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Health Literacy, Conceptual Analysis for Disease Prevention

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ABSTRACT

The capacity and competence to understand and use health information to make informed choices to make decisions is critical to maintain health. This capacity and competence, called health literacy, is affected by culture, language, trust, and the context in which the information is communicated. Improvement in health literacy involves creative solutions to translating health promotion to terms that are meaningful in the context of peoples' lifestyles. Researchers in the public health sector are called upon to advance the science of improving health in vulnerable populations. However gaps in applying the essential concept of health literacy in population studies may impact the significance of the results. This concept analysis may assist researchers to integrate effective models of health literacy toward the development of effective health promotion studies, and ultimately, improved health states, especially in vulnerable populations.

Keywords: Health literacy, Concept, Prevention

Background

Health literacy is a concept which is relatively new to research in public health, social science, nursing and medical literature. Healthy People 2020¹ defines health literacy as the degree to which individuals have the *capacity* to obtain, process, and understand basic health information and services needed to make appropriate health decisions¹. The World Health Organization addresses the cognitive and social skills to determine the *competence* to access and use information to promote and maintain health². Inadequate health literacy is linked to an increased risk of hospitalization, inconsistent follow up care, poor medication adherence, and high mortality rates^{2,3}. According to the US Department of Education, only twelve percent of US residents are health literate⁴, and this leads to fewer patient choices, safety risks as well, and an increased rate of hospitalizations⁵. Health literacy concepts emerge from theories of

Social Exchange, Social Cognitive and Self Efficacy^{6,7}. Nursing researchers have contributed to the concept of health literacy by including the constructs of capacity and competence presented by Bandura^{8,9,10}. These constructs are affected by culture, context, interaction, trust, and autonomy^{8,9}. Included in this review are interdisciplinary and nursing quantitative and qualitative studies, exploring health literacy concepts, and measurement of health literacy in diverse and vulnerable populations as well as in patients with chronic diseases^{8,9,10,11,12,13}.

Theoretical Framework

Over the past two decades, health literacy has been increasingly identified as a critical factor in effective interdisciplinary health care^{11,12,13,14,15,16,17}. A single explanatory model or theoretical construct of health literacy does not reside in one health

discipline, but is shared between social sciences, psychology, public health, applied linguistics, medicine, psychiatry and nursing^{10,12,18,19}. The capacity of an individual to become empowered to manage their health is affected by culture, language, trust, and the context in which the information is communicated^{15, 20,21}. Effective communication of health information is therefore an essential skill set for all health care providers, which will in turn enable patients to make informed choices regarding their health²⁰.

Significance of Health Literacy to HealthCare Professionals

The need to improve health literacy across diverse populations has been outlined in several US national surveys and reports, indicating that adults in many industrialized nations have low-level literacy skills, thereby limiting productive participation in the economy and in society²². Low levels of health literacy are associated with infrequent use of preventative services, poor understanding of medical conditions and treatment, and resultant non-adherence to medical instructions, and ultimately, increased morbidity and mortality rates, as well as higher costs for health care³.

In the U.S., initiatives such as the National Action Plan to Improve Health Literacy seek to use the concept of health literacy in key initiatives of public health policy in the Healthy People 2020 agenda, and the Joint Commission for Hospital Accreditation^{5,23}. These goals span across health care disciplines, and are generally relevant at the individual organizational level. However, no defined strategies for implementing an overall action plan are outlined, leaving much of the necessary work of improving health literacy to individual health care organizations²³. As patient educators in both public health and

health care organizations, nurses and public health professions have a unique opportunity to expand the current state of the science in health literacy, and impact morbidity and mortality rates among the populations they serve.

Historical Perspectives

Theoretical underpinnings for health literacy exist in social exchange theory, social cognitive theory and self-efficacy theory, all of which address rationale for individual social and personal practices^{6,7}. For example, social exchange theory defines social change as a continuum of negotiated exchanges between parties by the use of expected gain in reputation and influence on others, with a focused movement of resources as a result of these interactions⁷.

