Research Article / Araştırma Makalesi

A Study on the Development of a Health Literacy Assessment Scale

Sağlık Okuryazarlığı Değerlendirme Ölçeği Geliştirme Çalışması

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Abstract

Background: The study aims to develop a Health Literacy Assessment Scale (HLAS) that would be applied to 18+ year-old individuals in Şanlıurfa, can be understood by the society, and fits to their sociocultural levels, as well as aiming to assess the effects of some sociodemographic variables that are thought to affect the scale scores.
Materials and Methods: The research is of methodological type. The study data were collected in Zeliha Öncel Family Healthcare Center, which has 6 units and is located in Haliliye district, between 01.07.2021 and 15.08.2021. 100 for the first pilot, 100 for the second pilot and 330 for the main study were included in the study. The items in the scale were created by the researcher to determine the level of health literacy.
Results: Total median scores were found to be higher among males in comparison to females, among the age groups of 18-24 and 25-34 years in comparison to other age groups, among university graduates in comparison to other educational levels, among non-married and divorced/separated individuals in comparison to other marital statuses, and among those having social security in comparison to others.
Conclusions: As a result of this study, it was determined that the candidate scale, which was supported by validity and reliability analyzes, could be used to evaluate the health literacy of individuals in the region.

Keywords: Health Literacy, scale development, Türkiye

Öz

Amaç: Çalışma, Şanlıurfa'daki 18 yaş üstü bireylere uygulanabilecek, toplum tarafından anlaşılabilir ve sosyokültürel düzeylerine uygun bir Sağlık Okuryazarlığı Değerlendirme Ölçeği (SOYDÖ) geliştirmeyi ve ölçek puanlarını etkileyebileceği düşünülen bazı sosyodemografik değişkenlerin etkilerini değerlendirmeyi amaçlamaktadır.
Materyal ve Metod: Araştırma metodolojik türdedir. Çalışma verileri 01.07.2021-15.08.2021 döneminde, Haliliye ilçesinde bulunan ve 6 birim barındıran Zeliha Öncel Aile Sağlığı Merkezi'nde toplanmıştır. Çalışmaya birinci pilot için 100, ikinci pilot için 100 ve ana çalışma için 330 kişi dâhil edilmiştir. Ölçekte yer alan maddeler sağlık okuryazarlığı düzeyini belirlemek amacıyla araştırmacı tarafından oluşturulmuştur.
Bulgular: Toplam medyan puanları erkeklerde kadınlara göre, 18-24 ve 25-34 yaş gruplarında diğer yaş gruplarına göre, üniversite mezunlarında diğer eğitim düzeylerine göre, evli olmayanlarda ve boşanmış/ayrı yaşayanlarda diğer medeni durumlara göre ve sosyal güvencesi olanlarda diğerlerine göre daha yüksek bulunmuştur.
Sonuç: Bu çalışma sonucunda geçerlilik ve güvenilirlik analizleri ile desteklenen aday ölçeğin bölgedeki bireylerin sağlık okuryazarlığını değerlendirmek için kullanılabileceği tespit edilmiştir.

Anahtar Kelimeler: Sağlık Okuryazarlığı, ölçek geliştirme, Türkiye

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Introduction

In the last century, the concept of health has been explained based on the parameters such as the absence of the conditions such as disability and disease. This definition is insufficient nowadays due to the longer life expectancy and the concept of quality life among individuals around the world (1). Given the regulation prepared and enacted by the World Health Organization (WHO) in the year 1948, health was defined as a wholistic wellness of individuals from social, psychological, and physical aspect (2).

One of the factors determining our health from a social aspect is the relationship between health and education. Health literacy (HL) is at the intersection between education and health (3). Considering the definition by the WHO, HL refers to having the knowledge, trust, and skill levels required to improve personal and public health. As can be understood from the definition, HL is far beyond individuals gaining information about their own health and getting an appointment from a healthcare institution to protect their health. For HL levels of individuals to increase, it is necessary to improve their access to health-related information and gain them the skill to make use of this information to increase their health levels (4).

