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Coding Health Literacy According to the International Health Intervention Classification and Investigation of Health Literacy between Generations

Sağlık Okuryazarlığının Uluslararası Sağlık Müdahale Sınıflandırmasına Göre Kodlanması ve Nesiller Arasında Sağlık Okuryazarlığının Araştırılması

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ÖZ

Amaç: Sağlık ile ilgili yapılan değerlendirme ve tedavi prosedürlerinde tutulan elektronik sağlık kayıtları ile ilgili standart bir sınıflandırma sistemi yaygın değildir. Bu çalışma uluslararası bir sınıflandırma sistemi olan Dünya Sağlık Örgütünün Uluslararası Sağlık Müdahale Sınıflandırması (ICHI)'na dikkat çekmek ve farklı kuşaklarda yer alan bireylerin sağlık okuryazarlığı düzeylerini karşılaştırmak amacı ile planlandı.
Araçlar ve Yöntem: Bireylerin sağlık okuryazarlığı düzeyi Avrupa Sağlık Okuryazarlık Ölçeğinden uyarlanmış olan, Türkiye Sağlık Okuryazarlığı Ölçeği (TSOY) ile değerlendirildi. TSOY, Dünya Sağlık Örgütü Uluslararası Sağlık Müdahaleleri Sınıflandırması (ICHI) çerçevesinde incelendi. Bireyler yaş aralıklarına göre 4 farklı nesil grubuna ayrılarak, gruplar kendi aralarında karşılaştırıldı.
Bulgular: Çalışmaya 18 ve 75 yaş aralığında 247 birey katıldı. Gruplar arasında en yüksek sağlık okuryazarlığına geleneksel kuşağın, en düşük sağlık okuryazarlığına ise Z kuşağının sahip olduğu bulundu ($p<0.001$). TSOY kategorileri için ICHI kodlaması istatistiksel raporlamayı desteklemek için yeterli bulundu.
Sonuç: Kuşakların özelliklerine göre planlanan eğitim ve sağlık politikaları kuşaklar arası tanımlanan yetersizliklerin giderilmesinde önemlidir. Sağlık okuryazarlığına ilişkin verilerin ICHI kullanılarak kaydedilmesi halk sağlığının iyileştirilmesine katkı sağlayacak ve daha geniş bir veri ağına sahip olmamızı sağlayacaktır.

Anahtar Kelimeler: aile özellikleri; halk sağlığı; sağlık okuryazarlığı; sınıflandırma

ABSTRACT

Purpose: A standard classification system for electronic health records kept in health assessment and treatment procedures is not common. This study was planned to draw attention to the International Health Intervention Classification (ICHI) of the World Health Organization, which is an international classification system, and to compare the health literacy levels of individuals from different generations.
Materials and Methods: The health literacy level of individuals was evaluated with the European Health Literacy Survey –Turkish Version (HLS- TR). HLS- TR was investigated within the framework of The World Health Organization International Classification of Health Interventions (ICHI). Individuals were divided into 4 generation groups according to age range. The groups were compared with each other.
Results: In this study, 247 individuals participated between the ages of 18 and 75 years. It is found that the traditionalist generation has the highest level of health literacy among the groups and generation Z has the lowest level of health literacy ($p<0.001$). For HLS-TR categories, ICHI coding was found adequate to support statistical reporting.
Conclusion: Education and health policies planned according to the characteristics of generations are important in eliminating the inadequacies defined between generations. Recording data on health literacy using ICHI will contribute to improving public health and will enable us to have a wider data network.

Keywords: classification; family characteristics; health literacy; public health

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INTRODUCTION

Electronic health records are often used to obtain information in the event of a health problem that affecs function. Recording data on health literacy will be a crucial step in improving and protecting public health. However, as with many medical treatment and evaluation procedures, there is not a widely used international classification standard for the assessment of health literacy. However, recording data on health literacy will be a crucial step in improving public health and protecting public health. It has been found that 50% of the population has insufficient health literacy levels in England, Germany, and Turkey.[1-5] Many international studies report that the adult population is in the category of insufficient or problematic health literacy, and limited health literacy affects society.[5-7] The International Classification of Health Interventions (ICHI) has been in used for the collection of health interventions for clinical and statistical purposes, being developed by the World Health Organization. ICHI is a suitable classification system for assessing health literacy and has the potential to meet the need for a common language for prevention and health literacy.[8] Health literacy defines with the VFS code (the personal characteristics and resources that individuals and communities need to access, understand, and use health information and health services to make health-related decisions by the ICHI).[9] A standard classification is made for the VFS code in order to report health literacy more comprehensively, taking into account more personal, social, and environmental factors. The classification is divided into three axes: target (the entity on which the action is performed), action (a deed performed by an actor on a target) and means (the processes and methods by which the Action is performed). Under the target title, the disease or the main subject to be examined is coded. All evaluations made under the action title are coded. Under the title "means," social and individual factors affecting the disease or situation being examined are coded (Figure 1).[10]

