Original Article

Nurses' Knowledge and Experience of Health Literacy: Translation and Validation of the HL-KES 2 Scale in Greek

Evangelia Angelopoulou, MSc, BSc, RN
National and Kapodistrian University of Athens and General Children Hospital of Penteli, Athens, Greece

Paraskevi Apostolara, PhD, MSc, BSc, RN
Assistant Professor, Faculty of Nursing, University of West Attica, Athens, Greece

Anna Kardari, MSc, BSc, RN
National and Technical University of Athens, Greece

Venetia-Sofia Velonaki, PhD, MSc, BSc
Assistant Professor, Faculty of Nursing, National and Kapodistrian University of Athens, Greece

Correspondence: Angelopoulou Evangelia MSc, BSc. Nurse, National and Kapodistrian University of Athens, Greece   Papadiamantopoulou 123, Athens, 115 27, Greece, (0030)2107461435 Email: aggbalia85@gmail.com

Abstract

Background: Inadequate health literacy (HL) is a global issue. The knowledge and experience of nurses regarding HL can significantly affect the health care provided and, by extension, the health and well-being of the population. It is important to assess the knowledge and experience in HL of nurses in Greece with a reliable and valid tool.

Aim: To investigate nurses' knowledge and experience about HL when providing health care and to translate and to validate the scale HL-KES 2 (Health Literacy Knowledge and Experience Survey 2) into the Greek language.

Methodology: This is a cross-sectional study with a convenience sample of nurses working in Greece. The questionnaire included questions on demographic and professional characteristics, questions on self-rated knowledge and experience about HL and the knowledge and experience scale (HL-KES 2). The questionnaire was shared with nurses via social media.

Results: The majority of the sample (78.9%) had never attended any course related to HL but declared they knew the concept of HL with an average of 5.5 (2.7) points. Similarly, they stated that they considered HL when providing health care on average of 6.7 (2.6) units. A higher score on the self-rated knowledge scale was found to be associated with a higher level of knowledge of the concept of HL and more use of HL during health care delivery. So did the highest score on the experience scale, as it was also found to be correlated with the age of the nurses, their years of service and the number of their children. The Cronbach's alpha internal consistency index showed moderate reliability for the knowledge scale and excellent reliability for the experience scale.

Conclusion: More studies about the knowledge and experience of nurses regarding HL in Greece need to be conducted, in order to better understand the issue of HL and organize the proper interventions.

Keywords: Health Literacy, HLKES-2, nurses, Greece, reliability, validity

Introduction

Health literacy (HL) is a multidimensional concept that is considered a primary concern for public health, as it has appeared to be a key field of health promotion activity and a central pillar of the World Health Organization (World Health Organization, 2017). HL has been defined as "*the knowledge, motivation and*

competences to access, understand, appraise and apply health information in order to make judgments and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life throughout the course of life"' (Sorensen et al., 2012, p.80 3).

HL provides skills that enable individuals to understand and share personal and health information with health professionals, navigate the health care system, engage in self-care and adopt health-promoting behaviors (Alsubaie et al., 2019). Individuals with adequate HL demonstrate good judgment about issues that affect their health and tend to avoid harmful health behaviors. Consequently, HL is associated with better health outcomes and, by extension, health promotion (Sorensen et al., 2012). HL directly affects people's ability not only to process health information but also to act in the interests of their own health, the health of their family and their community. (Nutbeam et al., 2018).

Today, almost half of the world's adult population does not have sufficient HL in order to use the health services appropriately. This deficiency has been found to be associated with inadequate health knowledge, suboptimal health behaviors, low level of mental health, poor clinical outcomes, reduced use of health services, increased hospitalizations, and high costs of care (Berkman et al., 2011).

Health systems worldwide aim for individuals to participate in their own health care. To achieve this goal, health professionals and especially nurses, play a decisive role in the provision and coordination of person-centered care for preventive, acute and chronic health needs, due to their interaction with the individuals and their families. (National Academies of Sciences, Engineering, and Medicine; Committee on the Future of Nursing, 2021).

