

Health Literacy and Digital Health Literacy: concepts, challenges and strategies

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Lecture 1-3 Introduction to Health Literacy

Lecture 8-9 Digital Health Literacy, overview and technologies

Lecture 10-13 Communication Skills

Health Literacy: concepts and models

Health literacy (HL) was first introduced about 50 years ago in response to the increasing importance of health care and the need of adequate health education of people which enables them to meet the complex demands of public health in the circumstances of rapid development of new technologies (Simonds, 1974).

Health literacy was linked formerly to general literacy and initially was limited mostly to the ability to read medical contents to enable the individual to communicate adequately with the health care provider. Later the concept of HL was broadened to a more complex set of abilities including understanding and acting upon written health information, understanding health instructions, communication with health professionals and self-management (Peerson & Saunders, 2009) and was recognized as an important public health issue internationally (Briggs & Jordan, 2010). Many definitions of HL exist leading to debate as to what health literacy represents and how it is measured. Some definitions focus on literacy and numeracy skills, while others encompass broader attributes such as conceptual and cultural knowledge, and social skills. In the literature more than 25 definitions of HL are found, most of which emphasized the individual skills to obtain, process and understand health information to take adequate decisions about health. Since individual HL emerges from the interaction with the social environment, it is necessary to consider also the importance of health professionals as part of public health literacy. Namely, the health care organizations and professionals are the ones having the responsibility to adapt their services to the clients' needs to reduce the negative impact of limited HL. Recently, Santana et al. (2021) pointed out that the concept of HL was not solely reliant on individual capabilities but also on organizations' ability to make health-related information and services equitably accessible and comprehensible. In "Healthy People 2030" it was clearly distinguished between the personal and the organizational HL, providing the following definitions:

"Personal health literacy is the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others. Organizational health literacy is the degree to which organizations equitably enable individuals to find, understand, and use information and services to inform health-related decisions and actions for themselves and others."

Both personal and organizational HL may exert a significant impact on an individual's health. They are able to contribute to better understanding of diagnosis, treatment, or recommended lifestyle changes which are supposed to lead active and healthy lives.

Sørensen et al. (2012) which incorporates both the individual and the public health perspectives of HL as entailing "peoples' knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion".

Importantly in this definition three health domains can be identified: health care (in the case of disease), disease prevention (being at risk for disease), and health promotion (keeping sufficient health). These three health domains have relevance for nurses, physiotherapists and other healthcare practitioners who are actively involved in patient treatment but also in disease prevention and health promotion. Further, all definitions of HL refer to certain "skills" and "competencies". These can be summarized as: *access* (the ability to seek, find and obtain health information), *understand* (the ability to comprehend the accessed health information), *appraise* (the ability to interpret, filter, judge and evaluate the health information, and *apply* (the ability to communicate and use the information to make decision to maintain and improve health. It should be noted that these should be informed decisions and actions, which can be used to promote not only one's own health, but also the health of others. Health-related actions, for example selecting health care provider, service or preventive measures, or assisting family members with individual health needs can be executed at various places such as at the health care provider's office, in social media, at home, workplace, or in a public institution.

The concept of Health literacy in general is increasingly recognized for its complexity and multidimensional face and thus is comprehensively divided into three categories: reflecting the interaction between individual skills and the health system's demands (Nutbeam, 2000, 2008).

Functional HL refers to *“sufficient basic skills in reading and writing to be able to function effectively in everyday situations”*. These basic skills appear to be sufficient for individuals to obtain the necessary health information (for example, related to risks of disease) and to enable them to apply the obtained knowledge for certain activities. It can be expected that people with such basic health literacy skills are responding well to education and communication concerning information on health risks, or general use of health services.

Communicative or interactive HL is defined as *“more advanced cognitive and literacy skills which, together with social skills, can be used to actively participate in everyday activities, to extract information and derive meaning from different forms of communication, and to apply new information to changing circumstances”*. Individuals with these advanced skills show good responsiveness to education and communication activities targeting improved personal capacity to act independently, motivated and confidently.

Critical HL comprises *“most advanced cognitive skills which, together with social skills, can be applied to critically analyze information and to use this information to exert greater control over live events and situations”*. Critical HL along with the information on personal health includes also information on the social, economic and environmental determinants of health.

The Health Literacy Instructional Model (Conard, 2019) combines 5 domains of HL to build health literacy skills (Fig 1). Acquiring knowledge is the first domain in building comprehension and skills, followed by numeracy skills. Numeracy skills can be improved by calculation tasks in association to daily behaviours (fitness and activity monitoring, BMI and calories calculations). Navigations skills can be enhanced by providing more information on access, costs, usability and quality of healthcare systems. Communication is the most crucial part in the interaction between client and provider, in which the provider plays the main role once for adapting to the patient level/situation and secondly as a part of the patient education aiming to build up better communication skills. Finally, the client should be an active participant in the health providing-accepting process, being able to take independent and motivated decisions.



Figure 1: Health Literacy Instructional Model, based on Conard, 2019

The conceptual framework of Sørensen et al. (2012) (Fig. 2) provides the most comprehensive dimensions of health literacy, showing different factors which impact on health literacy as well as the pathways linking health literacy to health outcomes. In addition, it supports the practice of healthcare, disease prevention and health promotion by serving as a conceptual basis to develop health literacy enhancing interventions (Sørensen et al., 2012).



Figure 2: Framework of Health Literacy, based on Sørensen et al. 2012

Demographic and sociocultural factors influencing HL

To provide adequate to the individual HL health care services, it is important to identify first which factors contribute to decreased HL level. In summary, the following risk factors may influence HL.

