Digital Technology Use in Turkey and The Need For New eHealth Literacy Measurement Tools

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ABSTRACT

Aim of the study: Digital health technologies, which cause the reshaping of today's patient-health relationship have been reflected in every field of health services. In a setting where the patient-health relationship is so dependent on the use of digital tools and the internet, it has become one of the most important elements for the development of their health for users to have the necessary digital skills and eliminate false and unnecessary information and data and acquire their health needs. Thus, measuring the digital health literacy of consumers became a necessity. The aim of this study is to clarify the need for developing or adopting new digital health literacy measurement tools in Turkey.

Materials and Methods: For the purpose to reveal the state of digital health literacy in Turkey the reports announced by different international and national institutes were searched in this descriptive research. The prevalence of the use of social media, the increase in the number of internet users and mobile devices in recent years, individuals' reasons for using the internet, and the ratio of searching health issues in this data were compiled. Additionally, the digital/eHealth literacy scales developed or adopted in Turkish by researchers were searched from databases.

Results: The results showed that the adaptation of Turkey and its people to e-health is very high and Turkish people take the lead the way in terms of accessing health-related information, integrating with the health system, and using health-related applications. So, the need for digital health literacy scales and their potential use in Turkey was reported in this study. According to the results of the study only one measurement tool, developed by Norman and Skinner (2006) was adopted in Turkish and used by Turkish researchers. This study mostly used ten digital/eHealth literacy instruments were introduced and the gap in this area was argued. Although there are many digital/eHealth literacy scales adopted in various countries, in Turkey researchers stay behind in that situation. The need for developing or adopting new digital/eHealth literacy scales is obvious.

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INTRODUCTION

Digitization/digital transformation, which permeates every aspect of life has also taken its place in health services and it has been a necessity to keep up with technological developments in today's world. Especially with the use of digital technologies in health services, a new process has started. Internet technologies are at the forefront of these technologies. The internet offers rich information on many subjects and its prevalence in daily life has become a common source of information for many users. Thanks to the internet, the opportunity to access information has increased and almost all the services that people need are started to be provided from digital media. Digital health technologies, which cause the reshaping of today's patient-health relationship, have been reflected in every field of health services (Gümüş, 2018; Ekinci et al., 2021).

Digital transformations in health services repulsion people who provide health services and those who receive health services from different sources to make their lives easier. One of these quests is to provide digitalization in health in order to reduce the costs of health services, to have more equipped information about health, and to offer healthcare more effectively, efficiently and with quality come among others. Both web-enabling and social media-based information and communication technologies have reshaped today's patient-health relationship. In a setting where the patient-health relationship is so dependent on the use of digital tools and the internet, it has become one of the most important elements for the development of their health for users to have the necessary digital skills and eliminate false and unnecessary information and data. In addition, it has been seen in previous research that individuals with high digital literacy levels are more conscious about healthy living (conscious eating, exercise, and developing healthy lifestyle behaviors), and this has a positive relationship with staying healthy throughout life (Balay et al.,2021; Gümüş & Sönmez, 2020).

Digital applications and tools that we encounter in many areas have also led up to extraordinary developments in health and health services. When choosing a doctor or a hospital, a patient has the opportunity to review the hospital web pages beforehand, to send his wishes and complaints directly to the hospital authorities, to be examined from his home thanks to telemedicine, and follow the health institution and health worker's media. This situation has increased both the awareness level of patients and the competition between health institutions. In addition to accessing health services, consumers can also access diet lists, exercise programs, and healthy eating and drinking habits from paid or free platforms on the other hand heap of information creates confusion and usually causes valuable information and guidance to be overlooked. Especially during epidemics in the last two years, the importance of reaching accurate health information and benefiting from health services has been understood once again. Thus, it is vital that users who provide health information from the internet have a set of digital skills and understand this information in order to improve their health (Aba et al, 2019; Bostan & Yalçın, 2016).

Research has shown that having high digital health literacy is associated with a variety of positive health outcomes throughout the lifespan. Adequate health literacy enables individuals to make informed decisions concerning health care services, prevention of diseases, and health promotion. Inadequate health literacy causes less use of preventive health services, delay in seeking health care in the symptomatic period, inability to understand the individual's medical condition and adherence to medical instructions, increase in health care costs, and increase in mortality. Looking at the previous studies, a positive relationship was found between health literacy and health-promoting behaviors. Alcohol and cigarette use have been found more common in groups with low health literacy. Considering the individual rates who detect cancer at an early stage and have knowledge about the disease, it is seen that individuals with high health literacy are more common than those with low health literacy. As seen in many studies, there is a positive relationship between digital/e-health literacy, health-promoting lifestyle behaviors, and maintaining a better quality of life in groups with chronic diseases (Biçer et al. 2020; Balay et al, 2021). In addition, high e-health literacy is important for young groups to avoid harmful diets and habits and engage in physical activity. In particular during epidemics, since most of the information is accessed online, it has been observed that those with high digital literacy struggle more positively in these periods (Britt et al., 2017; Do et al.,2020; Doğan et al., 2012; Duong et al., 2020; Şen et al, 2017).