Among their many roles, nurses are also educators that provide health information to improve the individual's health, health promotion and disease management. Therefore, nurses' knowledge and experience of HL is important in health care provision (Mantwill et al., 2015; Chang et al., 2020). Nurses need to be well-educated and capable of recognizing the limitations associated with patients' poor HL and support them to participate in their own health care (Nutbeam et al., 2018). To ensure high-quality health communication, they must implement practices that take into account the HL of health service users (e.g. avoiding the use of medical terminology, using simplified information with visual representations, using teaching methods and providing opportunities for patients to ask questions about issues related to their health) (Coleman et al., 2017). However, according to some studies, both nursing students (Maduramente et al. 2019, Williamson et al., 2015) and health professionals have insufficient knowledge about HL and show inability to recognize patients with poor HL (Ozen et al., 2019).

One of the most frequently used tools to assess knowledge and experience about HL is the HL-KES (Health Literacy Knowledge and Experience Survey) scale, designed by Cormier and Kotrlik (2009). In 2019, Walker et al. created the short version of this scale, HL-KES 2, which consisted of 14 questions. The HLKES-2 is considered a valid and reliable tool for evaluating the knowledge and experiences of nurses regarding HL, in a modern environment (Walker et al., 2019) and it has already been used in other countries (Subedi et al., 2022). In Greece, the studies dealing with HL are limited, while no study investigating the knowledge and experience of nurses regarding HL was found. The aim of this cross-sectional study was mainly to investigate the factors related to the knowledge and experience of nurses about HL when providing health care and additionally the translation and validation of HL-KES 2 in the Greek language.

Material and Method

Type of study - data collection

A cross-sectional correlation study was performed with HL knowledge and related experience as dependent variables. A convenience sample of nurses working in Greece was used. The data was collected through an anonymous online questionnaire, which was shared via social media in the period

from July to August 2022. The questionnaire included questions on the demographic characteristics and professional details of the participants (gender, age, nationality, place of residence, marital status, number of children, current academic status, work experience, professional status), questions on self-assessed knowledge and experience for HL and the knowledge and experience subscales of the HL-KES 2. The HL-KES 2 had 14 questions (10 knowledge questions and 4 experience questions). In the original study the content validity index of the scale was 0.95 and the individual questions indicated proper item difficulty and discrimination. The Cronbach α coefficient was 0.565 for the 10 multiple-choice knowledge questions and 0.843 for the 4 Likert-type questions to assess experience, indicating good reliability (Walker et al., 2019).

Translation and validation of the HL-KES 2 scale: This scale was translated into Greek with the permission of its creators, and then back-translated into English by two nurses with excellent knowledge of both languages. It was then administered to three nurses with subject-specific knowledge and three without subject-specific knowledge, in order to ensure the validity of the Greek version and to make improvements in terms of understanding and clarity. The knowledge subscale score was the sum of the responses to 10 questions (0= wrong answer, 1= right answer) of the HL-KES 2. The range was from 0 to 10, with a higher score indicating higher knowledge about HL. The experience subscale score resulted from the sum of 4 items of a 4 point Likert scale (0–Never, 1–Sometimes, 2–Often, and 3–Always). The experience subscale score ranged from 0 to 12, with a higher score indicating more experience. The factorial structure of the questionnaire was examined through confirmatory factor analysis for both HL-KES 2 subscales.

Ethical issues: At the beginning of the questionnaire, the contact details of the main researcher were given along with an informative text, which stated the purposes of the study, the voluntary participation in it, the assurance of anonymity and confidentiality, as well as the non-use of the data in other researches or for other purposes. Also, it was

made clear that the participants could stop filling in the questionnaire any time they wanted, without saving their answers. The permission for the conduction of this study was obtained from the Ethics Committee of the Nursing Department of the National and Kapodistrian University of Athens.

Statistical Analysis: After the completion of the data collection, the descriptive indicators of all the variables of the questionnaire were examined and analyzed. The Kaiser's criterion was calculated (> 0.5) and the Bartlett's statistical test was performed in order to investigate the correlation between the factors composing the scales. Then, the correlation of the knowledge and experience scale with the demographic characteristics of the participants, their professional details and their self-assessed knowledge and experience about HL, was investigated by applying the t-test for independent samples, the one-way analysis of variance (ANOVA) and Bonferroni test to correct for multiple comparisons (only in the case of a statistically significant finding). The parametric Pearson and non-parametric Spearman correlation coefficients were calculated as well. Results with p-value lower than 0.05 were considered statistically significant. The SPSS v.26 software was used to perform the statistical analysis (IBM Corporation, 2019 Armonk, New York, USA).