Demographic factors influencing health literacy

Demographic factors, such as age, level of education, gender, and socioeconomic status contribute to an individual's health literacy. These factors impact people's ability to obtain, comprehend, and apply health-related information to make well-informed decisions on their health. With an understanding of these factors of the client, healthcare providers can tailor interventions to deliver with better understanding and better outcomes for different populations.

Age

- Older adults usually show lower health literacy because of declining of their cognitive skills with aging as well as reduced digital exposure (Bostock & Steptoe, 2012).
- Implications: This causes difficulty in understanding instructions or managing long term chronic illness.

Education level

- Presence of higher educational attainment is significantly associated with good health literacy (Paasche-Orlow & Wolf, 2007).
- Physiotherapists must consider the patient's educational background when communicating with clients.

Gender

- Women usually presence with higher health literacy because of the caregiving role they play within their families (Lee et al., 2015).
- Gender roles may affect who seeks care or makes health decisions.

Income and Socioeconomic status (SES)

- Low SES restricts access to healthcare resources and educational tools (Berkman et al., 2011).

- Communities with lower SES have greater disparities in health literacy.

Urban vs Rural residence

- Urban populations often have better access to health facilities and health information (Mendoza et al., 2022).
- Rural populations often rely on informal/traditional sources.

Employment status

- Exposure to health communications may be limited by unemployment and low-skilled jobs.

Sociocultural factors influencing health literacy

Cultural beliefs and norms

- In certain cultures, home remedies and traditional medicine may be preferred above clinical treatment (Ishikawa et al., 2008).
- Beliefs may affect acceptance of physiotherapy or medical interventions.

Language and communication barriers

- Communicating consistent health messages may be difficult in multilingual society.
- Lack of fluency in the dominant language of care can make understanding more difficult (Sentell & Braun, 2012).
- Patients may misunderstand information/ advice or avoid asking questions.

Religious influences

- Treatment decisions may be influenced by religious beliefs (e.g., disability perceived as divine will or karma).
- Treatment adherence and perception of sickness can be influenced by traditional healing systems and beliefs.

Family and community structure

- Strong family support contributed to better adherence to treatment (Osborn et al., 2011).
- Decisions about healthcare may involve family members in collective societies.

Health system navigation

- In complex or bureaucratic systems, some patients struggle to access care or understand processes (Sørensen et al., 2012).

Significant cross-country variations of these factors and their magnitude of influence on HL have been reported in the different countries (Sørensen et al., 2015) whereby in Europe the financial status, education and the age were identified as the strongest prediction factors. Recognizing vulnerable groups and risk factors from lower levels of HL is an important step for the development of effective approaches in the communication between health care provider and client which should be integrated in the knowledge of HL in the Nursing and PT education programs. Respectively, the CAPAGE project targets elderly people.

Health Literacy in Europe

Beside the national importance of Health Literacy, it has gained growing attention on the European health agenda, too. Sørensen et al. (2015) conducted a European health literacy survey in eight European countries with a total number of 8000 participants. Large numbers of the European population show difficulties in handling health issues due to limited health literacy skills. Individuals with limited health literacy have difficulties to comprehend health information, to navigate healthcare organization, to interact with health care providers and to participate in self-management of their health (Berkman et al., 2011; Groene & Rudd, 2011; Pires et al., 2015). The results of the study showed that almost 1 in 2 (47%) had insufficient or problematic health literacy. However, the distribution of levels differed substantially across countries (29–62%). Subgroups within the population, defined by financial deprivation, low social status, low education or old age, had higher proportions of people with limited health literacy, suggesting the presence of a social gradient (Sørensen et al., 2015). Limited health literacy represents an important challenge for health policies and practices across Europe, but to a different degree for different countries. While actions on HL have been identified in 16 EU member states, only in six countries national-level policies have been implemented, however not associated with adequate HL programs and activities. The social gradient in health literacy appears an important consideration when developing public health strategies aiming improvement of health equity in Europe. Still better monitoring and evaluation at European level are needed to ensure more successful coordination of efforts to improve HL.

Health Literacy in Sri Lanka

The general literacy level in Sri Lanka as assessed in the population census in 2021 was 93.3%. However, a national survey revealed that presence of moderate to low health literacy in Sri Lanka, especially in rural regions (Ministry of Health, 2014). Recent studies conducted on different population groups have also reported presence of moderate to low health literacy such as presence of a high proportions of 'limited' health literacy among schoolteachers in the Colombo Education Zone, Sri Lanka (Denuwara & Gunawardena, 2017).

Even though having a higher general literacy rate in Sri Lanka, the limited health literacy rates in different population groups can be attributed to different skills needed in health literacy compared to general literacy. Differences of health literacy levels can be based on rural/urban, gender, education, and income level.

Education and gender

- Compared to men with lesser educational levels, women with at least a secondary education demonstrate better health literacy (Perera et al., 2019).

Language diversity

- Three official languages (Sinhala, Tamil, English) give arise to communication challenges in health delivery (Fernando et al., 2020).

Influence of traditional medicine

- A significant amount of the population in Sri Lanka uses Ayurveda and Siddha medicine especially in the disease conditions like arthritis, back aches and fractures. Therefore, access to physiotherapy interventions and modern treatments will be affected.

Role of media and technology

- Growing usage of social media and mobile phones opens new avenues for health education (Samarasekara et al., 2021).
- E-health literacy is still emerging and unevenly distributed

Impact of Health Literacy on health and disease

Health literacy improves patients' responsibility for their own health and supports them in the decision-making process for individual treatment. Higher HL is associated with increased health and disease knowledge, with better self-reported health status, problem-solving and motivation, with more adequate use of health services, shorter hospitalization, consequently leading to lower healthcare costs (Speros, 2005; Manganello, 2007; Paasche-Orlow & Wolf, 2007; Mancuso, 2008). It was demonstrated that individuals with higher HL show better health and longer life-expectancy (Ratzan, 2001). In turn, a physical and cognitively healthier population tend to be more productive and require less health care services and costs.