Low level of health literacy causes risky outcomes such as high death rates, poor results in general public health indicators, inequalities in health, and increases in healthcare expenses. Individuals should have a sufficient level of HL in order to have self-responsibility for their health and to seek and find treatments to protect and improve their health and cure their diseases when sick (5, 6).

Nutbeam divided the HL into 3 dimensions: functional HL, interactive HL, and critical HL. The functional (fundamental) HL level requires having knowledge of the fundamental health subjects. At the level of interaction HL, an individual is expected to put the knowledge, which he/she has in the functional HL, into practice. At the level of critical HL, by making use of personal health knowledge, an individual should analyze his/her medical condition and reveal the personal or social benefit (7).

An ideal HL measurement instrument should have features comprehensively explaining the personal characteristics of each patient in order to customize the health information and needs for each individual (8). It is quite difficult to develop a HL measurement tool that can be applied to different societies and accepted by everyone. Although there are various measurement instruments, there are significant gaps in measuring and detecting the HL level (9). More advanced and comprehensive tests are needed in order to educate children and adults on health problems, convey public health-related information to society in a more comprehensive and understandable way, and understand the gaps between the existing studies on this subject and the demands of society (10).

The present study aims to develop a Health Literacy Assessment Scale (HLAS) that would be applied to 18+ year-old individuals in Şanlıurfa, can be understood by the society, and fits to their sociocultural levels, as well as aiming to assess the effects of some sociodemographic variables that are thought to affect the scale scores.

Materials and Methods

Research Type

The present study is a methodologic study.

Study Universe and Sample Selection

Within the context of this study, as performed in previous studies as a standard, 2 pilot applications were performed and then the reliability and validity of the draft scale were tested in the main application. In the first pilot application testing the items of the scale, 100 individuals were involved. Then, 100 more individuals were involved in the second pilot application. During the scale development process, the principle is to involve 5 to 20 folds of the number of items in the scale to calculate the number of participants (11). Since there were 33 items in the scale as of the second pilot application, the sample size was calculated to be 10 folds of the number of items and 330 individuals were involved.

The study data were collected in Zeliha Öncel Family Healthcare Center, which has 6 units and is located in Haliliye district, between 01.07.2021 and 15.08.2021. The data collection was performed by researchers by using the face-to-face interview method. In the present study, individuals aged 18 years or older and having no communication or language problems were employed. This study was conducted in accordance with the ethical principles stated in the "declaration of Helsinki" adopted by the World Medical Association (12).

Ethical Approval

The present research was approved by the Clinical Studies Ethics Committee of the Medical Faculty of Harran University (Session Nr.11, date 07.06.2021, decree Nr. HRU 21.11.16). The approval for the field study was obtained on 30.06.2021 with the decree Nr. E-49781372-773.99 by Şanlıurfa Provincial Health Directorate. After providing information about the study, the participants gave their consent verbally and in writing.

Data Collection Method

The form used in data collection consists of two sections. In the first section, there are 7 items questioning the sociodemographic characteristics such as age, gender, educational level, marital status, income level, and social security and employment statuses. In the second section, there is the 33-item scale developed in order to measure and assess the level of HL.

Development of the Scale Form

In order to establish the item pool for the draft scale, after a literature review, researchers created 54 items in order to comprehensively investigate all aspects of HL. This item poowas analyzed by a team of 5 experts in terms of the understandability of items and their suitability for society. After

this process, 14 items thought to not fit the theoretical structure of the scale were excluded.

The scale was designed as a 4-point Likert-type scale (1: Never, 2: Sometimes, 3: Most times, and 4: Always). The responses were rated as follows: Never: 0 points, Sometimes: 1 point, Most times: 2 points, and Always: 3 points.

