Health and oral health literacy – a review of literature

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ABSTRACT

The process of acquiring health information, appraising its concepts, and applying health prevention and treatment plans appropriately requires health literacy. Research in health literacy have highlighted the importance of moving beyond a focus on individuals’ skills to consider health literacy as an interaction between the demands of health systems and the skills of individuals. It is important element in the nation’s health agenda. Healthy People 2010 includes an objective to “improve the health literacy of persons with inadequate or marginal literacy skills” and action plans for the health literacy objective and the five other health communication objectives. Current paper reviews meaning of health literacy, its concepts, oral health literacy and collaboration/ consort to promote health literacy.

Key words: Health literacy, Oral health literacy, Cognitive

INTRODUCTION

Over the last decade, health literacy has become a vibrant area of research, which makes to understand basic health information and services needed to make appropriate health decisions. Health literacy is a key public health issue. For any public policy there should be active participation of people in their health as part of their contribution to civil society (Kickbusch IS, 2001). Literacy refers to basic skills needed to succeed in society while health literacy requires some additional skills, including those necessary for finding, evaluating and integrating health information from a variety of contexts. It also requires some knowledge of health-related vocabulary as well as the culture of the health system (Mayagah K, Wayne M. 2009). The American Medical Association’s Ad Hoc Committee on Health Literacy defined health literacy as “the constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment,” including “the ability to read and comprehend prescription bottles, appointment slips, and other essential health-related materials” (Ad Hoc Committee on Health Literacy, 1999). The Institute of Medicine (IOM) expert panel divided the domain of “health literacy” into (1) cultural and conceptual knowledge, (2) oral literacy, including speaking and listening skills, (3) print literacy, including writing and reading skills, and (4) numeracy (Baker DW, 2006).

WHY IS HEALTH LITERACY IMPORTANT?

The published literature identifies six general themes that help determine why health literacy is important for population health: (Mayagah K, Wayne M. 2009)

1. The large numbers of people affected with disease
2. Poor health outcomes
3. Increasing rates of chronic disease
4. Health care costs
5. Health information demands and
6. Equity.

Health literacy is very much needed as health care communication appears in a variety of ways; like conversations with health care professionals, prescription and over-the-counter medication, Appointment slips, Informed consents, Discharge instructions, Health education/promotion materials, Insurance/Medicare applications and other medical and health information. Health literacy helps to have good patient–practitioner relationship and makes the patient involvement in decision making as well (Health Literacy Review, 2013).

Levels of health literacy: Three distinct levels of health literacy as follows: (Nutbeam D, 2000)

Functional: basic skills in reading and writing necessary for effective functioning in a health context.

Interactive: more advanced cognitive literacy and social skills that enable active participation in health care.

Critical: the ability to critically analyze and use information to participate in actions that overcome structural barriers to health.
Nutbeam highlighted that the health literacy construct has emerged from two distinct perspectives – one which sees health literacy as a public health challenge and crisis (a ‘clinical risk’); and the other which views it as a public health goal or outcome (a ‘personal asset’) (Nutbeam, D, 2008).

An integrated conceptual model of health literacy:
Number of conceptual models of health literacy are present, (nearly 12 models) none of them can be regarded as sufficiently comprehensive to line up with the evolving health literacy definitions and competencies they imply. (Nutbeam, D, 2008, Protheroe J, Wallace L, Rowlands G, DeVoe J., 2009) This might be due to not sufficiently grounded in theory in terms of the notions and concepts included, not integrated the components included in “medical” and “public health” literacy models except Nutbeam’s (Nutbeam D, 2000) and Manganello’s, (Manganello JA, 2008), its different dimensions. Most of the models have failed in explaining the pathways linking health literacy to its antecedents and consequences like impact on health service use, health costs and health outcomes. Integrated model of health literacy combines the qualities of a conceptual model outlining the main dimensions of health literacy and a logical model showing the proximal and distal factors which impact on health literacy, as well as the pathways linking health literacy to health outcomes. The core of the model shows the competencies related to the process of accessing, understanding, appraising and applying health-related information. According to the ‘all inclusive’ definition this process requires four types of competencies: (Nutbeam D, 2008)

(1) Access refers to the ability to seek, find and obtain health information

(2) Understand refers to the ability to comprehend the health information that is accessed

(3) Appraise describes the ability to interpret, filter, judge and evaluate the health information that has been accessed

(4) Apply refers to the ability to communicate and use the information to make a decision to maintain and improve health.

