

# DEVELOPING THE HEALTH LITERACY LEVELS OF NURSING STUDENTS: A UNIVERSITY CASE

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## ABSTRACT

**Objective:** This study was carried out in a quasi-experimental design with pre-training and post-training control group, which was carried out to improve the health literacy levels of nursing students.

**Materials and Methods:** The population of the study consisted of Faculty of Nursing Students (a total of 1135 students) in 2022 and the sample consisted of 78 students determined using G-Power Analysis. The study was conducted as a quasi-experimental design with a pre-training and post-training control group. The questionnaire form and Turkey Health Literacy Scale-32 were used to collect the data for the study. Within the scope of the study, online training was given for 4 weeks to improve the health literacy levels of the students.

**Results:** While there was no statistical difference between the THLS-32 and subscales mean scores of the students participating in the experimental and control groups of the study before and after the training; it was concluded that the THLS-32 total scores of the students in the experimental group increased significantly after the training compared to the pre-training.

**Conclusion:** In line with these findings, it was concluded that health literacy training improved student's health literacy levels.

**Keywords:** : Health, health literacy, nurse, training, student

## ÖZET

**Amaç:** Bu çalışma hemşirelik öğrencilerinin sağlık okuryazarlık düzeylerinin geliştirilmesi amacı ile gerçekleştirilen ön test-son kontrol gruplu yarı deneysel bir araştırmadır.

**Materyal ve Metot:** Araştırmanın evrenini 2022 yılında ADÜ Hemşirelik Fakültesi öğrencileri (toplam 1135 öğrenci); örneklemini ise G-Power Güç Analizi kullanılarak belirlenen 78 (deney grubu 39 öğrenci ve kontrol grubu 39 öğrenci) öğrenci oluşturmuştur. Araştırma, eğitim öncesi ve eğitim sonrası kontrol gruplu yarı deneysel desende yürütülmüştür. Araştırmanın verilerinin toplanmasında anket formu ve Türkiye Sağlık Okuryazarlığı Ölçeği-32 kullanılmıştır. Araştırma kapsamında öğrencilerin sağlık okuryazarlığı düzeylerini geliştirmek amacıyla 4 hafta boyunca online eğitim verilmiştir.

**Bulgu:** Araştırmanın deney ve kontrol gruplarına katılan öğrencilerin TSOY-32 ve alt ölçek puan ortalamaları arasında eğitim öncesi ve eğitim sonrası istatistiksel açıdan fark görülmezken; deney grubundaki öğrencilerin eğitim sonrası TSOY-32 toplam puanlarının eğitim öncesine göre anlamlı düzeyde arttığı sonucuna ulaşılmıştır.

**Sonuç:** Bu bulgular doğrultusunda sağlık okuryazarlığı eğitiminin öğrencilerin sağlık okuryazarlığı düzeylerini iyileştirdiği sonucuna varılmıştır.

**Anahtar Kelimeler:** Sağlık, Sağlık okuryazarlığı, hemşire, eğitim, öğrenci

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## INTRODUCTION

Health literacy has become an important issue in recent years gaining positive behaviors and one of the fundamental factors of benefiting from healthcare. Associated with quickly improving technology communities undergo both health and wrong information. People cope with a complex healthcare system and being a health literate person is becoming increasingly difficult. Health literacy has a direct effect on health such as age, income status, and educational level. Therefore, studies and attempts at health literacy are extremely important for efforts to improve health (4, 11, 27).

There are several definitions for health literacy at present. According to the World Health Organization (WHO; transferring Ishikawa and Yano, 2008) health literacy is "cognitive and social skills on individuals' ability to access, understand and use health information, and their desires to maintain and improve health well-being" (17). To the American Medical Association (16) health literacy is a "skill set that covers basic reading and ability to perform required numerical tasks for functions in the healthcare environment". Skills include the use of prescribed medicines, appointment information, understanding tests related to diseases, managing the disease process, reading and understanding health-related materials, and being aware of the importance of health check-ups (27). Despite various explanations health literacy is individuals' ability to access, understand and interpret health-related information and care throughout their lives, to make decisions about improving their quality of life, to evaluate their health, and to benefit from healthcare for their desire (1, 6, 16). When the state of health literacy in the world was analyzed differences between countries were found. In the National Health Literacy Evaluation Study conducted in the USA, it was reported that 12% of the population had adequate health literacy and 12% had inadequate health literacy (30). In the European Health Literacy Survey conducted in 8 countries in Europe, 47.6% of the participants were found to have inadequate health literacy levels (33). According to the results of the study which includes Asian countries to determine health literacy between countries similarity with the participants' levels of health literacy was found problematic-limited. The study, conducted by Özkan et al. (29) in Turkey, reported that 68.9% of the population had inadequate or problematic-limited, 23.4% had adequate and 7.7% had excellent health literacy. In another study, with nursing and midwifery students, Ergün (13) determined that 39.9% of the students had inadequate and problematic-limited health literacy. In the other study which was conducted by Yılmaz Güven et al. (36), with students of the faculty of health sciences, students have adequate or excellent health literacy levels in the total scale was 55.7%. The last study which was conducted with nursing students by Uysal and Yıldız (34) found that 35.1% of the students had an excellent health literacy level, 37.70% had adequate, 21.20% had problematic-limited, and 6.00% had inadequate. Health literacy is closely related with closely healthcare professionals besides the public. Nurses who have great importance in the healthcare system, under-

stand health literacy and can use written health materials together with communication skills to improve public health. This is very important for the development of public health (1, 6, 7, 19, 24). Nurses must understand the health information and they can predict the process of diseases. Also, they should give information to a patient about their health. Therefore, health literacy training is very important. In the literature studies that are conducted to determine the levels of health literacy among nursing students show problematic-limited or inadequate (3, 13, 20, 25). For nursing students who are future health professionals improving health literacy is very important for public health because they influence people directly such as via training. There are a few studies in the literature on this issue and similar studies on nursing students are limited (3, 5, 21, 23, 32, 37). With this study, the contribution of health literacy training for nursing students to the health literacy level of students will be determined and will contribute to the literature. This study aims to improve the health literacy levels of nursing students. *Hypotheses of the Study* H0: Health literacy development training does not affect the health literacy level of nursing students. H1: Health literacy development training increases the level of health literacy of nursing students.