1.1. Health Literacy and Digital Health Literacy

The way to be a healthy individual is thanks to healthy habits and behaviors. In today's world, surrounded by an endless amount of true and false information, the way to acquire correct information about our health and develop correct behaviors is thanks to good health literacy. Healthcare literacy is expressed as the mental and social skills necessary for people to access health-related information, understand this information and use it in health-related decisions. Health literacy skills enable patients to take control of their own well-being by making sound healthcare choices, improving communication with physicians, and giving them the information they need to advocate

for themselves in a medical setting. However, it strengthens the competence of individuals on their own and public health by ensuring the correct use of resources and shaping quality conditions in health services (European Commission, 2019). In order to receive a quality health service, firstly, patients must understand and express their complaints and symptoms correctly. The difference between health literacy and literacy is that health literacy requires some additional skills, for example; adequate health-related vocabulary and skills such as consistently finding, evaluating, and using health information from a variety of contexts are required. Being able to understand medical education brochures, instructions about prescribed drugs, and doctors' explanations, evaluate consent forms in hospitals and overcome complex health systems are all essential for health literacy.

According to the results of some studies investigating the importance of health literacy, a positive relationship has been found between adequate health literacy and health status, utilization of health services, and preventive health services (Liu et al., 2018). On the other hand, individuals with low levels of health literacy are more likely to be hospitalized and have higher health expenditures (Davis, 1996). Moreover, people with low health literacy are less likely to be vaccinated against diseases and understand medical labels and instructions compared to adults with high health literacy (Biçer et al., 2020).

When the literature is searched, scales that measure the health literacy of health care users are frequently encountered. Rapid Estimation of Adult Literacy in Medicine (REALM), Adult Functional Health Literacy Test (TOFHLA), Health Activities Literacy Scale (HALS), Health Literacy Skills Scale (HLSI), and Adult Health Literacy Scale (AHLS) scales are the most common (Liu et al., 2018). Current health literacy scales have been adapted to many languages in different countries. These scales consist of questionnaires and fill-in-the-blank questions, evaluate the health literacy level of individuals as adequate, limited, or insufficient as a result of scoring, and measure the ability of people to read and understand health-related texts(Parker et al., 1995; Davis et al., 1993)

The concept of “digital or e-health literacy “ is expressed as people's searching for finding, understanding, and evaluating health information from electronic sources that emerged as a result of technological developments, and the information obtained as a result of these, addressing and solving any health problem. Digital health literacy combines different aspects of different literacy skills and applies them to e-health. Digital healthcare literacy consists of six different literacy components as digital literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy. All these concepts express the combination of digital skills and health literacy skills of individuals in this age where we are witnessing great changes in technology (ALB,2017). Digital health literacy includes developing user skills through education and training, as well as designing and tailoring digital health approaches to individual needs, particularly for older users, those living in socioeconomically disadvantaged conditions, and those with lower digital literacy levels in general. As a result of the rapid changes in the health sector, from time to time, patients and sometimes health workers cannot benefit enough from all these events and cannot follow these developments due to the fact that they do not have enough education and knowledge in the fields of information and health technologies (EuroHealthNet,2021). At this point, it is essential for people to benefit from digital communication channels as much as possible. It should be aimed to increase the digital health literacy level of individuals with solutions such as interpreting, evaluating, understanding, and benefiting from the needed content of health information that can be easily accessed through digital communication channels. Thus, measuring digital health literacy levels of health service consumers’ becomes vital in order to determine the incapacity or demands of the consumers and to set policy in the health sector.

Digital health literacy is required for all individuals in terms of reading and understanding health information on the internet, accessing health services, and benefiting from and presenting personal digital data (UNESCO, 2011; Who,2018). Therefore, measuring digital health literacy is important for healthcare providers and consumers. When the previous data was searched it is seen that only one eHealth scale was adopted in Turkish (Norman & Skinner, 2006). The aim of this study is to clarify the need for developing or adopting new digital health literacy measurement tools in Turkey. For this purpose to reveal the state of digital health literacy in Turkey the reports announced by different international and national institutes were searched. The prevalence of use of social media, the increase in the number of internet users and mobile devices in recent years, individuals’ reasons for using the internet, and the ratio of searching health issues in this data were compiled. The digital health literacy scales developed or adopted in Turkish by researchers were searched from databases. The need for digital health literacy scales and their potential use in Turkey was reported in this study.

MATERIALS AND METHODS

In this study, the descriptive research method is used. Descriptive documentary research was used to compile the reports regarding digital health technology use in Turkey and the world. The reports announced by governments or private institutes were analyzed to obtain the data of internet users over time in Turkey, primary reasons why internet users utilize the internet, digital health applications use and time spent on the internet. Additionally, an increase in the number of eNabız and HES (Life Fits Home) users were analyzed. Turkish Ministry of Health, TUIK, Data Reportal, Kepios, and Internet World Stats portals were used to gain the data for 2021.

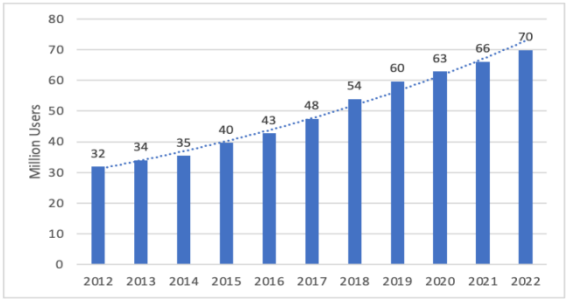
Then in order to access the digital/ e-health literacy scales developed by researchers a search was done. Databases such as Index Medicus/Medline/ Pubmed/PMC, PsychNet, EMBASE, CINAHL, Web of Science, Dergipark, and Google Academic were searched in February 2022. The studies were eligible for inclusion if they included the words "eHealth literacy, digital health literacy, scale, measurement". The original peer-reviewed articles which developed a digital/eHealth literacy scale were validated and tested by other studies many times and referred by various studies and were included in the study for analysis.