Each of these competences represents a crucial dimension of health literacy, requires specific cognitive qualities and depends on the quality of the information provided: (Nutbeam, D, 2008; Magasi S, Durkin E, Wolf MS, Deutsch A., 2009) obtaining and accessing health information depends on understanding, timing and trustworthiness; understanding the information depends on expectations, perceived utility, individualization of outcomes, and interpretation of causalities; processing and appraisal of the information depends on the complexity, jargon and partial understandings of the information; and effective communication depends on comprehension. The competences also incorporate the qualities of functional, interactive and critical health literacy as proposed by Nutbeam (Nutbeam D, 2000; Sørensen K, 2012).

<table>
<thead>
<tr>
<th>Health care</th>
<th>Understand information relevant to health</th>
<th>Appraise, judge or evaluate information relevant to health</th>
<th>Apply or use information relevant to health</th>
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</thead>
<tbody>
<tr>
<td>Access/obtain information on medical or clinical issues</td>
<td>Ability to understand medical information and derive meaning</td>
<td>Ability to interpret and evaluate medical information</td>
<td>Ability to make informed decisions on medical issues</td>
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<tr>
<th>Disease prevention</th>
<th>Ability to understand information on risk factors</th>
<th>Ability to interpret and evaluate information on risk factors for health</th>
<th>Ability to judge the relevance of the information on risk factors</th>
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<tr>
<th>Health promotion</th>
<th>Ability to update oneself on determinants of health in the social and physical environment</th>
<th>Ability to interpret information on determinants of health in the social and physical environment and derive meaning</th>
<th>Ability to make informed decisions on health determinants in the social and physical environment</th>
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</table>
MEASURING HEALTH LITERACY

(i) Tools measuring functional health literacy: Two most commonly used health literacy instruments are; [Sian-Smith, Dr. Kirsten. 2012]

- Rapid Estimate of Adult Literacy in Medicine (REALM)
- Test of Functional Health Literacy in Adults (TOFHLA).

The REALM measures the ability to recognize and pronounce a list of common medical words typically used in patient information materials (125 items for the longer version; 66 items for the shortened version), arranged in a series of columns based on the number of syllables they contain. It takes approximately three to five minutes to administer and mark (one to two minutes for the shortened version). Raw scores are then converted into reading grade levels corresponding to four different levels of US high school achievement (Sian-Smith, Dr. Kirsten. 2012; Davis TC, 1991; Davis TC, 1993).

In contrast, the TOFHLA (which is available in English, Spanish and Hebrew, and recently has been adapted for Australian and British populations) measures a person’s ability to read and understand extracts (presented using prose passages and numeric information) taken from several patient education materials (Parker RM., Baker DW, Williams MV, Nurss JR., 1995; Barber MN, 2009). The test comprises of a reading comprehension and numeracy assessment, and takes approximately 18-22 minutes to administer and score (7-10 minutes for the abbreviated version). The numeracy component (a 17-item test) involves responding to oral questions about 10 different health care scenarios, using a series of prompt cards. Tasks for this section include following instructions for how and when to take medication, interpreting results from a blood glucose reading, and determining eligibility for financial health care assistance. The literacy component (a 50-item test) uses a Cloze method, where participants are provided with three health-related text passages (a standard informed consent form, rights and responsibilities regarding Medicaid, instructions in preparation for an X-ray procedure). Throughout each passage, there are one or two words missing from each sentence, with four possible replacements. For this task, participants are required to read the prose passages and identify the most appropriate word to fill in the blank space. The maximum score for this test is 100, with equal weighting for the literacy (50 marks) and numeracy (50 marks) elements. Participants are classified into one of three health literacy categories, depending on their final TOFHLA score. These are as follows: (1) Inadequate health literacy (unable to read and interpret healthcare related texts; scores between 0-59); (2) Marginal health literacy (has difficulty reading and interpreting health care texts; scores between 60-74), and (3) Adequate health literacy (can read and interpret most health care texts; scores between 75-100). (Sian-Smith, Dr. Kirsten. 2012; Parker RM., Baker DW, Williams MV, Nurss JR, 1995; Barber MN, 2009).

Both the REALM and the TOFHLA measure skills at the individual level, and focus on specific areas that are thought to indicate how easy (or difficult) a person may find reading and understanding materials in future health care situations (Nutbeam, D, 2008; Sian-Smith, Dr. Kirsten. 2012; Baker DW, 2006).

