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Araştırma Makalesi– Research Paper

DETERMINING THE E-HEALTH LITERACY AND CRITICAL THOUGHT STATUS FOR THE INTERNET IN ADOLESCENTS

GENÇLERİN E-SAĞLIK OKURYAZARLIĞI VE İNTERNET İÇİN ELEŞTİREL BAKMA DURUMLARININ BELİRLENMESİ

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Özet

Bu araştırma, ergenlerin e-sağlık okuryazarlığını, internete yönelik eleştirel düşünce durumlarını, aralarındaki ilişkiyi ve onları etkileyen faktörleri belirlemek amacıyla yapılmıştır. Araştırmanın tasarımı tanımlayıcı ve ilişkiseldir. Araştırmanın evrenini bir il merkezinde devlete bağlı toplam 6 lisede öğrenim gören ergenler oluşturmaktadır. Araştırmada örnekleme yöntemi kullanılmadan evrenin tamamına ulaşılmaya çalışılmış ve toplam 1470 ergene ulaşılmıştır. Ergenlerin E-Sağlık Okuryazarlığı Ölçeği puan ortalaması 27,67±7,61, İnternet Eleştirel Okuryazarlık Ölçeği puan ortalaması 91,74±22,23'tür. Adölesanların e-sağlık okuryazarlığının cinsiyet, aile tipi, ekonomik durum ve baba eğitim durumunun etkilendiği bulunmuştur. Ergenlerin internete yönelik eleştirel okuryazarlık düzeylerinin aile tipi, ekonomik durum ve anne eğitim durumunun etkilendiği belirlendi. Ergenlerin e-sağlık okuryazarlığı ile İnternet için eleştirel okuryazarlık ortalama puanı arasında pozitif ve orta düzeyde bir ilişki bulunmuştur. Sağlığın korunması ve geliştirilmesi açısından yüksek risk grubu olan ergenler, e-sağlık okuryazarlığı konusunda eleştirel olarak düşünülmesi konusunda bilinçlendirilmelidir.

Anahtar Kelimeler: adolesan, e-sağlık okuryazarlığı, eleştirel okuryazarlık, hemşirelik

Abstract

This research was conducted to determine the e-health literacy of adolescents, their critical thought status for the Internet, the relationship between them, and the factors affecting them. The design of the research is descriptive and correlational. The population of the research consisted of adolescents enrolled in a total of 6 state-affiliated high schools in a city centre. It was attempted to reach the entire population without using the sampling method in the study, and a total of 1470 adolescents were reached. The mean score of the E-health Literacy Scale of the adolescents was 27.67±7.61, and the mean score of the Critical Literacy Scale for the Internet was 91.74±22.23. It was found that the e-health literacy of adolescents was affected by gender, family type, economic status, and father's educational status. It was determined that the critical literacy of adolescents for the Internet was affected by family type, economic status, and mother's educational status. Adolescents' e-health literacy and the critical literacy mean score for the Internet were found to be positively and moderately correlated. Adolescents, who are a high-risk group in terms of health protection and development, should be made aware of critically consider to e-health literacy.

Keywords: adolescent, e-health literacy, critical thought, nursing

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1. INTRODUCTION

Health literacy is the ability of the individual to access, understand, and use information in order to maintain and improve good health (Nutbeam, 2000, pp. 259-267). Health literacy is a holistic concept that entails an individual's ability to comprehend health-related information, express his/her health status, have knowledge of his/her disease, if any, take appropriate health-related actions, and benefit effectively from healthcare services (Nutbeam, 1998, pp. 349-364).

An electronic, Internet-based, digital and technology-based definition is made with the 'E' symbol used in e-health literacy unlike other types of literacy (Gülhan, 2016, pp. 105-110). Around 53% of the world's population uses the Internet (We are Social, 2018). The proportion of people who use the Internet to receive health-related information is around 70-80% (Social Touch, 2013; Pew Research Center, 2014). According to OECD data, the number of individuals trying to access health-related information over the internet has doubled since 2008 (Organisation for Economic Co-operation and Development, 2020). 90.8% of adolescents actively use the Internet and 69.3% use the Internet to receive health-related information in Turkey (Turkish Statistical Institute, 2018). E-health literacy aims to improve health outcomes by increasing the accessibility of health-related decision-making tools (Werst, Niya & Rogers, 2013, pp. 115-120).