RESULTS

3.1. Digital Health Technology use in Turkey and the World

The increase in the prevalence of the internet and the reduction in the costs of technological devices have allowed people to access health services with computers, smart mobile phones, and tablets without being physically present. With the development of digital platforms, individuals can easily perform many transactions such as obtaining information about health, nutrition, exercise, and other healthy lifestyle behaviors. Moreover, data and document transactions, membership, and purchasing health-related issues are becoming more common day by day.

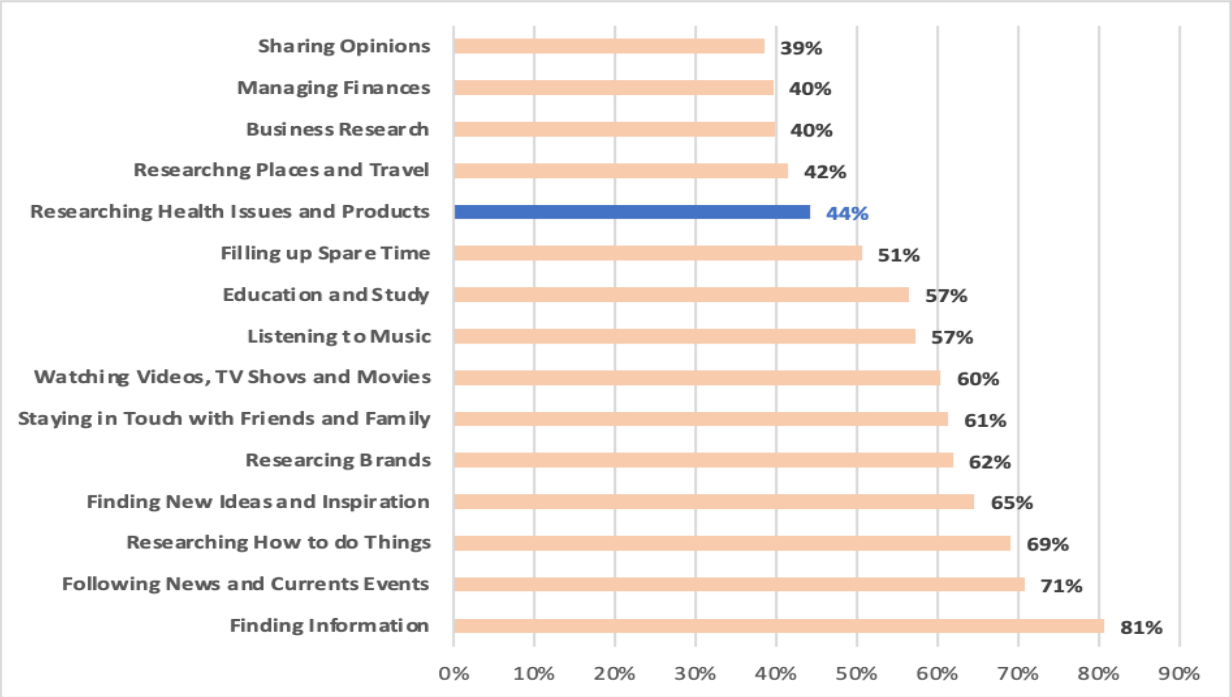
While talking about the use of digital health platforms, it is necessary to take a look at the usage rates in Turkey. Glance the rates in Turkey, the total number of internet users is close to 70 million and its ratio to the total population is 82% (TUIK, 2021; Data Reportal, 2022). The number of internet users and year-on-year change between Jan 2012 and Jan 2022 can be followed in Figure 1 (Kepios, 2022; Internet World Stats, 2022; 42Matters, 2022). Internet users in Turkey increased by 6% between 2021 and 2022. 95% of these users connect to the internet with mobile phones. The average time spent by Turkish people on the Internet is 7 hours and 54 minutes per day. When we look at the languages of the websites where the most content is produced in the world, Turkish is in the 4th place. 71% of Turkey's population uses social media. On average, 2 hours and 57 minutes are spent on social media per day. Considering these rates, Turkey, with its young and dynamic population, has adapted to technology to a great extent and has become one of the societies that are at the heart of the digital world.



Source: Datareportal, Kepios, Internet Word Stats, TUIK

Figure 1. Internet users over time in Turkey.