Results

The sample of the study consisted of 142 nurses, the majority of which (89.4%) were women with a mean age of 38.9 years (SD: 8.9 years). All the participants (100%) were of Greek nationality and most of them (84.5%) resided permanently in an urban area. 68.3% of the sample were married and 59.2% had at least one child. Regarding professional data, 52.1% had a master's or doctoral degree, 66.9% worked in a hospital or clinic and had an average of 13.2 years (9.2 years) of work experience in the health field. The majority of the sample (78.9%) had not attended a course related to HL (table 1). Regarding the self-assessed knowledge, the mean of the participants' stated knowledge about HL was 5.5 (2.7) points on a scale from 0 to 10, i.e. moderate knowledge. Similarly, they

stated that they considered HL when providing health care with a mean of 6.7 (2.6) points on a scale from 0 to 10.

Table 2 presents the results of the assessment of the questions' difficulty that composed the subscale of knowledge and factor analysis. The correct answer to each question resulted in the percentage of correct questions ranging from 30% to 93%. In 5 out of 10 questions the success rate was over 50%. The factor analysis showed that the questions received loading values ranging from 0.5 to 0.7, which confirmed the high quality of the questions. The Kaiser-Meyer-Olkin test value was 0.64 (above the acceptable limit of 0.6) and Bartlett's sphericity criterion was statistically significant (x^2=93.981, p< 0.001). The internal consistency Cronbach's alpha index was 0.51. The mean value of the knowledge scale was 5.2 (SD: 2.01), which indicated a moderate knowledge on HL topics. In conclusion, the factor analysis confirmed the original factor structure of the knowledge scale.

The factor analysis (table 3) showed that the questions that composed the experience subscale received loading values ranging from 0.4 to 0.7, which confirmed the high quality of the questions. The value of the Kaiser-Meyer-Olkin criterion was 0.75 (above the acceptable limit of 0.6) and Bartlett's sphericity criterion was statistically significant too (x^2=214.2, p< 0.001). Also, the correlation of the individual questions of the questionnaire with the overall scale of experience was investigated. More specifically, we observed that all questions were positively statistically significantly correlated with the overall evaluation scale, with a Pearson r correlation coefficient ranging from 0.638 to 0.878. The Cronbach's alpha internal consistency index for the experience subscale was 0.81, which means excellent reliability. The mean value of the experience subscale was 6.2 (SD: 2.7), indicating moderate experience on HL topics. In conclusion, factor analysis and correlation analysis confirmed the original factor structure of the experience scale.

From the data analysis, a statistically significant positive correlation of the score on the HL-KES 2 knowledge scale with the self-assessed level

of knowledge of the HL concept and the extent to which they take HL into account when providing health care emerged. This means that the better nurses estimated that they knew the concept of HL and took HL into account when providing health care, the higher their score on the HL-KES 2 knowledge subscale was. Conversely, no statistically significant correlation was found with the demographic characteristics and professional data of the nurses (p> 0.05). (table 4)

The score on the HL-KES 2 experience subscale was found to be positively and statistically significantly related to age, number of children, years of work experience in the health field, as well as to the self-assessed level of knowledge of the HL concept and the degree to which the HL is taken into consideration during the provision of health care. In particular, the nurses' score on the experience subscale was proportional with the nurses' age, their years of service and the number of children they had. Also, the better nurses estimated that they knew the concept of HL and took HL into account when providing health care, the higher their score on the experience subscale was. Furthermore, there was a statistically significant differentiation of the subscale of experience depending on the place of residence of the nurses and a tendency for an indicative relationship depending on whether they had attended a course related to HL or not (p = 0.07 < 0.10). More specifically, it appeared that those who lived in an urban area had a lower score on the experience subscale, compared to their colleagues who lived in a rural or semi-urban area. (table 5)

