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eHEALTH LITERACY IN DIGITAL ERA: TRENDS OF DEVELOPMENT

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Abstract. The study supplies a conceptual framework for the development and use of eHealth literacy in digital health management, as well as in government and international eHealth management activities. This study aims to gain a deep understanding and analysis of eHealth literacy measurement trends through a systematic review and analysis of articles published (from January 2006 to January 2023) in PubMed, Web of Science, and Scopus. There are fifteen original and high-quality validation studies found in the systematic literature review on measuring eHealth literacy. The study found three stages in the development of eHealth literacy measurement, which are characterized by a suitable set of skills. eHLS-Web 3.0 has high internal and external consistency scores, and eHEALS and HLS-EU-Q-16 have higher reliability for the basic development of an international eHealth literacy measurement instrument in digital health management. This study is a research program to guide future study and help knowledge accumulation and creation on eHealth Literacy instruments and their implementation in digital health management. The result of the study was supplied eHealth instruments for the implementation and training of eHealth Literacy in information systems. Future research themes in eHealth literacy will include the standardization of eHealth assessment instruments and the development of health strategies for different target audiences of various levels of management. And, to encourage further progress in the development of methodology and the application of eHealth literacy in information systems.

Keywords: digitalization, systematic review, healthcare management, health, electronic health.
JEL Classification: I11, I18, H51

INTRODUCTION

Digital health management involves a qualitative transformation of the healthcare system, increasing its efficiency by perfecting and automating the system, and organizing the efficient operation of all its links in the government, public, and private segments. The single common approach to assessing the results of the above innovations through the assessment of level eHealth literacy plays a key role. In addition, improving eHealth literacy will help minimize the costs of the health care system, improve the quality of health services provided, ensure greater inclusion in the health system, and perfect patient time for receiving services and the working time of doctors themselves.

A growing number of electronic resources, technologies, and an increasing number of health literacy measurement tools show the importance of people's skills in finding, understanding, and evaluating health information that can be found on the Internet. Although eHealth literacy has gained momentum in the past decade, it remains an under-researched area, particularly eHealth literacy measurement.

Existing systematic review mainly focused on measuring eHealth literacy and bibliometric analysis of instruments, that can help users summarize the current knowledge on the development of existing measurement instruments in health (Tavousi, M., Mohammadi, S., Sadighi, J., Zarei, F., Kermani, R. M., Rostami, R., & Montazeri, A., 2022), (Crocker, B., Feng, O., & Duncan, L. R., 2023) or specific characteristics of health literacy in different age, social groups of people, nationalities, or groups of patients (Estrella, M. L., & Allen-Meares, P., 2020), (Slatyer, S., Toye, C., Burton, E., Jacinto, A. F., & Hill, K. D., 2022).

Only a small selection of systematic reviews of eHealth literacy measurement (Lee, J., Lee, E. H., & Chae, D., 2021) aims to identify available eHealth literacy tools and evaluate their measurement properties to provide reliable evidence to researchers and clinicians choosing an eHealth literacy instrument. At the same time, only one study has performance-based measures of eHealth literacy (Crocker, B., Feng, O., & Duncan, L. R., 2023).

Some studies provide a comprehensive analysis of eHealth literacy (Soboleva-Tereshchenko O., 2023), (Wang Q., Wu X. and Qi H., 2021), but systematic reviews of the literature on eHealth literacy skills in the healthcare sector are poorly represented.

The global challenges of COVID-19, military conflicts, and the rapid development of artificial intelligence show the importance of people's skills to evaluate medical information on the Internet and use this information to solve health problems. Digital health management has become important for business, government, and international organizations.