Social cognitive theory emphasizes the importance of observing and modeling a set of behaviors, attitudes and emotional reactions of others, and also defines human behavior in terms of a continuous interaction between cognitive, behavioral and environmental influences⁶. Social cognitive theory states that newly witnessed behavior may potentially change a person's perspective and the influence of personal health belief systems has the capacity to impact individual life events in a meaningful fashion⁶. Self-efficacy theory incorporates the constructs of *self-reflection*, *motivation*, a *sense of well being*, as well as a *belief* in a *capability to attain goals* and *accomplish necessary life tasks*. Capacity and competence development in self-efficacy are dependent not only on the individual, but available systems and the complexity of individual demands in the environment⁶.

Analysis of Health Literacy Theory

Health literacy translates into the skills to maintain or improve health. These skills may be categorized as: cognitive (knowledge), behavioral (functional), advocacy (proactive), and existential (spiritual), and incorporates basic skills such as reading, writing and numeracy, and foster the ability to effectively analyze, communicate and question existing information in order to make sense of life with uncertainty and illness^{19,24}. Health literacy according to Nutbeam^{16,17} entails three distinct levels: Level I; functional literacy, Level II; interactive health literacy, and Level III; critical literacy^{25,26}. Level 1 refers to an ability to apply basic health literacy skills, such as reading and understanding medication labels. Level II involves use of cognitive skills and operate in a social environment supports social participation in health-related issues in the community. Level III health literacy incorporates the ability to evaluate health issues, determine the challenges and advantages of specific issues, recognize the potential benefit of a particular strategy, and offer advice at the community level. At each level of health literacy, successfully completing tasks to maintain or improve health requires specific skills. These skills require a capacity for understanding health information within a given perspective or belief system, and an empowered proactive approach to achieving health related goals, which may be identified as competence. This may be the point at which most clinicians fail, as the expertise of the clinician in addressing each level may not be adequate.

Other components, such as culture and life circumstances, access to health care and demonstrated individual understanding of health care practices, community social support, trust, income, education, and occupation are thought to significantly

contribute to unique capacity to become health literate among vulnerable groups^{27,28,29}.

Related Concepts

The three level health literacy model established by Nutbeam^{16,17} has been widely adopted to support current health literacy studies. Links have also been established between health literacy and the concept of social capital. Social capital refers to the existence of community based social organizational networks, norms and social trust networks that people can draw upon to solve common problems²⁶. The elements of social capital are essential contributors to health literacy, and have been linked to income, environment, education, and occupation²⁷. Evans and Stoddard³⁰ developed an interactional model to define the individual, social and physiological determinants of health (social and physical environment, genetic endowment, individual responses, behavior, biology, health and function, disease, access to health care, prosperity and well being). Health literacy frameworks, although relatively new, are evolving rapidly. Although Nutbeam's health literacy framework^{16,17} has evolved over the past 10 years, current models seek to integrate several health literacy components into diverse, multifaceted studies among populations identified as vulnerable¹¹. Existing models within the public health sector address health literacy among three broad areas: Access and utilization of health care, the provider-patient interaction, as well as capacity and competence in patient self-care activities¹¹. Health literacy studies should embrace the complexity of disease specific healthcare information, and the effect of race, ethnicity, socioeconomic status, education, linguistics and accessibility to healthcare information, to the ability to navigate the health care system. Moreover, the impact of

effective versus ineffective oral exchange of health information, the communication skills of the health care provider, and the degree to which a patient and family are able to actively engage in health promotion activities are critical variables for future health literacy studies^{13,31}. Not only are patient factors significant in improving health literacy, but cultural and linguistic competency of the provider in the delivery of health related information is instrumental in improving health literacy and ultimately reducing health care disparities³¹. These models may provide framework toward the development of innovative pedagogical health literacy models in the future. However, the ability to combine social and individual constructs of attention and retention, and competence, capacity and motivation within social and community demands and social norms into effective learning models has yet to be developed¹³.

