



## Scale Development of Digital Health Literacy for the Elderly

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### Abstract

Thailand is now transitioning into an aging society while embracing the digital era. Within this context, the utilization of online platforms emerges as a pivotal determinant shaping the digital health literacy of the elderly populace. However, challenges arise due to potential constraints in the elderly's access to and adeptness with digital technology, thereby impacting the efficacy of healthcare delivery. Recognizing this, researchers underscore the significance of enhancing media literacy among the elderly demographic. This study investigates the factors influencing the elderly's comprehension of online health media while devising a comprehensive digital health literacy measurement scale to facilitate targeted interventions. The research draws upon a sample of 281 individuals. The research employs both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) methodologies. Through rigorous psychometric examination, the analysis reveals the presence of 17 discernible questions, delineating four distinct factors—Functional, Communicative, Critical, and Translational—mirroring existing scholarship. These findings corroborate prior literature and furnish a foundation for further advancement and individual empowerment within this domain.

**Keywords:** 1) Digital Health Literacy 2) eHealth 3) Elderly 4) Scale Development

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## Introduction

In the contemporary era characterized by the ubiquity of technology and the internet, Thai individuals undergo unprecedented shifts in information consumption, communication, and media utilization patterns. While the media literacy of the Thai populace has notably advanced, it poses challenges both in positive and negative contexts. Swift access to media and technology is a pivotal determinant that enhances media literacy among the Thai demographic. The proliferation of smartphones and high-speed internet access has escalated (Sukhaphiriyakasem and Chaisuwann, 2018, p. 39), facilitating enhanced access to online services and digital media. Nonetheless, discrepancies concerning technology accessibility persist between urban and rural locales.

Similarly, the landscape of news consumption in Thailand has experienced notable changes. Individuals frequently resort to online news websites and applications for immediate information retrieval. Despite the increasing reliability of online news, challenges persist regarding misinformation and disinformation. Online social media platforms have been used for information dissemination, commentary, and online community formation in Thailand. Social media platforms such as Facebook, Instagram, and Twitter have revolutionized communication and influenced individuals' perceptions (Virakulthewan, 2018, p. 121).

Moreover, technology and online media assume pivotal functions in learning and communication within the swiftly evolving digital landscape. While the utilization of digital technology for medical and health education

purposes is widespread, older individuals may encounter barriers due to limited access to and utilization of digital tools, thereby impacting their ability to obtain relevant health information and access appropriate healthcare services. The media literacy landscape among the Thai populace presents a multifaceted and challenging scenario. In a rapidly expanding society, access to information and effective communication channels is paramount; however, a pressing need persists to cultivate competencies in handling the escalating influx of information discerningly and appraising critical and pertinent content effectively.

The elderly demographic in Thailand is increasingly embracing digital technology. This transition has profound implications for their way of life as they adapt to utilizing technology and engaging with online media. Typically, older individuals own smartphones or tablets, which they employ for internet-based learning through formal training programs or informal knowledge exchange within their families (Yaree and See Kiew, 2019, p. 231). Moreover, they commonly utilize platforms like Facebook and LINE for communication, facilitating the exchange of personal content such as information and photographs (Sutthipum, 2018, p. 21). This active engagement in online communication helps alleviate feelings of isolation and enhances their sense of relevance. Through these platforms, they can express their opinions, emotions, and experiences to society and individuals within their online communities. Consequently, online media is crucial in fostering community among the elderly in this digital age (Sutthipum, 2018, pp. 2-3). Nevertheless,

security issues related to online and technological usage remain significant concerns that the elderly population needs to address.

Additionally, Chiang Mai province harbors a significant elderly population totaling 394,279 individuals. Significantly, the San Sai and Doi Saket districts are noteworthy for being among the regions with the second highest density of elderly inhabitants, trailing behind the Muang district and comprising a total population of 20,165 elderly individuals (Department of Older Persons, 2022). In this region, researchers undertook fieldwork in collaboration with a team well-versed in the locality. Initial surveys unveiled the consumption of dietary supplements among the elderly populace, as evidenced by advertisements across television and various social media platforms, including Facebook, LINE, and YouTube.