Several lines of evidence highlighted the relationship between low health literacy and poorer health behaviors and outcomes (DeWalt et al., 2004; Paasche-Orlow & Wolf, 2007) independently of other sociodemographic factors. **Clients with limited HL may face the following obstacles** (Magnani et al., 2018):

- difficulties in accessing health care and insurance services
- difficulties in reading and comprehension of health-related information (instructions, informed consent documents, patient education materials)
- unsuccessful comprehension in communication with the health care provider, due to inadequately delivered information
- problems using spoken and written communication (language proficiency) and using numeracy and quantitative skills

These barriers lead to limited use of health insurance (Levitt, 2015) and less utilization of preventive healthcare services, to less adherence to therapy and medication, to lack of motivation and active participation, to inability to take adequate health decisions, which finally increase the risk to acquire a wide range of medical conditions. For example, Magnani et al. (2018) summarized that low HL expressed with insufficient disease knowledge, limited self-efficacy, activation, attitudes and self-care (diet, physical activity, medication and treatment adherence, problem solving) was associated with increased cardiovascular risks and conditions for example: hypertension, diabetes, stroke, coronary heart disease, obesity. Impact of HL on low back pain (Edward et al., 2018) reproductive health (Kilfoyle et al., 2016) psychological disturbances and quality of life (Rababah et al., 2020) have been described, too. Consequently, intermediate- and long-term healthcare outcomes may occur such as raised healthcare costs (Palumbo, 2017), increased hospitality and mortality rates (Berkman et al., 2011).

Collectively, this evidence reveals the crucial importance of providing relevant health information in a feasible and comprehensive way to shape the individual health understanding and behaviors and consequently improve health outcomes. The main responsibility for the effective delivery of health-related information has health professionals from different healthcare sectors.

Digital Health Literacy

The rapid growth of Internet, along with the progress in electronic and mobile technologies, shows a global impact on health and health care. Electronic health (eHealth) is defined by WHO as the cost-effective and secure use of information and communications technologies in support of health and health-related fields (WHO, 2021). It includes health-care services, health surveillance, health literature, health education, knowledge and research and aims to provide secure and cost-effective care to underserved populations. To benefit from the developed eHealth resources the consumers should be capable to access and read text, use information technology, and appraise the content of these (Norman & Skinner, 2006). Thus, the same authors defined the term electronic health literacy (eHL) as “the ability to seek, find, understand, or appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem”, also known as Digital Health Literacy (DHL). On one side, the DHL shares core aspects of health literacy. On the other side it incorporates additional knowledge and skills: computer literacy to computers and related technology efficiently to accomplish tasks; media literacy to use search engines; information literacy to evaluate a wide variety of sources (Norman & Skinner, 2006). Advantages of digital health technologies include convenience of accessibility, availability of information and solving problems outside of the clinical settings, time efficiency, reduction of travel expenses. E-technologies offer variety and flexibility for using health information (websites, interactive applications, games, augmented and virtual reality, combinations of text, images, audio and video, social networking tools, animations, risk calculators) that can assist clients matching to their individual needs and preferences. Further, technology solutions have the potential to improve communication between the client and the healthcare professional, because they enable client centered and personalized way of providing information and treatment (Dunn & Hazzard, 2019). Some digital tools (for example apps, portable devices with augmented reality) are rather appealing with entertaining and interactive elements, which capture clients’ attention, engage them cognitively and emotionally (Lam et al., 2017). This leads to increased participation and adherence to the therapy process. The implementation of digital technologies facilitates also the healthcare provider, for example to monitor patient’s behavior, compliance, nutrition, medication adherence, symptom management, or to undertake quick adaptations of the treatment. In addition, using e-tools enables individuals to exert more control over one’s health and to have better access to own data, while remaining connected to the healthcare team (Conard, 2019), which finally improves one’s HL and DHL.

Digital technology solutions can promote HL and DHL by extending the existing forms of information transfer (for instance books, clinical settings). On the other hand, to be a barrier because of insufficient capabilities of clients to deal with digital instruments (Dunn & Hazzard, 2019). The individual level of digital HL is predetermined and influenced by several factors. Individuals with limited DHL for instance, tend to be significantly older and suffer more often chronic diseases (Neter & Brainin, 2012). Lower educational attainment is another limitation in understanding eHealth contents and technical instructions. Individuals with lower socio-economic status are limited in accessing eHealth information due to the lack of computers, personal mobile and wearable devices, internet access. Great amount of evidence-based health information is provided exclusively in English or in German, which creates barriers for users using other languages. DHL encompasses a set of skills necessary for informed usage of electronic applications, not just limited to browsing for topics of interest, but also dealing with