During COVID-19, effective measures were needed to manage new cases and reduce the number of healthcare workers and patients with COVID-19. These measures included the digital sharing of COVID-19-related information between healthcare providers. To do this, medical staff must be familiar with the concept of digital health and have the right skills to share information related to COVID-19. Although there have been many studies related to eHealth literacy measurement instruments during COVID-19 (Karakulak, A., Stogianni, M., Alonso-Arbiol, I., Shukla, S., Bender, M., Yeung, V. W. L., Jovanović, V., Musso, P., Scardigno, R., Scott, R. A., Stuart, J., Friehs, M.-T., Toh, Z., Albayrak-Aydemir, N., Arvanitis, A., Buzea, C., Mastrotheodoros, S., Tsang, J.-A., Madeira, F., … Gkomez, A., 2023), only a few studies provided a systematic review investigating the role of eHealth literacy in preventive behaviors for COVID-19 (Ameri, F., Dastani, M., Sabahi, A., Hooshangi, F., Rahimkarimi, M., Rajabi, E., & Yaghooby, P., 2022), and only one research presents original tools used to measure digital health literacy to share COVID-19 (Chereka, A. A., Demsash, A. W., Ngusie, H. S., & Kassie, S. Y., 2022).

In addition to research on the impact of eHealth literacy on people's behavior during COVID-19, some systematic reviews focus on specific areas related to eHealth Literacy. Special attention deserves the systematic reviews that research the impact of electronic literacy in health on consumer behavior and healthy lifestyle (Bedrosova, M., Mylek, V., Dedkova, L., & Velicu, A., 2023), (Vittuari, M., Herrero, LG., Masotti, M., Iori, E., Caldeira, C., Qian, Z., Bruns, H., Herpen, E., Obersteiner, G., Kaptan, G., Liu, G., Mikkelsen, BE., Swannell, R., Kasza, G., Nohlen, H., & Sala, S., 2023)

Today, the use of AI in the healthcare sector is still quite limited, even though AI has a wide range of potential uses and benefits. The rapid development of artificial intelligence is already reflected in separate systematic reviews of the management literature (Maggie C.M. Lee, Helana Scheepers, Ariel K.H. Lui, Eric W.T. Ngai, 2023), however, only a few studies present the state of AI in the healthcare sector and the functionality of using AI in healthcare services (Ali, O., Abdelbaki, W., Shrestha, A., Elbasi E., Alryalat M. A. A., Dwivedi Y. K., 2023), (Kitsios, F., Kamariotou, M., Syngelakis, A. I., & Talias, M. A., 2023). However, future researchers will need to

carefully analyze the patient safety and privacy issues that arise from the use of AI in digital healthcare management.

In the context of the introduction of AI in healthcare, and changes in consumer behavior and health lifestyle under COVID-19 and other factors there is limited understanding of eHealth literacy trends and generally accepted eHealth literacy level assessment criteria for digital health management. To the best of our knowledge, such a systematic review of the measurement properties of eHealth literacy instruments with analysis trends and skills has not been conducted previously.

Therefore, this study aimed (1) to find the currently available instruments for measuring eHealth literacy and study the trends of eHealth literacy measurement from January 2006 to January 2023 and (2) to examine and analyze the eHealth literacy skill set and identify prospects for introducing eHealth literacy instruments into digital health management. This work is needed to help researchers and decision-makers identify and use performance-based eHealth measurement tools that can be applied to future digital health management projects.

METHODOLOGY

A systematic review was performed following the principles of PRISMA. The main databases including the Scopus, Web of Science, and PubMed databases were searched from January 2006 to January 2023. The selected keywords include the words "eHEALS', 'eHealth literacy instruments, 'e-Health literacy instruments, and 'electronic Health literacy instruments.' Basic inclusion criteria consisted of original articles, which had original and validated eHealth literacy instruments.

Our comprehensive systematic review framework is based on studies of all scales, tools, questionnaires, and instruments of eHealth literacy since the publication of eHEALS. We searched three main databases in biomedical information for published articles on the measurement properties of instruments measuring eHealth literacy and showed eligible articles using a standard set of selection criteria.

We selected eligible articles based on 3 main criteria: (1) availability of English full - text or Open Access articles, (2) measuring eHealth literacy instruments as defined in the systematic review framework (3) use of valuational and useful measuring instruments. Our study focused on finding measuring instruments of eHealth literacy (scales, toolkit, instruments, questionnaire).

Search Strategy

This study included all original articles reporting the psychometric properties of eHealth literacy instruments published after eHealth literacy measurements. Articles were found by searching three databases: Web of Science, PubMed, and Scopus. The databases were searched from 01 January 2006 to 011 January 2023. The study used a manual search strategy.

