

# HEALTH LITERACY: CONCEPT ANALYSIS

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**Abstract:** **Aim:** To report findings from analysis of the concept of health literacy (HL) in an effort to clarify its meaning, decrease ambiguities associated with the use of this concept and promote the consistency in using this concept in Nurse practitioners (NP) primary care clinics and research.

**Background:** The concept of HL is relatively new and was identified a decade ago. HL was defined as individuals/patient's ability to understand health information and self-management care as they relate to individual health outcomes. It is imperative for Nurse Practitioners to gain a clear understanding of this concept. Clear understanding of this concept will help NPs to develop awareness of this concept and the role it plays in client health outcomes. Clarification of this concept is important, as it will aid the NP to assess all aspects of the defining attributes of the concept.

**Method:** The eight steps of the Walker and Avant (2005) method were used for the analysis of the aforementioned concept. The eight steps of Walker and Avant include the following: identification of the concept, conduct a literature review from a broad range of disciplines, identify the key characteristics or attributes of the concept, identification of the antecedents of the concept, identify the consequences, construct model case, construct contrary case, construct borderline case, and empirical will be applied. Literature from various disciplines was conducted utilizing Psych Info, CINAHL, OVID, Eric, Health Science ProQuest, Medical, Health Science and Nursing, Social Science literature databases, and government websites. Articles from 1974 to present were reviewed. Literature review searched was done by using the following keywords: health, health literacy, chronic disease, diabetes, humanities, psychology, concept analysis, and concept. The numbers of articles retrieved from the aforementioned databases were one thousand and Articles not including the attribute, antecedent, and consequences were included in the analysis.

**Findings:** Analysis of this concept showed, patients with adequate health-literacy skills are capable of making sound decisions regarding their health diagnosis and treatment regimen, and are able to navigate the complex health care system. Having adequate health-literacy on readings, numeracy, and comprehension skills also help patients to read and comprehend health information on chronic diseases that require self-management such as diabetes, asthma and hypertension. The antecedents of Health Literacy are literacy and other experiences that relate to health. Positive consequences of Health Literacy consist of improved quality of life, decrease frequency of hospital admissions, and improved interpretation of test results and improvement of health knowledge. Reading and numeracy skills, comprehension, the ability to use health-related information in an effort to make successful health-related decisions, such as understanding informed consent, taking medication as prescribed, reading and comprehending the food label, diet and calories management are the defining attributes of health literacy. Reduction in emergency room visits, reduction in complications from chronic disease, improved lab results and self-reported been confidence in disease managements, and reduced health care cost are the consequences of health literacy. Most the literature reviewed followed either the World Health Organization, AMA, and Healthy people 2020, definitions of health-literacy.

**Empirical referents:** The Test of Functional Health Literacy in Adults (TOFHLA), The Newest vital signs, and REALM, will be used to measure the proposed concept.

**Results:** The defining attributes are reading and numeracy skills, comprehension, the ability to make a health care related decision, and function adequately as a health care consumer. Consequences of HL consist of self-reported

improvement in quality of life, lower health-related cost, improved health knowledge, decrease use of emergency rooms and hospitalizations.

**Conclusion:** Health literacy analysis promotes improved HCP assessment skills. NPs need to assess patients HL levels in order to provide appropriate interventions to the patients. Proper identification of patients with low literacy or poor literacy and shame associated with low literacy will help NPs to use an appropriate method to deliver health messages to clients with low HL and there by improve clients' health outcomes as well as, reduce cost associated with low HL.

**Keywords:** health, health literacy, chronic disease, diabetes, humanities, psychology, health informatics, and concept analysis.

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## 1. INTRODUCTION

**Aim and Purpose of the study:** The aim of this study is to report the analysis of the concept of Health Literacy (HL), understand the multifaceted concept of HL and adequately apply it in nursing practice for positive patient outcomes. Assessment and recognition of HL is very important in primary care for making a sound diagnoses. NPs need to provide adequate HL assessment of their clients and provide interventions accordingly. Furthermore, NPs need to rethink the way information should be delivered to clients based on their HL status and find a way to improve patients' low HL levels.