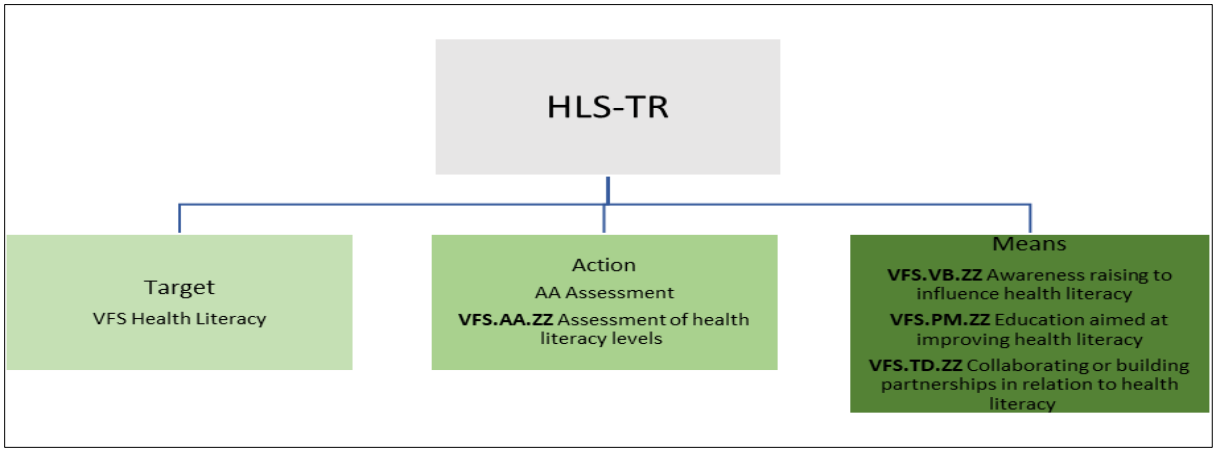

Figure 1. International classification of health literacy.

It has not been investigated how comprehensively the measurement tools used to evaluate health literacy in previous studies were evaluated according to the ICHI classification system. In addition, it is important to synthesize health literacy and ICHI views to conceptualize individuals' health literacy by assessing all their competencies.[8]

Health literacy assesses many skills, such as accessing, understanding, evaluating, and applying health-related information, making decisions in the event of illness, and maintaining and improving health.[7] It is a skill that can be trained and influenced by environmental factors.[11] It is also the ability of individuals to access, understand and apply information about their health to protect and improve their health. A scale that evaluates in many ways is required to evaluate a skill that requires a comprehensive cognitive process such as health literacy.

Living environments, family, and social environments affect a wide range of health-related issues from individuals' access to health services and their implementation. Health literacy focuses on health information and how it is used and applicable in different health-related fields. There are differences in culture, perception, expectation, priority, point of view, life, and behaviour among genera-

tions of individuals who grow up in separate ways. Because of all these effects, it is seen that there are differences between generations in subjects such as perception, thought, value judgments, communication, behaviour, and lifestyle. Differences between generations will bring different perceptions and behaviour models in subjects such as managing the disease processes of patients and adapting to treatment.[12] Although there is a correct ratio between increasing age and the level of health literacy in the literature, the number of studies analizing health literacy according to certain age ranges is limited.[4] The aim of this study was to investigate the level of health literacy of individuals from different generations and to determine the differences between generations. Another aim of this study is to evaluate the European Health Literacy Survey–Turkish Version (HLS-TR) according to ICHI and to ensure that ICHI becomes widespread.

MATERIALS and METHODS

This is a prospective cross-sectional pilot study conducted on individuals aged 20–75 who do not have a cognitive or mental state that prevents them from understanding the questions asked and who agreed to participate in the research. The research was conducted online in Turkey in 2022. The simple random sampling method was preferred. The study, it is aimed to work with a sufficient number of samples representing the adult group living in Turkey. The sample size was calculated for this study. The margin of error was accepted as 5% and the confidence interval was 95%, and as a result of the calculation, the minimum sample size was found to be 200 individuals with 50 individuals in each group. Descriptive findings of the participants who made up the sample are presented in Table 1. The study was approved by the Tarsus University Non-Interventional Clinical Research Ethics Committee (issue 2022/10 and date 03.06.2022). This study was carried out in accordance with the Declaration of Helsinki Principles and the necessary permissions were obtained from the supervisor of the institution where the study was conducted. An informed consent form was obtained from all participants who agreed to participate in the study. Individuals who did not answer the questions in the questionnaire incompletely, individuals who were reluctant to participate in the study and individuals who did not want to answer the questions were excluded from the study.