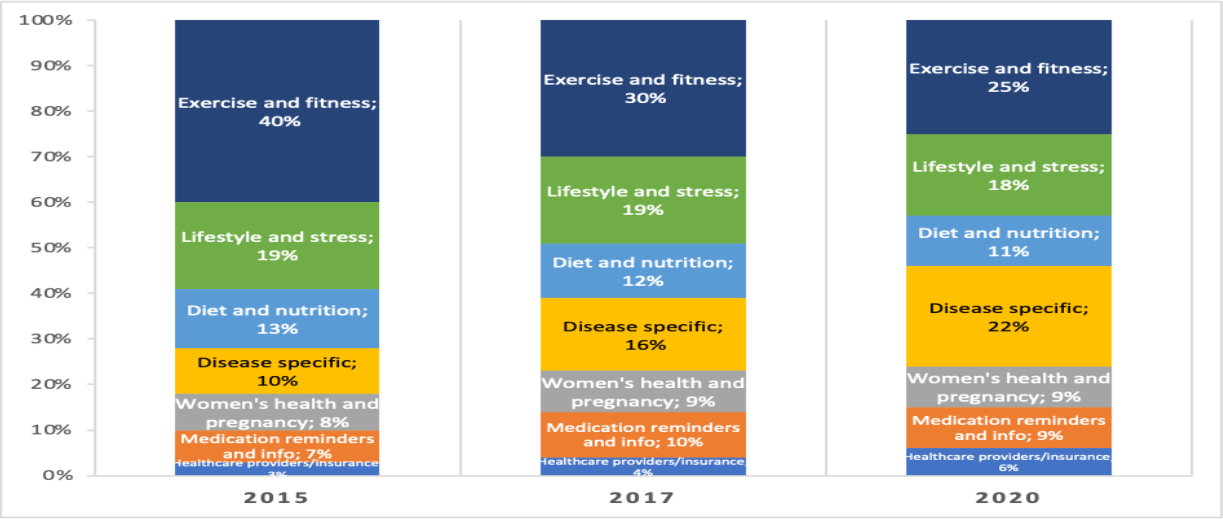
The main results for using the internet can be followed in Figure 2 (Data Reportal, 2022; Kepios, 2022; Internet World Stats, 2022). When primary reasons why internet users aged 16 to 64 utilize the internet comes to accounts researching health issues and products (44%) is among most common reasons. Information scanning (87.6%) takes the first place among the reasons for using the internet in Turkey. Surely if the content of that information could be investigated a serious proportion of it might have been about health issues, especially during the epidemic period. In other words, when we look at the health side of the business, the rate of obtaining health-related information and making searches among the reasons for using the internet is noteworthy.



Source: Datareportal, Kepios, Internet Word Stats, TUIK

Figure 2. Main reasons for using the internet

When the most widely used digital health applications by consumers in 2015-2021 were analyzed two categories to understand the current landscape of digital health apps were determined (42Matters, 2022; Aitken &Nass, 2021). Across the patient journey, digital health apps were divided into two main categories: those focused on "wellness management (exercise and fitness, lifestyle and stress, diet and nutrition) and those which specifically focus on "health condition management (information on diseases and conditions, access to care, and aid treatment such as through medication reminders). To conduct an analysis of global health application trends, data taken from health applications from both Google Play and the Apple Application Store. In addition, free application analysis tools are used to access data on patient health apps. Healthcare applications in the Medical and Health and Fitness categories are sorted according to downloads. Digital Health Applications by category and yearly change are shown in Figure 3 (42Matters, 2022; Aitken &Nass, 2021).

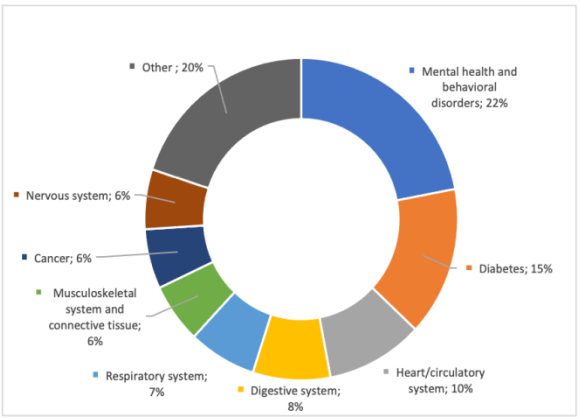


Source: 42 Matters, Jun 2021 and Jul 2017, Jun 2015; IQVIA Institute, Jun 2021

Figure 3. Digital Health Applications by category and yearly change

It can be seen from the analysis of the results that, disease-specific applications have shifted since 2015, with 22 up from 10% in 2020. This trend shows that users are now using more specific health applications.

According to 2020 data, the largest categories continue to focus on chronic conditions when 2580 disease-specific applications are examined. When the distribution of diseases comes into account mental health and behavioral disorders, diabetes, heart and circulatory systems, digestive systems, and respiratory systems diseases take the lead. The results can be followed in Figure 4 (Aitken &Nass, 2021).



Source: IQVIA AppScript App Database, Jun 2021; IQVIA Institute, Jun 2021; Disease specific n=2580 apps.

Figure 4. Disease Specific Applications' Categories in 2020.

3.2. HES (Life Fits Home) and eNabız users in Turkey

Adaptation of Turkey and its people to e-health applications is very high and Turkish people take the lead the way in terms of accessing health-related information, integrating with the health system, and using health-related applications. During the Covid 19 epidemic, the HES application, which also serves to monitor health services such as vaccine applications, ranked 6th among all mobile applications in terms of the number of active users. The number of users of e-Nabız, an important health portal in Turkey, is more than 60 million, and the number of users of HES (Life Fits Home) is over 75 million. When all these developments are followed, it is seen how important digital health literacy is for healthcare service users. Digital health literacy is essential for all individuals in terms of reading and understanding health information on the internet, accessing health services, and benefiting from and presenting personal digital data (eNabız, 2021, memurlar.net, 2022).