The search strategy was limited to eHealth literacy instruments whose psychometric information was presented transparently and accurately. Papers were retrieved using various combinations of the title, keywords, and abstracts of articles, including 'eHEALS', 'eHealth literacy measurement, 'e-Health literacy measurement, and 'electronic Health literacy measurement.'

Inclusion criteria were: English article published between January 2006 and January 2023 and Literature Free full text or Open Access. Exclusion criteria were dissertations, books, letters to the editor, papers presented at conferences, and abstracts of speeches.

Eligibility criteria for inclusion were as follows: the study had research on the measurement of eHealth literacy; the study included sample and formative, process, and outcome assessment of this eHealth literacy measurement; and the study was a reviewed paper.

The first search yielded 1699 articles, including 551 articles on the Web of Science, 611 articles on PubMed, and 537 articles on Scopus. All potentially relevant publications were extracted and analyzed. After the final evaluation, the necessary data were extracted and recorded. The literature search results were reviewed, screened titles and DOI, and duplicate results were excluded

(1151), leaving 548 articles. So, the first search cleared of duplicates for abstracts resulted in 548 articles, which were reviewed for relevance to the research question.

So, the first search cleared duplicates for abstracts and resulted in 548 articles, which were reviewed for measuring eHealth literacy instruments as defined in the systematic review framework. The main factors for ultimately excluding many articles included the following: the study described the models of the eHealth literacy; the study focused on Health literacy, education, and training of healthcare staff or other subsets of Health literacy outside the scope of the eHealth literacy instruments.

Following the inclusion and exclusion criteria from the study, the titles and abstracts of the articles were carefully examined, resulting and 242 articles selected that used relevant measuring instruments. The main factors for excluding many articles included the following: the study supplied a brief description of the eHealth literacy Instruments without supplying results on the approbation. The other factor in the final exclusion of studies was that the study was empirical and conducted on eHealth literacy instruments adapted for use in different languages and/or in various populations.

Therefore, the criteria effectively excluded papers that measure the actual results of evaluating the translation of eHealth literacy instruments, for example, approbation eHEALS, HLS-EU-Q, and a mix of diverse eHealth literacy instruments for different countries and/or various groups of adults, adolescent, old people with chronic (non-chronic) diseases.

Measuring instruments of eHealth literacy supply insight into individuals' eHealth literacy skills. They can also supply a broader overview of the skills that play a key role in eHealth interactions, including interactive skills. However, measuring instruments of eHealth literacy or hybrid scales are usually long, more complex, and time-consuming for patients and professionals, and may not be possible in specific settings.

To end bias, when the long version of the scale or questionnaire is compared with the short version, and to eliminate systematic fallacy, when the large sample is compared with a small one, we added additional conditions. A total of 15 full-text articles were assessed for eligibility.

The study flowchart that details the study selection process along with the final search results is presented in Figure 1.