A multiple linear regression model was then applied to investigate the dependence of the HL-KES 2 knowledge subscale on nurses' basic demographic and professional characteristics and the 2 questions referring to self-rated knowledge and experience about HL. These variables were included in the multivariate analysis, even though they did not appear to be statistically significantly correlated with the knowledge subscale in the univariate analysis, in order to identify any possible confounding effects between them. Also, 2 linear regression models were applied separately for each

question on self-assessed knowledge and experience for HL, as they showed multicollinearity. The degree of self-assessed knowledge of the HL concept was still statistically significantly associated with the knowledge subscale even after the adjustment for other demographic and occupational factors (Model 1). More specifically, the knowledge subscale was expected to increase by 0.149 points with a 95% Confidence Interval (CI) of (0.018 to 0.280) points, adjusting for the remaining variables. Similarly, it emerged that the more the nurses considered that they took HL into account when providing health care, the greater the increase in the knowledge subscale (Model 2: 0.211 points, with 95% CI. 0.076 to 0.347 units). (table 6)

Similarly, a multiple linear regression model was applied to investigate the dependence of the HL-KES 2 experience subscale on those variables that emerged to be statistically significantly correlated with the experience subscale when investigating the univariate correlations: age, place of residence, number of children, work experience in the health field and the 2 questions about self-assessed knowledge

and experience about HL. Additionally, gender was adjusted for potential confounding effects. It is noted that 2 linear regression models were applied separately for each question on self-assessed knowledge and experience for HL, as these 2 questions showed multicollinearity. It was observed that the degree of self-assessed knowledge of the HL concept was still statistically significantly associated with the experience subscale after adjusting for other demographic factors and occupational factors (Model 1). Specifically, the experience subscale score was expected to increase by 0.280 points with a 95% Confidence Interval (CI) of (0.115 to 0.445) points, adjusting for the remaining variables. Similarly, it emerged that the more nurses considered that they took HL into account when providing health care, an increase in the experience subscale score (Model 2) by 0.333 units and with 95% CI was expected. (0.163 to 0.502) units, adjusting for the effects of the remaining independent variables. However, it was observed that during the multivariate analysis, the remaining variables no longer seemed to play a significant role in the change of the experience subscale ($p > 0.05$). (table 7)

Table 1. Descriptive statistical measures of the demographic characteristics and professional data of the sample.

Demographic Characteristics		Descriptive statistical measures
Sex	(female: n, %)	127 (89.4)
Age	(years: mean, SD)	38.9 (8.9)
Nationality (n, %)	*Greek*	142 (100.0)
Place of residence (n, %)		
	Rural area or Settlement with less than 10,000 inhabitants	22 (15.5)
	Urban	120 (84.5)
Marital status (n, %)		
	Single	41 (28.9)
	Married	97 (68.3)

Widower	4 (2.8)
Number of children (n, %)	
0-2	126 (88.7)
≥ 3	16 (11.3)
Attribute of current academic status (n, %)	
Nurse with postgraduate studies	72 (52.2)
Work experience in the health field (years: mean, SD)	13.2 (9.1)
Current work position (n, %)	
Hospital or clinic	95 (66.9)
Health center, local health unit, other primary healthcare facility	38 (26.7)
I do not work	4 (2.8)
Other	5 (3.5)
Have you attended a course related to HL and if so, how long? (n, %)	
No, never	112 (78.9)
Yes, with duration <3 hours	23 (16.2)
Yes, with duration ≥3 hours	7 (4.9)

Table 2: HL-KES 2 knowledge subscale

Question	Difficulty	Loading	Cumulative variance (%)
Q1	0.50	0.568	20.2
Q2	0.30	0.496	33.3
Q3	0.48	0.522	44.9
Q4	0.34	0.508	55.3
Q5	0.43	0.607	64.8
Q6	0.56	0.500	73.0
Q7	0.93	0.722	80.8
Q8	0.40	0.474	87.7
Q9	0.68	0.558	94.3
Q10	0.59	0.571	100.0

Table 3. HL-KES 2 experience subscale

	Factorial analysis		Pearson r correlation coefficient (p-value)				
	Loading	Cumulative variance (%)	Experience scale	1.	2.	3.	4.
Experience scale			1				
Q1	0.708	63.9	0.859 (<0.001)*	1			
Q2	0.702	83.5	0.878 (<0.001)*	0.706 (<0.001)*	1		
Q3	0.640	92.9	0.799 (<0.001)*	0.627 (<0.001)*	0.612 (<0.001)*	1	
Q4	0.367	100.0	0.638 (<0.001)*	0.372 (<0.001)*	0.466 (<0.001)*	0.257 (0.002)*	1

Table 4. Correlation results of the knowledge scale of HL-KES 2 with the demographic characteristics, professional data and the questions about the self-assessed knowledge and experience about HL in the sample.