interactive digital health platforms, using health apps and wearables or communicating with health care providers. Despite access to the Internet via smartphones has become the most common way for obtaining information, technology-unfriendly individuals, such as the elderly for instance, are still unwilling and unable to use technology. Thus, insufficient competency and specific skills to navigate “smart” devices are major burden of data entry or confusion with app usage (Krebs & Duncan, 2015) leading finally to confusion, discomfort and consequently decreased use of eHealth resources. In this context, the question arises whether digital media should be used to break down DHL barriers or whether analogue means should be used instead. To involve clients in eHealth-related activities, it is crucial first to evaluate the individual level of DHL in clients. The measurement tool eHealth Literacy Scale (eHEALS) (developed in English and translated in few other languages) by Norman & Skinner (2006) has been used in different settings. It consists of eight items for self-report of ease and skills when navigating the Internet for valid health-related information. The instrument has been widely used, however a lack of correlation between eHEALS scores and actual task performance in online health information seeking (Quinn et al., 2017; van der Vaart & Drossaert, 2017) was found. Another concern was the fact that it could not sufficiently address critical and interactive health literacy skills (Norman, 2011; van der Vaart & Drossaert, 2017). The Digital Health Literacy Instrument (DHLI) screening tool was developed to evaluate not only the operational, but also navigational skills, quality of information search, reliability assessment, relevance determination, adding self-generated content and privacy protection (van der Vaart & Drossaert, 2017). The importance of assessing digital health competencies of health workers was also stressed (Jimenez et al., 2020). Digital health literacy (DHL) includes the provision (the medium) of information (APP's, homepages, tools), the ability to use these medias (support tools), and the learning to understand this information (learning platforms) (Fig. 3). This requires an appropriate selection and high quality of the digitally provided materials that meet well established criteria.

Eysenbach et al. (2002) proposed seven quality assessment criteria for client health information on the Internet:

1. Accuracy of provided information, which should be based on current guidelines or standards of care
2. Completeness/comprehensiveness, which can be achieved by addressing the main concepts of the topic and thematically subdivided
3. Technical elements, consisting for example informational sources, sponsorship, target groups
4. Good readability of information
5. Design and aesthetic elements
6. Accessibility that ensures usage of information also by people living with disabilities
7. Usability in order to facilitate navigation

Although there are no standards for digital decision aids, various quality evaluation criteria were developed for decision aids in general (International Patient Decision Aid Standards Collaboration assessment checklist; Workbook on Developing and Evaluating Patient Decision Aids to evaluate the development and evaluation processes of decision aids; Ensuring Quality Information for Patients, to evaluate information quality (O'Connor & Jacobsen, 2003; Moulton et al., 2004; Lenz & Kasper, 2007; International Patient Decision Aid Standards (IPDAS), 2019). DHL can be successfully promoted by using eHealth tools. To reduce barriers for clients when dealing with digital information in inpatient settings, Smith & Magnani (2019) recommend for instance the formation of interdisciplinary teams. These include not only health workers but also App designers and programmers. These teams are supposed to work with clients to identify and resolve DHL barriers, providing systematically technical and medical support. Through close cooperation and interactive tools, DHL education can be delivered in an individual and client-friendly way. It is important to define the health care aspects that can be facilitated by digital technologies. Applications, instructions and materials that are actual, standardized, comprehensive, readable concise, and easy to navigate should be provided to ensure

easy and friendly usage. To enhance communication, materials should be available in video and audio format suitable also for people with limited general literacy. Linking main contents to related additional materials enables deeper understanding and independence in acquiring new knowledge. Using patient personal experience and characteristics when transmitting messages engages actively the client into the process. Considering the client's characteristics (age, sociodemographic status, cultural background, beliefs and behaviors, education and language level) are critical when designing eHealth tools intended to promote DHL. This can determine to a certain extent the availability of access and the preferred means of communication. Clients with limited HL and DHL should be explicitly informed about the available digital services, should be supported technically, and encouraged to use novel evidence-based applications (for example fitness trackers). Importantly, client's feedback should be considered to evaluate the efficacy and to improve patient experience and care. Implementing eHealth tools on clients is related to ethical challenges, namely data collection and data sovereignty. Data sovereignty, meaning responsible informational freedom appropriate to the opportunities and risks of Big Data, should be the central ethical and legal goal when dealing with Big Data, as defined by the German Ethics Council (Deutscher Ethikrat, 2018). It is also necessary for the use of telerehabilitation and for the inclusion of the "data sovereign" patient in treatment and research processes (keyword: data donation) (Strotbaum et al., 2019).