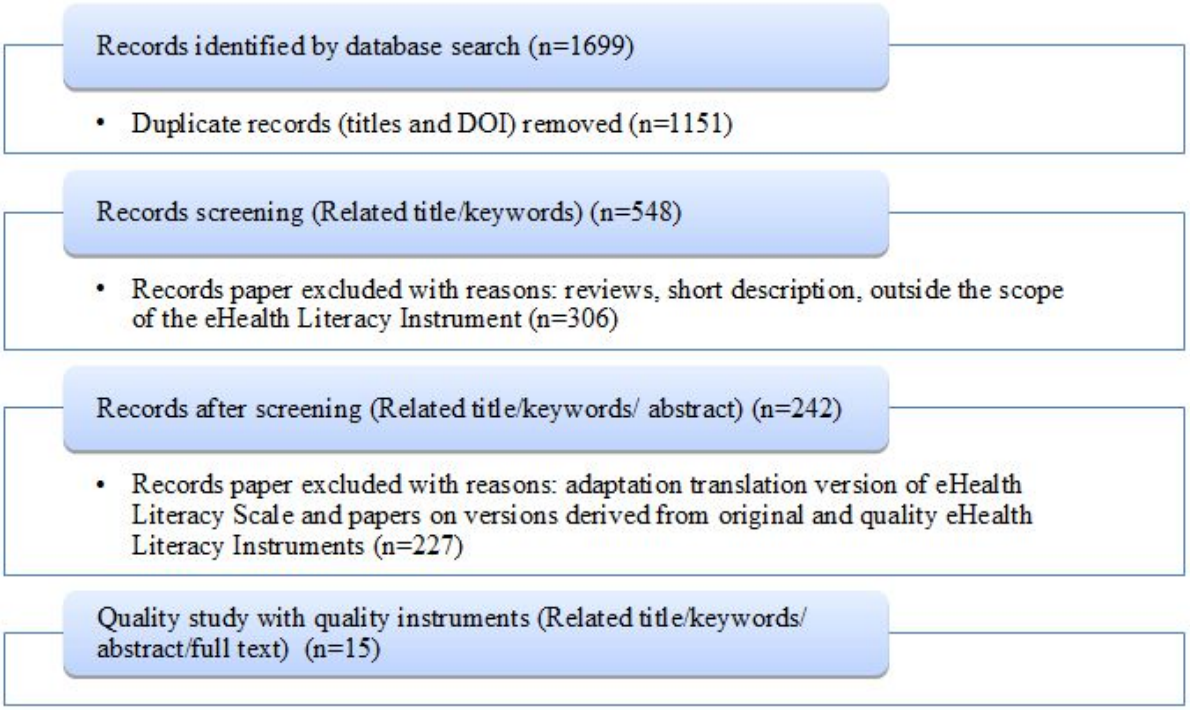

Fig 1. Flow diagram of the study selection process
Source: Own study

Then 15 articles were analyzed with full data extraction according to an adequate description of the development and validation of the eHealth literacy measurement quality assessment tool. In total, for a review of 15 full-text articles, we extracted the following data from eligible articles: (1) basic article information (authors, title, journal name, year of publication, study eligibility); (2) validation study details (design, objectives, setting, country); (3) description of respondents (type, sample population, size, mean age, gender, disease status); (4) instrument details (name, purpose, number of items, response scales, constructs purported to measure, constructs and domains of eHealth literacy relevant to the conceptual framework); (5) details of instrument development (item generation, refinement procedures, administration, scoring methods, theoretical basis, limitations); and (6) results of statistical analyses and measurement properties evaluated (statistical methods, reported values for each measurement property).

RESULTS AND DISCUSSION

In summary, we identified 15 eHealth literacy instruments (Table 1) that were rated as high quality based on the presence of important indicators such as domain representation, sample size, the level of internal and external consistency scores, and the description of the eHealth literacy skill set.

Table 1

Selected eHealth literacy instruments

#	Health Literacy instrument name	Year	Authors	Country	Sample	Number of items
1	eHealth Literacy Scale (eHEALS)	2006	Norman CD, Skinner HA	Canada	664 adolescents (age 13-21)	8 items
2	European Health Literacy Questionnaire (HLS-EU-Q16)	2009-2012	European Health Literacy project	EU	8 EU countries (n = 1000 per country, age 18+)	16 items
3	Fostering Literacy for Good Health Today (FLIGHT) & Vive Desarollando Amplia Salud (VIDAS)	2013	Ownby et al.	USA	93 Spanish- and 105 English-speaking participants 50 years or older.	98 items
4	Patient Readiness to Engage in Health Internet Technology (PRE-HIT)	2014	Koopman R.J et al	USA	200 patients with chronic conditions (age 18+)	28 items
5	e-Health Impact Questionnaire (eHIQ)	2015	Laura Kelly et al	UK	117 participants in Stage 1 + 102 participants in Stage 2 (age 18+)	37 items
6	electronic Health Literacy Scale (e-HLS)	2016	Seçkin G et al	USA	50,000 residents (age 18+)	19 items
7	Digital Health Literacy Instrument (DHLI)	2017	Van der Vaart R et al	Netherlands	200 respondents at T1 (age 18-84) + 67 respondents at T2 (age 18-65)	28 items
8	Extended eHealth literacy scale (eHEALS-E)	2017	Petrič G et al	Slovenia	644 users (mean=38.9 years)	20 items
9	eHealth Literacy Assessment Toolkit (eHLA)	2018	Karnoe A et al	Denmark	475 respondents (age 18 - 60 +)	44 items
10	eHealth Literacy Questionnaire (eHLQ)	2018	Kayser, L. et al	Denmark	475 individuals (age 16 - 74)	35 items