Furthermore, these elderly individuals frequently procure dietary supplements through LINE chat and Facebook messages, swayed by advertisements' perceived benefits without adequate product quality verification (Tulanon, 2019, p. 62). Consequently, they incur financial losses on substandard products that may pose health hazards upon consumption or become victims of fraudulent activities or financial exploitation due to their limited digital media literacy. These challenges arise from the elderly population's insufficient comprehension of digital media.

Consequently, the research team acknowledges the significance of advancing digital health literacy competencies among the elderly. As such, the aim is to construct an index to assess the extent of digital health liter-

acy within this demographic, thereby facilitating personalized skill enhancement initiatives. Moreover, the acquired data will be leveraged to refine future digital health literacy education systems targeted at the elderly.

## Research Objectives

To construct a scale measurement for assessing the degree of Digital Health Literacy among the elderly.

## Literature Reviews

### 1. The Concept of Digital health literacy

Digital Health Literacy, derived from Health Literacy, has been conveyed in various Thai languages, including Health Disparity, health intelligence, and health knowledge. The World Health Organization (WHO) has delineated it (World Health Organization, 2024) as the proficiency to access, comprehend, and utilize information through multiple channels to foster and sustain one's health. This encompasses cognitive and social competencies that shape an individual's drive and aptitude to access, comprehend, and employ information. WHO further delineates the facets of health literacy, bifurcating it into two principal domains: 1) General literacy, encompassing proficiencies like reading, numeracy, listening, negotiation, critical thinking, and decision-making abilities, and 2) Other literacies, spanning to scientific literacy, cultural literacy, computer literacy, and media literacy. The literacy levels across all domains can directly and indirectly influence one's health status and overall well-being (Sabbahi, et al., 2009, p. 451).



Thus, healthcare establishments use screening protocols to evaluate the extent of health literacy among service recipients. The Single-item Literacy Scale (SILS) stands out as a widely employed instrument devised in 2006, which raises the question: How often do you need help to read guidelines, pamphlets, or other written materials provided by doctors or pharmacies? (Morris, et al., 2006, p. 2). Various assessment instruments for health literacy have emerged, including The Rapid Estimate of Adult Literacy in Medicine (REALM), Functional Communication and Critical Health Literacy Scales (FCCHL), and Medical Achievement Reading Test (MART).

In the online context, Digital health literacy encompasses an individual's knowledge, skills, and perceived efficacy in seeking, evaluating, and applying health-related information from online media platforms to address health concerns. Norman and Skinner (2006, p. 2) launched The eHealth Literacy Scale (eHEALS), a five-level Likert-type scale developed in Canada to assess the usability of online health information. This scale was developed based on the eHealth literacy theory, which draws from social cognitive and self-efficacy theories. It encompasses six dimensions: general literacy, media literacy, information literacy, computer literacy, scientific literacy, and health literacy (Norman and Skinner, 2006, p. 2).

In 2021, Wang and colleagues extended the discourse on critical analysis and translational applications in scale development in their work titled "A Comprehensive Analysis of E-Health Literacy Research Focuses and Trends" (Wang, Wu and Qi, 2021). In Thailand,

efforts have been made to develop a health literacy assessment tool based on the ABC-DE-Health Literacy Scale for Thai Adults. This tool evaluates fundamental literacy competencies, social interaction abilities, cognitive reasoning, and health outcomes (Intarakamhaeng, 2017, pp. 7-8). Nonetheless, it is essential to note that this instrument must address the nuances of online media utilization.

Based on the findings in the study mentioned above, researchers underscore the significance of advocating for enhancing online health literacy competencies among the elderly population. In this study, eHealth literacy pertains to the competencies and skills of individuals to search, comprehend, exchange, and evaluate health-related information accessible on the internet and subsequently utilize this acquired knowledge to maintain or enhance health. It comprises four dimensions: 1) the functional dimension entails fundamental proficiency in reading and writing health-related content online; 2) the communicative dimension, which involves the capacity to collaborate, adapt, and regulate health-related communication with others on multimedia social media platforms; 3) critical dimension: this encompasses the ability to appraise the credibility, relevance, and potential risks of sharing and receiving online information, and 4) translational dimension refers to the ability to apply health-related knowledge acquired from the internet across diverse contexts.

