

## Oral health literacy. A concise review.

Camila Delgado<sup>1</sup> & Yurissan Salamanca<sup>1</sup>.

**Abstract:** According to the World Health Organization, Health Literacy (HL) corresponds to the cognitive and social abilities that determine the motivation and ability of individuals to gain access, to understand, and to use information in ways that provide and maintain good health. The development of HL in dentistry came late, and only in the last decade did it reach a level similar to that in the medical area. In dentistry, HL centered on the concept of Oral Health Literacy (OHL), defined as the degree to which individuals have the capacity to obtain, process, and understand basic information on oral health and services that is necessary to make appropriate health decisions. The evidence suggests that people with low HL have worse health status and greater use of medical resources, which results in an increase in costs in the general population. Determinants of the level of OHL include age, level of education, and socioeconomic level. These determinants are reflected in low oral health and in less access to information or less understanding regarding care, pathologies, or dental treatments. The instruments for measuring HL and OHL are mainly aimed at recognizing arithmetic and reading skills, which are not fully related to the ability of the people surveyed to find, understand and use information related to health. OHL is an important issue at the level of health programs, because knowledge of OHL helps in medical practice, in disease prevention and in health promotion. OHL instruments must have validated and demonstrate adequate psychometric properties.

**Keywords:** health literacy, oral health literacy, validation studies

### INTRODUCTION

Health Literacy (HL) was defined by the WHO in 1998 as: *“Cognitive and social skills that determine the motivation and ability of individuals to gain access to understand and use information in ways that provide and maintain good health”* (Sørensen et al., 2012). As a consequence of this, can be inferred that HL includes the knowledge, personal skills, and confidence that allow the adoption of measures that improve personal and community health through changes in lifestyles and personal conditions (Ministerio de Salud, 2017).

The development of HL came late to dentistry, and only in the last decade did it reach a level similar to that in the medical area. In dentistry, HL centered on the concept of Oral Health Literacy (OHL), which was defined as the degree to which individuals have the ability to obtain, process, and understand the basic information about oral health and services that is necessary to make appropriate health decisions (Cartes-Velásquez, 2015; Schiavo, 2011). The evidence suggests that people with low HL have worse health status and use medical resources more, which results in an increase in costs in the general population (Rodríguez, 2017).

Among the most prevalent risk factors related to poor oral

**Affiliations:** <sup>1</sup>Facultad de Odontología, Universidad Andrés Bello, Concepción, Chile.

**Corresponding author:** Camila Delgado. Dirección: Applegath 259, Higueras, Talcahuano. Phone: +56987435733. E-mail: camiladelgadosalas@gmail.com.

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health are low socioeconomic level, low educational level, residing in rural areas, and having never accessed dental care, which implies low HL and OHL. However, the highest levels of HL and OHL involve better patient-dentist communication where dental care strategies and a better self-perception of oral health is addressed (*Schiavo, 2011; Guo et al., 2014*).

A low level of OHL and unfounded fears in relation to dentistry lead to the progressive deterioration of both oral health and health in general. The existence of myths and false beliefs - such as considering "dental caries" an unavoidable disease or considering the loss of dental pieces as a natural part of aging - are the product of lack of knowledge and lack of awareness (*Marón et al., 2014*).

Currently the National Oral Health Plan in Chile (2018 - 2030) is aware of the importance of measuring HL in the population; in fact, within Strategic Axis 1, the first strategic objective is to encourage OHL. The corresponding goal is to have 90% of health managers promote OHL in the population (*Ministerio de Salud, 2017*).

The objective of this paper is to review the definitions and instruments for measuring OHL available in the international literature.

## DEFINITIONS

The concept of HL was originally used in the United States and Canada. In both places, HL was defined as "the ability of citizens to make sound decisions about health in daily life: at home, at work, health care facilities, the market, and in the political arena". Currently, this definition is widely used in public health (*Kickbusch, 2008*).