E-health literacy requires the critical use of information to solve the health problem by applying communication technologies in the cultural and social framework in recognition, search, understanding, and evaluation processes of a health problem (Norman-Cameron & Skinner, 2006, pp. 1-7). Adolescents who critically consider e-health literacy can question the meaning of the content they read by researching it from different sources as well as their own knowledge, value, experience, and observations (Lewison, Flintand & Van, 2002, pp. 382-392; Çiftçi, 2019, pp. 1341-1358). Thus, adolescents examine the form of structuring by analysing health-related information such as adolescents' ability to critically consider health literacy, develop personal and social capability, see the social definition of health, and understand the political and economic dimensions of health (Bröder et al., 2017, pp. 1-25).

It reflects cognitive and skill development outcomes aimed at supporting effective social and political movement rather than individual movement. The individual is proactive at this level, that is, they can see, understand, and make decisions about their own health (Nutbeam, 2000, pp. 259-267; Mccaffery, Smith & Wolf, 2010, pp. 35-44; Ishikawa & Kiuchi, 2010, pp. 1-5).

Rapidly increasing content in the digital environment also increases the information that raises suspicion of accuracy (Gülhan, 2016, pp. 105-110). Especially information in the field of health requires the ability to distinguish qualified information (Renahy, Parizot & Chauvin, 2008, pp. 1-10). This skill is even more important for adolescents who are in very rapid growth and development process and use the Internet more intensively (Bilgehan, 2018). There are a limited number of studies on adolescents' critical thinking of e-health literacy even though there are many studies on e-health literacy in the literature (Denktaş, 2019; Ertaş, Kıraç & Demir,

2019, pp. 3-10; Witten & Humphry, 2018, pp. 51-59). The research aims to determine the e-health literacy of adolescents, their critical thought status for the Internet, the relationship between them, and the factors affecting them.

Study Questions

1. What is the level of e-health literacy in adolescents?
2. What is the level of critical thought status for the Internet in adolescents?
3. What are the factors affecting adolescents' e-health literacy?
4. What are the factors affecting adolescents' critical thought status for the Internet?
5. Is there a relationship between the e-health literacy levels of adolescents and their critical thought status for the Internet?

2. METHODS

2.1. Aim

The research aims to determine the e-health literacy of adolescents, their critical thought status for the Internet, the relationship between them, and the factors affecting them.

2.2. Study Design

The design of the research is descriptive and correlational.

2.3. Setting and Sample

The research was conducted between November 7 and November 17, 2019. The population of the research consisted of adolescents enrolled in a total of 6 state-affiliated high schools in a city centre in the Eastern Anatolian region. The whole population was tried to be reached without using the sampling method and a total of 1470 adolescents were reached in the research. 32% of adolescents did not agree to participate in the research (68%). The data of 1,000 adolescents who completed the survey were included in the research. Power analysis was performed to determine the sample size of the study. The total sample size was found using the G*POWER software as n = 1000, with a 0.10355 effect size, 95% power, and a 0.05 error margin, based on the percentage measurement values for the methods to be studied in the literature review. Power analysis showed that the data collected was sufficient.

2.4. Measurements

Introductory Information Form, E-health Literacy Scale in Adolescents, and Critical Literacy Scale for the Internet were used to collect the data.

2.4.1. Introductory Information Form

This form, which was prepared by the researchers in line with the literature, included questions determining the age, gender, family type, economic status, parental educational status, and parental employment status of adolescents (Coşkun & Bebiş, 2015, pp. 378-384).