## 2. Elderly individuals in Thailand

According to the Elderly Persons Act of 2003, Article 3, an older adult is sixty years or older and has Thai citizenship (Chotchatcha-

walkul, 2013, p. 45). Elderly or old age refers to individuals aged 60 years and above. It is noted that in old age, there is a decline in physical functions due to changes in musculoskeletal structure and the functioning of various organ systems. This physiological deterioration can decrease task efficiency and impact mental well-being, potentially resulting in physical illness. This perception of social insignificance among the elderly may contribute to adverse health outcomes.

Furthermore, Thailand will transition into an aging society by 2024-2025. Research indicates that elderly individuals in Thailand primarily rely on traditional mass media such as radio and television to access daily news. However, there is a growing inclination towards using online media platforms, with many elderlies now turning to online news websites and other internet sources for information. Concurrently, a subset of the elderly is leveraging online educational opportunities to improve their digital literacy and acquire new knowledge in various domains, including personal interests and health-related subjects. Nevertheless, some elderly individuals still encounter challenges and uncertainties when using technology. Specific individuals may feel overlooked or hesitant to engage with online media due to concerns regarding cyber security and physical limitations.

Research on the digital health literacy of elderly individuals has been relatively limited. Nonetheless, the elderly population must possess adequate digital health literacy skills. Previous studies have expanded on this concept to introduce health media literacy,

which underscores individuals' abilities to discern the interconnections between health and various media platforms. This entails the capability to critically assess the influence of media on health-related behaviors. Findings from Quan-Haase, Schreurs and Martin (2014, p. 984) suggest that elderly individuals lacking digital proficiency face societal constraints and lack access to institutions that provide support or facilitate the acquisition of knowledge and skills related to digital literacy.

Furthermore, several factors impact digital media literacy, including personal attributes like age, gender, and educational attainment. Additionally, familial and peer support has been identified as conducive to enhancing the digital media literacy competencies of elderly individuals. Environmental factors, particularly familial dynamics, play a significant role in developing digital media literacy skills among the elderly (Virakulthewan, 2018, pp. 6-7).

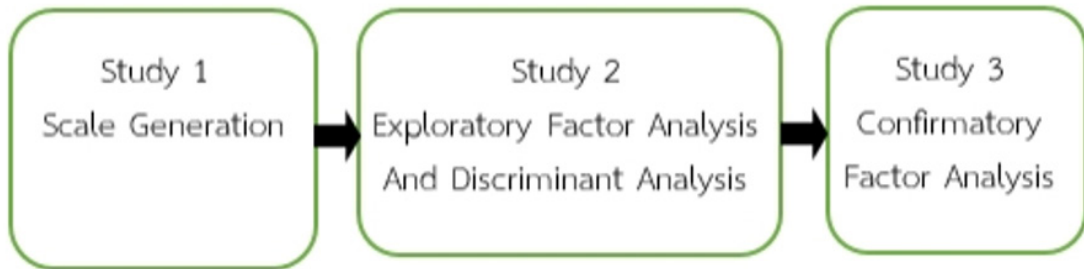
Furthermore, an investigation into the digital health literacy of elderly individuals in Suphanburi province revealed that they primarily utilize LINE and Facebook for communication purposes and access information concerning medication use and healthy lifestyles via online media, predominantly employing mobile devices. While they demonstrate confidence in the information they acquire, their ability to evaluate health-related information resources on the internet still needs to be improved (Jaemtim and Yuenyong, 2019, pp. 175-177).