The Health Activities Literacy Scale (HALS) (incorporated as part of the National Adult Literacy Survey, conducted in the US) attempts to provide a broader understanding of how well a person uses information, across a range of health care contexts, including those outside of the clinical setting (Educational Testing Service, 2006). These include: health promotion, health protection, disease prevention, health care and maintenance, and systems navigation. While the HALS assessment is more comprehensive than the REALM and TOFHLA, it would be impractical to use it in most research projects as it takes up to one hour to administer. On the other hand, the REALM and TOFHLA are also limited in that they involve relatively undemanding tasks. For example, Fagerlin, Zikmund-Fisher et al. (2007) point out that the items used in the numeracy section of the TOFHLA (e.g. following medication instructions, working out the date and time of a doctor’s appointment) do not give a sense of how well an individual would be able to comprehend more complex quantitative information, conveying risks and probabilities, (e.g. concept of relative and absolute risk reduction, or the outcomes of various treatment or screening options) (Sian-Smith, Dr. Kirsten. 2012; Educational Testing Service, 2006).

One potential new screening tool is the Newest Vital Sign (NVS), which places greater emphasis on the ability to apply quantitative skills to understand health information (Weiss BD, 2005). The task takes around 3 minutes to complete, and involves a form of health information that people may be more familiar with – a food nutrition label on an ice cream container. It requires the participant to locate information (reading and comprehension skills), calculate percentages (numeracy skills), and use abstract reasoning skills to work out if a type of ice cream should be avoided because of a peanut
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allergy. The NVS has good correlation with the REALM and TOFHLA.

More recently, the TOFHLA and REALM instruments have been used in general population based surveys to establish the prevalence of inadequate functional health literacy in the adult community. In random population surveys in the UK approximately 11% were considered to have either marginal or inadequate health literacy, as measured by the TOFHLA. (Von Wagner C, Knight K, Steptoe A, Wardle J, 2007) The Australian survey also showed that around 7%, 11% and 26% of the general population demonstrated less than adequate health literacy skills according to the TOFHLA, REALM and the NVS respectively (Barber MN, 2009).

(ii) Self-reported measures of health literacy: It’s a person’s perceived ability to read and make sense of health information (both text and numeric). Three questions, in particular, have shown to be useful in detecting adults with inadequate health literacy. However, this measure has not been found to be good at detecting people with marginal literacy. The items are: (1) ‘How often do you have problems learning about your medical condition because of difficulty understanding written information?’ (2) ‘How confident are you filling out medical forms by yourself?’, and (3) ‘How often do you read hospital materials?’ (Sian-Smith, Dr. Kirsten. 2012, Chew LD, Bradley KA, Boyko EJ, 2004). There is also evidence that just asking one question (i.e. ‘How often do you need to have someone help you when you read instructions, pamphlets, or other written material from your doctor or pharmacy?’) is an effective way of identifying individuals with inadequate and marginal functional health literacy. (Morris NS, MacLean CD, Chew LD, Littenberg B,2006; Wallace LS, Rogers ES, Roskos SE, Holiday DB, Weiss BD, 2006)

CHALLENGES OF MEASURING HEALTH LITERACY

Existing health literacy tools (e.g. the REALM, TOFHLA and NVS) have been developed and validated by researchers. To a large extent these instruments derive from general literacy tests, and their content substituted with health-related material typically encountered in a clinical context. These tools assess related, but different constructs of health literacy and use different thresholds for indicating inadequate health literacy. As such, it is difficult to directly compare performance on one instrument with another as the proportion of participants classified as having inadequate health literacy varies between measures, and some tools appear to more demanding than others (Sian-Smith, Dr. Kirsten. 2012; Barber MN, 2009). No tools have been developed to measure health literacy skills at the interactive and critical level, to fully tap into the multifaceted nature of this construct (Ishikawa H, Yano E, 2008).

Oral health literacy: The literacy barrier to oral health has been largely invisible until recently because it was seldom recognized and poorly understood and many healthcare providers could not address the literacy needs of their patients. (Rerndon GT, 2010).

Oral health literacy, as defined by Healthy People 2010, is “the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate oral health decisions” (Schiavo JH, 2011; U.S. Department of Health and Human Services, 2000; U.S. Department of Health and Human Services. Oral health in America, 2000), Study conducted by American Dental Hygienists’ Association (ADHA) and Institute of Medicine (IOM) committees on oral health, which comprised of dental hygienists, dentists, nurses, physicians, epidemiologists, and health promotion experts revealed that patient’s literacy is a factor to be evaluated to determine a patient’s level of general or oral health risk (American Dental Hygienists’ Association, 2008). Dentist and dental staff are in unique position to help patients with low oral or general health literacy, thus empowering them to active role in their oral healthcare (Chopra A, Rao NC, Gupta N, Vashisth S, 2013).