The WHO (1998) defined HL as: "Cognitive and social skills that determine the motivation and ability of individuals to gain access to, understand, and use information in a way that provides and maintains good health". As a consequence, it seeks to include knowledge and personal skills that allows people to acquire lifestyle changes that promote personal and community health.

According to *Ratzan and Parker (2000)*, HL

consists of people's ability to obtain, process, and understand basic health information and health services, which are considered necessary for them to make decisions regarding health issues.

In 2012, the European Consortium on Health Literacy conducted a systematic review of the literature on HL. From this review the Consortium developed the following definition: HL is linked to knowledge, motivation, and skills needed to access, understand, and apply information on health issues, in order to assess and make decisions regarding one's health, disease prevention, and health promotion, with the goal of maintaining or improving the quality of life (*Sørensen et al., 2012*).

What these definitions have in common is the idea that HL requires people to understand the information that helps them maintain good health (*Ratzan and Parker, 2000*).

With the increase in research on HL in the 1990s, HL has acquired two different approaches. The first one is oriented toward clinical care, which involves patient-provider interaction. The other approach is oriented toward public health, where organizations work to improve the health of people, in addition to providing educational opportunities to them (*Pleasant & Kuruvilla, 2008; WHO 1998*).

There are three types of literacy according to *Nutbeam (2000)*:

- a) *Functional literacy*: This takes into consideration a patient's reading and writing skills. It refers to how patients understand a prescription or dosage of a certain medicine, how they handle information about health risks, and how they use health services in the face of any problem it presents.
- b) *Communicative or interactive literacy*: This assesses cognitive skills along with social skills. It involves the ability of people to search for information through different media as well as their ability to apply it to various personal situations, thereby promoting change in their specific circumstances.
- c) *Critical literacy*: This corresponds to the ability of people to critically analyze information related to

health for later use and to exercise greater control over the health events.

## ORAL HEALTH LITERACY IN CHILE

The mission of the National Oral Health Plan 2018-2030 in Chile is to 1) raise the quality of life of the entire population using the principles of the model of comprehensive health care with a family and community approach, 2) strengthen intersectoral and social participation with an emphasis on equity and inclusion, and 3) promote the training and development of the health team according to the oral health needs of the people (*Ministerio de Salud, 2017*).

The National Oral Health Plan includes an assessment and improvement of OHL; in fact, within Strategic Axis 1, the first strategic objective is to encourage valuation and measurement of OHL. Its goal is to have 90% of oral health managers encourage the assessment and OHL in the population. The purpose of this goal is to achieve a level of knowledge, personal skills, and confidence among the population that allows them to adopt measures that improve their personal health and the health of the community through a change in lifestyles and personal conditions (*Ministerio de Salud, 2017*).

Currently, there are two instruments that have been validated for the Chilean population. These are the Oral Health Literacy Instrument (OLHI) and the Rapid Adult Literacy Estimate in Dentistry (REALD-30) (*Cartes-Velásquez & Luengo, 2017; Cartes-Velásquez & Luengo, 2018*).

## INSTRUMENTS

The measurement instruments are mainly intended to assess arithmetic and reading skills, skills that are not fully related to the ability of the people surveyed to find, understand, and use health-related information (*Dickson-Swift et al., 2014*).

The most widely used instruments are based on the Rapid Adult Literacy Estimate in Medicine (REALM), or on the functional health literacy test in adults (ToFHLA) (*Dickson-Swift et al., 2014; Davis et al., 1993*).

The REALM comprises 125 medical terms. Participants are asked to read the words aloud in order of increasing difficulty; this enables assessment of the range of reading ability. This tool became famous within the scope of HL research due to the short application time it requires (approximately 5 minutes). To reduce the application time to 2 minutes, *Davis et al. (1993)* reduced the number of words to 66 and called the tool the shortened REALM. In later years, even shorter versions of this tool continued to appear. Among the advantages of these tools is their speed and simplicity of application. However, this kind of instruments has been criticized because it only measures knowledge of words without any comprehension test or functional HL (*Parker & Jamieson, 2010*). In contrast, the ToFHLA is a reading comprehension test, but it also has a subscale designed to measure arithmetic skills (*Davis et al., 1993*).

