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DIGITAL LITERACY OF ELDERLY IN CROATIA

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ABSTRACT: This study investigates digital literacy among older adults in Croatia, examining their skills, usage patterns, and attitudes toward education. Digital literacy is the ability to access, evaluate, create, and use digital technologies safely. It is essential for social inclusion, lifelong learning, and improving quality of life. A survey of 152 residents from four nursing homes in Zagreb revealed that smartphones are the most commonly used devices and that family members serve as the primary source of digital support. While many participants can perform basic tasks, such as making calls or adjusting volume, they struggle with evaluating online information, navigating complex interfaces, and coping with rapid technological changes. Barriers include fear of mistakes, security and privacy concerns, limited confidence, language difficulties, and low exposure to advanced digital functions. Despite these challenges, older adults recognize the importance of digital literacy and show interest in attending workshops to improve their skills in this area. The findings highlight that older adults demonstrate partial digital literacy; they are competent in operational tasks but lack evaluative and advanced abilities. Tailored educational programs that combine step-by-step guidance and cybersecurity training can enhance confidence, reduce digital exclusion, and foster active participation. Supporting older adults in developing digital and media literacy is crucial for promoting independence, social engagement, and overall well-being in contemporary societies.

KEYWORDS: digital literacy, older adults, digital exclusion, digital education

INTRODUCTION

Digital literacy is the ability to navigate, understand, evaluate, create, and safely use digital technologies and content. A digitally literate person can express opinions online, communicate through networks, and manage multimedia content independently /1/. Such individuals

can access, organize, compare, create, and share information with diverse audiences using digital tools /2/. Digital literacy is closely linked to information literacy, which refers to the ability to locate, evaluate, and use information effectively to meet one's needs /3/. Information literacy is broader, encompassing all types of information, whereas digital literacy focuses on digital contexts /1/. Both concepts enhance the quality of life by supporting

informed decision-making, lifelong learning, employability, and active participation in society /4/.

Digital technologies permeate all areas of daily life, from communication and shopping to public services and political participation. However, many older adults remain excluded because of a lack of digital skills. This digital exclusion stems from complex barriers, including feelings of confusion, fear of technology, and low self-confidence /5/. Digital skills enable older adults to maintain contact with distant family and friends, reduce loneliness, and access information and public services, supporting active participation in digital life /1/. For older adults, digital media present specific challenges due to generational gaps, technological barriers, and changing information formats /6/; /7/. Age alone does not determine the use of media. Factors such as health, cognitive abilities, social relations, and economic conditions also play a major role /8/. Key challenges include recognizing fake news, navigating complex interfaces, and coping with rapid technological change. Digital education should inform and empower students, enhancing their confidence and control in digital spaces. Despite barriers, older adults benefit from maintaining family contact and accessing public services /7/; /8/; /9/. Preference for traditional media can limit access to online platforms /10/. Accelerating digitalization and virtual interactions can lead to social exclusion if older adults lack skills or access, highlighting the importance of digital literacy for their active participation /11/. The main aim of this study was to determine the level of digital literacy among older adults in Croatia, focusing on their skills, usage patterns, barriers, and attitudes toward further digital education.

LITERATURE REVIEW

Old age is commonly defined as 65 years and older, encompassing the biological, psychological, and social dimensions. Biological aging involves natural physical changes, such as reduced sensory and motor abilities and diminished organ function. Psychological aging can include declines in memory, attention, and problem-solving, which are influenced by both individual biology and social context. Social aging depends on the community, social norms, and the roles assigned to older adults /12/. Aging is typically divided into stages: late middle

age (50–60), younger old age (60–70), middle old age (70–80), and oldest age (80+) /13/. Older adults today belong to different generations, each shaped by unique historical and cultural contexts. The Silent Generation (born 1928–1945) experienced the Great Depression, civil rights movements, and the rise of radio. Baby Boomers (1946–1960) grew up during post-war economic growth and social change /6/.