11	Transactional eHealth Literacy Instrument (TeHLI)	2019	Paige, S. R. et al	USA	5 experts and 25 end-users 283 participants (age 64.34 years ± 10.4 years)	18 items
12	Digital Health Literacy Assessment (DHLA)	2020	Liu P et al	Taiwan	350 participants (age 20+)	10 items
13	eHealth Literacy Scale in Web 3.0 contest (eHLS-Web 3.0)	2021	Liu H et al	China	1421 students in study 1 (age 20.5 years ± 1.4 years) and 8 health experts (age 38.3 ± 5.9 years) + 741 students in study 2 (age 21.3 years ± 1.4 years)	24 items
14	Problem-Based mHealth Literacy Scale (PB-mHLS)	2022	Zhang, L., & Li, P.	China	433 responses aged 30 to 60 years	33 items
15	Condition-specific eHealth literacy scale for diabetes (CeHLS-D)	2022	Lee, EH., al	South Korea	453 people with diabetes aged 56.8 (SD = 10.8) year	10 items

Source: Own study

All instruments were approbated on a large sample of 117 (eHLQ) to 8000 (HLS-EU-Q16) percipients and separate groups of adolescents and adults from 13 years old (eHEALS) to 84 years old (DHLI). Three instruments have been assessed in 2 stages (eHIQ, DHLI, eHLS-Web 3.0). The number of domains varied from 5 (eHIQ) to 8 (PRE-HIT). Additionally, the domains presented in the eHealth literacy instruments were studied. These instruments have also been well-reviewed and confirmed in relevant studies in terms of validity and reliability (Table 2).

Table 2

Internal and External Consistency Indicators of Selected eHealth Literacy Instruments

#	Name	Year	Authors	Internal consistency (Cronbach's alpha total /all domains/stages)
1	eHEALS	2006	Norman CD, Skinner HA	Cronbach's alpha = 0.88 (0.91*)
2	HLS-EU-Q16	2009-2012	European Health Literacy project	Cronbach's alpha = 0.81
3	FLIGHT & VIDAS	2013	Ownby et al.	Cronbach's alpha = 0.58 - 0.84 for the entire sample
4	PRE-HIT	2014	Koopman R.J et al	Cronbach's alpha = 0.65 - 0.87.
5	eHIQ	2015	Laura Kelly et al	Cronbach's alpha = 0.77 - 0.92.
6	e-HLS	2016	Seçkin G et al	Cronbach's alpha = 0.93
7	DHLI	2017	Van der Vaart R et al	Cronbach's alpha T1 (n=200) = 0.57 - 0.87, T2 (n=67) = 0.68 - 0.88
8	eHEALS-E	2017	Petrič G et al	Cronbach's alpha = 0.52 - 0.81.
9	eHLA	2018	Karnoe A et al	Cronbach's alpha = 0.59 - 0.94.
10	eHLQ	2018	Kayser, L. et al	Cronbach's alpha = 0.77 - 0.86.
11	TeHLI	2019	Paige, S. R. et al	Cronbach's alpha = 0.87- 0.92
12	DHLA	2020	Liu P et al	Cronbach's alpha = 0.84 - 0.89.
13	eHLS-Web 3.0	2021	Liu H et al	Cronbach's alpha = 0.976
14	PB-mHLS	2022	Zhang, L., & Li, P.	Cronbach's alpha = 0.864 - 0.949
15	CeHLS-D	2022	Lee, EH., et al	Cronbach's alpha = 0.89-0.92

Source: Own study

All instruments had a substantial value of Internal consistency, which was estimated Cronbach's alpha coefficient of 0.70 and above for total scale and more than 0.70 for ¾ of scale domains. Of all the selected eHealth literacy tools, eHEALS is the most used. Today, many studies have proven that eHEALS is a dependable, efficient, and widely used tool for assessing eHealth literacy, demonstrating a high level of internal consistency (Cronbach's alpha) up to 0.91 (Shiferaw KB. 2020), (Wijaya, M. C., & Kloping, Y. P. (2021).