### *Significance:*

Low Health Literacy is an issue in primary care nursing practice that warrants immediate attention by NPs. Forty- forty-four (40-44) million American adults (approximately one quarter of the US population) are functionally Health Illiterate, with another 50 million having marginal literacy skills (Speros, 2005).The above statistics simply means that there are quite a number of USA population who have difficulty reading and are unable to perform simple mathematical computations. Individuals may be literate within a context of familiar terms and content, but may have challenges when required to understand unfamiliar healthcare terminology.

One of the largest studies performed to date to study the prevalence of HL in the USA was done in two public hospitals. The study revealed that one third of their English-speaking patients failed to read and comprehend basic health-related material, sixty (60) percent could not comprehend a routine consent form, twenty-six (26) percent could not comprehend written information on an appointment slip and forty-two (42) percent could not understand written directions for taking medications (Spores, 2005). Estimated 90% of American adults lack basic health literacy skills (Institute of Medicine, 2012). (IOM). Low HL results from lack of knowledge about human anatomy and the disease process. An effect of lifestyle changes on health outcomes has been linked to poor disease management, increase hospitalization, poor medication adherence regimens (U.S. Department of Health and Human Services (DHHS, 2011).

Health Researchers suggested that HL increases with age, as evidenced by people over 60 years and older have challenges in reading and comprehending the instruction of self-medication management and reading instructions regarding doctor's appointments (Lanning and Doyle, 2010).

The National Center for Education (2006) reported that the prevalence of low literacy level is higher among Blacks, Hispanics and American Indian/Alaskan Natives when compared to White and Asian/Pacific Islander adults in the United States. The National Safety goals to address issues that may pose harm to patients and attempt the continuum created by the Joint Commission (JACHCO, 2012), stressed that health care providers should advocates for the patient safety. Therefore, NPs awareness of patient low health literacy level will help them to plan an effective way of delivering health information to them.

## 2. HISTORY OF HL CONCEPT

Health Literacy origin dates back to ancient Egypt and Greeks who shaped communication from oral to written expression (Eadie, 2014). In 1974, the HL concept was limited to note in the United States, when a paper raised awareness towards the Standards of health education in grade schools (National Network of Libraries, Libraries of Medicine, 2011). Health education initiative for patients attracted much attention from different disciplines. The first research on patient's health literacy level mentioned that patients have challenges in comprehending health care material. In the 1990's and 1990's, Doak and Root and stressed that there were problems with patients understanding health-care materials (Mancuso, 2008). In the same years, The Missouri Health Enrichment Learning Center, in conjunction with the Missouri Foundation of

Health, revealed that number of currently used patient education materials lack theoretical basis, therefore it failed to lead to positive patient outcomes (Nutbeam, 2009). Theories about health literacy were developed to guide the educational programs. Missouri Health Literacy initiative developed a theory –based logic model, which uses three tiers to provide information to the community and enhance awareness and at the same time, provides access to health care (Eadie, 2013). Nutbeam (2009) developed a theory model to guide health education programs. Nutbeam’s Health Literacy model focused on three levels (Functional, interactive, and critical thinking) with corresponding goals.

Leonard and Cecilia, Doak and Jane Root in the early 1980s demonstrated the gap between health education materials and peoples’ inability to understand those materials (Speros, 2005). Professionals from different health disciplines began to explore the health-related learning needs of populations with low literacy and formulating strategies to design health education program to accommodate individuals who cannot read. Finally, Robert Wood Johnson funded a two-year research study of doctors affiliated with Emory University in Atlanta, Georgia and University of California Los Angeles (UCLA) Medical Center in Los Angeles, California to study health literacy. The of their study aim was to determine individuals’ ability to successfully complete basic reading and numerical tasks that are required for appropriate decision-making in a health care environment (Spores, 2005).