The draft scale was applied to a group of 20 individuals face-to-face. By collecting opinions and suggestions on how to modify the items in order to have them understood more by the citizens in the region, the scale was revised. Then, it was sent to 15 experts to examine from the contextual validity. After gathering the expert opinions, frequency values were calculated for each item and the items were assessed using the method of Lawshe. In this method, the assessments are made using values such as Context Validity Ratio (CVR) and Context Validity Index (CVI) (13). CVR is calculated by dividing the total number of experts stating that an item fits by the half of the total number of experts and then subtracting 1 from the result. CVR value higher than 0.60 for 15 experts was considered to be positive for the item (14). Ten items found to have lower CVR values were excluded from the scale. The items, which experts were asked to be modified, were assessed and corrected as necessary. There was a consensus that 3 items on the scale were measuring different aspects at the same time and those items were excluded from the scale. In conclusion, the 33-item scale was ready for the first pilot application.

A hundred individuals were reached for the first application. The suitability of the items was assessed and the items with total correlation values lower than 0.30 were revised by obtaining suggestions from the experts. No item was excluded in the first application. The items revised after the first application were applied to another group of 100 individuals. At this point, since no item was found to have total correlation value lower than 0.30, no items were excluded and the main application was initiated. Considering the principle of 5-20 folds of the number of items, the main process was carried out with 330 individuals. Six items in the draft scale were directed reversely. These items were considered while scoring and they were scored reversely while calculating the total score.

Statistical Analysis

The statistical analyses in the present study were conducted using SPSS Version 20 (Armonk, New York: IBM Corp.) software. The categorical data of participants were expressed using frequency distributions and percentages, whereas numerical data were presented using mean values, standard deviations, median values, and minimum-maximum values. The fitness of data to normal distribution was tested using Kolmogorov Smirnov- Shapiro Wilk, Skewness and Kurtosis properties, variation coefficient, and histogram graphs. If the normal distribution was found in the scale score and participant characteristics, independent groups t-test, one-way variance analysis, and Pearson's correlation values were used. In case of non-normal distribution, their non-parametric equivalents (Mann-Whitney U, Kruskal-Wallis Variance Analysis, and Spearman Correlation analysis) were used. Statistical values with $p<0.05$ were considered significant.

Validity Test

The structural validity of the scale was tested using Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA was used in identifying the subdimensions and in the reduction of the data. If the sample size is sufficient for analysis was tested using Kaiser-Mayer-Olkin (KMO) coefficient and Barlett sphericity test. Since EFA revealed that 7 items were overlapping, those items were excluded from the draft scale. CFA process was initiated since the scale was explaining the explicit and implicit variables with 3 subdimensions and 26 items. Since CFA examines the relationships between structures rather than those between variables, the dimensions found with EFA were validated. The items, which were first abbreviated using the capital letters of dimensions, were coded using the item numbers and capital letters of 3 dimensions as functional/communicational (a), practice (b), and critical (c) in CFA. To better represent the structure, modifications were made on the items between a5 and a6, c5 and c7, and a2 and a13.

Reliability Test

In order to determine the scale's error-free status and variability by cases, the inner consistency and stability analyses were performed. Internal consistency was tested using Cronbach's Alpha coefficient and item total correlation. Stability was tested using test-retest and Intraclass Correlation Coefficient (ICC). The scale was conducted on 20 individuals and then re-conducted 4 weeks later on the same individuals. It was tested if the data fit the normal distribution. As a result of the normal distribution analyses, the dependent groups were subjected to t-test and Pearson's correlation test. The statistical significance was set at $p<0.05$ in the analyses.

As a result of the validity and reliability analyses, it was determined that the final form of the Health Literacy Assessment Scale (HLAS) consisting of 3 dimensions and 26 items and developed in order to assess the HL level could be used.

Results

Sociodemographic Characteristics of Participants and Descriptive Results

The sociodemographic results of the research are reported over 330 individuals participating in the main application. The mean age of participants was 41.80±14.41 years (min: 18, max: 77, median: 41.50). Of the participants, 56.4% were female, 23.6% were literate, 79.4% were married, 68.8% were not working in a paid job, 85.4% were in lower social class, and 65.5% had social security within the scope of Social Security Institution (SGK) (Table-1). Considering the educational level by age, literacy level was found to decrease with advancing age. The percentages of the educational level of secondary school and high school in the age groups of 18-24, 25-34, 35-44, 45-54, 55-64, and 65 and older were calculated to be 84.7%, 52.2%, 20.9%, 20.9%, 17.0%, and 23.8%, respectively.