Table 1. Some socio-demographic characteristics of the participants.

		Frequency (n)	Percentage (%)
ex	Female	146	59.1
	Male	101	40.8
Educational Status	Primary education	12	4.8
	High school	7	2.8
	University	186	75.3
	Master-Doctor of Philosophy Degree	42	7.0
Presence of Chronic Disease	Presence of Chronic Musculoskeletal Disorder	93	36.7
	Presence of Chronic Systemic Disease	48	18.9
	No	112	44.2

Inclusion criteria

*Being between the ages of 20 and 75

* The ability to read and write.

Exclusion criteria from the study

*The individual who has a disease at a level that may prevent them from understanding and completing the questionnaire

*Answering the questions in the survey incompletely means marking more than one option at the same time.

Demographic characteristics of the individuals participating in the study, such as age, height, and weight, were recorded. The health literacy level of the patients was evaluated by the European Health Literacy Survey–Turkish Version (HLS- TR). The Turkish validity and reliability of the questionnaire was conducted 2014.[1] It measures the level of health literacy with 47 questions over four parts: disease prevention, health promotion, health service delivery, and information processing. Each of the 47 questions in the survey is evaluated on a scale of 1 to 4 (1=very difficult, 2=difficult, 3=easy, 4=very easy. According to the scores obtained, the level of health literacy of 0-25 points is insufficient; 25-33 points are

limited; 33-42 points are sufficient; 42-50 points are categorized as excellent health literacy. The questionnaire was filled in online (Google forms) by the participants.

The individuals included in the study were divided into 4 groups according to their age ranges. Individuals between the ages of 18-22 are Generation Z; Individuals between the ages of 23-40 are Y generation; Individuals between the ages of 41-54 are X generation; Individuals in the 55 to 75 age range are called the Traditionalist generation. The health literacy level of the generations is determined according to age ranges and their differences according to each other will be analyzed by statistical methods. We used the WHO Family of International Classifications online browser for coding HLS- TR and followed the corresponding coding guidelines and instructions (https://icd.who.int/dev11/l-ichi/en). We considered all relevant information (target, action, means, definition, index terms, and include notes) when deciding on the ICHI code, (see Figure 1). ICHI categorization was done manually by searching for ICHI interventions and procedures using the search box presented on the website (suppl. 1, suppl. 2). In this study, we used ICHI coding instead of ICH (International classification system) coding to evaluate HLS-TR. Because ICF examines multiple aspects of loss of function due to injury, disease, congenital or acquired disability. On the other hand, ICHI comprehensively evaluates the scales and methods used in treatment and evaluation (suppl.1, suppl. 2).

ICHI have main codes (also called “precoordinated codes” or “stem codes”) that can be used on their own. ICHI allow users to optionally add other codes to the main codes to modify or refine their meaning. This is often referred to as “post coordination.” Note that the use of multiple main codes together is not post coordination, because there is no change in the meaning of the main codes.

ICHI is based on 3 axes, each forming a part of the 7-character code. The axes are:

- target—the entity on which the action is carried out
- action—the deed done by an actor to the target
- means—the processes and methods by which the action is carried out.

Statistical Analysis

The number (n), percentage (%) and distribution of data were evaluated using IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp. program. The conformity of the groups for normal distribution was investigated using the Shapiro-Wilk test. Non-parametric tests were used because the data did not fit the normal distribution. Evaluation results were expressed as arithmetic mean±standard deviation (X±SD). Data containing three or more groups were analysed using the "Kruskal Wallis Test". Dunn test was used for pairwise comparisons. The statistical significance level was accepted as $p<0.05$. Spearman correlation analysis test was used to determine the relationship between two continuous variables. The statistical significance level was accepted as $p<0.05$.

RESULTS

A total of 247 people (146 were female and 101 were male), aged between 20-75 years (minimum 18, and maximum 75 years) participated in this study. The mean age of the participants was 43.54±17.85 years. Among the individuals participating in the study, 81 people were in the Traditionalist generation. (55-75 years old), 55 people were in the X generation (41-54 years old), 59 people were in the Y generation, aged 23-40 and 52 people were in the Z generation (18-22 years old). The health literacy level of the different generations participating in the research was found 36.23±6.91; 30.86±8.82; 31.11±7.93 24.34±12.04 points, respectively. A positive correlation was found between age and health literacy level ($r=0.4$; $p<0.001$), (Table 2).