2.4.2. E-health Literacy Scale in Adolescents

It was developed by Norman-Cameron and Skinner (2006) to determine the e-health literacy attitudes of adolescents. This scale, which was adapted to Turkish by Coşkun and Bebiş (2015), consists of 8 items. Scale items are graded with a 5-point Likert-type scaling method as "1: Strongly Disagree, 2: Disagree, 3: Undecided, 4: Agree, 5: Strongly Agree". The scores are positively oriented and evaluated over the total score. The lowest 8 points and the highest 40 points are obtained from the scale. The high score obtained from the scale indicates that e-health literacy is high in adolescents (Coşkun & Bebiş, 2015, pp. 378-384). Cronbach's alpha value of the E-health Literacy Scale in Adolescents was found to be 0.833 in this research.

2.4.3. Critical Literacy Scale for the Internet

It was developed by Dal and Aktay (2015) to measure the critical literacy of adolescents for the Internet. This scale consists of a total of 27 items. Scale items are graded with the 5-point Likert-type scaling method as "1: Never, 2: Rarely, 3: Occasionally, 4: Mostly, 5: Always". The scores are positively oriented and evaluated over the total score. The lowest 27 points and the highest 135 points are obtained from the scale. The high score obtained from the scale indicates that critical literacy is high for the Internet (Dal & Aktay, 2015, pp. 185-199). Cronbach's alpha value of the Critical Literacy Scale for the Internet was found to be 0.951 in this research.

2.5. Data Collection

Informed voluntary consent forms were distributed for both adolescents and parents the day before the research data were collected. Data were collected from adolescents aged 14-18 years who received consent from both themselves and their parents on the day of data collection deemed appropriate by the relevant institution. The data were obtained by the researchers using the face-to-face interview technique. The completion time of each questionnaire lasted approximately 15-20 minutes.

2.6. Data Analysis

Descriptive characteristics of the data were presented in number, percentage, arithmetic mean, and standard deviation values. Shapiro-Wilk normality test was used to determine whether the data showed normal distribution. Independent sample t-test was performed to compare two independent groups and Variance analysis (ANOVA) was performed to compare more than two independent groups. Statistical significance level was considered $p<0.05$.

Afterward, the Bonferroni test was used from the post-hoc comparison test to see which groups were different from each other. The statistical significance level was considered $p<0.016$ for the triple groups and $p<0.083$ for the quadruple groups at this stage. Pearson correlation coefficient was used to analyze the correlation between numerical variables. Data evaluation was performed with IBM SPSS (Statistics for Windows, Version 25.0; Armonk, New York) statistical package software.

2.7. Ethical Considerations

Approval was obtained from the ethics committee of a university (Date: 07.10.2019-No: E.14594) before starting the research. Written permission was obtained from the competent institutions for the high schools where the research would be conducted (Date: 06.11.2019 No: 79143383.605.01/21943998). Informed Voluntary Consent Form was distributed for both adolescents and their parents the day before the research data were collected and their written consent was obtained with the necessary explanations about the purpose and method of application of the research. The research was conducted in accordance with the ethical standards of the Declaration of Helsinki. The participants included in the research were voluntary and their personal information was kept confidential.

3. RESULTS

It was determined that the mean age of adolescents was 15.74±1.16 years and 51.0% were female, 78.6% had nuclear families, 66.5% had income equivalent to expenses, 39.5% had primary school graduates, 37.9% had high school graduates, 72% of mothers did not have a job, and 80% of fathers had a job.

Adolescents received a minimum of 8 points and a maximum of 40 points from the E-health Literacy Scale, and the mean score was 27.67±7.61. Adolescents were found to have a minimum of 27 points and a maximum of 135 points from the Critical Literacy Scale for the Internet, and the mean score was 91.74±22.23 (Table 1).