Table 1. Sociodemographic Characteristics of Participants

	n	%
Gender		
Female	186	56,4
Male	144	43,6
Age groups		
18-24 years old	46	13,9
25-34 years old	71	21,5
35-44 years old	67	20,3
45-54 years old	72	21,8
55-64 years old	53	16,1
65 years and older	21	6,4
Education status		
Illiterate	78	23,6
Literate	23	7,0
Elementary School	110	33,4
Secondary School	40	12,1
High School	42	12,7
University and higher	37	11,2
Marital status		
Non-married	50	15,2
Married	262	79,4
Divorced-separated	8	2,4
Widow	10	3,0
Employment status		
Employed	103	31,2
Unemployed	227	68,8
Social security		
SGK	216	65,5
Other	37	11,2
None	77	23,3
Social class		
Lower social class	282	85,4
Medium social class	31	9,4
Upper social class	17	5,2
Income level		
Income is less than expenses	166	50,3
Income equals expenses	151	45,8
Income is higher than expenses	13	3,9
Total	**330**	**100**

Structural Validity

Explanatory Factor Analysis

The scale was initially designed to have 4 dimensions (functional, communicational, practice, and critical) and then EFA was conducted. After the EFA, since the structure of the scale did not fit the 4-dimensional one, EFA was repeated for 3 dimensions. After the repeated EFA, there were 3 dimensions having eigenvalue higher than 1 and explaining 60.80% of the total variance.

Since the inter-item correlation levels were found to be higher than 0.30, it was thought that there were relationships between the items and Promax, one of the curvilinear axis rotation methods, was chosen. It was determined in-which dimension the items were. The items having loads higher than 0.30 in multiple dimensions were examined.

The items with a difference between factor loads lower than 0.101 were considered overlapping items. In this parallel, starting from the overlapping items with the lowest difference, the analysis was repeated by excluding the items one by one. In conclusion, the items P2, P4, P8, P9, C5, C6, and C8 found to be overlapping were excluded from the draft scale. (P=practice, C=criticize)

As a result of the repeated EFA, the first and second dimensions were combined (fundamental and communicational). In its final form, the scale had 3 dimensions and 26 items and the process continued. The dimensions were named as follows: (1) Fundamental and communicational, (2) Practice, (3) Critical / assessment.

The fundamental/communicational dimension consists of 13 items, practice dimension consists of 6 items, and critical/assessment dimension consists of 7 items. The factor structure of the scale is presented in Table 2.

The eigenvalue of fundamental/communicational dimension was found to have the eigenvalue of 11.88 and explain 45.72% of the variance, whereas the practice dimension was found to have the eigenvalue of 2.65 and explain 10.21% of the variance and critical/assessment dimension was found to have the eigenvalue of 1.26 and explain 4.87% of the variance.

Table 2. Factor structure of the scale

	Dimensions		
	1	**2**	**3**
F1	0.752		
F2	0.788		
F3	0.728		
F4	0.868		
F5	0.766		
F6	0.876		
F7	0.846		
F8	0.796		
F9	0.842		
C1	0.720		
C2	0.755		
C3	0.762		
C4	0.659		
P1		0.710	
P3		0.567	
P5		0.689	
P6		0.647	
P7		0.556	
P10		0.650	
CA1			0.556
CA2			0.739
CA3			0.678
CA4			0.713
CA7			0.524
CA9			0.688
CA10			0.647

F: Fundamental, C: Communicational, P: Practice, CA:Critical/Assessment

Confirmatory Factor Analysis

It is used in order to determine if a score can be obtained from the current subdimensions and sum of the subdimension scores of the draft scale, theoretical frame of which was established using EFA. After the CFA analysis, it can be seen in Figure 1 that score can be obtained from the subdimensions and from the sum. It was decided to make modification to make fit indices more suitable and to better represent the structure. Among the modification options recommended by Amos software, 3 modification options (between a5 and a6, c5 and c7, and a2 and a13) determined to reduce the X2/sd value the most were preferred and 3 modifications were made. Fit indices obtained after the modification are presented in Table 3. It can be seen that the draft scale had acceptable and good fit indices.