The eHEALS was the first eHealth literacy measurement tool that assessed the skills of Internet users in searching for, finding, and applying medical knowledge on the Internet (Norman, C. D., & Skinner, H. A., 2006). Since Norman and Skinner developed eHEALS, more rating scales, instruments, and questionnaires have been created. The following eHealth literacy measurement instruments have expanded user skills based on the peculiarities of each stage of development. With the continuous development of science and technology, the core of assessment has gradually shifted from eHealth literacy to Digital Health literacy (Liu, P., Yeh, L. L., Wang, J. Y., & Lee, S. T., 2020) and mHealth literacy (Zhang, L., & Li, P. (2022). The main skills used in the identified instruments are shown in Table 3.

Table 3

Main skills of selected eHealth literacy instruments

Name	Year	Find / Information Searching	Operational skills / Access to Internet	Navigation skills	Understanding information	Evaluating information/ Relevance, helpful, appraise	Trust and credibility information/ Critical skills	Health management/ Self-management/ Self-assessed	Used /Apply/ Using information to make informed decisions	Protecting privacy / Confidential/ Privacy concern	Communicating /Adding content/ Sharing/ Relation with doctor
eHEALS	2006	x				x			x		
HLS-EU-Q16	2012	x			x	x			x		
FLIGHT & VIDAS	2013	x		x	x				x		x
PRE-HIT	2014	x	x		x	x			x	x	x
eHIQ	2015				x	x			x	x	x
e-HLS	2016					x	x				x
DHLI	2017	x	x	x		x	x			x	x
eHEALS-E	2017	x	x		x	x	x		x		
eHLA	2018	x	x	x	x			x		x	x
eHLQ	2018		x	x	x		x	x	x	x	
TeHLI	2019	x					x		x		x
DHLA	2020	x					x		x		
eHLS-Web 3.0	2021			x			x	x		x	x
PB-mHLS	2022	x	x		x	x		x	x		x
CeHLS-D	2022	x	x		x	x		x	x		x

Source: Own study

Thus, in addition to assessing the ability to search, find, evaluate, integrate, and apply what is received in the electronic environment to solve a health problem, an assessment was also added to the ability to communicate to solve a health problem and protection of confidential information in the implementation of these processes.

Group of communication and protecting privacy skills, firstly as a new group were added in PRE-HIT (Koopman, R. J., Petroski, G. F., Canfield, S. M., Stuppy, J. A., & Mehr, D. R., 2014) and then were researched in eHIQ (Kelly, L., Ziebland, S., & Jenkinson, C., 2015), DHLI (Van der Vaart, R., & Drossaert, C., 2017), eHLA (Karnoe A, Furstrand D, Christensen KB, Norgaard O, Kayser L., 2018), eHLS-Web 3.0 (Liu, H. X., Chow, B. C., Liang, W., Hassel, H., & Huang, Y. W., 2021).

Then, the critical skills, which connect with estimating trust and credibility information on the Internet, were separated in e-HLS (Seçkin, G., Yeatts, D., Hughes, S., Hudson, C., & Bell, V., 2016), DHLI (Van der Vaart, R., & Drossaert, C., 2017), eHEALS-E (Petrič G, Atanasova S, Kamin T., 2017), TeHLI (Paige, S. R., Stellefson, M., Krieger, J. L., Miller, M. D., Cheong, J., & Anderson-Lewis, C., 2019), DHLA (Liu, P., Yeh, L. L., Wang, J. Y., & Lee, S. T., 2020) into a new group from evaluating information skills. The Navigation skills, which are related to navigation and orientation on the Web, were separated into DHLI (Van der Vaart, R., & Drossaert, C., 2017), eHLA (Karnoe A, Furstrand D, Christensen KB, Norgaard O, Kayser L., 2018), eHLS-Web 3.0 (Liu, H. X., Chow, B. C., Liang, W., Hassel, H., & Huang, Y. W., 2021) into a new group from operational and information searching skills.

The detailed study of the content and changes of eHealth skills in selected eHealth literacy instruments made it possible to find three stages in the development of eHealth Literacy measurements: formation during 2006-2014, extension during 2014-2017, improvement during 2018-2023 (Fig 2.)