## Methodology

The research approach consisted of three separate investigations, as shown in Figure 1. Study 1 focused on developing a measurement tool derived from an extensive literature review concerning digital health literacy and the elderly population in Thailand. In Study 2, Exploratory Factor Analysis (EFA) was employed to condense the number of variables or inquiries and to explore the interrelationships among these variables or inquiries within the same domain or factor (Wanichban-

cha, 2009, p. 217). Discriminant Analysis was then utilized to ascertain whether the measurement instrument could differentiate and discern between individuals with high and low scores on the assessment tool. The statistical software SPSS was utilized to conduct these analyses. Finally, study 3 employed Confirmatory Factor Analysis (CFA), a more intricate statistical method, to validate the underlying structure or constructs based on the examined theoretical framework (Tabachnick and Fidell, 2007, p. 29), utilizing the AMOS software.



**Figure 1** Research Methodology

The population targeted in this research consists of individuals residing in Chiang Mai Province, which has the second-highest number of elderly individuals in Thailand (Department of Older Persons, 2022), following Bangkok. The study focuses on collecting data from elderly residents outside of the city district. This selection criterion is based on data obtained from the Health Data Center (HDC) as of June 3, 2023, which indicates that Chiang Mai province has an overall elderly population of 318,959 individuals. Notably, among these areas, the San Sai district ranks second in the most elderly residents, following the municipal district, with 20,165 elderly individuals (Department of Older Persons, 2022).

This study aims to develop a measurement scale specifically for the elderly. How-

ever, to evaluate the discriminatory power of the measurement, it is necessary to compare the responses of the elderly with those of other age groups. Consequently, data were collected from a sample of 18 to 81 years old and divided into three age groups: adolescents (18-40 years), middle-aged (41-65 years), and elderly (65-81 years). Data collection took place between March and May 2023.

## Results and Discussion

Study 1 commenced with an exhaustive literature review and examination of relevant research about digital health literacy. This comprehensive review informed the development of a set of questions for constructing a measurement instrument, drawing inspiration from the framework proposed by

Paige, et al. (2019, pp. 17-18). The questions were translated into Thai and adapted to the specific socio-cultural context of Thailand. Initially, a pool of 18 preliminary questions was generated, which were then integrated into a questionnaire utilizing a 5-point Likert Scale (ranging from 1 = strongly disagree to 5 = strongly agree). Subsequently, Face Validity testing was administered with the participation of members of the general public, followed by expert evaluation by three Information Technology specialists employing the Index of Item-Objective Congruence (IOC). Based on the constructive feedback received, iterative

revisions were made to refine the questionnaire. Ethical considerations regarding human subjects were diligently addressed before finalizing the questions, ensuring their accessibility and comprehension among the elderly participants. Data collection encompassed survey responses from 281 individuals, with 24.2% identifying as female and 75.8% as male. The respondents predominantly fell within the age range of 18 to 81 years, with an average age of 47. According to Table 1, a significant portion of the participants reported educational attainment below the high school level.

**Table 1** Descriptive of data collected.

	Items	Frequency	Percentage
Gender	Male	68	24.2
	Female	213	75.8
Age	18-40 years	112	39.9
	41-65 years	103	36.7
	66-81 years	66	23.5
Income	Less than 5,000 baht	122	43.4
	5,000 – 10,000 baht	85	30.2
	10,000 – 15,000 baht	34	12.1
	15,000 – 20,000 baht	12	4.3
	20,001 and up	28	10.0
Education	Less than secondary school	88	31.3
	Secondary school / Vocational certificate	86	30.6
	Diploma / High vocational certificate	50	17.8
	Bachelor's degree	49	17.4
	Postgraduate	8	2.8

In Study 2, the researchers employed Exploratory Factor Analysis (EFA) to evaluate the Construct Validity of the measurement

instrument developed in Study 1. The findings from the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity suggested



favorable conditions for conducting factor analysis. Specifically, the KMO value exceeded the recommended threshold at 0.959. Bartlett's Test of Sphericity yielded a highly significant P value (Sig) of .000, indicating substantial intercorrelation among the variables and thus confirming the appropriateness of the dataset for factor analysis. Following this, a factor analysis was conducted using variable rotation and item assessment, identifying four factors or

components, of which 17 out of the original 18 items were deemed to load adequately.

In this study, the Cumulative% of Variance was 77.263%, with an Eigenvalue of 13.9. The overall reliability of the measurement instrument was high (Cronbach's  $\alpha = 0.96$ ), and the reliability of each factor ranged from 0.91 to 0.96. The results of the exploratory factor analysis (EFA) are displayed in Table 2.