Older adults often face multiple challenges in engaging with digital technologies. Basic digital tasks, such as turning on devices, understanding apps, navigating interfaces, and managing accounts, can be difficult /14/. Psychological and emotional barriers include confusion, fear of technology, low self-confidence, and resistance to change, which tend to increase with age /1/; /5/. Physical limitations, such as impaired vision, hearing, and motor skills, as well as cognitive decline in memory, critical thinking, and processing speed, further restrict learning /1/; /15/. Language barriers also impede digital skill acquisition /14/. Other obstacles include distracting content, high device costs, limited technical knowledge, low motivation, and a perceived lack of necessity /16/. Security and privacy concerns are particularly important. Safe Internet use requires strong passwords, updated software, antivirus protection, and caution with unknown links. Without this knowledge, older adults are vulnerable to online fraud, identity theft, and phishing attacks /17/; /18/. Their trust in acquaintances or seemingly reliable sources increases their susceptibility to scams, including fake banking sites, investment schemes, lottery scams, and fraudulent invoices /7/; /19/; /20/.

Engagement with digital technologies is influenced not only by skills but also by psychosocial factors such as curiosity, self-esteem, social connectedness, anxiety, and physical health /21/. Family members and close acquaintances often act as “trusted experts”, providing emotional, informational, and technical support, which increases confidence and motivation /22/. Resistance to and negative emotions toward technology, while common, can be mitigated when older adults decide to adopt digital skills, showing a willingness to learn and engage actively online /1/. Difficulties arise not from a lack of knowledge but from a mismatch between familiar daily routines and rapidly changing digital environments. Older adults

expect stability and predictable patterns, whereas digital transformation demands continuous adaptation /5/.

Digital literacy programs play a crucial role in enhancing the autonomy, confidence, and social inclusion of older adults. Educational interventions, including peer-supported approaches, improve skills in using smartphones, e-services, and communication tools. These programs increase participants' sense of usefulness, connectedness, and control /23/; /24/. Croatian studies confirm that digitally literate older adults report greater satisfaction, productivity, and social engagement /25/. Programs targeting vulnerable groups foster personal responsibility, supportive environments, and intergenerational collaboration, contributing to active and dignified aging /26/.

THEORETICAL BACKGROUND

Media literacy is a core 21st-century skill. In modern society, media are pervasive and shape our perception of the world. Media literacy enables individuals to access, evaluate, and create media messages across various formats /27/. It also involves responsible use, critical thinking, and active participation in producing and sharing content /28/. Digitalization has transformed audiences from passive recipients to active participants who can select and critically engage with the content. Media literacy encompasses three main competencies: object/technical skills, methodological skills, and social competence /29/. Didactic aspects include technical (reading, writing, computer skills), symbolic (combining multiple information types), and cultural components (contextualizing technical and communication processes) /30/ /31/. While media literacy focuses on acquiring specific skills for engaging with media, media competence represents a broader ability to participate safely and actively in media environments. Media literacy can be seen as an initial phase in developing full media competence /32/. Media literacy also has a societal role as it protects from harmful content, empowers users to understand media, promotes active civic participation, and reduces the digital divide by educating vulnerable groups, including older adults, with tailored content /33/.

CURRENT RESEARCH

The research on digital literacy among older adults was conducted using a quantitative approach. The following objectives were established. The main objective (1) is to determine the level of digital literacy among older adults. The secondary objectives are as follows: (2) to identify which digital devices and online services older adults use most frequently, (3) to determine how older adults have acquired digital skills, (4) to identify the barriers that most affect older adults' use of digital technology, and (5) to examine older adults' attitudes toward the importance of digital literacy and their interest in further education. Based on the stated objectives, the following research hypotheses were formulated: (H1) Older adults in Croatia are digitally literate. (H2) Older adults in Croatia consider digital literacy important and are interested in further education.