In dentistry, the first tools or instruments to measure OHL were adaptations of those used to measure HL. Most of them corresponded to word recognition tools that provided an approximate measure of reading skills in relation to the contents of oral health (*Lee et al., 2007*).

The Rapid Adult Literacy Estimate in Dentistry (REALD) was an adaptation of REALM by Lee et al. (33). Similarly, Gong et al. developed the Functional Health Literacy Test in Dentistry (ToFHLiD) from ToFHLA (*Baur et al., 2005*). The ToFHLiD consists of a reading comprehension section of 68 items and a 12-item arithmetic section (*Dickson-Swift et al., 2014*).

Currently, there is a variety of other tools for measuring oral health literacy. The Oral Health Literacy Instrument (OHLI) developed by *Sabbahi et al. (2009)* is an instrument like ToFHLA. The OHLI contains reading comprehension sections which cover 38 word items on dental caries and periodontal disease. The OHLI also contains a basic arithmetic section, which contains 19 items that evaluate the comprehension of medical prescriptions related to dental treatment, post-extraction instructions, and dental appointments. *Sabbahi et al. (2009)* also added a test of knowledge of oral health which consists of relating images with words. There are 7 images that show 17 elements, such as extra and intraoral structures, oral diseases and conditions, dental

prostheses, and different elements of oral hygiene.

The Oral Health Literacy Assessment in Spanish (OHLA-S) presents the same concepts as REALD-30, but includes a comprehension test. While both the OHLA-S and the REALD-30 are short and easy to apply, *Lee et al. (2013)* recommends the OHLA -S because there is a better balance between reliability and validity, and it also had a greater correlation with the years of schooling in both pronunciation and comprehension.

Few instruments present adaptations to specific populations or cultural groupings. However, among the adapted ones, we have the Hong Kong Rapid Estimate of Adults in Dentistry (HKREALD-30), the Hong Kong Oral Health Literacy Task for Pediatric Dentistry (HKOHLAT-P), and the Knowledge Assessment of Health - Spanish (OHLA-S) *Dickson-Swift et al., 2014*).

*Sistani et al. (2013)* developed an OHL questionnaire for adults (OHL-AQ) which contains 4 sections: reading comprehension, arithmetic, listening comprehension, and decision making. During the development of the OHL-AQ, the authors found, through community and population-based studies, that OHL-AQ is valid and reliable for the evaluation of functional OHL of adults. In addition to increase ease of application, the OHL-AQ has a short execution time. Therefore, it could be used in clinical or research contexts with the aim of improving reading and writing skills related to oral health and communication between patient and dentist (*Dickson-Swift et al., 2014*).

*Jones et al. (2014)* derived the Health Literacy Scale in Dentistry (HeLD) from the Health Knowledge Measurement Scale (HeLMS ) with the objective of developing a relatively reliable and valid instrument that can address existing concerns about cultural suitability. HeLMS has many of the same limitations as the other tools because it includes theoretical constructs that measure a person's ability to seek, understand, and use oral health information that is important in accessing and benefiting from oral health services.

HeLD consists of 29 elements in 7 domains: communication, access, receptivity, understanding, use, support, and economic barriers. These domains have been shown to have an impact on oral health status

(*Jordan, 2009*). Rigorous psychometric tests show that HeLD has a strong construct validity and high reliability (alpha coefficient > 0.80 for the 8 domain).

## DISCUSSION

One of the main tools within health promotion, according to *Marón et al. (2014)*, is education. Education is paramount to achieving a better state of health within the population; education promotes awareness which, in turn, generates changes that result in healthier lifestyles. This idea is also supported by *Ueno et al. (2013)*, who state that health education is a key component of oral health programs; therefore, knowing oral health literacy levels is important in knowing how to design effective educational materials as well as effective intervention programs to achieve greater success in health promotion in the community.