**Table 2** The factor loadings of the 18 items from the EFA analysis.

Items	Factors				Communalities (h <sup>2</sup> )
	1	2	3	4	
1. I can summarize health information I read on the internet myself.	.742				.732
2. I know how to use the internet to find information to answer health-related questions.	.796				.808
3. I can type text to find the health information I need online.	.767				.803
4. I have basic skills in teaching others about finding health information on the internet.	.672				.784
5. I can communicate with others until that person gets the health information they need and answers questions about his health.		.617			.778
6. I have the skills to exchange health opinions with various people online simultaneously.		.730			.847
7. I can distinguish emotions. The feeling of being able to talk with others about health on the internet**					.644
8. I have the basic skills needed to talk on the internet.		.529			.733
9. I have the skills to build good relationships with people who share health information online.		.499			.795
10. I can state what makes people who provide health information on the internet trustworthy.			.458		.699
11. I can define which health information on the internet is fake.			.784		.763
12. I can determine which health websites are safe to share personal information.			.609		.742

Items	Factors				Communalities (h <sup>2</sup> )
	1	2	3	4	
13. I can tell which information on the internet is relevant to my health.			.622		.746
14. I can assess the trustworthiness of people providing health information on the internet.			.667		.769
15. I can use the internet to learn how to manage my health.				.735	.819
16. I can use the internet as a tool to improve my health.				.729	.782
17. Can I use the information on the internet to make decisions about my health care?				.805	.838
18. I can use the internet to learn about health issues that are relevant to me.				.744	.824
Eigenvalue	4.11	2.66	3.04	4.09	13.9
% of variance	22.85	14.78	16.89	22.73	77.26
Reliability (Cronbach $\alpha$ )	.91	.91	.93	.91	.96

**Note:** \*\* Items that were excluded from the analysis.

Subsequently, discriminant validity was assessed by categorizing participants into three groups based on their total scores on the measurement instrument: a group with low digital health literacy perception (Quartile 1), a group with moderate digital health literacy perception (Quartiles 2 and 3 combined), and a group with high digital health literacy perception (Quartile 4). It was observed that the first group (low digital health literacy perception) comprised 72 individuals, the second group (moderate digital health literacy perception) comprised 130 individuals, and the third group (high digital health literacy perception) comprised 79 individuals. An independent sample t-test was then conducted to examine differences in mean scores between the low and high groups. The hypotheses are formulated as follows:

H0: There is no significant difference

in the mean digital health literacy perception scores between Group 1 and Group 2.

H1: The mean digital health literacy perception scores in Group 1 and Group 2 differ significantly.

The findings of the Independent t-test indicated that the two-tailed significance value (Sig) was 0.00, falling below the predefined significance level of 0.05, corresponding to a confidence level of 95%. As a result, the null hypothesis (H0) is rejected in favor of the alternative hypothesis (H1), suggesting that the measurement instrument can distinguish among individuals belonging to distinct categories of digital health literacy levels.

Moreover, the second discriminant analysis was conducted on the generated index measures to ascertain their capability in discriminating and differentiating between individuals who responded to the questionnaire



with high and low scores for each factor. The data were segregated into age groups, 18-40 years, 41-65 years, and 66-81 years, to compare

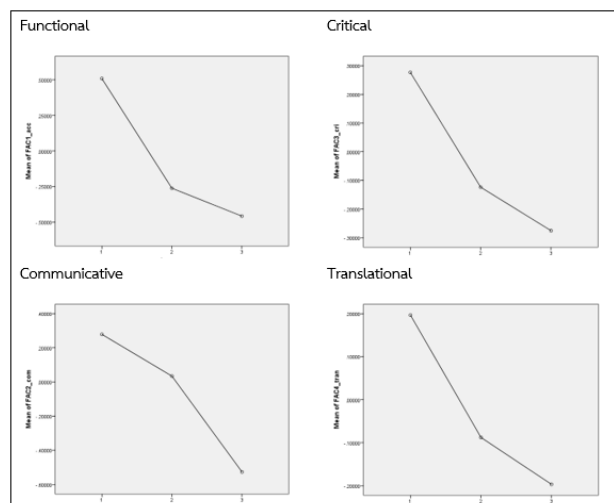
response differences using ANOVA analysis across the four developed measurement factors. Results are shown in Table 3.