	Knowledge scale mean (SD)	p-value
Demographic characteristics		
Sex		
Male	4.6 (2.1)	0.247[2]
Female	5.2 (2.0)	
Age (years)	r= -0.051	0.545[3]
Place of residence		
Rural area or Settlement with less than 10,000 Inhabitants	5.0 (2.5)	0.669[2]
Urban	5.2 (1.9)	
Marital status (n, %)		
Single and widower	5.0 (1.9)	0.616[2]
Married	5.2 (2.0)	

Number of children	rho= 0.058	0.494[4]
Professional data		
Attribute of current academic status		
Nurse assistant	4.3 (1.8)	
Nurse	5.1 (2.2)	0.209[5]
Nurse with postgraduate studies	5.4 (1.9)	
Work experience in the health field	rho= -0.019	0.821[4]
Current work position		
Hospital or clinic	5.1 (1.9)	
Health center,local health unit, other primary healthcare facility	5.2 (2.3)	0.605[5]
I do not work	5.6 (2.2)	
Other		
Have you attended a course related to HL?		
No	5.0 (2.0)	0.127[2]
Yes	5.7 (2.1)	
How well do you know the concept of HL	rho= 0.207	0.014[4]*
How much do you take HL into account when providing health care?	rho= 0.269	0.001[4]*

SD: Standard Deviation [1]School unit, camp, special education or Mental health unit or Home care, Hospice
[2]t-test for independent samples [3]Correlation coefficient, Pearson r [4]Correlation coefficient, Spearman rho
[5]One-way analysis of variance (ANOVA) *statistically significant result

Table 5. Correlation results of the experience scale with the demographic characteristics, professional data and the questions about the self-assessed knowledge and experience for HL in the sample.

	Experience scale mean (SD)	p-value
Demographic characteristics		
Sex		
Male	5.5 (3.2)	0.300[2]
Female	6.2 (2.7)	
Age (years)	r= 0.303	<0.001[3]*
Place of residence		
Rural area or Settlement with less than 10,000 Inhabitants	7.2 (2.7)	0.047[2]*

Urban	6.0 (2.7)	
Marital status (n, %)		
Single and widower	5.6 (2.9)	0.125[2]
Married	6.4 (2.6)	
Number of children	rho= 0.188	0.025[4]*
Professional data		
Attribute of current academic status		
Nurse assistant	7.4 (2.6)	
Nurse	5.9 (2.7)	0.274[5]
Nurse with postgraduate studies	6.2 (2.7)	
Work experience in the health field	rho= 0.268	0.001[4]*
Current work position		
Hospital or clinic	6.0 (2.6)	
Health center,local health unit, other primary healthcare facility	6.0 (2.8)	0.406[5]
Other[1]	6.9 (3.1)	
Health Literacy		
Have you attended a course related to HL?		
No	6.0 (2.8)	0.070[2]
Yes	7.0 (2.5)	
How well do you know the concept of HL?	rho= 0.326	<0.001[4]*
How much do you take HL into account when providing health care?	rho= 0.394	<0.001[4]*

SD: Standard Deviation [1]School unit, camp, special education or Mental health unit or Home care, Hospice or I do not work [2]t-test for independent samples [3]Correlation coefficient, Pearson r [4]Correlation coefficient, Spearman rho [5]One-way analysis of variance (ANOVA) *statistically significant result

Table 6. Results of fitting a multiple linear regression model with the HL-KES 2 knowledge scale as the dependent variable, adjusting for demographic factors, occupational data, and self-rated knowledge and experience about HL.

Model	Independent variables	b (95% C.I.)	p-value
1	**Sex**		
	Male	*Reference category*	
	Female	0.553 (-0.546 - 1.651)	0.321
	Age (years)	-0.014 (-0.052 - 0.024)	0.460

Place of residence		
Rural area or Settlement with less than 10,000		
Inhabitants	*Reference category*	
Urban	0.574 (-0.368 - 1.516)	0.230
Attribute of current academic status		
Nurse assistant	*Reference category*	
Nurse (RN)	0.831 (-0.567 - 2.229)	0.242
Nurse with postgraduate studies	1.023 (-0.308 - 2.353)	0.131
Current work position		
Hospital or clinic	*Reference category*	
Health center, local health unit, other primary healthcare facility	0.095 (-0.833 - 1.023)	0.840
Other[1]	0.346 (-0.629 - 1.320)	0.484
Have you attended a course related to HL?		
No	*Reference category*	
Yes	0.475 (-0.391 - 1.340)	0.280
How well do you know the concept of HL?	0.149 (0.018 - 0.280)	0.026*
Constant b_0	2.900	0.023