Methodological Approaches

Health literacy has emerged as a critical concept in the delivery of health care, curriculum development, and empiric interdisciplinary research, including public health, nursing, medicine, psychology, sociology and epidemiology. Associations have been established between levels of health literacy and mortality rates^{3,32}. A comprehensive literature search of several data bases were conducted using CINAHL, PsychInfo, ScienceDirect, Cochrane Register, Ovid SP, ProQuest, and Google Scholar, as well as tracking citations of identified research published after 2005. The following terms were used to search the existing empiric qualitative and qualitative literature: health literacy, health knowledge, health literacy promotion, health literacy capacity and competence, and individual health skills.

Two qualitative studies explore health literacy from the patient perspective, using

phenomenology and focus group qualitative methods³³. Quantitative empiric studies measure health literacy in vulnerable populations, or measure provider competence in health literacy, using a validated and reliable health literacy instrument and were included in this analysis if they met criteria for descriptive, correlation, quasi-experimental or experimental research as defined by³³. Quantitative studies chosen for this analysis measured the level of health literacy among vulnerable populations, or the differences in the perception of appropriateness of patient educational methods from the perspectives of both the provider and patient.

Qualitative Studies

Two qualitative studies that explored the concept of health literacy from the patient perspective were selected for review. Using a phenomenological design³⁴, Australian patients identified seven abilities critical to health literacy: The ability to seek health information, knowing where to find health information, verbal communication skills, assertiveness, literacy skills and the capacity to retain information and apply skills. In another study, four focus groups in a US multi-site sample of 25 HIV patients³⁵ utilized open-ended questions exploring the participant's understanding of medication adherence, discussions with health care providers, and problems with taking medications. Consistent themes emerged among the four independent groups; respondent understanding of adherence, recall, format for questions, visual aids and instrument administration³⁵. Patient centered phenomenological studies and focus groups may guide the future development and refinement of existing health literacy measurement tools, especially in identified vulnerable populations.

Quantitative Studies

In two landmark studies^{15,32}, populations were identified with low levels of health literacy, such as adults living in poverty, or adults who did not complete high school, as well as patients over the age of 65 years^{15,32}. Higher average health literacy scores were discovered in women than in men, and among White and Asian/Pacific Islander participants than Black, Hispanic, American Indian/Alaska Natives and multiracial adults^{36,37}. Subsequent studies in health literacy have sought to address the needs of vulnerable populations, and to explore evolving instrumentation to measure health literacy as well as the gaps that prevent patients from understanding their health^{12,36,37,38}.

Instruments Used To Measure Health Literacy in Quantitative Research

Effective measurement of health literacy is dependent on a reliable and valid instrument. The Test of Functional Health Literacy in Adults (TOFHLA) and National Assessment of Adult Literacy (NAAL), The Rapid assessment of literacy levels (REALM), Wide Range Achievement Test (WRAT-4), Short TOFHLA (S-TOFHLA), and the Newest Vital Sign (NVS) have been widely used to measure health literacy^{39,40,41,42,43}.

Standard methods of patient teaching involve active 1:1 clinician teaching and passive patient listening. However, clinician education and training are paramount to the successful improvement in health literacy, and although physicians rate their proficiency in discussing cancer risk as 'high', the patient evaluation of the experience was only 'satisfactory to good'³⁷. The degree of interaction between a health provider and their patient is inherent in the ability to translate specific health care information into active patient engagement in health management, and may also be the optimal method to assess health literacy^{12, 17, 37}. A new term, called interactive health literacy, is defined by the degree of active

questioning behaviors, rather than provider centric information delivery, and may create an opportunity for paradigm shifts in health care promotion. The Measure of Interactive Health Literacy (MIHL) addresses the effectiveness of oral information exchange. This instrument differs from written assessments, as the examiner offers scripted messages, designed to elicit information seeking utterances (ISUs) by the learner¹². During learning sessions, the participant is invited to question information presented to ensure comprehension of material presented, and shows promise in new avenues of learning patterning¹².