### **3. DEFINITION OF THE CONCEPT/ LITERATURE SYNTHESIS**

The World Health Organization defines HL as “cognitive and social skills that determine the motivation and ability of individual to gain access to, understand, and use health information in ways that promote and maintain good health”. Health Literacy means more than being able to read pamphlets and successfully make appointments. By improving access to health information and their capacity to use it effectively, health literacy is critical to empowerment. (WHO 1998, pp.10). The WHO suggested that health promotion and health education are both independent variable and health literacy is an outcome or dependent variables of both health education and health promotion efforts. They also suggests that combination of advance cognitive, analysis, critical thinking, social skills which determine the motivation and ability of individuals to have access to, understand, and use information in such a way to, maintain and promote good health (WHO, 1998). Health communication skills will empower health care consumers in problem solving and important health-related decision-making.

American Medical Association (AMA, 2008) defined HL as “a constellation of skills including the ability to perform basic reading and numeracy tasks requiring functioning in the health care environment” (American Medical Ad Hoc Committee on health literacy for the Council on Science Affairs 1999, p.553). AMA’s definition of HL suggests that HL is the ability of individuals to apply reading, writing, and numeracy skills to health information materials in a health-care setting. However, the aforementioned definition, did not take into consideration of other environment or settings where nurses or other health care providers work, such as community and occupational health. This definition also, did not address the verbal communication, social interaction and the ability to act on health-related decision-making.

Healthy People 2020 defined HL 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 (US Department of Health and Human Services needed to make appropriate health decisions’(US Department of Health and Human Services 2000, p.11-20). In this definition, it suggests that individuals need an understanding of HL in order to make a sound decision related to health care. However, they did not recognize the health care industry as a contributor, and only relate to this issue as individual ability to be competent in acquiring adequate HL Level.

Student definition of the concept: Health-literacy is the ability of individual, family, and community to comprehend, reason, acquire numeracy skills needed to navigate the complex health care system and being able to adequately, manage disease, political and social communications and obtain health promotion measures to improve quality of life and life expectancy. Individuals need HL Skills for health-related decision-making such as participating in research project, signing informed consent, making health related decision for a family member who may be incompetent to make their own health decisions, and making recommendation to the political leaders in signing or proposing health care bills in the house of senate and House of Representatives.

Taking medication, both prescribed, over the counter, and alternative and complementary medication all require the numeracy skill to properly take the right dose of medication. Comprehension and reading will help individuals to understand the interaction between conventional medication and complimentary medication to avoid adverse effects of both medications and avoid drug interactions. The above definition included the family, individual, community health-

related decision making. In a family, parents, family members who are identified as the health related decision maker on behalf of another family member such as pediatric and geriatric populations. The NPs will need to assess the designated person's HL Status and intervene accordingly.

Library science and Information definition of the HL: "believe that one has the right to access and understand health information, in order to be the key determinant of the decision –making process as regards to their health care (Burnham & Peterson, 2005). Parker and Kreps (2005) suggest that from the library science view point, individual sees HL as an important skill in making various health-related decisions such as seeking the best available care and using health promotion measures'

Public health definition: "the personal, cognitive and social skills that detects the motivation and ability of individuals to gain access to, understand, use information to promote and maintain health (Nutbeam, 2000). This definition suggests that improving access to health information, comprehension of health information, will empower and improve the self-efficacy of individual in making adequate decision related to health care and function adequately as a good health care consumer.

Personal, cognitive, and social skills relate to being able to communicate effectively in any settings. Motivation in this definition relates to improve self- efficacy to manage those diseases that requires self-management, such as, diabetes, asthma, and cardiac related disease respectively. This definition is comprehensive and is a common priority of many health care providers in today's health care. (Mancus, 2008). This definition also reflected in the consequences of health literacy such as health care cost reduction, safety and decision –making to improve quality of life , improve life expectancy, and health outcomes. HL is also redefined by the Public Health professionals as the "wide range of skills and competencies that people develop to seek out comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life (Zarcadoolas et al, 2006). The definition totally reflects all the attributes and antecedents. It viewed the individual as an informed decision maker. Health educators, physicians use this public health definition and consider it as an outcome of health education and health promotion measures that measures health-related knowledge, attitudes, motivation, behavioral intentions, personal skills and self-efficacy((Manchus, 2008).