3.3. Digital/e Health Literacy Scales and Their Utilization in Turkey

Different researchers have developed several scales to measure digital health literacy levels of health care users. When the digital/eHealth literacy scales used in studies in Turkey were examined, it was seen that only one of them (Norman & Skinner,2006) was translated, validated, and adapted to Turkish by Coşkun and Bebiş in 2015 and according to the research of this study, a new scale has not been adapted to Turkish since then. During the last ten years, a lot of changes emerged in health technologies and new digital health literacy scales compatible with these changes have been developed. The digital/eHealth scales developed by different researchers in different countries are as follows.

When the eHealth literacy scales are investigated it can be seen that eHeals is a pioneering instrument measuring eHealth literacy and was original with a single factor structure developed by Norman and Skinner in Canada in 2006. Norman and Skinner's eHeals is still the earliest work measuring e-Health literacy. eHeals is a scale consisting of 1 scale (traditional literacy, health literacy, information literacy, scientific literacy, media literacy, computer literacy, and 2 questions for internet use) and 8 items 1 to 5 Likert type. Coşkun and Bebiş adopted the scale in Turkish in 2015. Since 2015 researchers from Turkey tested the scale on different samples (Korkmaz et al, 2021; Uskun et al., 2021; Nakas, 2020)

Then in 2014, another quantitative research was conducted by researchers from Taiwan (Hsu et al.,2014). eHls/The eHealth Literacy Scale was a measurement tool consisting of 3 scales (functional e-health literacy; interactive e-health literacy and critical e-health literacy) and 19 items. In the same year, another e-health measurement tool PRE HIT was developed by Koopman(2014) in the USA and new concepts came to the agenda such as internet privacy concerns and anxiety about the security of data of consumers. Also, online health information need, computer/internet experience, computer anxiety, relationship with the doctor, and cell phone expertise were included in 6 factors 28 items 1 to 4 Likert type scale.

By 2015 EHLA/Ehealth literacy Assessment Toolkit was tested by Furstrand and Kayser in Denmark. This quantitative 6 scales (computer familiarity, confidence, incentive, and performance as well as functional health literacy, health literacy self-assessment, and health literacy performance) and 42 items 1 to 5 Likert type questionnaire were conducted on adolescent health service users.

By Kayser et al. in Denmark in 2015 another measurement tool named eHLQ (The eHealth Literacy Questionnaire) emerged. That was the most common tool used by different researchers from various countries after Norman and Skinners' eHeals instrument. The scale focused on new digital health services and their utilization of them by consumers. The scale consisted of 7 factors (using technology to process health information, understanding of health concepts and language, ability to actively engage with digital services feeling safe and in control, motivated

to engage with digital services, access to digital services that work, digital services that suit individual needs), 35 Items 1 to 4 Likert Type.

In 2016 Seçkin et al. in the USA developed a new scale, EHLS (Electronic Health Literacy). In that quantitative study, a questionnaire with three factors; communication, trust, and action with 19 Items 1 to 5-point Likert scale was tested and validated by the researchers. Another tool measuring operational skills, navigation skills, information teaching, evaluation reliability, determining relevance, adding content, and protecting the privacy of health service consumers became popular among digital/eHealth literacy scales. That measurement tool consisting of 6 scales and 19 items 1 to 4 point Likert type was developed by Van Der Vaart and Drosseart in Holland in 2017 and spread all over the world. In 2019 Paige et al. developed another tool named TMeHL(Transactional Model of eHealth Literacy in the USA. It consisted of 4 factors (functional, communicative, critical, translational) and 18 items 1 to 4 Likert type.

After 2020 new tools were developed by several researchers. Liu, et al. developed eHLS Web 3.0 (eHealth Literacy Scale) in China in 2021. It consisted of 3 scales (acquisition, verification, and application) and 24 items 1 to 5 Likert type. Yoon et al. developed DHTL-AQ (Digital Health Technology) in South Korea in 2022. It consisted of 4 scales (ICT-related terms, ability to use an application, knowing of ICT icons, evaluating the reliability and relevance of digital health) and 34 items 1 to 5 Likert type. These scales were more compatible with technological progress, furthermore, new ICT uses and applications were the focus of the research. The recently developed scales were not tested by different researchers in different countries. So their reliability and validity of them have not been checked by different researchers. On the other hand, some of these scales developed before 2020 were used by many researchers and adopted in many languages. Although there are many digital/eHealth literacy scales adopted in various countries, in Turkey researchers stay behind in that situation. The need for developing or adopting new scales is obvious.

DISCUSSION

As can be followed from the results of the study technological changes in the world and in our country are very rapid and the people in our country keep pace with these improvements. Thus to acquire true and accurate data and utilize the digital health technologies efficiently digital/eHealth literacy scales gain importance. When the digital/eHealth literacy scales developed by various researchers came into account, it was seen that various measurement tools were referred to many times in various studies and their reliability and validity were tested by different researchers from different countries among different demographic groups. On the other hand, only one measurement tool eHEALS (The eHealth Literacy Scale), developed by Norman and Skinner (2006) was adopted in Turkish and used by Turkish researchers.

In previous literature some researchers reviewed e-health literacy instruments and reported that although eHEALS (The eHealth Literacy Scale) had been used in various studies, it measured a narrow scope of health literacy (Lee et al.,2021; Monkman & Kushniruk, 2015; Norgaard et al., 2015). While it met the needs for measuring eHealth literacy of individuals in 2006, eHEALS (The eHealth Literacy Scale) has some disadvantages besides its advantages. First eHEALS has only one dimension with ten (8+2) questions and measures consumers' perceived skills and comfort with eHealth, not the skills directly. On the other hand new generation eHealth literacy scales have sub dimensions measuring users' operational and navigational skills, (DHLI/Digital Health Literacy Scale), confidence, incentive, and performance (EHLA), evaluating the reliability and relevance of digital health (DHTL-AQ), interactive ehealth literacy (eHls/The eHealth Literacy Scale), access to digital services that work (eHLQ) and users relationship with doctor by cell phone (PRE-HIT). As it can be seen, the new eHealth literacy scales measure the health service consumers literacy multidirectional.