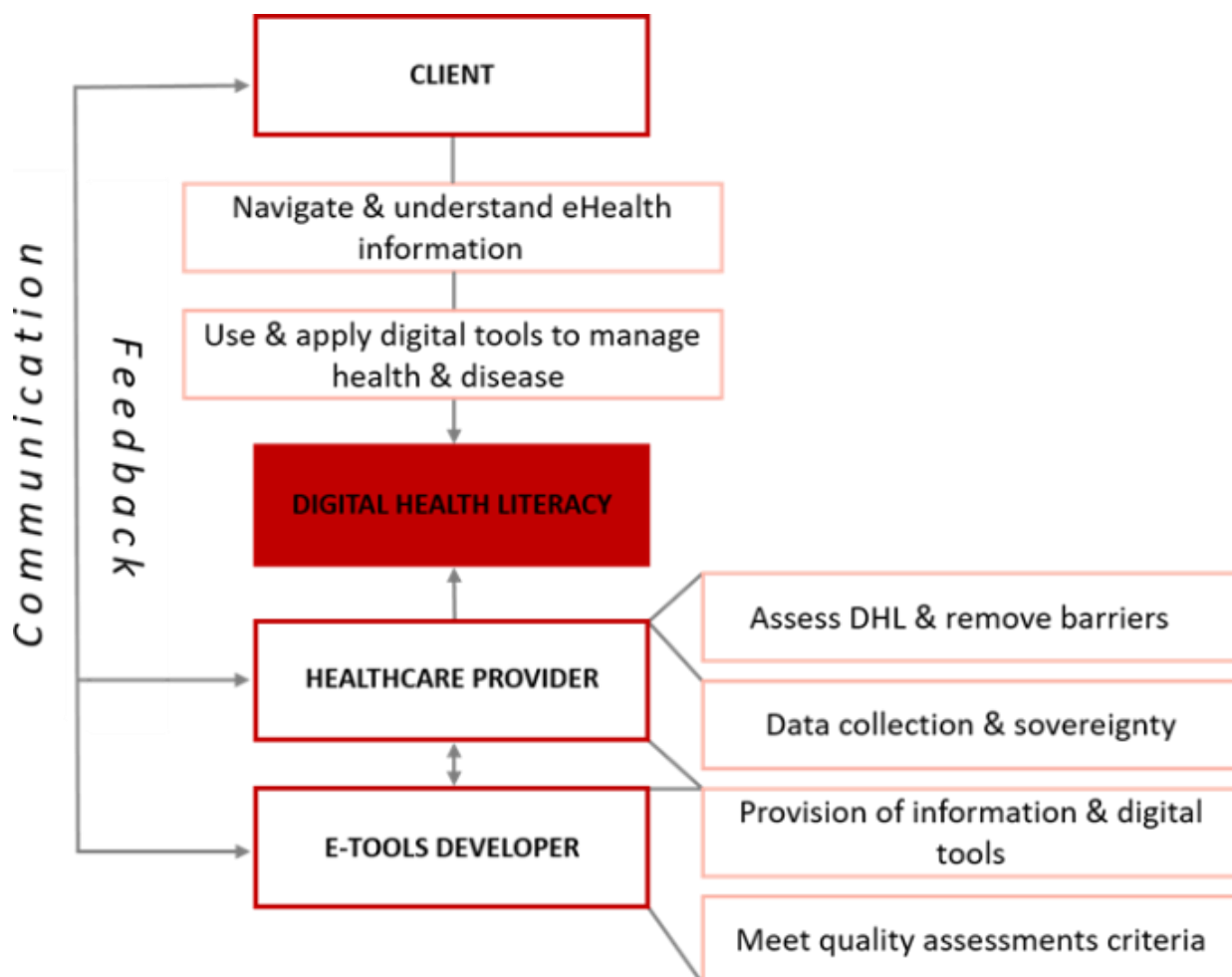


Figure 3: Digital Health Literacy – an overview

Health Literacy in physiotherapy practice and patient education

Physiotherapy gained an increasing importance and expanding responsibility in the large family of the healthcare sectors. Physiotherapists work in an inter-professional team and are actively present in almost all health- and disease-related conditions across the entire life span of their clients. In addition, in comparison to the other health professionals, they spend a substantial amount of time with the client. They are not simply involved in disease prevention, treatment and rehabilitation, but also in providing health information, in educating patients how to understand and manage his/her health status and at the same time in finding the most optimal approach for that.

Nowadays, physiotherapists work with an increasing number of individuals with chronic and multiple diseases, with an aging population, with people of diverse cultural, language sociodemographic, physical and cognitive status. All these vulnerable groups show respectively diverse levels of HL and require appropriate patient education strategies. To ensure educational strategies that match the individual learning capacities, needs and HL levels of the clients, physiotherapists should possess appropriate HL knowledge and competencies.

First of all, physiotherapists need to recognize the **signs of compromised HL** (Weiss, 2007; Ennis et al., 2012) such as:

- Incompletely or inadequately completed forms
- Frequently missed therapy appointments
- Inability/difficulty to name and take correctly medications
- Inability to follow instructions referred by other health professionals
- Inability to comprehend/complete their home exercise program, or disease management tasks
- Refusing to read written instructions or asking the therapist to read to them

Secondly, physiotherapists are supposed to screen clients to evaluate the level of HL. Various assessment instruments have been developed to measure HL, focusing for example on different cognitive tasks (reading fluency, memory span and understanding sentences, etc.). Identifying the HL level will help the physiotherapist to develop and apply respective intervention strategies which is an important initial step in facilitating the client to participate actively in the therapist-patient interaction process. Generally, such **strategies** include: simplifying forms, improving the readability of printed information, absence of specific medical terminology through patient-centered language and feedback conversations that ensure that the therapist has been understood by the patient. Further, appropriate communication strategies (use plain language and clear sentences, ask questions, give feedback, use “teach back” method) should be utilized in order to optimize the patient education process (Hironaka & Paasche-Orlow, 2008; Ennis et al., 2012).

Evidence-based patient education implies the joint use of current medical best evidence to inform patients about their **health and management options** (Bunge et al., 2010). It means that the patient is informed about his/her health condition, aims of the therapy program and about the prognosis. Particularly, this may include (Lopez-Olivo & Suarez-Almazor, 2019):

- clarifying diagnostic uncertainties
- providing possible therapy options
- explaining the purpose and possible success of treatment
- clarifying associated risks and burdens
- informing about the patient’s rights to refuse one treatment or choose alternative one
- support by developing problem-solving strategies

Important part of the patient's education is the **access and usage of health information**. It was reported that different age groups use very different sources of information. Older adults used to receive more health information from the health care provider, radio, TV, books and magazines and less from Internet. The tendency of using Internet sources also by older adults is rapidly increasing. The choice of health information source depends also on the specific cultural, sociodemographic and cognitive characteristics of the individual. It is important for the physiotherapist first to identify the preferred and the optimal source of health information for the individual client and secondly, to provide accurate and reliable health information resources in a compatible form.

Perform and adjust communication effective to clients with limited HL

The goal: Nurses and Physiotherapists work with clients with limited health literacy (for instance older people, patients with chronic diseases, with low economic status, education and migration background) and their families, to gather and share essential information related to health literacy. They use effective communication skills and strategies in a client-centered way.