Nursing Definition: An extensive nursing literature Databases such as, CINAHL, Health source: (Nursing/Academic edition EBSCO, Ovid Nursing database, and Health and medicine, and nursing professional websites such as American Nurses Association, American College of Nursing Accreditation reviewed for this paper showed that nursing profession has no definition of HL. Infarct, most of the article used the IOM and the Healthy people 2020 definitions. Research showed that up until 2008, only one nursing article (Spores, 2005) was published on the concept (Mancuso, 2008). The contribution of nursing to health literacy concept and research is very limited (Mancuso, 2008). To date only three articles were found in the nursing literature that provided the analysis of this concept (Spores, 2005, Mancuso, 2008, Chang et al, 2009). The Merriam Webster Dictionary (2016) definition of HL (2016) does not have any definition of HL. It defined literacy as the ability to read, write and defined health as, condition of being well or free of disease, overall condition off somebody's mind.

Steadman's Medical Dictionary (2012), defined HL as "ability of members of the public to read, understand interpret health care information. This definition included the public, and not just an individual, and included that the patient will be able to read and interpret. Patients need to have reading and interpretation skills in order to understand their lab values and act on them such as, blood glucose result, blood pressure, temperature measurement, and read their prescriptions and dates for doctor's appointments. However, this definition did not consider the numeracy skills require to take medication properly. Being able to know the correct medication dose, frequency, and time all require the numeracy skills.

Taber's Medical cyclopedic Dictionary (2009) defined health literacy as 'the ability to understand the cause, prevention, and treatment of disease, the degree of communication that enhances the public's ability to obtain, understand and act on health-related information. This definition included most of the attributes and antecedents discussed. The definition considered the public, and that includes family, individual and communities. The public need to manage their disease process, being able to recognize symptoms of disease, and act appropriately. This will enhance early detection of chronic disease and prompt treatments. HL skills will help the public to seek health promotion and prevention measures.

#### 4. DEFINING ATTRIBUTE

Defining Attributes are the characteristics that are frequently associated with the HL concept (Walker & Avant, 1995).

The defining attributes of health literacy consist of numeracy skills, comprehension, the capacity to use information in health care decision making, to function as a health care beneficiary successfully. Reading skills involves various behaviors such as cognitive behavior, focusing attention, using contextual analysis to comprehend new terms, word recognition, organizing and integrating new information (Spores, 2005). Numeracy is defined as the ability to read and comprehend numbers and perform basic mathematic computation (Spore, 2005).

The Human Resources Development Canada (HRDC) 1997. P. 14) defined numeracy as knowledge and skills required in the application of mathematical operations. Comprehension is the ability to apply prior knowledge and context in reading process in an effort to make sense what is read and is the ability to understand the content of what is read and make sense of it. The reader is familiar with similar language based on the previous experiences that the reader have had with similar content. (Spores, 2005). All the literatures reviewed for this concept, reported that patients with adequate health literacy skills are well informed and are capable of making adequate decisions regarding their health care, while patients with poor or low health literacy lack the knowledge and ability to make sound health care related decisions.

### ***Model case***

Walker and Avant (1995) defined model case as a case that includes all the defining attributes of a concept. It is also a typically realistic example of the use of the concept. Below is a model case that contains all the defining attribute of the HL Concept. JB is a 50-year-old African American male who is active and have a high cognitive functioning level. JB completed a 4-year college education. His job requires him to read a great deal but he was hospitalized for an appendectomy. JB's lab was obtained for surgery workup and his glucose was elevated. Hemoglobin A1C lab was done to rule out diabetes.

The test result suggests that JB has pre diabetes. His mom has diabetes type 2, so, he has since read about diabetes on the Medline Consumer Information on the internet, which explains that diabetes is preventable or delayed among individual with prediabetes with exercise, diet- management, and metformin 500 MG twice daily (ADA, 2016). He talked to his Godson, who is a family Nurse Practitioner, and who told him to exercise five times daily, five times a week and to control his diet especially his carbohydrates.