When the level of intergenerational health literacy is analyzed, there is no difference between Generation X and Generation Y ($p=0.960$); The health literacy level of the Z generation was found to be lower than the other generations ($p<0.001$), (Table 3).

The group with the highest rate of inadequate health literacy (%10.52) is the Z generation (26 individuals); It

was found that the group with the highest rate of excellent and adequate health literacy (%6.07-%18.22, respectively) was the traditional generation (15 individuals and 45 individuals, respectively) (Table 4).

Table 2. HLS-TR mean score and relationship between age and health literacy score.

		HLS-TR Score (X±SS)
Traditional generation (n=81)		36.23±6.91
X generation (n=55)		30.86±8.82
Y generation (n=59)		31.11±7.93
Z generation (n=52)		24.34±12.04
Age (n=247)	**X±SS**	31.33±9.79
	r	0.40
	p	<0.001

HLS-TR: The European Health Literacy Survey –Turkish Version; X: Mean, SS: Standard Deviation, n: number, X Generation: Individuals between the ages of 41-54; Y Generation: Individuals between the ages of 23-40; Z Generation: Individuals between the ages of 18-22. Spearman Correlation Test. p*<0.05; p**<0.01.

For HLS-TR categories, ICHI coding was adequate to support reporting. All of the questions in the health literacy survey, which includes 47 questions, fit within the framework of the ICHI, with no question at the top. This is also presented in tables 5 and 6 in the appendix (suppl. 1, suppl. 2). All of the questions in the questionnaire were examined within the framework of the ICHI, and very few items could be placed in the therapeutic action category within the ICHI. For this reason, the health literacy questionnaire we used was found to be insufficient in terms of the therapeutic action category. The HLS-TR category which is Therapeutic Action could be improved.

Table 3. Comparison of health literacy level according to different generations.

		HLS-TR Average Score Difference Between Groups (X±SS)	p
Traditional Generation	X Generation	5.36±1.41	0.001**
	Y Generation	5.11±1.29	0.001**
X Generation	Z Generation	11.89±1.83	<0.001**
	Y Generation	-0.247±1,58	0.960
Y Generation	Z Generation	6.52±2.05	0.003**
	Z Generation	6.77±1.96	0.003**

HLS-TR: The European Health Literacy Survey –Turkish Version; X: Mean, SS: Standard Deviation, X Generation: Individuals between the ages of 41-54; Y Generation: Individuals between the ages of 23-40; Z Generation: Individuals between the ages of 18-22. Kruskal Wallis Test, p*<0.05, p**<0.01.

Table 4. Distribution of health literacy level by generations.

	Inadequate level of health literacy		Limited level of health literacy		The adequate level of health literacy		Excellent level of health literacy	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Traditional Generation	2	% 0.81	19	% 7.69	45	% 18.22	15	% 6.07
X Generation	10	% 4.05	12	% 4.86	29	% 11.74	4	% 1.62
Y Generation	14	% 5.67	19	% 7.69	18	% 7.29	8	% 3.24
Z Generation	26	% 10.52	17	% 6.89	5	% 2.02	4	% 1.62
Total	52	% 21.05	67	% 27.13	97	% 39.27	31	% 12.55

Traditional generation: Individuals between the ages of 55-75; X Generation: Individuals between the ages of 41-54; Y Generation: Individuals between the ages of 23-40; Z Generation: Individuals between the ages of 18-22.

DISCUSSION

Health terminologies and classifications are fundamental to get information about health systems. International standard classifications provide a wide network of health-related information, allowing statistical data to be collected, analysed, and compared.[13] In the present study, it is more difficult to collect data from the Z generation whose health literacy level is insufficient. Because these individuals have fewer health problems, they apply for health services less, so less information is collected from individuals in the Z generation. But also those with low health literacy are more likely to use health services unconsciously.[4] The knowledge level of the Z generation about health literacy can be evaluated with the results obtained from online platforms. Although health literacy is important for all age groups, expectations about health status vary for individuals in different age ranges. The development of health literacy is important for the protection and development of health for the Z generation adolescents and for the Y generation adults. For individuals in the traditionalist generation and the X generation, health literacy is important for determining the ways of coping with chronic disease and improving their health. According to the results of our study, which was planned to analyzed whether the level of health literacy creates a difference between generations, the health literacy level of the Z generation, which has the smallest age group, was found to be lower than the other groups. Few studies exist on adolescent health in the literature were available because adolescent individuals are generally healthy.[14,15] Similar to the results of our study, in the study of Muslu