The challenge¹: Nurses and physiotherapists are confronted with critical moments in their contact with clients with limited health literacy. They encounter various challenges in different stages of therapy, which raise important questions. How do nurses and physiotherapists support clients in their preparation for the consultation? How do they communicate effectively during the consultation and how do they gather adequate information? Does the client understand the provided information and do the nurses and physiotherapists clarify or adapt the information to the people with limited HL? Do nurses and physiotherapists use client-centered communication with understandable and general language? How do they establish a good collaborative and trusting relationship?

The characteristics describe different selected elements from the literature that vary the operationalization of the tasks and that can be combined according to a modular principle.

Setting/Context	Drivers and barriers ²	Client characteristics ³
- Hospital - Rehabilitation - Physiotherapy practice - Health center - Maternity clinics - School ...	- Individual (language, knowledge, beliefs, ideologies, experiences, medical conditions) - Social/community (environment, social support, social norms, networks, culture & traditions, health system & providers - Accessibility (interpreters, incentives, continuity of care, time/workload, communication skills - Training (provider types, up-to-date verbal and written information, inter-sectoral)	- Age - Gender - Ethnicity - Educational level - Cognitive ability - Cultural factors - Spiritual beliefs - Medical conditions - (Non)communicable diseases - Lifestyle risks

¹ In accordance to Murugesu et al., 2018; ² Based on Taggart et al., 2012; ³ Based on Taggart et al., 2012

Key competencies Health professionals are able to...	Enabling competencies
1. establish a trusting professional relationship with clients and their families	1. communicate through a client-centered approach that encourages client trust and autonomy that is characterized by empathy, respect and compassion 2. respond to client's non-verbal behavior to enhance communication 3. create a shame-free environment and respond to emotions 4. anticipate and support clients' needs 5. be aware of one's own preconceptions and do not let them affect one's work with clients 6. take nothing for granted 7. use, if necessary (medical) interpreter services 8. use lot of visual aids
2. elicit and synthesize accurate and relevant information, incorporating the perspectives of clients and their families	1. use techniques of active listening (e.g. reflection, picking up patient's cues, paraphrasing, summarizing, verbal and non-verbal techniques) 2. use client-centered interviewing skills to effectively gather relevant information 3. determine (non-judgmental) causes of non-adherent health behaviors 4. use short and simple language 5. elicit clients' (prior) understanding of their health issues in a non-shaming manner 6. scan and assess actively situational elements to gain information 7. identify clients learning style preferences 8. consider the client's cultural and educational background when providing health information 9. consider the client's traditional beliefs and address them respectfully.
3. provide and reflect on the given information or his/her family	1. communicate clearly through plain language, avoidance of jargon, prioritization of information 2. offer strategies in place to ensure low-threshold access to the services 3. use teach-back to check understanding 4. assess and write comprehensible client information 5. use of visual aids (videos, images, self-drawing) 6. promote digital health literacy to support the treatment procedures and adherence to it
4. promote participatory / shared decision making	1. encourage clients or their family members to ask questions 2. In cooperating with family members when appropriate 3. involve clients or their family members in shared decision-making 4. educate clients or their family members to participate in 5. shared decision-making (ask 3 questions-tool)

References

- Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011). Low Health Literacy and Health Outcomes: An Updated Systematic Review. *Annals of Internal Medicine*, 155(2), 97. <https://doi.org/10.7326/0003-4819-155-2-201107190-00005>
- Briggs, A. M., & Jordan, J. E. (2010). The importance of health literacy in physiotherapy practice. *J Physiother*, 65(3), 149–151. [https://doi.org/10.1016/s1836-9553\(10\)70018-7](https://doi.org/10.1016/s1836-9553(10)70018-7)
- Bostock, S., & Steptoe, A. (2012). Association between low functional health literacy and mortality. *BMJ*, 344, e1602.
- Bunge, M., Mühlhauser, I., & Steckelberg, A. (2010). What constitutes evidence-based patient information? Overview of discussed criteria. *Patient Education and Counseling*, 78(3), 316–328. <https://doi.org/10.1016/j.pec.2009.10.029>
- Conard, S. (2019). Best practices in digital health literacy. *International Journal of Cardiology*, 292, 277–279. <https://doi.org/10.1016/j.ijcard.2019.05.070>
- Denuwara, S. S., & Gunawardena, N. S. (2017). Health literacy among school teachers in the Colombo Education Zone, Sri Lanka. *Sri Lanka Journal of Public Health*, 40(2), 52-59.
- Deutscher Ethikrat (Hrsg.). (2018). *Big Data und Gesundheit- Bericht über die öffentliche Befragung des Deutschen Ethikrates*. <https://www.ethikrat.org/fileadmin/Publikationen/Studien/befragung-big-data-und-gesundheit.pdf>
- DeWalt, D. A., Berkman, N. D., Sheridan, S., Lohr, K. N., & Pignone, M. P. (2004). Literacy and health outcomes: A systematic review of the literature. *Journal of General Internal Medicine*, 19(12), 1228–1239. <https://doi.org/10.1111/j.1525-1497.2004.40153.x>
- Dunn, P., & Hazzard, E. (2019). Technology approaches to digital health literacy. *International Journal of Cardiology*, 293, 294–296. <https://doi.org/10.1016/j.ijcard.2019.06.039>
- Edward, J., Carreon, L. Y., Williams, M. V., Glassman, S., & Li, J. (2018). The importance and impact of patients' health literacy on low back pain management: A systematic review of literature. *The Spine Journal*, 18(2), 370–376. <https://doi.org/10.1016/j.spinee.2017.09.005>
- Ennis, K., Hawthorne, K., & Frownfelter, D. (2012). How Physical Therapists Can Strategically Effect Health Outcomes for Older Adults With Limited Health Literacy. *Journal of Geriatric Physical Therapy*, 35(3), 148–154. <https://doi.org/10.1519/JPT.0b013e31823ae6d1>
- Eysenbach, G., Powell, J., Kuss, O., & Sa, E.-R. (2002). Empirical studies assessing the quality of health information for consumers on the world wide web: A systematic review. *JAMA*, 287(20), 2691–2700. <https://doi.org/10.1001/jama.287.20.2691>
- Fernando, T., et al. (2020). Language and communication in Sri Lankan health care. *Asian Bioethics Review*, 12(2), 117–130
- Groene, R. O., & Rudd, R. E. (2011). Results of a feasibility study to assess the health literacy environment: Navigation, written, and oral communication in 10 hospitals in Catalonia, Spain. *Journal of Communication in Healthcare*, 4(4), 227–237. <https://doi.org/10.1179/1753807611Y.0000000005>
- Hironaka, L. K., & Paasche-Orlow, M. K. (2008). The implications of health literacy on patient-provider communication. *Archives of Disease in Childhood*, 93(5), 428–432. <https://doi.org/10.1136/adc.2007.131516>