PROCEDURE

The study was conducted in nursing homes over a four-week period, from June 9 to July 6, 2025. Since the nursing homes are owned by the City of Zagreb, prior approval from the relevant authorities was required. Accordingly, an official request was sent to the City of Zagreb for permission to conduct this research. The request was addressed to the City Office for Social Protection, Health, Veterans, and Persons with Disabilities, the competent body for municipal nursing homes. After reviewing the request, the office provided written consent via email authorizing the research. This consent was also forwarded to the official email addresses of the nursing homes where the study was planned to be conducted. Subsequently, social workers and professional staff at the homes were contacted to arrange the timing and procedure for administering the questionnaire. Questionnaires were distributed to residents willing to participate, and data collection was anonymous and voluntary. Data were collected using the paper-and-pencil method.

INSTRUMENT

For the purpose of this study, a questionnaire was developed. It consisted of 51 questions, 50 of which were closed-ended with predefined answer options, and one

open-ended question that allowed a free response. The initial questions gathered sociodemographic data, including gender, age, and education level. The second part focused on digital devices and Internet usage. The third part included a series of statements in which respondents indicated their level of agreement. These statements covered various aspects of digital literacy and participants' experiences, including self-assessment of digital device skills, difficulties encountered, concerns regarding online activities, and interest in further digital skills education. Each statement was rated using a five-point Likert scale: 1 – strongly disagree; 2 – mostly disagree; 3 – neither agree nor disagree; 4 – mostly agree; 5 – strongly agree.

SAMPLE

In the conducted study, the target group consisted of older adults, specifically retirees residing in nursing homes in the city of Zagreb. The research included a total of 152 participants from four different nursing homes. The questionnaire was completed by 51 men and 101 women, representing 34% male and 66% female participants. The majority of respondents, 55.9%, declared themselves to be 80 or older. This was followed by respondents belonging to the age group 75 to 79, 17.1%. Furthermore, there were 11.8% of respondents aged 70 to 74, and 10.5% aged 65 to 69. The fewest respondents indicated that they belonged to the age group up to 64, 4.6%. Regarding education level, the largest number of respondents (44.1%) had secondary education as the highest level of education. This was followed by respondents who indicated a university degree/faculty (23%), then a higher education degree (15.1%), and respondents with primary school education (10.5%). The smallest number of respondents indicated a doctorate (3.3%) and a master's degree (3.9%) as their highest level of education.

RESULTS

The first group of questions was designed to better understand some general habits and motives for digital device use among the population. The results show that the most commonly owned digital device is a smartphone, with 65.1% of respondents having one. Computers and tablets

were each owned by 19.7% of respondents, while 30.9% did not own any digital device. Many respondents owned more than one device. Following the previous question, respondents were asked how much time they spent on the Internet daily on average. Almost half of the respondents (48%) did not use the Internet at all. Among those who do, the largest group (18%) spends 1 to 2 hours online each day. This is followed by 17% of respondents who spend less than one hour on the Internet, 11% who spend 2 to 3 hours, 3% who spend 3 to 4 hours, and 2% who spent 4 to 5 hours online. Only 1% of respondents spent more than 5 hours per day on the Internet.

The results show that the most common use of the Internet among respondents was reading news on online news portals (41.4%). This was followed by making regular phone calls (38.8%), sending messages via Viber and WhatsApp (34.2%), using email (25.7%), social networks (23.7%), and video calls (23.7%). The least common online activities were online banking (14.5%), online shopping (8.6%), and watching movies or series (6.6%). The next question asked respondents how they acquired knowledge of digital skills and Internet use, in order to test the hypothesis. The most common response was learning with the help of family members, indicated by 27.6% of the respondents. Notably, a significant portion of respondents acquired digital skills independently (12.5%), making this the second most common answer after family support. Other sources included help from friends (4.7%) and courses as a means of improving digital skills (4.6%). The smallest percentage of respondents (2.6%) reported that they were still learning how to use digital technologies. Although 48% of respondents do not use the Internet, among those who do, family members remain the main source of support for older adults in acquiring digital competency.