Model	Independent variables	b (95% C.I.)	p-value
2	**Sex**		
	Male	*Reference category*	
	Female	0.516 (-0.563 - 1.595)	0.346
	Age (years)	-0.023 (-0.062 - 0.015)	0.229
	Place of residence		
	Rural area or Settlement with less than 10,000		
	Inhabitants	*Reference category*	
	Urban	0.583 (-0.341 έως 1.507)	0.214
	Attribute of current academic status		
	Nurse assistant	*Reference category*	
	Nurse (RN)	0.802 (-0.574 - 2.178)	0.251
	Nurse with postgraduate studies	1.029 (-0.275 - 2.334)	0.121
	Current work position		

Hospital or clinic	*Reference category*	
Health center,local health unit, other primary healthcare facility	0.188 (-0.729 - 1.106)	0.685
Other[1]	0.310 (-0.649 - 1.268)	0.524
Have you attended a course related to HL?		
No	*Reference category*	
Yes	0.514 (-0.649 - 1.351)	0.226
How much do you take HL into account when providing health care?	0.211 (0.076 - 0.347)	0.003*
Constant b_0	2.670	0.033

b: partial dependence coefficient CI: Confidence interval *statistically significant result

Table 7. Results of fitting a multiple linear regression model with the HL-KES 2 knowledge scale as the dependent variable, adjusting for demographic factors, occupational data, and self-rated HL knowledge and experience.

Model	Independent variables	b (95% C.I.)	p-value
	Sex		
1	*Male*	*Reference category*	
	Female	0.692 (-0.686 - 2.069)	0,322
	Age (years)	0.061 (-0.051 - 0.172)	0.284
	Place of residence		
	Rural area or Settlement with less than 10.000 Inhabitants	*Reference category*	
	Urban	-0.840 (-2.022 - 0.342)	0.162
	Number of children	-0.207 (-0.695 - 0.280)	0.402
	Work experience in the health field	0.038 (-0.065 - 0.142)	0.465
	Have you attended a course related to HL?		
	No	*Reference category*	
	Yes	0.436 (-0.630 - 1.503)	0.420
	How well do you know the concept of HL?	0.280 (0.115 - 0.445)	0.001*
	Constant b_0	1.989	0.305
Model	**Independent variables**	**b (95% C.I.)**	**p-value**
	Sex		
2	*Male*	*Reference category*	

Female	0.579 (-0.778 - 1.936)	0.400
Age (years)	0.053 (-0.057 - 0.163)	0.342
Place of residence		
Rural area or Settlement with less than 10,000	*Reference category*	
Inhabitants	-0.883 (-2.044 - 0.279)	
Urban		0.135
Number of children	-0.142 (-0.616 - 0.333)	0.556
Work experience in the health field	0.027 (-0.076 - 0.129)	0.607
Have you attended a course related to HL?		
No	*Reference category*	
Yes	0.585 (-0.451 - 1.620)	0.266
How much do you take HL into account when providing health care?	0.333 (0.163 - 0.502)	<0.001*
Constant b$_0$	1.767	0.355

b: partial dependence coefficient CI: Confidence interval *statistically significa

Discussion

The main finding of our study was that nurses' knowledge about HL ranged at a moderate level. Similar were the findings of a study in Saudi Arabia where the majority of the nurses had moderate knowledge about HL and did not understand the impact of HL on patient care (Alsubaie et al., 2019). Chang et al. (2020) conducted a study in Taiwan to investigate nurses' knowledge about HL and found that only 51% of their study sample had correct answers about HL while the percentages were slightly higher (62%) in a study that explored HL with the most commonly used patient teaching methods in nurses working in ICUs (Kennard, 2017). In contrast, Cafiero (2013), in his study about nurse practitioners' knowledge, experience and intention to use HL strategies in clinical practice in the United States, reported that most of the nurses answered all questions about HL correctly.