He should maintain 1800-calorie diet and may need Metformin to prevent or delay the onset of diabetes type 2. His Godson, the NP helped him to calculate what a 1800-calorie diet 500 mg of Metformin twice a day and exercise by walking 30 minutes five days a week. He went to the physician for follow up and this time he asked questions about his hemoglobin A1C result interpretation, and other appropriate questions regarding exercise, complications of diabetes, health promotion, and disease prevention. He also informed the physician that he had made progress in changing his lifestyle. JB demonstrated adequate functional reading and numeracy skills by taking Metformin as prescribed, exercising and adopting the 1800 diet with glycemic control. According to the literature JB is functioning successfully as a health care consumer by adopting the health life style and keeping the doctor's informed of the progress he is making towards his health.

### ***Borderline case***

According to Walker (1995) defined borderline case as a case that lacks several of the defining attribute purposefully. DD is a 57-year-old African University Professor of English Language presented to the ER with a chief complaint of a profound weakness, difficulty breathing, polyuria, polydipsia, and polyphagia. He has never been hospitalized only goes to his health care provider for his annual physical and His job compels him to read extensively for professional development. His urine was positive for ketone and A1C was 8%. DD was diagnosed with diabetes ketoacidosis and hospitalization was required for IV insulin administration.

The nurse asked DD to sign the admission papers so that treatment could be initiated. He refused because he did not understand what insulin IV entailed and the risk of hospitalization as described in the admission form. He declined to take the IV insulin. He was also do an aerobic exercise for at least 150 mins/week to take metformin 500 mg twice a day, eat more vegetable, less fat, less complex carbohydrate and follow up with the doctor in two weeks. He interpreted his instructions as taking two tablets one time daily when the prescription is to take the medication one tablet twice daily, he exercised twice a week and did not do aerobic exercise as prescribed. He did not return for follow up.

Although DD is very literate, his behavior demonstrated a lack of health literacy skills. He is able to read the admission form but does not comprehend the meaning or significance of the suspected diagnosis and the necessary intervention. He does not understand or comprehend his prescription and took his medication incorrectly. The decision to decline the

admission and follow up is because of a lack of understanding of the seriousness of his condition. He did not function successfully as a health care consumer.

### ***Contrary Case***

Walker & Avant (1995) defined this case as a case that does not have any part of the defining attribute of the concept. Therefore, do not reflect the health literacy concept. NK is a 32 years old Caucasian female from rural West Virginia who completed high school and has poor communication skills. NK reads at a 4<sup>th</sup> grade level and she stammers when she is speaking. She has poor writing skills with words and letters are usually reversed. NK brought her 6-year-old daughter to the clinic with chief complaint of itchy eyes, a runny nose and she was diagnosed with an allergic rhinitis. Allergen tested was done and she was found to be allergic to coconuts and peanuts. NK is advised to stop giving her daughter coconuts and peanuts or any food that contained both. She is also advised to let school know about her daughter's peanut and coconut allergies. Peanuts and anything made with peanuts and coconuts. She was sent home with nasal drops and Claritin 10 mg per day.

NK assured the NP that she understood the prescription prior to leaving the clinic. She was asked to bring her daughter back to the clinic in one week for a follow up or to call. A few days later, she took her daughter to the emergency room with an allergic reaction. She admitted that she did not administered the nasal spray to the daughter as prescribed and gave her daughter cake made with coconut, and gave peanut butter sandwich with coconut juice for lunch. She did not administer the nasal spray to the daughter because she did not know how to use it. She gave the two tablets of 10 mg of Claritin a day. NK showed a clear example of a patient who is not health literate. She does not have adequate reading and numeracy skills, yet she told the NP that she understood the discharge instructions, when the truth is; she was ashamed to admit that she did not understand the instructions. She chose not administer the nasal spray and lacks the decision making skill to seek help in using the nasal spray. In this case she is unable to function as an unsafe health care consumer as she continues to feed the daughter peanut butter sandwich and coconut drink which she is allergic to.