Although eHeals is very popular in many countries it was developed years ago and since that time, a lot of changes in technology, the internet, and the computer world have emerged. Along with the evolution of interactive communication technologies on the internet development of second-generation instruments has emerged. By the increase in the number of internet users and occurrence of the pandemics in recent years, digitization accelerated the use of digital tools, mobile phones, tele medicine, web services and online health services. Thus, while measuring eHealth literacy confidence, privacy, and consciousness of the users during using internet and computer should be asked. New generation eHealth literacy scales attach importance to this issue and include sub dimensions regarding determining relevance, adding content, protecting privacy (DHL), confidence of personal data (EHLA), accessing reliable data (DHTL-AQ), feeling safe and in control for digital services (eHLQ), internet privacy concerns (PRE-HIT) and trust (EHLS). As use of health applications, smart devices and online health services have increased in recent years, questions regarding that issue should be added in scales. Some new age eHealth literacy scales have subdimensions as ability to use health applications (DHTL-AQ), digital services that suit individual online health needs (eHLQ) which meet the need for measuring actual

internet and computer use problems or facilities during using mobile health applications or smart devices.

The most important criteria for determining the eHealth literacy scales proposed in this study was being tested with regards of reliability and validity many times by different researchers in different countries and in different populations. Certainly, they have various sub dimensions and wide variety content. In findings section the scales mentioned in this study were explained on behalf of their origin, their methods, and factors. The researchers who want to adopt new tools for measuring the eHealth literacy can utilize the data given in this study and investigate the tools in detail. On the other hand to develop the most appropriate scale to Turkey population, new scales can be developed by new researchers.

When the previous literature come to account it was seen that the relation between health literacy and health status, utilization of health services, and preventive health services was significant. As digital health technology use in Turkey and the world is increasing, new generation eHealth measuring instruments is essential. Since multiple different approaches began to be applied in determining the correlation between successful and effective use of information technology, digital/eHealth literacy, and its usability, they recommend further psychometric studies of the second-generation eHealth literacy instruments conducted in different samples. In considering where and how concepts related to eHealth literacy can be applied to improve healthcare applications and systems it is better to adopt new generation e-health literacy tools or developing new ones (Lee et al.,2021; Monkman & Kushniruk, 2015; Norgaard et al., 2015).

CONCLUSION AND RECOMMENDATIONS

The extraordinary situations that the world has been through in the last few years have shown us that it is impossible to escape from technology. During the Covid 19 pandemic period, the world has increased the speed of digitalization in an inestimable way and there have been 10 years of development in almost two years. While societies are experiencing rapid digital transformation in areas such as education, finance, commerce, and travel, the field of health has also received its share of this change. As the world moves towards more digital-based technologies thanks to the great development in technology, the occasion, and challenges of disseminating health content over the internet to web browsers and mobile devices are also more understood. When emphasizing the importance of reaching the right and necessary information, it has been seen that the spread of wrong and incomplete information will lead societies to disasters. In this case, the importance of digital health literacy has been re-understood.

Digital health literacy is generally seen as a fundamental necessity for the democratic and patient-centered digitization of the health system. The benefits of digital health technology are the capabilities and resources individuals need to use and benefit from digital health resources. When digital health technology access and participation increase in a fair way among health service users they take the advantage of competition between health institutes and service providers. By this means, consumers have the chance to receive the best service with the best facilities. On the other hand, the use of digital health technologies in the provision of health services is one of the priority areas for application and research. The enterprise of protective mechanisms depending on the level of digital health literacy of health-related platforms, which also contain many security risks, may reduce the possibility of harm from misuse of health information with the help of digital health literacy measures.

From time to time, the consciousness and awareness levels of societies on this subject have been measured by studies in which health researchers have investigated the relationship between digital health literacy and other behaviors and attitudes in different groups in different regions. Testing the validity and reliability of digital health literacy scales developed by different researchers mentioned in this study in the Turkish population will enable us to fill an important gap in the field. With the application of these scales, the deficiencies and mistakes of individuals can be revealed by measuring the level of digital health literacy in different groups of the society, deficiency, and difficulties in the use of government and private sector digital health systems can be identified so individuals can better benefit from digital health applications.

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There is no explanation.

Conflict of Interest:

The authors declare that they have no conflict of interest.

Ethical Approval (Must be answered):

Since the data of the study were obtained from the open sources and databases , ethics committee approval was not obtained.

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REFERENCES

42 Matters (2022), "Store Stats for Mobile Apps", [Internet] https://42matters.com/stats (accessed Feb 16, 2022).

Aba, G., Gümüş, R., & Çakır, Y. N. (2019). Sağlık Çalışanlarının Medikal Turizme Yönelik Algılarının İncelenmesi: Özel Hastane Örneği. Yönetim ve Ekonomi Araştırmaları Dergisi, 17(3): 93-105.