For *Sistani et al. (2013)*, assessing OHL should be a priority in oral health promotion in countries with developing health systems. *Dickson-Swift et al. (2014)* support this idea because it identifies OHL as the key to promoting health and preventing oral diseases. Likewise, *Sorensen et al. (2012)* suggest that knowledge of the definitions or conceptualizations of HL can be helpful in medical practice, disease prevention, and health promotion and can be used as a basis for the development of new measurement tools.

*Sistani et al. (2013)*, contend that the state of oral health is affected by determinants other than literacy, including age, education, and socioeconomic status. However, they argue that poor OHL is a significant indicator of low oral health. For *Ueno et al. (2013)*, the knowledge children acquire in school has implications for their attitudes and behavior towards their oral and general health in adulthood. *Lee et al. (2013)* report that high OHL is associated with high educational level, good health, relatively high oral health knowledge, and good quality of life in relation to oral health. However, in the same study, the authors also say that sometimes educational level is limited and can lead to an overestimation of the level of OHL. This is related to the fact that literacy is often several levels lower than the level of education attained.

According to *Hotzman et al. (2013)*, low level of

HL is related to less access to information. This limited access may imply financial and time constraints, difficulty understanding written materials and internet searches, as well as cultural prejudices. *Ueno et al. (2013)* state that some people have difficulty reading and understanding educational material, and there are others who are not attracted to the information and do not apply any effort to understand it.

Because dental caries and periodontal disease result from chronic problems or habitual behaviors, *Ueno et al. (2013)* are not certain that poor OHL leads to poor clinical results. In other words, people could have practiced unfavorable oral health behavior for a long time and that could be the cause of their poor oral health. However, this is difficult to prove with a cross-sectional study.

*Sarmiento et al. (2015)* states that there are several difficulties when measuring HL, among them the measurement instruments do not vary according to the context in which the individual develops. Also, the instruments tend to focus on the functional level of health literacy and not its other dimensions. In addition, *Lee et al. (2013)* states that it is difficult to identify people with low OHL levels.

*Dickson-Swift et al. (2014)* report that most of the measurement instruments are focused on the recognition of words, arithmetic, and reading skills in relation to health behavior and use of medical services. However, HL should incorporate communicative or interactive and critical skills.

According to *Ueno et al. (2013)*, comprehension tests require more application and skill time than word recognition tests. In addition, according to *Parker et al. (2012)* REALD-30 has been criticized for its limited evaluation and for provoking discomfort among patients due to feelings of being "judged". Moreover, according to *Lee et al. (2013)*, the phonetic structure of the Spanish language is very regular, so that the Spanish speaker can correctly read and pronounce a term without needing to understand the meaning. This is a flaw in relation to the instrument.

The importance of the process of translation and cultural adaptation has been considered by

several authors in recent times. Indeed, as most health questionnaires are originally developed in English, in order to use them in a different culture, language, or country, it is necessary to carry out a translation and cultural adaptation in a structured and organized way in order to maintain the equivalence of the original instrument. If the questionnaire maintains semantic equivalence, it allows us to obtain reliable data and make comparisons with foreign research.

## CONCLUSION

OHL is an important issue at the level of health programs, because OHL helps in medical practice, disease prevention, and health promotion. In relation to OHL instruments, these must be validated and demonstrate adequate psychometric properties.