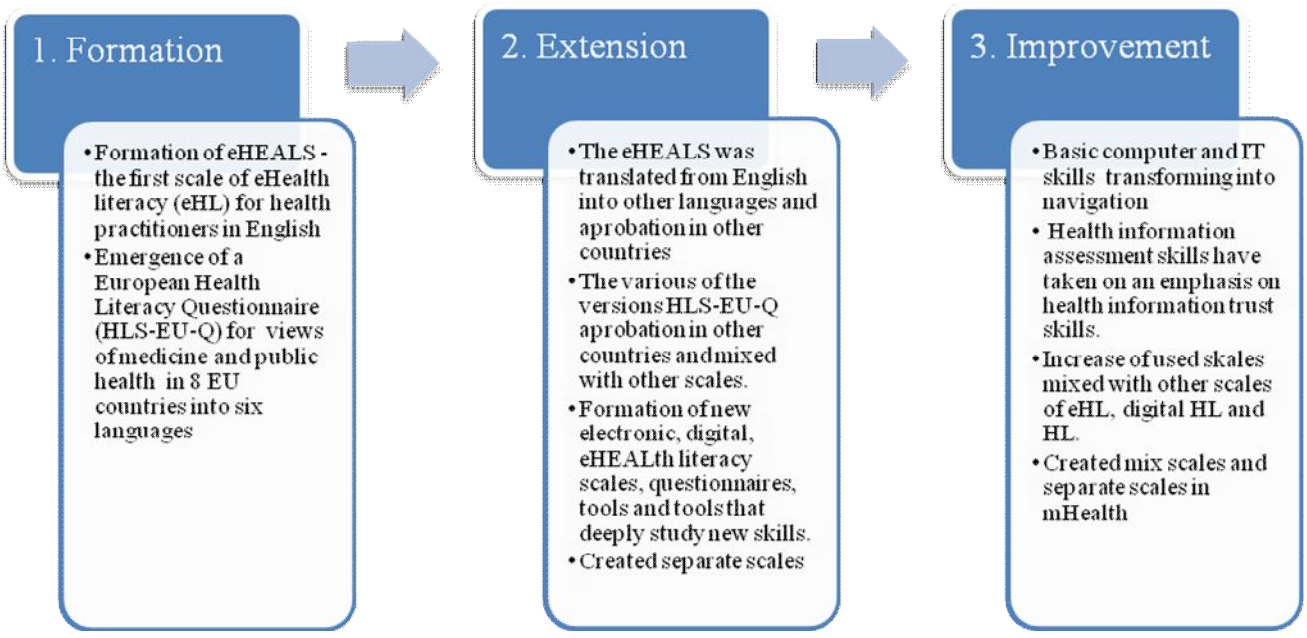

Fig 2. Stages in the development of eHealth Literacy measurements

Source: Own study

RESULTS AND DISCUSSION

This systematic review of the literature covered seventeen years of bibliometrics. This review extracted and reported a range of health literacy instruments that may be helpful for business, public administration, and international organizations in area healthcare. In addition, the current study might help investigators, and decision-makers, who wish to use an instrument for measuring eHealth literacy in the system of digital health management.

Two eHealth literacy instruments have multiple versions used in different languages and populations and have the potential to be used for estimating eHealth literacy for healthcare consumers, for instance, eHEALS (Norman, C. D., & Skinner, H. A., 2006), HLS-EU-Q 16 (Sørensen, K., Van den Broucke, S., Pelikan, J. M., Fullam, J., Doyle, G., Slonska, Z., Kondilis, B., Stoffels, V., Osborne, R. H., Brand, H., & HLS-EU Consortium, 2013).

Among the general health literacy instruments the HLS-EU-Q 16, which examines health literacy in three areas (health care, health prevention, and health promotion), has the potential to be used universally to estimate eHealth literacy for decision-makers in government and international organizations.

Despite the substantial number of instruments for assessing eHealth literacy, the availability of unique international instruments for measuring eHealth literacy is currently one of the concerns of public health professionals. This study showed that the most widely used tools internationally are HLS-EU-Q 16 and eHEALS. Given the wide range of applications of these instruments, they can be considered a prelude to the development of an international instrument for measuring eHealth literacy.