American Library Association. Welcome, ALAs Lit Clgh; (2017). Digital Literacy [Internet] https://literacy.ala.org/digital-literacy/ (accessed Jan 11, 2022)

Balay-Odao, E. M., Alquwez, N., Alsolami, F., Tork, H. M., Al Otaibi, K., & Al Thobaity, A. (2021). COVID-19 crisis: Influence of eHealth literacy on mental health promotion among Saudi nursing students. Journal of Taibah University Medical Sciences, 16(6): 906-913.

Biçer, İ., Çakmak, C., Demir, H., & Kurt, M. E. (2020). Koronavirüs anksiyete ölçeği kısa formu: Türkçe geçerlik ve güvenirlik çalışması. Anatolian Clinic the Journal of Medical Sciences, 25(Special Issue on COVID 19): 216-225

Bostan, S, Yalçın B., (2016). Sağlık Turistlerinin Medikal Destinasyon Seçimini Etkileyen Faktörler. Journal of International Social Research, 9(43).

Britt, R. K., Collins, W. B., Wilson, K., Linnemeier, G., & Englebert, A. M. (2017). eHealth literacy and health behaviors affecting modern college students: a pilot study of issues identified by the American College Health Association. Journal of medical Internet research, 19(12): e3100.

Coşkun, S., & Bebiş, H. (2015). Adolesanlarda e-sağlık okuryazarlığı ölçeği: Türkçe geçerlilik ve güvenirlik çalışması. Gülhane Tıp Dergisi, 57: 378-434. https://doi.org/10.5455/gulhane.157832

DataReportal (2022), "Digital 2022: Turkey", [Internet] https://datareportal.com/reports/digital-2022-turkey (accessed Feb 14, 2022)

Davis, T. C., Arnold, C., Berkel, H. J., Nandy, I., Jackson, R. H., & Glass, J. (1996). Knowledge and attitude on screening mammography among low-literate, low-income women. Cancer: Interdisciplinary International Journal of the American Cancer Society, 78(9): 1912-1920.

Davis, T. C., Long, S. W., Jackson, R. H., Mayeaux, E. J., George, R. B., Murphy, P. W., & Crouch, M. A. (1993). Rapid estimate of adult literacy in medicine (REALM): a shortened screening instrument. Family medicine, 25(6): 391-395.

Do, B. N., Tran, T. V., Phan, D. T., Nguyen, H. C., Nguyen, T. T., Nguyen, H. C., ... & Van Duong, T. (2020). Health literacy, ehealth literacy, adherence to infection prevention and control procedures, lifestyle changes, and suspected COVID-19 symptoms among health care workers during lockdown: online survey. Journal of medical Internet research, 22(11): e22894.

Doğan Çetinkaya, Erciyes Pelikan JM, Röthlın F, Ganahl K. HLS-EU CONSORTIUM (2012): Comparative Report of Health Literacy in Eight EU Member States. The European Health Literacy Survey HLS-EU, Online Publication: http://www.health-literacy.eu (accessed June 14, 2022)

Duong, T. V., Pham, K. M., Do, B. N., Kim, G. B., Dam, H. T., Le, V. T. T., & Yang, S. H. (2020). Digital healthy diet literacy and self-perceived eating behavior change during COVID-19 pandemic among undergraduate nursing and medical students: A rapid online survey. International journal of environmental research and public health, 17(19): 7185.

e-Nabız (2022), Turkish Ministry of Health,[Internet] https://enabiz.gov.tr/ (accessed Feb 21, 2022)

e-Nabız on Twitter (2022), [Internet] https://twitter.com/enabizsistemi (accessed May 20, 2022)

Ekinci, Y., Tutgun-Ünal, A., & Tarhan, N. (2021). Dijital Sağlık Okuryazarlığı Üzerine Bir Alanyazın İncelemesi. Bayterek Uluslararası Akademik Araştırmalar Dergisi, 4(2): 148-165.

EuroHealthNet (2021). Digital Health Literacy: how new skills can help improve health, equity, and Sustainability. [Internet] https://eurohealthnet.eu/publication/digital-health-literacy-how-new-skills-can-help-improve-health-equity-and-sustainability (accessed Jan 18, 2021)

European Commission. (2019). EU-funded Research & Innovation in the field of ICT for Health, Wellbeing & Ageing - An Overview.[Internet] https://ec.europa.eu/digital-single-market/en/news/eu-funded-research-and-innovation-field-ict-health-wellbeing-and-ageing-overview (accessed Feb 12, 2022)

Furstrand, D., & Kayser, L. (2015). Development of the eHealth literacy assessment toolkit, eHLA. In MEDINFO 2015: eHealth-enabled Health : 971-971.

Gümüş, R. (2018). Pazarlama faaliyetlerinin sağlık sektörüne uygulanması: Bir literatür incelemesi. Bulletin of Economic Theory and Analysis, 3(4): 217-235.

Gümüş, R., & Sönmez, Y. (2020). Quality of online communication tools at hospitals and their effects on health service consumers' preferences. International Journal of Healthcare Management, 13(1):35-44. https://doi.org/10.1080/20479700.2018.1470816

Hsu, W., Chiang, C., & Yang, S. (2014). The effect of individual factors on health behaviors among college students: the mediating effects of eHealth literacy. Journal of medical Internet research, 16(12): e3542.