The survey included statements covering various dimensions of digital literacy to test these hypotheses. The first statement addressed knowledge of using digital devices (e.g., mobile phones) and their function. The results showed that 25% of respondents strongly disagreed that they knew how to use digital devices, while an equal percentage strongly agreed. A significant portion (19.1%) remained neutral, highlighting differences in digital competencies among older adults. The highest agreement was for the ability to make calls with a smartphone (53.9%), although 22.4% strongly disagreed. Similarly,

Table 1. (1 – strongly disagree; 2 – mostly disagree; 3 – neither agree nor disagree; 4 – mostly agree; 5 – strongly agree)

Statement	1	2	3	4	5
I know how to use digital devices.	25%	11.2%	19.1%	19.7%	25%
I know how to make a call using a mobile phone.	22.4%	1.3%	5.3%	17.1%	53.9%
I know how to take a photo with a mobile phone.	42.4%	3.3%	7.3%	11.9%	35.1%
I know how to send a message on a mobile phone.	33.8%	8.6%	8.6%	8.6%	40.4%
I know how to mute/adjust volume on a mobile phone.	25.7%	3.3%	5.3%	16.4%	49.3%
I can assess whether information on the Internet is true or false	39.5%	9.2%	25%	17.1%	9.2%
I often read news with sensational headlines that later turn out to be irrelevant or false	38.2%	10.5%	27.6%	13.2%	10.5%
Foreign language (e.g., English) causes me difficulties in using digital devices.	29.6%	10.5%	17.1%	11.2%	31.6%
I am afraid I will break something while using digital devices	32.2%	8.6%	23%	14.5%	21.7%
I need additional training to use the Internet and digital devices.	25%	5.3%	25.7%	25%	19%
I would like to attend workshops to learn digital skills.	27%	7.9%	25%	16.4%	23.7%
I believe such workshops are useful for everyday life	13.2%	2.6%	13.2%	15.8%	55.3%

49.3% fully agreed that they could adjust the volume on a phone, while 25.7% strongly disagreed. Sending messages saw 40.4% full agreement and 33.8% full disagreement. Regarding taking photos, 42.4% strongly disagreed, while 35.1% strongly agreed. The respondents also evaluated the social benefits of digital devices. A significant share (52%) fully agreed that devices help maintain contact with family and friends, indicating a positive role of technology in social connections, while 21.7% strongly disagreed. Given that many respondents spend time reading online news, statements were included on their ability to assess the credibility of information and their frequency of reading sensational headlines. Approximately 50% were unable to independently judge the truthfulness of online content (39.5% strongly disagreed, 9.2% mostly disagreed), while 25% remained neutral. Only 9.2% fully agreed with their ability to assess the information. Regarding sensational news, 38.2% strongly disagreed, 10.5% mostly disagreed, 27.6% were neutral, and 23.7% agreed to some degree. Statements on online safety and barriers to using digital technologies revealed that 40.1% of respondents did not feel safe online, with 25% neutral and 11.2% feeling fully confident. Concerns about fraud and data theft were prominent, with 38.2% fully agreeing and 20.4% mostly agreeing that these issues affected their sense of security. Language barriers were also noted, with 31.6% fully agreeing that foreign language terms (e.g., English) create difficulties, 11.2% mostly agreeing, 17.1%

neutral, and 40.1% disagreeing to some degree. Fear of making mistakes was another barrier: 21.7% fully agreed, 14.5% mostly agreed, 23% were neutral, and 40.8% disagreed. Finally, the respondents expressed their views on the need for additional digital training and workshops. Regarding the need for further education, 19% fully agreed, 25% mostly agreed, nearly 26% were neutral, and 25% fully disagreed. Interest in free digital skills workshops showed similar diversity: 23.7% fully agreed, 16.4% mostly agreed, 25% were neutral, 27% fully disagreed, and 7.9% mostly disagreed. The highest agreement was observed for the perceived usefulness of such workshops: 55.3% fully agreed, 15.8% mostly agreed, 13.2% fully disagreed, 2.6% mostly disagreed, and 13.2% were neutral.