**Table 3** Discriminant analysis by using ANOVA on different age groups.

Factors	Age Group	Means	F	Sig
Functional	Adolescents	.509	30.116	.000
	Middle-aged	-.261		
	Elderly	-.456		
Communicative	Adolescents	.278	14.898	.000
	Middle-aged	.034		
	Elderly	-.526		
Critical	Adolescents	.276	7.961	.000
	Middle-aged	-.124		
	Elderly	-.275		
Translational	Adolescents	.196	3.922	.021
	Middle-aged	-.087		
	Elderly	-.196		

The findings of the ANOVA indicated that the significance value (Sig) was 0.00, falling below the predefined significance level of 0.05, corresponding to a confidence level of 95%. The outcomes of the comparative analysis, delineating variations across distinct

age cohorts in each facet, reveal statistically significant disparities across all four factors. These distinctions are visually represented in Figure 2, illustrating pronounced differentials discernible on both sides of the comparison.



\*Note: 1 is Adolescent, 2 is Middle-aged, and 3 is Elderly.

**Figure 2** Comparison of differences in Digital health literacy levels in each age group.

The findings indicate notable disparities in digital health literacy levels among various age cohorts, particularly emphasizing the elderly's comparatively lower proficiency across all assessed factors. This suggests a discernible discriminatory capacity within the employed metrics, enabling effective differentiation between elderly individuals and their younger counterparts. The examination of responses further underscores the heightened digital health literacy observed among younger and middle-aged demographics compared to the elderly cohort.

In Study 3, Confirmatory Factor Analysis (CFA) was conducted based on the Exploratory Factor Analysis (EFA) findings in Study 2,

which identified 17 retained items distributed across four factors. The researchers examined the data by assessing three model testing strategies: the Null, One-Factor, and Four-Factor. The analysis demonstrated that the Four-Factor Model exhibited the highest level of consistency in the fit indices, characterized by CMIN/DF = 2.00, CFI = .98, RMSEA = .06, and AIC = 306.07. These fit indices indicate a firm fit, particularly with the acceptable values of CFI = .98 and RMSEA = .06. The summarized outcomes of the CFA are displayed in Table 4, affirming that the measurement instrument comprises all 17 pertinent items, distributed among four factors, with robust reliability values.

**Table 4** The results of the Confirmatory Factor Analysis (CFA).

Model	CMIN/DF	CFI	RMSEA	AIC
Null Model	32.19	.00	.334	4413.04
1-Factor Model	3.56	.93	.096	473.17
4-Factor Model	2.00	.98	.06	306.07

**Note:** CMIN/DF = Chi-Square/Degree of Freedom; CFI = The Comparative Fit Index; RMSEA = Root-Mean-Square Error of Approximation; AIC = Akaike's Information Criterion.

Subsequently, the researchers proceeded to evaluate the next level of validity, encompassing the Convergent validity test of the items. Within the same construct, items are expected to display a high shared variance, denoted by an Average Variance Extracted (AVE) value surpassing 0.5. Furthermore, they conducted the Discriminant validity test to determine whether variables possess distinct characteristics by ensuring that the Maximum Shared Variance (MSV) is lower than the AVE. This affirms the measurement instrument's robust discriminant validity. Additionally, they gauged the Construct Reliability (CR), reflecting

consistency akin to internal consistency. A CR value exceeding 0.7 signifies strong reliability, while values falling between 0.6 and 0.7 are acceptable (Hair, Ringle and Sarstedt, 2011, pp. 144-145). The consolidated findings from these assessments are in Table 5, indicating that all four variables demonstrate convergent validity, discriminant validity, and structural reliability.