Table 1. Distribution of the Score Averages that the Young People Obtained from the E-Health Literacy and Critical Literacy Scales (N = 1000)

Scales	Min - Max	$\bar{X}$ ±SS
E-Health Literacy	8-40	27.67±7.61
Critical Literacy	27-135	91.74±22.23

It was found that the e-health literacy of adolescents was affected by gender, family type, economic status, and father's educational status ($p<0.05$). The mean e-health literacy scores of adolescents of the female gender (28.38±7.16) were higher compared to the mean scores of adolescents of the male gender (26.95±8.00). The mean scores of e-health literacy were lower in adolescents living in extended families (26.28±8.18) compared to adolescents

living in nuclear families (27.96±7.47) and fragmented families (29.00±6.54); they were lower in adolescents whose income was less than their expenses (26.31±7.39) compared to adolescents whose income was equal to their expenses (27.45±7.50) and whose income was more than their expenses (28.92±7.87); and they were lower in adolescents whose father was primary school graduate (26.15±7.78) compared to adolescents whose fathers were secondary school (27.53±7.38), high school (28.01±7.48), and university graduates (28.51±7.79) (Table 2).

It was determined that the critical literacy of adolescents for the Internet was affected by family type, economic status, and mother's educational status ($p<0.05$). The mean critical literacy scores for the Internet were lower in adolescents living in an extended family (87.28±21.66) than in adolescents living in a nuclear family (92.72±22.33) and in a fragmented family (94.38±20.02); they were lower in adolescents whose income was less than their expenses (87.22±25.60) compared to adolescents whose income was equal to their expenses (90.99±21.52) and adolescents whose income was more than their expenses (95.93±22.09). The mean critical literacy scores for the Internet were higher in adolescents whose mothers were university graduates (96.95±21.30) compared to adolescents whose mothers were primary school (90.57±23.12), secondary school (90.11±22.61), and high school graduates (93.01±20.44) (Table 2).

Table 2. Distribution of the Score Averages that the Young People Obtained from the E-Health Literacy and Critical Literacy Scales According to the Introductory Information (N = 1000)

Introductory Information			**E-Health Literacy**		**Critical Literacy**	
	S	**%**	**$\overline{X}$ ±SS**	**Test and p**	**$\overline{X}$ ±SS**	**Test and p**
Age*	15.74±1.16					
Gender						
Female	510	51,0	28.38±7.16	t=2.938	92.79±22.16	t=1.523
Male	490	49,0	26.95±8.00	**p=.003**	90.65±22.28	p=.128
Place of Residence						
Village/Town[&]	172	17.2	26.03±7.04		86.95±21.55	
District	282	28.2	28.54±7.85	F=5.933	94.03±22.96	F=5.599
Province	546	54.6	27.74±7.59	**p=.003**	92.07±21.87	**p=.004**
Family Type						
Nuclear Family	786	78.6	27.96±7.47		92.72±22.33	
Extended Family[&]	188	18.8	26.28±8.18	F=4.149	87.28±21.66	F=4.770
Fragmented Family	26	2.6	29.00±6.54	**p=.016**	94.38±20.02	**p=.009**
Economic Situation						
Income less than the expenditure[&]	104	10.4	26.31±7.39	F=5.087	87.22±25.60	F=6.716
Income equal to the expenditure	665	66.5	27.45±7.50	**p=.006**	90.99±21.52	**p=.001**
Income more than the expenditure	231	23.1	28.92±7.87		95.93±22.09	
Educational Status of the Mother						
Primary School	395	39.5	27.27±7.44		90.57±23.12	
Secondary School	250	25.0	27.49±7.33	F=1.110	90.11±22.61	F=3.060
High School	248	24.8	28.20±7.78	p=.344	93.01±20.44	**p=.027**
University[&]	107	10.7	28.36±8.40		96.95±21.30	
Educational Status of the Father						
Primary School[&]	178	17.8	26.15±7.78		86.64±22.75	
Secondary School	232	23.2	27.53±7.38	F=3.541	88.98±22.38	F=7.816
High School	379	37.9	28.01±7.48	**p=.014**	93.45±22.01	p=.000
University	211	21.1	28.51±7.79		96.01±20.92	

*Age was stated as mean ± SD. [&]The group that creates the significance.
t= Independent samples t testwas conducted. F=One way Anova test was conducted.