Table 3. Confirmatory factor analysis fit indices.

	Fit values of the model	**Good fit criteria**	**Acceptable fit criteria**	**Level of fitness**
X2/df	4.82	0< X2/sd<2	2< X2/sd<5	Acceptable
RMSEA	0.010	0<RMSEA<0.005	0.05<RMSEA<0.01	Acceptable
CFI	0.96	0.97-1	0.95-0.97	Acceptable
NFI	0.95	0.95-1	0.90-0.95	Good
RFI	0.94	0.90-1	0.85-0.90	Good
IFI	0.96	0.97-1	0.95-0.97	Acceptable

X2/sd: ratio of X2 statistics to the degree of freedom (df), RMSEA: root mean square error of approximation, CFI: comparative fit index, NFI: normed fit index, RFI: relative fit index, IFI: incremental fit index

Reliability Results of the Main Application

The Cronbach's alpha coefficient of the main scale was calculated to be 0.950. The dimensions were examined separately and their internal consistency coefficients were calculated.

In order to assess the consistency of the scale, the form of the scale consisting of 3 dimensions and 26 items was conducted on 21 individuals. After 4 weeks, the measurement was repeated. While the mean score in the first measurement was 54.85 ± 9.28 points, the mean score after 4 weeks was found to be 55.47 ± 9.74. It was determined that there was no statistically significant difference between the repeated measurements (p=0.675) (Table-4).

The correlation between the measurements was determined to be positive (in the same direction), at high level, and statistically significant (p<0.001). Pearson's correlation coefficient was calculated to be 0.756. The interclass correlation coefficient (ICC) between the two measurements was 0.860. As a result of these measurements, the scale, consistency of which was measured using test-retest method, was found to perform the measurement at the same consistency for the same people.

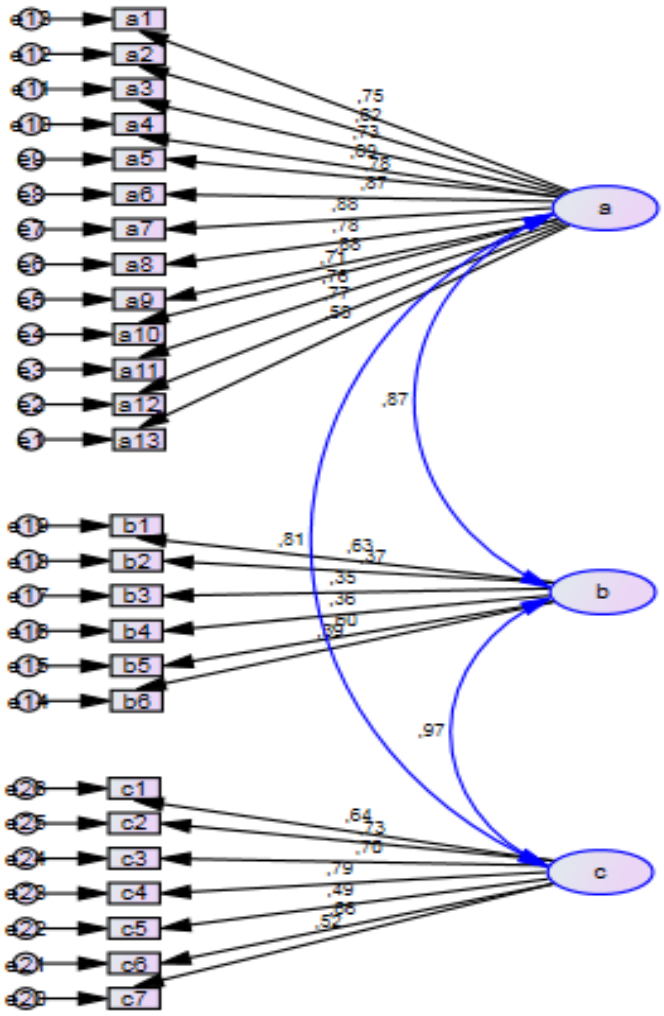

Figure 1. Confirmatory factor analysis of the scale.