**Table 5** Results of validity and reliability testing.

Index	Fun	Com	Cri	Tra
Construct Reliability	0.88	0.87	0.93	0.90
Average Variance Extracted	0.86	0.80	0.77	0.86
Maximum Shared Variance	0.61	0.69	0.77	0.69

The questionnaire items from the third study are detailed as follows:

**1. Functional Factor:** This factor encompasses four questions:

1) I can independently summarize health information obtained from the internet.

2) I know how to utilize the internet to seek information for addressing health-related inquiries.

3) I am proficient in typing text to search for health-related information online.

4) I possess fundamental skills to educate others on finding health information on the internet.

**2. Communicative Factor:** This construct comprises four inquiries:

1) I am proficient in communicating with others to furnish them with necessary health information and address their health-related inquiries.

2) I am apt to engage in multifaceted discussions and exchange viewpoints on health matters with diverse individuals over the internet.

3) I possess the fundamental skills essential for participating in online dialogues.

4) I am adept at fostering positive relationships with individuals with whom I interact and exchange health-related information online.

**3. Critical Factor:** This domain encompasses five inquiries:

1) I can discern reputable sources of health information on the internet.

2) I can differentiate between authentic and counterfeit health information disseminated online.

3) I can identify secure health-related websites for sharing my health data.

4) I can pinpoint health-related information on the internet relevant to my circumstances.

5) I can assess the reliability of individuals disseminating health information on the internet.

**4. Translational Factor:** This construct encompasses four inquiries:

1) I can use the internet to educate myself on maintaining my health.

2) I can leverage the internet to enhance my well-being.

3) I can utilize internet-based data to inform decisions concerning my healthcare.

4) I can use the internet to learn about health-related aspects of my situation.

### Conclusion and Implication

Necessary competencies influencing digital health literacy were delineated through a comprehensive review of relevant literature. From the abovementioned theory, Norman and Skinner (2006, p. 4) introduced the eHealth Literacy Scale (eHEALS), a Likert-type scale comprising five levels, to evaluate proficiency

in accessing electronically presented health information grounded in social cognition and self-efficacy theories. This scale incorporates six dimensions: general literacy, media literacy, information literacy, computer literacy, scientific literacy, and health literacy. Subsequent research by Wang, Wu and Qi (2021) expanded on this discourse regarding scale development, emphasizing critical analysis and translational applications.

In Thailand, efforts have been directed toward developing the ABCDE-Health Literacy Scale for Thai Adults to assess fundamental literacy competencies, social interaction skills, cognitive reasoning abilities, and health outcomes (Intarakamhaeng, 2017, pp. 7-8).

Consequently, these competencies served as the basis for formulating questionnaire items and investigating influential factors via Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), complemented by an assessment of the instrument's reliability, as previously documented. Following analysis, the initial pool of 18 items was refined to 17, distributed across four distinct factors: Functional (4 items), Communicative (4 items), Critical (5 items), and Translational (4 items). Consequently, the developed measurement tool underwent preliminary psychometric evaluation, ensuring content and structural validity and demonstrating satisfactory reliability indices. This affords assurance to researchers contemplating the application of this refined instrument in future data collection endeavors.

This aligns with the research findings of Quan-Haase, Schreurs and Martin (2014, p.981), which suggest that older individuals needing

more requisite digital skills may encounter societal constraints and a dearth of pertinent support structures to facilitate digital literacy. Consequently, devising a suitable index for gauging the extent of online health media literacy among the elderly can enhance skills and proficiency in online health media literacy tailored to individual needs.

Suggestions for researchers interested in developing a measurement of online health literacy among the elderly should consider collecting data across a variety of geographic areas. This approach should account for demographic factors such as gender, age, occupation, and education. Future studies can utilize the proposed measurement scale to evaluate the online health literacy of the elderly and explore its relationship with health care outcomes. Researchers may also investigate factors such as varying attitudes, cultures, and beliefs, which may impact healthcare decision-making. Finally, the development of this measure offers multiple benefits. It can inform research to mitigate self-care issues and reduce the risk of elderly individuals falling victim to online scams. Furthermore, it can contribute to identifying ways to enhance educational opportunities for the elderly in the context of online health literacy.

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