Internet World Stats (2022), "Turkey Internet usage and market report", [Internet] https://www.internetworldstats.com/eu/tr.htm (accessed Feb 15, 2022)

Kayser, L., Karnoe, A., Furstrand, D., Batterham, R., Christensen, K. B., Elsworth, G., & Osborne, R. H. (2018). A multidimensional tool based on the eHealth literacy framework: development and initial validity testing of the eHealth literacy questionnaire (eHLQ). Journal of medical Internet research, 20(2): e8371.

Kepios (2022), "Global Digital Reports", [Internet] https://kepios.com/reports (accessed Feb 14, 2022)

Koopman RJ, Petroski GF, Canfield SM, Stuppy JA, Mehr DR. Development of the PRE-HIT instrument: patient readiness to engage in health information technology. BMC Fam Pract. 28:15-18. doi: 10.1186/1471-2296-15-18.

Korkmaz Aslan, G., Kartal, A., Turan, T., Taşdemir Yiğitoğlu, G., & Kocakabak, C. (2021). Association of electronic health literacy with health-promoting behaviours in adolescents. International Journal of Nursing Practice, 27(2): e12921.

Lee, J., Lee, E. H., & Chae, D. (2021). eHealth literacy instruments: Systematic review of measurement properties. Journal of medical Internet research, 23(11): e30644.

Liu, H. X., Chow, B. C., Liang, W., Hassel, H., & Huang, Y. W. (2021). Measuring a broad spectrum of eHealth skills in the Web 3.0 context using an eHealth Literacy Scale: Development and validation study. Journal of Medical Internet Research, 23(9): e31627.

Liu, H., Zeng, H., Shen, Y., Zhang, F., Sharma, M., Lai, W., & Zhao, Y. (2018). Assessment tools for health literacy among the general population: a systematic review. International journal of environmental research and public health, 15(8): 1711.

Memurlar.net (2022). HES uygulamasını indiren kullanıcı sayısı açıklandı. [Internet] https://www.memurlar.net/haber/999097/hes-uygulamasini-indiren-kullanici-sayisi-aciklandi.html (accessed May 20, 2022)

Monkman, H., & Kushniruk, A. W. (2015). eHealth literacy issues, constructs, models, and methods for health information technology design and evaluation. Knowledge Management & E-Learning: An International Journal, 7(4): 541-549

Murray Aitken, Deanna Nass, (2021). Digital Health Trends 2021: Innovation, Evidence, Regulation, and Adoption. IQVIA Institute, NJ, USA

Nakas, D. (2020). e-Health Literacy Levels of University Students in Turkey and Affecting Factors. International Journal of Caring Sciences, 13(3): 2149-2159.

Norgaard, O., Furstrand, D., Klokker, L., Karnoe, A., Batterham, R., Kayser, L., & Osborne, R. H. (2015). The e-health literacy framework: a conceptual framework for characterizing e-health users and their interaction with e-health systems. Knowledge Management & E-Learning: An International Journal, 7(4): 522-540.

Norman, C. D. & Skinner, H. A. (2006). eHEALS: the eHealth literacy scale. Journal of medical Internet research, 8(4): e507.

Paige, S. R., Stellefson, M., Krieger, J. L., Miller, M. D., Cheong, J., & Anderson-Lewis, C. (2019). Transactional eHealth literacy: Developing and testing a multi-dimensional instrument. Journal of Health Communication, 24(10): 737-748.

Parker RM, Baker DW, Williams MV, Nurss JR. The test of functional health literacy in adults: a new instrument (TOFHLA) for measuring patients' literacy skills. J Gen Intern Med. 1995 Oct;10(10):537-41. doi: 10.1007/BF02640361.

Seçkin G, Yeatts D, Hughes S, Hudson C, Bell V. Being an Informed Consumer of Health Information and Assessment of Electronic Health Literacy in a National Sample of Internet Users: Validity and Reliability of the e-HLS Instrument. J Med Internet Res. 11;18(7):e161. doi: 10.2196/jmir.5496.

Şen, M. A., Ceylan, A., Kurt, M. E., Palancı, Y., & Adın, C. (2017). Sağlık hizmetleri meslek yüksekokulu öğrencilerinin sağlıklı yaşam biçimi davranışları ve etkileyen faktörler. Dicle Tıp Dergisi, 44(1): 1-12.

Tuik (2021). Hanehalkı bilişim teknolojileri kullanım araştırması. [Internet] https://data.tuik.gov.tr/Bulten/Index?p=Hanehalki-Bilisim-Teknolojileri-(BT)-Kullanim-Arastirmasi-2021-37437 (accessed Feb 19, 2022)

UNESCO (United Nations Educational Scientific and Cultural Organization)(2011). Digital literacy in education [Internet]. https://iite.unesco.org/pics/publications/en/files/3214688.pdf (accessed Jan 24, 2022)

Uskun, E., Doğan, E., & Kişioğlu, A. N.(2022) e-Health Literacy Scale: Turkish validity and reliability study for adults over 45. Turkish Bulletin of Hygiene and Experimental Biology, (Ahead of Print). doi: 10.5505/TurkHijyen.2022.75608.

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): e6709.

World Health Organization (2018). Health literacy and health behaviour. [Internet]. https://www.who.int/healthpromotion/conferences/7gchp/track2/en/ (accessed Jan 25, 2022)

Yoon, J., Lee, M., Ahn, J. S., Oh, D., Shin, S. Y., Chang, Y. J., & Cho, J. (2022). Development and Validation of Digital Health Technology Literacy Assessment Questionnaire. Journal of medical systems, 46(2): 1-11.