The results of our study, however, are not in full agreement with many studies which highlight the need to strengthen knowledge about the role of HL in the provision of safe and quality care. A study conducted in Iran, revealed that the nurses had limited knowledge about HL, although most of them reported previous exposure to the concept of HL (Nesari et al., 2019). Similarly, in a recent cross-sectional study in Iraq the majority of the 177 participating nurses (92.3%) had low level of knowledge (Al-Fayyadh et al., 2022). Also, the study of Qian et al. (2021) which was conducted in china, showed that nurses had a low level of knowledge of HL and the applied practices related to the HL were insufficient.

The findings of our study also contrast with the results of a study conducted in Turkey where nurses' knowledge of HL and their understanding of its role in patient outcomes was limited (Güner al., 2019). Similarly, in Nepal, nurses' lack of knowledge was observed in almost all areas, but noticeably in the area of health care teaching evaluation (Subedi et al., 2022). Nantsupawat et al. (2020), conducted a cross-sectional study in Thailand and concluded

that the majority of nurses were not familiar with the concept of HL.

Regarding the level of nurses' experience on the HL, the results of this study are in agreement with the results of a study conducted by Al-Fayyadh et al. (2022), which showed that more than half of the participants (58.7%) had an acceptable level of experience and the results of the study conducted by Maduramente et al. (2019), in which the majority of graduate nursing students had moderate experience in HL. In contrast, Nesari et al., (2019), showed in their study that nurses had limited experience in using HL tools and new technologies when providing information related to health care. Similarly, in the study of Williamson et al., (2015), graduate nursing students were found to be deprived of experiences on HL issues.

The factors analysis showed that the questions composing the knowledge subscale received values ranging from 0.5 to 0.7 and the Cronbach's Alpha internal relevance index was 0,51, which confirmed the high quality and reliability of the questions. Similarly, it occurs that the questions composing the experience subscale received loading values ranging from 0.4 to 0.7 and Cronbach's Alpha internal relevance index was 0.81, which also confirmed the high quality and reliability of the questions. Our findings are in agreement with the study of Parandeh et al. (2020), which aimed to weight HL-KES scale to the Iranian population. This version had good validity and reliability (Cronbach's Alpha internal relevance index was 0.565 for the ten multiple choice questions and 0.843 for the four Likert questions) (Walker et al., 2019).

Limitations of the Study: The main limitation of this study is that the sample of nurses participated, was a convenience sample and therefore the results cannot be generalized. Since the study did not involve randomly selected nurses, we do not know if the moderate knowledge and experience in HL corresponds to the nurses in Greece or to the sample of this study only. Therefore, it is necessary to assess the level of HL knowledge and experience in future studies in random samples of nurses. Also, the nurses who chose to participate in this study may have had more sensitivity about the issues surrounding HL, which reinforces the non-generalizability of the results. Another limitation of this study is the strong subjective element of the question: 'How much do you take HL into account when providing health care?', because the participants answered for themselves, whereas in an observational study, their real behavior could be recorded more objectively.

Conclusion: HL is considered an important factor in creating positive communication between patients and healthcare professionals and bringing optimal health outcomes. Therefore, nurses must have knowledge, experience and communication skills in order to provide their patients with safe care (Protheroe et al., 2009). In Greece, health literacy has started to be studied in the last decade. The studies that have been carried out on HL so far, target the population of professional nurses as their knowledge and experience regarding HL affect the health system. The assessment of the knowledge and experience of nurses regarding HL in Greece is considered valuable because it captures the current situation, so that appropriate interventions can be designed, with the ultimate goal of improving the health services provided. Less effective nurse-patient communication may have more adverse effects on people with limited HL skills and may contribute to health disparities (Molina-Mula & Gallo-Estrada. 2020).

The strengthening of HL should be based on three main axes: 1) the education of patients and health professionals, 2) the participation of patients in decision-making about their health and 3) the awareness of patients and health professionals. Approaches to dealing with patients with insufficient or problematic HL include the improvement of patient-health professional communication, simplification of health information and creation of educational and informational materials for nurses and patients adapted to their perceptual capabilities. These tools aim to facilitate nurses and empower patients so that they can be more effective in their own care, improving not only their own health but the overall efficiency of the health system (Nesari et al., 2019).

Also, the HLKES-2 appeared to be a reliable tool for conducting research on the nurses' knowledge and experience in HL and could be useful in respective future studies and clinical practice.

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