Table 4. Test-retest analysis of the scale

	Mean ±Standard deviation	T*	P*
First measurement	54.85±9.28		
Measurement after 4 weeks	55.47±9.74	0.426	0.675

**Dependent Samples T-test*

Table 5. Relationship of total scores with sociodemographic characteristics (n=330).

	Med (Min-Max)	Mean ± SD	Test statistics	P value
Gender				
Female	38.00(9-78)	40.93±18.20	MWU= 9986.50	**<0.001**
Male	49.00(12-75)	48.50±15.43		
Age groups				
18-24	54.50(16-76)	53.41±15.48*		
25-34	51.00(11-78)	49.18±16.90*		
35-44	41.00(13-78)	42.07±17.41	Chi-Square	**<0.001**
45-54	37.00(9-71)	38.25±15.72	**=29.35	
55-64	37.00(12-72)	40.49±18.11		
65 and older	41.00(21-71)	44.52±16.32		
Educational level				
Illiterate	25.00(12-61)	26.63±9.66*		
Literate	27.50(9-65)	29.33±15.50*		
Elementary school	48.00(14-78)	47.82±14.25	Chi-Square	**<0.001**
Secondary school	49.00(21-73)	50.30±12.58	**=167.95	
High school	52.00(26-75)	53.90±11.52		
University and higher	65.00(45-78)	64.40±8.65*		
Marital status				
Non-married	54.00(12-76)	51.98±16.59*		
Married	43.00(9-78)	42.78±17.23	Chi-Square	**=0.001**
Divorced-Separated	60.00(27-72)	53.62±17.95*	**=16.14	
Widow	32.00(21-65)	36.10±14.16		
Employment status				
Employed	50.00(9-78)	49.78±15.89	MWU= 8552.50	**<0.001**
Unemployed	41.00(10-78)	41.72±17.55		
Social security				
SGK	48.00(11-78)	46.83±17.19*		
Other	39.0012-76)	41.15±17.34	Chi-Square	**<0.001**
None	36.00(9-64)	35.51±15.40	**=15.87	
Social class				
Lower social class	43.00(9-78)	42.47±17.25*		
Medium social class	49.00(23-72)	49.48±14.18*	Chi-Square	**<0.001**
Upper social class	66.00(40-78)	64.00±10.83*	**=27.30	
Income level				
Income is less than expenses	41.00(9-76)	41.10±17.43*		
Income equals expenses	48.00(11-78)	47.30±17.12	Chi-Square	**=0.006**
Income is higher than expenses	50.00(27-75)	48.69±14.55	**=10.34	

*Med: Median, Min: Minimum, Max: Maximum, SD: Standart Deviation, MWU: Mann-Whitney U, *Significant, **Chi-Square value in Kruskal-Wallis Variance analysis*

Discussion

Health literacy is a very important subject that is widely discussed in studies nowadays. In the current literature, there are many scales measuring the HL in different ways. Among those scales, Cronbach's alpha coefficients measuring the internal consistency were reported to be between 0.70 and 0.95 (15, 16). In the present study, Cronbach's alpha coefficient of the scale was found to be 0.95. This value suggests that the consistency of the scale developed in the present study is at the "perfect" level (17).

Examining the relationship between HL levels of participants and their sociodemographic characteristics, it was determined that mean total HL score of males was found to be statistically significantly higher than that of females. Among the previous studies carried out in Türkiye, there are studies reporting higher HL score among men in comparison to women (15), whereas there also are studies reporting no statistically significant difference between men and women (16). In a study carried out by Kavuncuoğlu and Koşan in Erzurum, HL score of women was found to be higher in comparison to men (18). Although there are many studies in the literature stating that women had higher total HL scores when compared to men (19-22), the present study and some other studies carried out in Türkiye reported that men had higher HL scores. One of the main reasons for this result might be because the educational level of women was lower than men.