DISCUSSION

The main aim of this study was to determine the level of digital literacy among older adults in Croatia, focusing on their skills, usage patterns, barriers, and attitudes toward further digital education. Most participants reported owning at least one digital device, with smartphones being the most commonly owned, suggesting that they are the easiest way to include older adults in the digital environment. However, a notable 30.9% did not own any devices, indicating partial digital exclusion. Basic smartphone skills were relatively strong: making

calls (53.9%) and adjusting volume (49.3%) were the most mastered functions, followed by sending messages (40.4%) and taking photos (35.1%). Conversely, skills involving the critical evaluation of information, such as assessing online news credibility (9.2%) or avoiding sensationalist content, were limited. These findings indicate that older adults in Croatia have partial digital literacy. They are competent in operational tasks but lack advanced or evaluative skills. Similar studies report that older adults primarily use devices for basic communication and news reading /16/; /24/; /34/; /35/, reinforcing that the first hypothesis is only partially supported.

Approximately 52% of respondents used the Internet, with daily usage ranging from less than one hour to 1–2 hours. Older adults primarily used the Internet for reading news (41.4%), phone calls (38.8%), and messaging apps such as WhatsApp and Viber (34.2%). Advanced activities, such as social media engagement (23.7%), email (25.7%), online banking (14.5%), online shopping (8.6%), or watching films (6.6%), were less common. These findings align with previous research, which highlighted WhatsApp, Viber, and email as the most frequently used tools /9/ /25/. Family members emerged as the primary source of digital support, with 27.6% learning with family assistance, 12.5% independently, 4.7% with friends, and 4.6% through formal courses. Family members act as trusted guides, helping older adults gain confidence and motivation /22/; /36/; /37/.

Safety concerns were prominent, as 40.1% of participants reported not feeling secure online, and only 11.2% felt completely safe. Concerns included fraud, personal data theft, language barriers, and fear of making mistakes. About 31.6% cited difficulties with English terms, and 21.7% were afraid of damaging devices, highlighting cognitive, emotional, and linguistic barriers. Perceived risks and lack of confidence are significant obstacles to digital engagement. Similar findings were reported by a study that found that lack of knowledge and privacy concerns prevented some older adults from using smart technology /18/; /38/; /39/.

A substantial proportion of respondents recognized the value of digital education, with 71.1% considering training useful and 44% expressing interest in additional training. The willingness to attend workshops was moderate, with 24% fully interested and 16.4% partially interested.

These findings demonstrate that older adults value digital literacy and are open to learning, although barriers such as fear or lack of confidence may limit participation. These results confirm the second hypothesis, showing that older adults consider digital literacy important and are interested in acquiring more knowledge. This is in line with previous research stating that once older adults decide to adopt digital skills, they are willing to learn and engage actively online, regardless of age-related challenges /1/. Given that many older adults read online news but cannot assess credibility, there is a clear need to develop media literacy skills, including critical thinking and understanding media messages /28/; /40/.

The results emphasize the need for tailored interventions that address operational, cognitive, linguistic, and other barriers. Step-by-step guidance, instructions, relatable examples, and safety education can build confidence and reduce fear. Promoting awareness of cybersecurity and media literacy is critical for protecting older adults from fraud and misinformation, supporting social inclusion and active participation in modern society. Nearly a third of respondents remain digitally excluded, highlighting the digital divide and the importance of accessible training programs. The findings of this study cannot be generalized because of the small sample size. To increase the reliability and applicability of the results, the sample should be expanded to include participants from multiple regions across Croatia. Furthermore, future research should employ qualitative methods to gain deeper insights. In conclusion, older adults in Croatia exhibit partial digital literacy, mainly focusing on basic smartphone functions and Internet use for communication and information. They rely heavily on family support, face barriers such as fear and lack of confidence, and show an interest in further education. Targeted, supportive digital training can enhance both skills and confidence, fostering inclusion, independence, and well-being.