et al.,[16] the health literacy levels of the individuals in the Z generation were found to be lower than the individuals in the X generation. Although not reported in the results of this study, there are studies reporting that low health literacy level in young people is associated with low academic achievement and health level.[14,15] Individuals in the Z generation are a generation that spends more time on the internet than previous generations and has less time to socialize face-to-face. If the Z generation is evaluated in terms of social media literacy, it is seen that they have access to more information than the previous generations. They are already more knowledgeable than other generations on current events, popular music culture, and global trends. being aware of new learning tools, teaching styles, and unlimited access to resources; all these reduce their interest in classical methods.[17,18] Due to electronic communication and increased social media communication, it is a generation that is more alone and less communicating. Although they are experts in accessing information; they may not be able to analyse the authenticity of the information they find. Although increased electronic communication facilitates access to information, it can negatively affect self-expression, direct observation, and communication with healthcare personnel. Generation Z may need more hands-on participation and specialized education that includes creativity to improve health literacy.[19] The health literacy level of the individuals in the Traditional generation, which has the largest age group, was found to be higher than the other groups. The geriatric population over the age of 55 is increasing in many countries.[1,16,20,21] Increasing the elderly population will increase the need for health problems and health services. In the studies in the literature, the presence of chronic disease causes individuals to communicate with more health professionals, to have more information about their diseases, and therefore to increase in the level of health literacy.[22,23] There was no difference between the X generation and the Y generation in terms of health literacy level. Health Literacy scales evaluate living environments, family and social environment. With this aspect, health literacy needs to be analyzed in a multidimensional way. In this study, the HLS-TR questionnaire was used to assess health literacy. ICHI allows us to comprehensively record health literacy data. When the studies in the literature are analyzed, it is seen that studies using the international classification system related to health interventions are rare.[24,25]

In the study of Ergun and Malhan,[26] coding and classification in primary health care services; It has been reported that it is important for the accurate, reliable storage, evaluation and reporting of health-related data. In another study, patients with neurogenic swallowing disorder were classified using the ICF using the Eating Assessment Tool and the Swallowing Quality of Life Questionnaire. The structural definitions of the two different questionnaires examined in the study were made according to ICF. It has been an important study in terms of choosing the appropriate questionnaire to be used in the studies.[27] When the studies conducted in Turkey were examined, it was seen that the ICF classification system was used in all of the studies.[28-30] In this study, the HLS-TR scale, which is one of the most frequently used scales in the literature, was evaluated according to ICHI for the first time. For HLS-TR categories, ICHI coding was found adequate to support statistical reporting. However, the HLS- TR category, which is Therapeutic Action, was found to be insufficient compared to other categories. Besides HLS-TR, there are many scales assessing health literacy. Scoring all evaluation methods through a classification system will enable us to obtain a common data network. ICHI applications should be supported in order to obtain more data on health literacy and to analyse the obtained data with a standard classification. In the literature, studies coding health-related interventions according to ICHI are more common than studies coding health-related assessments.[8] We think that this study will raise awareness about the use of ICHI in health-related evaluations. Future studies may classify other scales assessing health literacy with the ICHI. This study was conducted with limited sample size. Although a statistically sufficient number of individuals has been reached, larger case numbers will enable us to reach more reliable results. In this respect, this study can be considered a pilot study. Also, the study data is collected online, it is possible that individuals from the traditional generation will be replaced by those with higher media literacy. This may cause a bias in the results. Therefore, these are limitation of the study.

Health literacy is more important for individuals in the X generation and traditional generations due to the increasing presence of disease with age, increased mortality, and chronic diseases. There is a strong relationship between age and health literacy level.[31] Increasing age causes individuals to be more interested in their health and increase their level of knowledge. Considering the differences in the health literacy levels of individuals from different generations, who show different perceptions and behaviour patterns on issues such as managing disease processes and adapting to treatment, will increase the success of treatment in the field of health. Preventive health services are important for the Z generation, whose health literacy level is lower than other groups. Social and visual media can be used for individuals in the Z generation to have information about their health and to be protected against diseases. In addition, recording data on health literacy in the literature and evaluating other scales used in health literacy in terms of ICHI adequacy will contribute to studies to improve public health.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

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Ethics Committee Permission

Approval for this study was obtained from the Tarsus University Non-Interventional Clinical Research Ethics Committee (03.06.2022 dated and 2022/10 numbered).

Authors' Contributions

Concept/Design: AG, ÖAŞ. Data Collection and/or Processing: AG. Data analysis and interpretation: AG. Literature Search: AG, ÖAŞ. Drafting manuscript: AG, ÖAŞ. Critical revision of manuscript: ÖAŞ.

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