Vulnerable Populations

Patients are identified as vulnerable if they are over 65 years of age, or under 18 years of age, have limited access to health care due to physical or mental capacity, limited resources, or have an existing health condition⁴⁴. Much of the recent research in health literacy has been conducted primarily to address these challenges and test new strategies, with a focus on the improvement of health information, communication and decision-making, as well as cultural appropriateness, accessibility and appropriateness in various disease states.

The challenges of poor health literacy affect health outcomes specifically in vulnerable populations. Several simple life skills may be missing in patients with low levels of health literacy. Studies addressing basic tasks required to maintain health, such as completing insurance forms correctly, assessing health care costs, and interpreting medication and food levels show promise in understanding interactive health literacy. In ongoing US cross sectional studies, the need is immediate to improve health literacy, as it is evident that children of parents with inadequate health literacy are also at risk to be

obese, be without adequate immunizations, and not have health insurance⁴⁴.

Disease specific health literacy as well as other related problems such as depression and trust in health care providers are essential factors in those known to be at risk for living with chronic conditions such as diabetes. For example, inadequate patient understanding of diabetes was found to explain variances in HbA1c levels (adjusted $R^2 = 0.125$, $F(4.916)$, $p < 0.003$)⁴⁵. Strong positive correlations were found between health literacy and diabetes knowledge ($\rho = 0.296$, $p < 0.01$), and as depression increased, so did the HbA1C ($r = 0.335$, $p < 0.01$), while as trust increased, HbA1c decreased ($\rho = -0.426$, $p < 0.01$)⁴⁵. Moreover, a negative correlation was noted between diabetes knowledge and race ($\rho = -0.277$, $p < 0.01$), and a positive association between socioeconomic status and health literacy and diabetes knowledge ($\rho = 0.353$, $p < 0.01$)⁴⁵. In this study, trust in the nurse provider had the most significant impact on HbA1c level⁴⁶.

The relationship between health literacy and patient outcomes has also been shown in other disease specific conditions, such as HIV/AIDS. Gauchet⁴⁶ found that adherence to a medical regime is extremely important in HIV patients, and may be affected by the relationship with the provider, duration of treatment, severity of illness and personal values. Significant associations between adherence and patient beliefs about treatment ($X^2(120, N = 127) = 23.16$, $p = .001$), were discovered, as well as confidence in the physician and duration of treatment and illness ($X^2(124, N = 127) = 14.84$, $p = .001$)⁴⁶. Health literacy is also related to the frequency of medical care in HIV patients ($p < .002$)⁴⁷.

The Effect of Healthcare Provider Interaction

The ability of healthcare providers to impact health literacy and health behaviors in chronic states such as obesity is paramount, but obesity is addressed only 26% of the time by patients' healthcare providers⁴⁸. Various qualities of the healthcare provider, such as quality of counseling, provider training, type and complexity of counseling offered, attitude of the provider toward obesity, and the frequency of the contact with the provider, impact patient outcomes in obesity treatment^{49,50,51}. Jay⁵⁰ evaluated 23 resident primary care physicians and 37 of their patients in a New York City obesity clinic setting. Patients who demonstrated higher motivation toward losing weight had received more complete, patient centered, unbiased physician counseling, and each additional counseling practice was associated with higher odds of motivation to: Lose weight (OR 1.31, CI 1.1, 1.55), intending to eat better (OR 1.23, CI 1.06, 1.44), exercise regularly (OR 1.14, CI 1.00, 1.31) or eat better (OR 2.96, CI 1.03, 8.47)⁵⁰. These findings suggest that effective clinician training and negative or positive attitude regarding patient obesity education can dramatically influence patients' motivation to lose weight⁵⁰.