E-health literacy for the Internet was found to be positively and moderately correlated with critical literacy when the relationship between adolescents' e-health literacy and the critical literacy mean score for the Internet was examined (r=0.429, p=0.000) (Table 3).

Table 3. Correlation between the E-Health Literacy and Critical Literacy Score Averages of the Young People

Scales	**E-Health Literacy**	
	R	**P**
Critical Literacy	,429**	**,000**
***p<0.01**		

4. DISCUSSION

The results of this research, which aimed to determine adolescents' e-health literacy, their critical view of the internet, their relationship, and the factors influencing this relationship, were discussed in light of the relevant literature. It is thought that this study will make an important contribution to the field in terms of originality.

The e-health literacy level of adolescents was found to be above the average in the research. Similarly, adolescents' e-health literacy level has been reported to be above the average in other studies conducted in Turkey (Denktaş, 2019; Karaman, 2016, pp. 326-350). These results suggest that adolescents want to actively participate in health services in today's modern health system and play decisive roles in their care and treatment. Increasing the level of health literacy and raising awareness will first contribute to the development in the life of adolescents and then in the life of societies and increase the level of wellbeing.

Advanced cognitive and social skills are required to critically analyze information and control it further on life events (Nutbeam, 2000, pp. 259-267; Mccaffery, Smith & Wolf, 2010, pp. 35-44; Ishikawa & Kiuchi, 2010, pp. 1-5). The critical literacy level of adolescents for the Internet was found to be above the average in the research. A similar study found that the critical literacy levels of the participants for the Internet were above the average (Çiftçi, 2019, pp. 1341-1358). Most adolescents stated that they were worried about the accuracy of health information available on the Internet in another study (Nsuangani & Pérez, 2006, pp. 64-74). It can be concluded that, in light of these results adolescents have good cognitive and social skills and therefore critical care competencies in the Internet environment.

The mean e-health literacy scores of adolescents of the female gender were higher compared to the mean scores of adolescents of the male gender in the research. Similarly, the e-health literacy of females was found to be higher compared to males in some studies (Ertaş, Kıraç & Demir, 2019, pp. 3-10; Witten & Humphry, 2018, pp. 51-59; Nsuangani & Pérez, 2006, pp. 64-74). This may be due to the fact that awareness and desire for help in case of illness are higher in females (Suka et al., 2013, pp. 407-415). In addition, it is envisaged that males in Turkey mostly use healthcare services when they are ill, especially in case of serious diseases, and avoid healthy lifestyle behaviors and preventive healthcare services for the social perception of “men do not become ill” in relation to their roles and responsibilities in society.

In the study, e-health literacy among adolescents living in extended families was found to be lower than that of adolescents living in nuclear and fragmented families. It has been reported in the literature that e-health literacy is low in the elderly and poses a risk factor for inadequate health literacy (Beauchamp et al., 2015, pp. 1-13; Von Wagner, Knight, Steptoe & Wardle, 2007, pp. 1086-1090; Barber et al., 2009, pp. 252-261). Adolescents' e-health literacy levels may have been influenced by sociocultural factors such as living in an extended family of elderly people in the same house, mainly wanting to meet their health-related knowledge

needs from family elders, or elderly people becoming more dominant in home decisions as a reflection of cultural values.

The e-health literacy of adolescents with less income than expenses was found to be low in this research. It was found in a study conducted to examine e-health literacy and quality lifestyle behaviors of adolescents that e-health literacy level of families with less income than expenses was lower (Ergün, Sürücüler & Işık; 2019, pp. 194-203). 33.57% of the individuals with low-income status had inadequate health literacy whereas 13.79% of the individuals with high-income status had inadequate health literacy level in another study (Demirli, 2019). Low-income levels may be an obstacle to reaching many opportunities such as Internet accessibility and improvement of health conditions.