Signs of limited health literacy: Patient might show little or no interest in written documentation, such as pamphlets or health history forms, express frustration or impatience when encouraged to use printed materials, Take long time filling out forms and return them incompletely or incorrectly completed or may take home to fill, or give excuses like forgot their glasses at home or depends on friend or family members for his appointments or prescriptions (Baker DW, 2006; Schiavo JH, 2011; Barrow SL, 2012; Hasnain-Wynia R, Baker DW, 2006; Cornett S, 2009). Important tools used to access oral health literacy have been depicted in table 2.
Table 3. Important tools to access oral health literacy

<table>
<thead>
<tr>
<th>Health literacy assessment tool</th>
<th>Developed by</th>
<th>Year</th>
<th>Details</th>
<th>Time taken</th>
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<tbody>
<tr>
<td>Oral Health Literacy Instrument (OHLI)</td>
<td>Dania A. Sabbahi, Herenia P. Lawrence, Hardy Limeback and Irving Rootman</td>
<td>2009</td>
<td>Comprehension section: 38-item test with words omitted from one passage on dental caries and another on periodontal disease. Numeracy section: 19 items to test comprehension of directions for taking common prescriptions associated with dental treatment, post extraction instructions, and dental appointments. Oral health knowledge test: 17 items</td>
<td>45 min</td>
</tr>
<tr>
<td>Test of Functional Health Literacy in Dentistry (TOFHLiD)</td>
<td>Debra A. Gong, Jessica Y. Lee, R. Gary Rozier, Bhavna T. Pahel, Julia A. Richman, William F. Vann Jr.</td>
<td>2007</td>
<td>Text passages and prompts related to fluoride use and access to care to assess reading comprehension and numerical ability</td>
<td>30 min</td>
</tr>
<tr>
<td>Rapid Estimate of Adult Literacy in Dentistry (REALD-99)</td>
<td>Julia A. Richman, Jessica Y. Lee, R. Gary Rozier, Debra A. Gong, Bhavna T. Pahel, William F. Vann, Jr.</td>
<td>2007</td>
<td>Longer version of REALD: 30—include the same 30 words included in REALD—30 and 69 new words</td>
<td>5-10 min</td>
</tr>
<tr>
<td>Rapid Estimate of Adult Literacy in Dentistry (REALD-30)</td>
<td>R. Gary Rozier, Shoou-Yih Daniel Lee, Deborah Bender, Rafael E. Ruiz</td>
<td>2007</td>
<td>Word recognition test: 30 common dental words with various degrees of difficulty</td>
<td>5-10 min</td>
</tr>
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IMPROVING ORAL HEALTH LITERACY (Schiavo JH., 2011; Barrow SL. 2012; Ong LM, de Haes JC, Hoos AM, Lammes FB., 1995; Pfizer, 2013; Horowitz AM, Kleinman DV., 2008; Andrulis DP, Brach C., 2007; Parikh NS, Parker RM, Nurss JR, Baker DW, Williams MV, 1996; National Institute of Dental and Craniofacial Research, 2005)

1. Role of Communication: Communication is one of the important parameters that can help in improving literacy. Achieving clear communication with patients involves the following:

a. The amount of information initially given to dental patients and public should be limited to what the patient needs to know as opposed to what is good to know. This includes limiting the number of messages delivered at one time, which in turn will reduce the informational burden and make the communication more effective.

b. Use simple language with patients with low health literacy by trying to define technical terms and instructions in lay language, e.g., cavities as opposed to caries or gum disease as opposed to periodontal disease.

c. Teach–Back Technique: The patient is asked to explain to the dentist a procedure or concept he/she has just tried to explain to them.

d. Consider culture and language: It is necessary to encourage and develop educational opportunities for increased cultural competence.

e. Maintain a “shame-free” environment; this includes patients should be offered assistance and staff should never try to single out patients they believe have low health literacy skills.

2. Receive health literacy training: Dentist should receive training, which should include how to collect assessment data, when and how to use interpreters, and how to engage in cross-cultural and clear communication.

3. Educate all team members within the organization to recognize and respond appropriately to patients with literacy and language needs.