- Ishikawa, H., et al. (2008). Functional, communicative, and critical health literacy. *Patient Education and Counseling*, 75(3), 414–417.
- International Patient Decision Aid Standards (IPDAS). (2019). *International Patient Decision Aid Standards (IPDAS)*. <http://ipdas.ohri.ca/>
- Jimenez, N., Fuentes, M., Moore, M., Rivara, F., Frias-Garcia, M., & Crawley, D. (2020). Transitions to outpatient care after traumatic brain injury for hispanic children. *Hospital Pediatrics*, 10(6), 509–515. <https://doi.org/10.1542/hpeds.2019-0304>
- Kilfoyle, K. A., Vitko, M., O’Conor, R., & Bailey, S. C. (2016). Health Literacy and Women’s Reproductive Health: A Systematic Review. *Journal of Women’s Health*, 25(12), 1237–1255. <https://doi.org/10.1089/jwh.2016.5810>
- Krebs, P., & Duncan, D. T. (2015). Health App Use Among US Mobile Phone Owners: A National Survey. *JMIR MHealth and UHealth*, 3(4), e101. <https://doi.org/10.2196/mhealth.4924>
- Lam, M., Choi, M., Lam, H. R., Agarwal, A., Chow, R., Chow, S., Rowbottom, L., McDonald, R., Lam, H., Chan, S., Chow, E., & Henry, B. (2017). Use of multimedia in patient and caregiver education for cancer pain management: A literature review. *Annals of Palliative Medicine*, 6(1), 66–72. <https://doi.org/10.21037/apm.2016.11.06>
- Lee, K. H., Kim, J. H., & Kim, S. H. (2015). Gender differences in health literacy and factors associated with health literacy among Korean adults. *Journal of Korean Medical Science*, 30(6), 843–849.
- Levitt, L. (2015). Why Health Insurance Literacy Matters. *JAMA*, 313(6), 555. <https://doi.org/10.1001/jama.2014.17419>
- Lopez-Olivo, M. A., & Suarez-Almazor, M. E. (2019). Digital Patient Education and Decision Aids. *Rheumatic Disease Clinics of North America*, 45(2), 245–256. <https://doi.org/10.1016/j.rdc.2019.01.001>
- Magnani, J. W., Mujahid, M. S., Aronow, H. D., Cené, C. W., Dickson, V. V., Havranek, E., Morgenstern, L. B., Paasche-Orlow, M. K., Pollak, A., Willey, J. Z., & On behalf of the American Heart Association Council on Epidemiology and Prevention; Council on Cardiovascular Disease in the Young; Council on Cardiovascular and Stroke Nursing; Council on Peripheral Vascular Disease; Council on Quality of Care and Outcomes Research; and Stroke Council. (2018). Health Literacy and Cardiovascular Disease: Fundamental Relevance to Primary and Secondary Prevention: A Scientific Statement From the American Heart Association. *Circulation*, 138(2). <https://doi.org/10.1161/CIR.0000000000000579>
- Mancuso, J. M. (2008). Health literacy: A concept/dimensional analysis. *Nursing & Health Sciences*, 10(3), 248–255. <https://doi.org/10.1111/j.1442-2018.2008.00394.x>
- Manganello, J. A. (2007). Health literacy and adolescents: A framework and agenda for future research. *Health Education Research*, 23(5), 840–847. <https://doi.org/10.1093/her/cym069>
- Mendoza, J. A., Garcia, J. L., & Torres, R. F. (2022). Urban-rural differences in access to health care and health information in Latin America. *Journal of Health Policy*, 45(4), 512–523.
- Moult, B., Franck, L. S., & Brady, H. (2004). Ensuring Quality Information for Patients: Development and preliminary validation of a new instrument to improve the quality of written health care information. *Health Expectations*, 7(2), 165–175. <https://doi.org/10.1111/j.1369-7625.2004.00273.x>