### ***Antecedents***

Antecedents are events that precede the occurrence of the concept (Walker & Avant, 1995). The antecedents of health and literacy and health related experiences National Center for Education Statistics (1992, p.2) defines as "using printed and written information to function in society to achieve one's goals and to develop one's knowledge and potential". Meta cognitive skills associated with reading, comprehension and numeracy are included in this definition. Prior experience and exposure with illness and healthcare delivery systems as well as exposure to the medical terms are added to literacy. Individual cognitive framework must have some logical context of health care information. (Spores 2005).

### ***Consequences***

Walker and Avant (1995) defined Consequences as incidents that occur because of the concept. The consequences of health literacy that have been suggested by the reviewed literatures include: adequate self-reported health status, decrease health-related care cost, adequate health knowledge, decrease hospitalization and emergency room visit (Spores 2005).

### ***Empiric Referent***

The Empirical References are categories of actual phenomena that have to be present to demonstrate the occurrence of the concept (Walker and Avant, 1995, p.46). Empirical referents are classes or categories of actual phenomena that by their existence or presence demonstrate the occurrence of the concept itself (Spores, 2005). Empirical referent provides health care professionals and NPs with observable phenomena by which to measure levels of health literacy in a specific patient and for proper identifications of population with high risk. In 1993 (REALM: David et al, 1993) Rapid Estimate of Adult Literacy in medicine was developed to measure HL. REALM is a screening tool that test medical word recognition and pronunciation. It screens adult reading ability in health care. REALM can be administered in less than three minutes (IOM, 2012). It is very easy to use in a busy clinical setting (IOM, 2012). Sixty (66) medical terms patient is expected to be able to read in order to function effectively in his or her own health care is administered to patient. Scores of 0-66 words read and pounced correctly can be converted to four reading grade levels: grades 0-3(0-18 words), grades 4-6(19-44), grades 7-8(45-60 words), and grades 9 and above (61-66) (IOM, 2012). The REALM also reports high intra-subjects' reliability (0.97). In the year 1995, The Test of Functional Health Literacy in Adults (TOFHLA) was developed and used by the researcher to measure the phenome, (Parker et. al, 1995).

TOFHLA includes a 17-item test of numerical ability and a 50-item test of reading comprehensive (IOM, 2012). The

score of 75-100 on the TOFHLA represent empirical referent of health literacy (Spores, 2004). TOFHLA is considered to be the most valid and reliable instrument to measure HL. In 2005, Newest Vital Sign (NVS) was developed (NVS: Weiss et al 2005). NVS, assess level of health literacy, it takes 3 minutes to administer and is very feasible in primary care setting (Shah et. al, 2010). NVS assess math, reading and comprehension. NVS sensitivity was as great as the TOFHLA's for identification of individuals with inadequate HL (Weiss et al, 2005).

## 5. CONCLUSION

Clarity of the meaning of HL concept is needed to reduce misinterpretation associated with this concept. Clear understanding of the definition of HL will enhance consistency in using this concept in the primary care settings. Clarification of this concept will help NPs to accurately assess their patients, for proper identification and intervention planning for those patients who are ashamed to admit that they cannot read, and as a result not able to comply with health care instructions. NPs should not assume that an individual who is educated in other field is health literate based on their education attainment. Given the busy primary care settings, the NPs can delegate the duty of proper assessment and identification of patients with low literacy to a nurse, while he/she plan intervention to mitigate the issue. Nursing schools should make sure that health literacy is threaded across their curriculum. Nurse scientists should produce more publications on this concept. Nursing assistant and nurses should be educated on how to assess, identify, and observe clients' behaviors related to low literacy. Such clues include, 'I don't have my glasses' when an instruction to read to a client/patient and he/she is asked to read back, not be able to name side effect, dosage, and frequency of medication given to him/her. Proper identification of the antecedents of this concept will help NPs to identify patients' population at risk for poor health-literacy and intervene accordingly.

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