31(10), 5-5.

For Peer Review

Malachowski, M. (2014). “Obamacare and the proper role of public libraries in health literacy”. *Computers in Libraries*, 34(1), 4-9.

Malkin, K. B., & Feingold, S. K. (2014). “A library, a nurse, and good health”. *Computer, Informatics Nursing,* 32(12), 559-561.

Marhenke, C., & Howrey, M. (2014). “Healthy aging resources on the web for seniors and caregivers: an eHealth literacy library training partnership”. *Florida Libraries,* 57(2), 27-31.

McCabe, J. A. (2006). “An assignment for building an awareness of the intersection of health literacy and cultural competence skills”. *Journal of the Medical Library Association*, 94(4), 458-461.

Mi, M., Stefaniak, J., & Afonso, N. (2014). “Community needs assessment to reach out to an underserved population”. *Medical Reference Services Quarterly*, 33(4), 375-390.

National Patient Safety Foundation. (2016). *Ask me 3*. Accessed on February 3, 2016 from https://npsf.site-ym.com/default.asp?page=askme3.

Neal, R. E., & Brower, S. M. (2013). “Morningcrest health library: a clinic-based approach to health information literacy services”. *Journal of Consumer Health on the Internet*, 17(1), 76-85.

Nielsen-Bohlman, L., Panzer, A. M., & Kindig, D. A. (2004). *Health literacy: a prescription to end confusion.* Washington, DC: Institute of Medicine, The National Academies Press.

For Peer Review

Noh, Y. (2013). “The development and performance measurements of educational programs to improve consumer health information (CHI) literacy”. *Reference & User Services Quarterly,* 53(2), 140-154.

Oelschlegel, S., Gonzalez, A. B., & Frakes, E. (2014). “Consumer health information centers in medical libraries: a survey of current practices”. *Journal of Hospital Librarianship,* 14(4), 335-347.

Paul, C. J., & Schneider, E. (2006). “Leading a plain language program”. *Journal of Hospital Librarianship*, 6(2), 51-57.

Pomerantz, K. L., Muhammad, A. A., Downey, S., & Kind, T. (2010). “Connecting for health literacy: health information partners”. *Health Promotion Practice,* 11(1), 79-88.

Ports, K. A., Ayers, A., Crocker, W., Hart, A., Mosavel, M., & Rafie, C. (2015). “Community perceptions and utilization of a consumer health center”. *Journal of the Medical Library Association*, 103(1), 35-39.

Quesenberry, A. C. (2015). “Linking health literacy and libraries in Tennessee”. *Tennessee Libraries*, 65(1), 1-1.

Radick, L. (2015). “Improving health literacy, one public library at a time”. *American Libraries*, 46(11/12), 48-53.

For Peer Review

Raimondo, P. G., Harris, R. L., Nance, M., & Brown, E. D. (2014). “Health literacy and consent forms: librarians support research on human subjects”. *Journal of the Medical Library Association*, 102(1), 5-8.

Real, B., McDermott, A. J., Bertot, J. C., & Jaeger, P. T. (2015). “Digital inclusion and the Affordable Care Art: public libraries, politics, policy, and enrollment in ‘Obamacare’”. *Public Library Quarterly*, 34(1), 1-22.

Sandstrom, H. T. (2004). “Watch your language”. *Library Trends*, 53(2), 329-335.

Shipman, J. P., Kurtz-Rossi, S., & Funk, C. J. (2009). “The health information literacy research project”. *Journal of the Medical Library Association*, 97(4), 293-301.

Stephenson, P. L., Green, B. F., Wallace, R. L., Earl, M. F., Orick, J. T., & Taylor, M. V. (2004). “Community partnerships for health information training: medical librarians working with health-care professionals and consumers in Tennessee”. *Health Information & Libraries Journal,* 21 Suppl 1, 20-26.

Strong, M. L., Guillot, L., Badeau, J. (2012). “Senior CHAT: a model for health literacy instruction”. *New Library World*, 113(5), 249 - 261.

Susic, J. (2009). “NIHSeniorHealth classes for senior citizens at a public library in Louisiana”. *Journal of Consumer Health on the Internet*, 13(4), 417-419.

For Peer Review

Szwajcer, A., Macdonald, K., & Kvern, B. (2014). “Health literacy training for family medicine residents”. *Journal of the Canadian Health Libraries Association*, 35(3), 128-132.

Teolis, M. G. (2010). “A MedlinePlus(®) kiosk promoting health literacy”. *Journal of Consumer Health on the Internet*, 14(2), 126-137.

U.S. Department of Education, National Center for Education Statistics. (1999). *The 1992 National Adult Literacy Survey.* Washington, DC: National Center for Education Statistics.

U.S. Department of Education, National Center for Education Statistics. (2013). *Literacy, numeracy, and problem solving in technology-rich environments among U.S. adults*. Washington, DC.

U.S. Department of Health and Human Services. (2000). *Healthy people 2020*. Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2008). *America’s health literacy: why we need accessible health information*. Washington, DC: U.S. Government Printing Office.

Van Moorsel, G. (2001). “Do you Mini-Med School?: leveraging library resources to improve Internet consumer health information literacy”. *Medical Reference Services Quarterly*, 20(4), 27-37.

For Peer Review

Vaughn, C., Leonard, K., & Oelschlegel, S. (2014). “Delivery of information to the patient bedside utilizing skylight in-room television service”. *Journal of Hospital Librarianship,* 14(1), 1-13.

Whitney, W., Dutcher, G. A., & Keselman, A. (2013). “Evaluation of health information outreach: theory, practice, and future direction”. *Journal of the Medical Library Association*, 101(2), 138-146.

Wickline, M. A., & Rosenthal, C. A. (2010). “Health literacy: collaborating to educate professionals”. *Journal of Consumer Health on the Internet*, 14(2), 184-192.

Wu, L., Blalock, L., Cunningham, K., Graysno, M., & Stephenson, P. (2006). “Wiring seniors to quality health information”. *Journal of Consumer Health on the Internet*, 10(2), 11-24.

Xie, B. (2011). “Effects of an eHealth literacy intervention for older adults”. Journal of Medicine Internet Research, 13(4), e90.

Xie, B. (2011). “Experimenting on the impact of learning methods and information presentation channels on older adults' e-health literacy”. *Journal of the American Society for Information Science & Technology*, 62(9), 1797-1807.

Xie, B. (2011). “Older adults, e-health literacy, and collaborative learning: an experimental study”. *Journal of the American Society for Information Science & Technology*, 62(5), 933-946.

For Peer Review

Xie, B. (2012). “Improving older adults' e-health literacy through computer training using NIH online resources”. *Library & Information Science Research*, 34(1), 63-71.

Yates, C. (2015). “Exploring variation in the ways of experiencing health information literacy: a phenomenographic study”. *Library & Information Science Research*, 37(3), 220-227.

Zionts, N. D., Apter, J., Kuchta, J., & Greenhouse, P. K. (2010). “Promoting consumer health literacy: creation of a health information librarian fellowship”. *Reference & User Services Quarterly*, 49(4), 350-359.

For Peer Review