Other eHealth literacy instruments have the potential to be used by healthcare providers in estimating eHealth literacy, for instance, TeHLI, and eHLS-Web 3.0. Special attention deserves development in 2021 of the eHealth literacy Scale in the Web 3.0 Competition (eHLS-Web 3.0), which has high internal and external consistency scores among all eHealth literacy instruments and is the latest updated version of eHLS-Web.

In addition, the emergence of a new subtype of eHealth literacy – mHealth Literacy based on the wide use of mobile phones during the last years. Considering the quality indicators of this instrument and the quantity and diversity of study participants, this could form the basis for an international eHealth literacy or mHealth literacy measurement instrument.

It seems that we need a core global general eHealth literacy instrument for use around the globe, which would consider the needs of consumers (Lee, EH., Lee, Y.W., Lee, KW., Kim HJ., Hong, S., Kim, SH., & Kang, EH.,2022), (Zhang, L., & Li, P. (2022) and providers of healthcare (Liu, H. X., Chow, B. C., Liang, W., Hassel, H., & Huang, Y. W.,2021) and the need for their regulation at the government and international level (Sobolieva-Tereshchenko, O., 2023), (Sobolieva-Tereshchenko, O. & Zhukova, Y., 2023).

Future research will be required to comprehensively and in-depth explore the measurement of eHealth literacy in the areas of unification and standardization of eHealth literacy tools and eHealth literacy skills.

CONCLUSION

This is the first systematic literature review that specifically finds measurement instruments of eHealth literacy and important eHealth literacy skills. We found 15 unique eHealth literacy instruments and conducted a comprehensive analysis of eHealth literacy research focuses and trends.

This review highlighted that there were more than enough instruments for measuring eHealth literacy. Therefore, well-developed instruments could be helpful if appropriately selected based on the goals of digital health management. Perhaps it is time to develop and implement common recommendations to provide a clear guideline for measuring health literacy as appropriate.

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ГРАМОТНІСТЬ З ОХОРОНИ ЗДОРОВ'Я В ЕПОХУ ЦИФРОВІЗАЦІЇ: ТЕНДЕНЦІЇ РОЗВИТКУ

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Дослідження забезпечує концептуальну основу для розвитку та використання грамотності в галузі охорони здоров'я в епоху масштабної цифровізації управління охороною здоров'я на державному та міжнародному рівнях управління. **Метою** даного дослідження є порівняльна оцінка та аналіз тенденцій вимірювання грамотності у сфері електронної охорони здоров'я за допомогою систематичного огляду та аналізу статей, опублікованих у науко-метричних базах PubMed, Web of Science та Scopus. **Методологія**: у дослідженні використовувався систематичний огляд та аналіз статей, опублікованих з січня 2006 по січень 2023 року. Систематичний огляд проводився відповідно до принципів PRISMA. Для дослідження використовувалася стратегія ручного пошуку. Методологічну якість кожного дослідження було оцінено за допомогою показника внутрішньої узгодженості шкал вимірювання (альфа Кронбаха). **За результатами** дослідження було виявлено п'ятнадцять оригінальних та високоякісних інструментів вимірювання грамотності з охорони здоров'я, серед яких виділено три найефективніших на думку автора: eHLS-Web 3.0., eHEALS та HLS-EU-Q-16 для базової розробки міжнародного інструменту вимірювання грамотності в галузі електронної охорони здоров'я в управлінні цифровою охороною здоров'я. Зокрема, інструмент електронної охорони здоров'я eHLS-Web 3.0 було оцінено як такий, що має високі показники внутрішньої та зовнішньої узгодженості, а інструменти eHEALS та HLS-EU-Q-16 було визначено, як такі, що мають перевірену десятиріччями досліджень надійність. Систематичний огляд також виявив три етапи у розвитку виміру грамотності у сфері електронної охорони здоров'я, які характеризуються відповідним набором навичок. Майбутні теми досліджень у галузі грамотності в галузі електронної охорони здоров'я слід зосередити на стандартизації інструментів оцінки електронної охорони здоров'я та розробці стратегій охорони здоров'я для різних цільових аудиторій та різних рівнів управління, а також методології застосування грамотності з електронної охорони здоров'я в інформаційних системах.

Ключові слова: цифровізація, систематичний огляд, управління охороною здоров'я, охорона здоров'я, електронна грамотність.