4. Use supplemental interventions where appropriate, like models, pictures, and short videos to explain treatment and preventive procedures.
Health Literacy Review, listening, and reading sets and missions of non-conducive to discussion: priority. Encourage family participation. 

Plan what you are going to say: Logical order and one step at a time.

Define new health care terms: Explain any and all acronyms

Verify understanding: Restate and rephrase in a way that the patient understands, but it isn’t condescending.

Establish an environment conducive to discussion: Select a quiet place where one can sit near the elder. Speak clearly allowing time for the elder to process the information.

Organize your message: Omit extraneous information and repeat the most important information.

Adjust to the needs of the patient: Be respectful of the need for silence always watching, listening, and reading the patient. Choose your words carefully!

Encourage active participation in appointments: Ask the patient to write down concerns or make lists. Be sensitive that many older adults will be reluctant to ask questions of people in authority. Encourage family participation.

Pay attention to non-verbal communication: Try to make sure the patient encounter is welcoming and respectful.

COLLABORATION/ CONSORTIA AND USE OF CONVERGENCE TECHNOLOGY TO PROMOTE HEALTH LITERACY (Maitrayee Ghosh, 2013): As stated in UNESCO Library Manifesto, the following key missions related to information literacy, education and culture should be at the core of public library services:

- Creating and strengthening reading habits in children from an early age
- Facilitating the development of information and computer literacy skills
- Supporting and participating in literacy activities and program for all age groups, and initiating such activities, if necessary.
- Providing adequate information services to local enterprises, associations and interest groups
- Supporting both individual and self-conducted education as well as formal education at all levels

Public libraries have potential to provide health information within the community. However, more thought is needed as to the format and quality of content; Information professionals serving in public libraries need to create tailor made information in accordance with the community need. Informational and emotional support can affect personal retrieval capacity; emphasis will be given on e-learning to provide health education through telemedicine which can make available specialized health care to rural women through information and communication technology (ICT).

In this digital age through mobile gadgets and social networks with 24/7 access has tremendous potential to empower under privileged group. All the public libraries/village resource centers can contribute to the development of databases and customize information according to community need.

HELP - Health Education Library for People (http://healthlibrary.com/aboutus.htm) is one of the free health library situated in Fort, Mumbai. It is one of largest patient education center housing more than 11,000 medical books on almost all aspect of health and diseases, along with pamphlets, health care magazines, with an exhaustive audiovisual section. The online health Care directory can be searched under the categories: Doctor, Hospital, Blood Bank, Pharmacist, chemist and so on. My Health Pedia - the online health wiki is available in Hindi, users can share expert opinion, case histories & personal experiences.

CDAC a premier R&D institution of Government of India is working to develop Hospital Information System (HIS), one of the most promising applications of information technology in the health care sector on telemedicine, there are several examples of Academic libraries consortia in India to share resources on medical sciences, for example a consortium, Health Science Library and Information (HELINET) (www.rguhs.ac.in/HELINETHOSTCONSORTIIM/home holinethost.htm) is the medical library consortium in India, initiated by Rajiv Gandhi University of Health Sciences (RGUHS), Karnataka. The ICAR e-consortia (http://icmr.nic.in/icmrnews/econsortia.htm) Ratnakar et.al (2009) the consortium of Indian Council of Medical
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Research (ICMR) for sharing resources of its medical libraries among its 25 institutes, “ICMR with the help of Informatics”. Satellite based teleconferencing for formal and non-formal education has been operational since 1992 at a national and regional level. These efforts have culminated in the launch of GyanDarshan, a dedicated educational satellite to cable educational television channel and GyanVani, dedicated educational radio project. The government of India is planning a mobile based information dissemination program for disseminating health promotion messages with an objective to reposition the mobile technology from a mere communication system to an instrument of empowerment of the community and take health care services at the door step (Maitrayee Ghosh, 2013).

CONCLUSION

Health Literacy as a major health investment and health development strategy needs long term commitment, strong partnerships and powerful spokespersons. Improving health literacy in a population involves more than the transmission of health information, although that remains a fundamental task. Helping people to develop confidence to act on that knowledge and ability to work with and support others will best be achieved through more personal forms of communication, and through community based education outreach. If we are to achieve the ultimate goal that is reflected in that definition of health literacy trying to promote greater independence and empowerment among the individuals and communities we work with – we will need to acknowledge and understand the political aspects to education, focused on overcoming structural barriers to health.

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