## REFERENCES

- Baur C, Comings J, Evans C, et al. The invisible barrier: literacy and its relationship with oral health. *J Public Health Dent.* 2005;65(3):174-82.
- Cartes-Velásquez R, Luengo L. Adaptation and validation of the rapid estimate of adult literacy in dentistry for Chilean Population. *P R Health Sci J.* 2018; 37 (1).
- Cartes-Velásquez R, Luengo ML. Adaptation and validation of the oral health literacy instrument for the Chilean population. *Int Dent J.* 2017;67(4):215-220.
- Cartes-Velásquez R. Alfabetismo en salud: bases conceptuales y evidencia en odontología. *MEDISAN.* 2015;19(4):558-66.
- Davis TC, Long SW, Jackson RH, et al. Rapid estimate of adult literacy in medicine: a shortened screening instrument. *Fam Med.* 1993;25(6):391-5.
- Dickson-Swift V, Kenny A, Farmer J, et al. Measuring oral health literacy: a scoping review of existing tools. *BMC Oral Health.* 2014;14:148.
- Guo Y, Logan HL, Dodd VJ, et al. Health literacy: a pathway to better oral health. *Am J Public Health.* 2014;104(7):e85-91
- Jones K, Parker E, Mills H, et al. Development and psychometric validation of a Health Literacy in Dentistry scale (HeLD). *Community Dent Health.* 2014;31(1):37-43.
- Jordan JE. Conceptualising and measuring health literacy from the patient perspective. PhD [thesis]. Melbourne: University of Melbourne;2009.
- Kickbusch I, Maag D. Health Literacy. In: Heggenhougen K, Quah S, editors. *International Encyclopedia of Public Health.* Vol 3. San Diego: Academic Press; 2008. pp. 204-11
- Lee J, Stucky B, Rozier G, Lee S, Zeldin L. Oral health literacy assessment development of an oral health literacy instrument for Spanish speakers. *J Public Health Dent.* 2013;73(1):1-8.
- Lee JY, Rozier RG, Lee SY, Bender D, Ruiz RE. Development of a word recognition instrument to test health literacy in dentistry: the REALD30--a brief communication. *J Public Health Dent.* 2007;67(2):94-8.
- Marón S, Páez S, Denarco C. Alfabetismo en Salud Bucal. Una experiencia en poblaciones vulnerables de la provincia de



Mendoza. *Revista De La Facultad De Odontología. Universidad Nacional De Cuyo*. 2014; 8(1):29-32.

Ministerio de Salud. *Plan Nacional de Salud Bucal 2018-2030*. Santiago: Departamento de Salud Bucal División de Prevención y Control de Enfermedades; 2017.

Nutbeam, D. Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promot Int*. 2000; 15(5): 259 -67.

Parker E, Jamieson L. Associations between Indigenous Australian oral health literacy and self-reported oral health outcomes. *BMC Oral Health*. 2010;10:3.

Parker E, Misan G, Chong A, Mills H, Roberts-Thomson K, Horowitz A et al. An oral health literacy intervention for Indigenous adults in a rural setting in Australia. *BMC Public Health*. 2012;12(1).

Pleasant A, Kuruvilla S. A tale of two health literacies: Public health and clinical approaches to health literacy. *Health Promot Int*. 2008; 23(2):152-9.

Ratzan SC, Parker RM. Introduction. In: Selden CR, Zorn M, Ratzan SC, Parker RM, editors. *In National Library of Medicine current bibliographies in medicine: Health literacy*. Bethesda,

MD: National Institutes of Health; 2000. (NLM Pub. No. CBM 2000-1).

Rodríguez J. *Alfabetización médica en la enfermedad pulmonar obstructiva crónica*. [Tesis Doctoral]. Madrid: Universidad Complutense de Madrid; 2017

Sabbahi DA, Lawrence HP, Limeback H, et al. Development and evaluation of an oral health literacy instrument for adults. *Community Dent Oral Epidemiol*. 2009;37(5):451-62

Sarmiento P, Fernández M, Poza M, Pelicano N. Propuesta de evaluación de la alfabetización en salud. *Psicología Latina*. 2015;6(1):1-11.

Schiavo JH. Oral health literacy in the dental office: The unrecognized patient risk factor. *J Dent Hyg*. 2011;85(4):248-55.

Sistani MM, Yazdani R, Virtanen J, Pakdaman A, Murtomaa H. Oral health literacy and information sources among adults in Tehran, Iran. *Community Dent Health*. 2013;30(3):178-82.

Sørensen K, Van den Broucke S, Fullam J, et al. Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*. 2012;12(1).

Ueno M, Takeuchi S, Oshiro A, et al. Relationship between oral health literacy and oral health behaviors and clinical status in Japanese adults. *Journal of Dental Sciences*. 2013;8(2):170-6.