In a retrospective record review analysis of data from 686 patients in a nurse run wellness center, Kemper⁵¹ demonstrated that a stratified approach to weight loss counseling should be determined by the number of cardiovascular disease risk factors and the degree of overweight (normal, overweight or obese) and although 12% of patients are counseled for weight reduction, nearly half of overweight patients and 100% of obese patients should be counseled using the guidelines from the National Heart, Lung and Blood Institute. Significant differences in the occurrence of at risk blood glucose across three BMI categories were significant,

$X^2=30.045$, $p<.000$, as were the risks associated with high blood pressure, $X^2=31.257$, $p <.000$, physical inactivity, $X^2=34.571$, $p <.000$, and the presence of two or more CHD risk factors $X^2=31.633$, $p <.000$. This indicates that improving health literacy specifically geared to a patient's condition and using standardized criteria to guide practice is the most relevant method to impact patient outcomes⁵¹.

Health Literacy and Cardiovascular Disease

Health literacy in patients with high volume, high-risk cardiovascular conditions such as hypertension and congestive heart failure is essential to self-care, especially in the most vulnerable populations⁵². Two significant ongoing initiatives aimed at improving prevention and medication adherence are included in this analysis as emerging science in health literacy.

The first, the Black Barbershop Health Outreach Program (BBHOP), shows promise in the future of screening for diabetes and hypertension, as well as lifestyle recommendations⁵³. The primary aim of the BBHOP program is to identify African American men at risk for diabetes and hypertension in the community and to determine rates of screening. Through self-administered surveys including demographic, clinical and health behavioral data an evaluation of the population served in this health promotion initiative will gauge the potential for intervention studies in this setting. To date, BBHOP has extended screenings to over 7000 African American men in nearly 300 barbershops in over 20 cities across 6 states⁵³. Future studies will need to be conducted to evaluate the efficacy in the program in the actual reduction of blood pressure as a result of the intervention.

Secondly, Wild⁵⁴ will soon complete a three year randomized controlled trial evaluating the

efficacy of a multimedia intervention in increasing health literacy, medication adherence and reducing mortality in congestive heart failure patients. Variables under investigation in the study include the patients' ability to comprehend registration forms and instructions for diagnostic tests, as well as knowledge scores, patient satisfaction scores, and readmission rates or death within 90 days.

Synthesis of Methodological Approaches

Health literacy has been measured using a variety of tools, predominately those that incorporate reading comprehension and numeracy, and offers a solid foundation for future studies⁴⁸. The relevance of the patient provider interaction as well as the frequency of these interactions has been shown to dramatically impact adherence to various regimes to maintain health^{12,49}. However, patient perception and definition of health literacy skills as described in the qualitative studies varies somewhat from existing measurement tools⁴⁹. These constructs include competence, capacity, self-reflection, motivation, trust, a sense of well being, as well as a belief in a capability to attain goals and accomplish necessary life tasks. Ongoing studies^{53,54} reflect a movement toward measurement of these constructs and will contribute to our existing understanding of health literacy related behaviors.

Conclusions and Implications

Disparities in health outcomes exist across various populations by race, ethnicity, socio-economic status, age, educational level, and condition and are well documented.

Health literacy may be condition specific, especially in patients with a known morbid

condition or physical disability. Future health literacy studies may define disease specific elements of health literacy through the use of innovative, interactive measurement instruments. Trust in the health care provider, as well as community context demonstrate outstanding potential for improving both capacity and competence in wellness management. Future health literacy models should encompass culture, individual capacity and competence, degree of illness and physical or mental capacity, as well as frequency of medical care and trust in the health care provider. Additionally the frequency of medical care significantly impact adherence rates to medications, and may be more significant than written health literacy. Therefore, information provided to patients must represent the patient's written literacy level without the insertion of medical jargon, and be appropriate to the individual's cultural, cognitive and physical capacity. Interactive learning, and use of multimedia approaches may prove to be a much stronger vehicle for learning new health maintenance skills, and may be varied and condition specific. Guided interventions are required to address the gaps in health outcomes across various conditions in patients with inadequate health literacy and it is critical that demands on patients do not exceed their skills and abilities and level of education, especially in vulnerable, at risk populations. Nurse scientists and interdisciplinary health literacy researchers have unique opportunities to validate interactive health literacy models to best serve communities and families.

Conflict of interest: None to declare.

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