- Murugesu, L., Heijmans, M., Fransen, M. & Rademakers, J. (2018) *Beter omgaan met beperkte gezondheidsvaardigheden in de curatieve zorg: kennis, methoden en tools*. Nivel, Utrecht.
- Neter, E., & Brainin, E. (2012). eHealth literacy: Extending the digital divide to the realm of health information. *Journal of Medical Internet Research*, 14(1), e19.
<https://doi.org/10.2196/jmir.1619>
- Norman, C. D., & Skinner, H. A. (2006). eHealth Literacy: Essential Skills for Consumer Health in a Networked World. *Journal of Medical Internet Research*, 8(2), e9.
<https://doi.org/10.2196/jmir.8.2.e9>
- Nutbeam, D. (2000). Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, 15(3), 259–267. <https://doi.org/10.1093/heapro/15.3.259>
- Nutbeam, D. (2008). The evolving concept of health literacy. *Social Science & Medicine*, 67(12), 2072– 2078. <https://doi.org/10.1016/j.socscimed.2008.09.050>
- O'Connor, A., & Jacobsen, M. (2003). *Workbook on developing and evaluating patient decision aids*.
https://decisionaid.ohri.ca/docs/develop/develop_da.pdf
- Osborn, C. Y., Egede, L. E., & Fisher, L. (2011). Family support and medication adherence in diabetes. *Diabetes Research and Clinical Practice*, 92(3), 295-300.
- Paasche-Orlow, M. K., & Wolf, M. S. (2007). The Causal Pathways Linking Health Literacy to Health Outcomes. *American Journal of Health Behavior*, 31(1), 19–26.
<https://doi.org/10.5993/AJHB.31.s1.4>
- Palumbo, R. (2017). Examining the impacts of health literacy on healthcare costs. An evidence synthesis. *Health Services Management Research*, 30(4), 197–212.
<https://doi.org/10.1177/0951484817733366>
- Peerson, A., & Saunders, M. (2009). Health literacy revisited: What do we mean and why does it matter? *Health Promot Int.*, 24(3), 285–296. <https://doi.org/10.1093/heapro/dap014>
- Perera, R., et al. (2019). Health literacy in Sri Lanka: A community-based study. *BMC Public Health*, 19(1), 1162.
- Pires, C., Vigário, M., & Cavaco, A. (2015). Readability of medicinal package leaflets: A systematic review. *Revista de Saúde Pública*, 49(0). <https://doi.org/10.1590/S0034-8910.2015049005559>
- Quinn, S., Bond, R., & Nugent, C. (2017). Quantifying health literacy and eHealth literacy using existing instruments and browser-based software for tracking online health information seeking behavior. *Computers in Human Behavior*, 69, 256–267.
<https://doi.org/10.1016/j.chb.2016.12.032>
- Rababah, J. A., Al-Hammouri, M. M., & Drew, B. L. (2020). The impact of health literacy on college students' psychological disturbances and quality of life: A structural equation modeling analysis. *Health and Quality of Life Outcomes*, 18(1), 292. <https://doi.org/10.1186/s12955-020-01541-7>
- Ratzan, S. C. (2001). Health literacy: Communication for the public good. *Health Promotion International*, 16(2), 207–214. <https://doi.org/10.1093/heapro/16.2.207>
- Samarasekara, K., et al. (2021). E-health literacy and health behaviors among young adults in Sri Lanka. *Journal of Public Health*, 29(3), 547–556.
- Santana, S., Brach, C., Harris, L., Ochiai, E., Blakey, C., Bevington, F., Kleinman, D., & Pronk, N. (2021). Updating Health Literacy for Healthy People 2030: Defining Its Importance for a New

- Decade in Public Health. *Journal of Public Health Management and Practice, Publish Ahead of Print*. <https://doi.org/10.1097/PHH.0000000000001324>
- Sentell, T., & Braun, K.L. (2012). Low health literacy and limited English proficiency. *Journal of Health Communication*, 17(Suppl 3), 82–99.
- Simonds, S. K. (1974). Health Education as Social Policy. *Health Education & Behavior*, 2, 1–10. <https://doi.org/10.1177/10901981740020s102>
- Smith, B., & Magnani, J. W. (2019). New technologies, new disparities: The intersection of electronic health and digital health literacy. *International Journal of Cardiology*, 292, 280–282. <https://doi.org/10.1016/j.ijcard.2019.05.066>
- Sørensen, K., Pelikan, J. M., Röthlin, F., Ganahl, K., Slonska, Z., Doyle, G., Fullam, J., Kondilis, B., Agrafiotis, D., Ueters, E., Falcon, M., Mensing, M., Tchamov, K., Broucke, S. van den, & Brand, H. (2015). Health literacy in Europe: Comparative results of the European health literacy survey (HLS-EU). *The European Journal of Public Health*, 25(6), 1053–1058. <https://doi.org/10.1093/eurpub/ckv043>
- Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., Brand, H., & (HLS-EU) Consortium Health Literacy Project European. (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, 12(1), 80. <https://doi.org/10.1186/1471-2458-12-80>
- Speros, C. (2005). Health literacy: Concept analysis. *Journal of Advanced Nursing*, 50(6), 633–640. <https://doi.org/10.1111/j.1365-2648.2005.03448.x>
- Strotbaum, V., Pobiruchin, M., Schreiweis, B., Wiesner, M., & Strahwald, B. (2019). Your data is gold – Data donation for better healthcare? *It - Information Technology*, 61(5–6), 219–229. <https://doi.org/10.1515/itit-2019-0024>
- Taggart, J., Williams, A., Dennis, S., Newall, A., Shortus, T., Zwar, N., . . . & Harris, M. F. (2012). A systematic review of interventions in primary care to improve health literacy for chronic disease behavioral risk factors. *BMC Fam Pract*, 13, 49.
- van der Vaart, R., & Drossaert, C. (2017). Development of the Digital Health Literacy Instrument: Measuring a Broad Spectrum of Health 1.0 and Health 2.0 Skills. *Journal of Medical Internet Research*, 19(1), e27. <https://doi.org/10.2196/jmir.6709>
- Weiss, B. D. (2007). *Health literacy and patient safety: Help patients understand* (2. Aufl.). AMA Association. <https://www.ufff.br/getmedicina/files/2015/11/BARRY-WEISS.pdf>
- WHO. (2021). *EHealth. World Health Organization*. <http://www.emro.who.int/health-topics/ehealth/>