Studies have found that the level of education is a positive significant variable for e-health literacy (Baker, Wagner & Singer, 2003, pp. 2400-2406; Techataweewan & Prasertsin, 2018, pp. 215-221). The e-health literacy of adolescents whose fathers were primary school graduates was lower compared to adolescents whose fathers were secondary school, high school, and university graduates in this research. It was found that the educational level of the father significantly affected the e-health literacy of adolescents in another study conducted on adolescents (Ergün, Sürücüler & Işık, 2019, pp. 194-203). The reason for this may be that adolescents' ability to access, understand, and use information is less guided by fathers with a low level of education.

It was found in this research that the critical literacy level was lower in adolescents with less income than expenses compared to adolescents with income equal to expenses and adolescents with more income than expenses. It was found in another study conducted with high school students that the income and expense status of the family had no effect on critical literacy level (Dumanlıdağ, 2019). It was determined that the perceived income status did not affect the level of critical thinking in a study conducted to determine the factors affecting the critical thinking tendencies of students (Bingöl, Görgen & Özdelikara, 2012, pp. 219-226). The reason for this may be that research is conducted in different regions of Turkey and evaluations are made with different scale tools.

Family constitutes the basic unit of society and plays an important role in shaping individuals even though it varies depending on culture (Tutar, 2013). It was found in this study that the adolescents living in an extended family had lower critical literacy mean scores than those who lived in a nuclear or fragmented family. Adolescents can gain a critical literacy attitude by watching adults in the family environment and observing reactions to events. The vast majority of families stated that they want to play an active role in their children's decisions according to the “Family Values” research conducted by the Ministry of Family and Social Policies in Turkey (Ministry of Family and Social Policies, 2010). It can be said based on this data that adolescents living in an extended family are effective in their decisions or that adolescents tend to make decisions based on the past experiences of adults, avoid doing research

in the thinking and decision-making process, and apply to authority (family elder) as the source of information.

Another result in the research is that the critical literacy level is higher in adolescents whose mothers are university graduates compared to adolescents whose mothers are primary, secondary, and high school graduates. It was found that the educational level of the mother significantly affected the critical literacy of adolescents in another study conducted on adolescents (Dağdevire, 2013, pp. 15-21). The reason for this may be the fact that mothers with a high level of education lead their children more and raise awareness in the process of critical literacy development.

It is very important for adolescents to interpret e-health literacy from a critical perspective in the digitalizing world. E-health literacy of adolescents was found to be positively and moderately correlated with the critical literacy mean score for the Internet in this research. There are studies in the literature that determine that there are positive relationships between digital literacy and e-health literacy (Ertaş, Kıraç & Demir, 2019, pp. 3-10), digital literacy and media literacy (Koltay, 2011, pp. 211-221), media literacy and e-health literacy (Levin-Zamir & Bertschi, 2018, pp. 1643), and health literacy and e-health literacy (Del Giudice, et.al., 2018, pp. 281). Internet users need to see the different perspectives presented to them by questioning and configure their own meaning instead of accepting the elements that they see, hear and read with e-health literacy as they are. Therefore, it can be said that e-health literacy in adolescents is a skill that requires critical literacy skills for the Internet.

Study Limitation

The limitations of the research are that it is conducted only in one province due to time and cost limitations and the critical literacy of adolescents for e-health literacy and the Internet is evaluated only with self-report scales.

5. CONCLUSIONS

E-health literacy and critical literacy levels of adolescents were found to be above the average. It was found that the e-health literacy of adolescents was affected by gender, family type, economic status, and father's educational status. It was determined that the critical literacy of adolescents for the Internet was affected by family type, economic status, and mother's educational status. In addition, adolescents were found to critically consider e-health literacy at a moderate level.

It can be said that adolescents' poor socio-economic wellbeing, living in an extended family, and low parental education constitute a risk factor for critical consideration of e-health literacy. Adolescents, who are a high-risk group in terms of health protection and development, should be made aware of critically consider to e-health literacy. It may be suggested that all

kinds of activities aimed at improving the socio-economic welfare of adolescents be supported, and that future research be conducted on a larger sample.

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