The mean age in the study group was 41.80 ± 14.41 years. The mean age was reported to be similar in previous HL studies carried out in Türkiye (15, 23). Moreover, in the literature, it was determined that HL levels decreased with advancing age (16, 18, 19). Similarly, it was also determined in the present study that the total HL scores decreased with advancing age. Only the total HL score of individuals aged 65 years and older was found to be higher than in the previous age group. This is believed to be because the educational level of individuals aged 65 years and older was randomly

higher and it might have affected the HL level.

In studies carried out on HL in Türkiye and involving also illiterate individuals, the percentage of individuals having elementary school and secondary school graduations ranged between 9.8% and 41.2% (15, 16, 23). In studies involving illiterate individuals, the percentage of illiterate participants ranged between 2.8% and 10.6% (24, 25). The percentage of elementary school and below in the present study was higher in comparison to the previous studies. The high percentage of the uneducated people in the study group is the high percentage of individuals, who have low educational level, in the region. Although there were differences between educational levels in those countries, it was determined similarly that HL level increased with increasing educational level. Similarly, in a previous HL study carried out in Europe, it was determined that the increase in the education level was an important factor for the increase in HL level (26). As with the total score, there were also statistically significant increases in HL score together with the education in the subdimensions of the present study.

Considering the relationship between marital status and HL, it was determined in the present study that the HL scores of non-married and divorced/separated individuals were higher. A previous study carried out in Erzurum province of Türkiye reported that single individuals had higher HL scores in comparison to married individuals (18), whereas a study carried out in Serbia showed that married individuals had a higher HL score when compared to single individuals (27). In the present study, HL scores of non-married participants were found to be higher. It might be because single individuals were much younger, young individuals had higher educational level and, consequently, they were found to have a high level of HL.

In the present study, employed individuals were found to have higher total HL scores and higher scores in subdimensions in comparison to the other groups. In literature, there are studies reporting similar results (15, 16, 22, 23). Individuals within a society are affected by their environment and it might also influence their attitudes (28, 29). Moreover, individuals might have information through various ways such as media and personal experiences nowadays (30). The factors such as individuals working in a job and having interaction and communication with individuals, accessing information through social learning, and conscious use of technological systems such as e-health might have caused an increase in their HL levels.

Similar to the present study, there also are studies reporting lower HL scores among individuals having low income levels, low educational levels, and low social statuses (31, 32), whereas some studies reported no difference between the scores by income level (20). In studies carried out in England (33), Germany (34) and in various countries (35) similar to the present study, it was determined that individuals having a high social status had significantly higher HL scores. It might be because the individuals having low social status do not maintain their personal development since they don't have individuals supporting their development through social learning and they do not benefit from technology.

Conclusion

The present study can be used on individuals aged 18+ years. Subdimension scores and total dimension scores can be achieved from the scale. Consistency of the scale might be more significant in the course of time by testing it on other societies or groups.

Limitations

The limitations of the study include the fact that the data were collected from a single center, that it underrepresented some subgroups such as individuals in rural areas, and that only Turkish-speaking individuals were able to participate in the study.

Ethical Approval: *The present research was approved by the Clinical Studies Ethics Committee of the Medical Faculty of Harran University (Session Nr.11, date 07.06.2021, decree Nr. HRU 21.11.16). The approval for the field study was obtained on 30.06.2021 with the decree Nr. E-49781372-773.99 by Şanlıurfa Provincial Health Directorate. After providing information about the study, the participants gave their consent verbally and in writing.*

Author Contributions:
Concept: B.B.
Literature Review: R.K.
Design : B.B., R.K.
Data acquisition: R.K., D.K.
Analysis and interpretation: B.B., R.K.
Writing manuscript: R.K., D.K.
Critical revision of manuscript: B.B

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