CONCLUSION

Digital literacy among older adults is a critical factor in promoting active aging, social inclusion, and an overall quality of life. This study demonstrates that while many older adults in Croatia possess basic digital skills, primarily for communication and accessing information while significant challenges remain. A notable portion of older adults remain digitally excluded due to technical difficul-

ties, insecurity, limited Internet access, language barriers, and a lack of appropriate support. Smartphones have emerged as the most practical and widely used digital devices, highlighting their potential as a gateway to greater digital participation. Family members play a central role in providing guidance and support; however, gaps in skills remain, particularly in critical areas such as evaluating online information, navigating more complex digital functions, and ensuring online safety. Older adults also reported fears of fraud and device misuse, underscoring the need for structured, supportive educational interventions. Tailored workshops, step-by-step guidance, practical examples, intergenerational support, and content delivered in a familiar language can help overco-

me these barriers. Importantly, the study revealed a clear interest in further learning, with participants recognizing the value of digital literacy in daily life and expressing willingness to engage in workshops. Addressing the digital divide requires not only education but also broader social and policy interventions, including increased access to devices and the Internet, public access points, and targeted programs for rural or underdeveloped areas. Digital inclusion for older adults in Croatia is, therefore, both a technical and social responsibility, and enhancing digital skills can significantly improve participation, independence, and well-being in contemporary society.

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DIGITALNA PISMENOST STARIJIH OSOBA U HRVATSKOJ

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SAŽETAK: Ovaj rad istražuje digitalnu pismenost starijih osoba u Hrvatskoj, ispitujući njihove vještine, obrasce korištenja, prepreke i stavove prema daljnjem obrazovanju. Digitalna pismenost jest sposobnost pristupa, procjene, kreiranja i sigurnog korištenja digitalnih tehnologija. Ključna je za socijalnu uključenost, cjeloživotno učenje i kvalitetu života. Istraživanje provedeno među 152 osobe iz četiriju domova za starije osobe u Zagrebu pokazalo je da su pametni telefoni najčešće korišteni uređaji, dok članovi obitelji predstavljaju glavni izvor digitalne podrške. Iako mnogi sudionici mogu obavljati osnovne zadatke poput upućivanja poziva ili podešavanja glasnoće, imaju poteškoća s procjenom informacija na internetu, snalaženjem u složenim sučeljima i prilagodbom na brze tehnološke promjene. Među preprekama su strah od pogrešaka, sigurnosni i privatnosni problemi, ograničeno samopouzdanje, jezične poteškoće i niska izloženost naprednim digitalnim funkcijama. Usprkos tim izazovima starije osobe prepoznaju važnost digitalne pismenosti i pokazuju interes za sudjelovanjem u radionicama radi poboljšanja svojih vještina. Rezultati pokazuju da starije osobe posjeduju djelomičnu digitalnu pismenost, kompetentne su u operativnim zadacima, ali im nedostaju evaluacijske i napredne sposobnosti. Prilagođeni obrazovni programi koji kombiniraju korak-po-korak upute, primjere iz svakodnevnog života, međugeneracijsku podršku i trening kibernetičke sigurnosti mogu povećati samopouzdanje, smanjiti digitalnu isključenost i potaknuti aktivno sudjelovanje. Podrška starijim osobama prilikom razvijanja digitalne i medijske pismenosti ključna je za promicanje neovisnosti, društvenog uključivanja i općeg blagostanja u suvremenom društvu.

KLJUČNE RIJEČI: digitalna pismenost, starije osobe, digitalna isključenost, digitalno obrazovanje