## MATERIALS AND METHODS

The study was conducted as a quasi-experimental design with a pre-training and post-training control group between January 2022 and December 2022 with students studying at ADU Faculty of Nursing who participated in the study as volunteers. The population of the study consists of ADU Nursing Faculty Students (428 male, 707 female) in 2022 (N=1135). The minimum sample size was determined as 35 for the experimental group and 35 for the control group with an effect size of 0.80 (large), alpha value of 0.05, and power of 0.80 (3, 18). To prevent possible data loss, the sample size increased to 10% and the study was completed with 78 individuals, 39 of the experimental group and 39 of the control group. Students were included in both experimental and control groups using a non-probability sampling method. The independent variables of the study are both students' characteristics and the pre-training score result from the Turkish Health Literacy Scale-32 (THLS-32) while the dependent variable is the post-training score result from the THLS-32 (28).

### *Data Collection Forms*

Data was collected with Questionnaire Form and Turkish Health Literacy Scale-32 (THLS-32) via Google Forms.

### *Questionnaire Form:*

This form is prepared by researchers searching the literature. It includes 7 questions (gender, lived place, income status, chronic disease, use of regular medication, use of addictive drugs, and age) that determine nursing students' characteristics (3, 10, 29).

### *Turkish Health Literacy Scale-32 (THLS-32):*

THLS-32 is improved for evaluating health literacy in literate individuals over the age of fifteen. It is a Likert scale and includes 4 different answer options 1=very easy,

Table 1: Information on health literacy training

Subjects	Contents	Time
Health literacy and basic terms	Literate, concept of health literacy, types of literacy, types of health literacy, health literacy levels in Turkey and the world	40 minutes
The importance of health literacy and affecting factors	Importance of health literacy, health literacy levels, factors affecting health literacy	40 minutes
The importance and role of health literacy in nursing	Health information access sources, nursing and health literacy, roles of nursing, the relationship between nursing roles and health literacy	40 minutes
Communication in health	Health term, communication term, communication in health, types of communication, communication process, communication skills in health	40 minutes

2=easy, 3=difficult, 4=very difficult. The score which is gained from THLS-32 shows levels of health literacy. Meanings of score are; (0-25) score: inadequate health literacy (>25-33) score: problematic-limited health literacy (>33-42) score: adequate health literacy (>42-50) score: excellent health literacy (28). *Health Literacy Improvement Training*

Subjects of the health literacy training are developed by researchers and completed with expert opinions. Based on the research on health literacy and health literacy literature, it was created from "Health Literacy and Basic Terms, The Importance of Health Literacy and Affecting Factors, The Importance and Role of Health Literacy in Nursing, and Communication in Health" titles. (1, 3, 26, 31). The topics were conducted online by the researchers using methods such as lecturing, question-answer, sampling, and summarizing at the convenience of all nursing students in the experimental group.

*Implementation and Data Collection Process in the Study Experimental Group:*

After written informed consent was obtained from the individuals in the experimental group who agreed to participate in the study both the pre-training test and THLS-32 applied. After the first test, nursing students took online health literacy training for 4 weeks. Then, they covered the subjects of "Health literacy and basic terms, The importance of health literacy and affecting factors, The importance and role of health literacy in nursing, and Communication in health". Each subject of training completed an average of 40 minutes. One week after the end of the training THLS-32 applied for a second time for each subject.

*Control Group:*

After oral and written permission from the individuals in the control group who agreed to participate in the study both the pre-training test and THLS-32 were applied. THLS-32 applied second time, after 4 weeks since the first test. End of the data collection process of the study, individuals in the control group took health literacy development training.

*Statistical Methods*

The data obtained from the study was evaluated. Gauss Curve, Minimum and Maximum Values, and Kolmogorov Smirnov test are used for the normal distribution. It shows that there is a normal distribution in the study using basic statistical tests like the Student t-test and Paired-Samples t-test.

*Ethical Sides of the Study*

Institutional permission, ethics committee permission

(ADU Faculty of Nursing Non-invasive Clinical Research Ethics Committee- E-76261397-050.99-108709), and permission to use the THLS-32 were obtained to conduct the study and carry out the data collection process. In addition, written permission was obtained from individuals who are volunteers to participate in the study. Also, this study has no financial support from any institution.

## RESULTS

The results of the study, which is carried out to improve the health literacy levels of nursing students, are presented in this section. When the students in both experimental and control groups were analyzed in terms of their characteristics. In regards to the results of analysis; 79.5% of the students in the experimental group and 84.6% of the students in the control group are female; 74.4% of the students in the experimental group and 82.1% of the students in the control group are living with their families; 71.8% of the students in the experimental group and 76.9% of the students in the control group have an income equal to expense; 92.3% of the students in the experimental group and 97.4% of the students in the control group do not have any chronic disease; 94.9% of the students in the experimental group and 94.9% of the students in the control group do not use regular medication; 87.2% of the students in the experimental group and 92.3% of the students in the control group do not use any addictive drugs; 66.7% of the students in the experimental group and 74.4% of the students in the control group follow new developments in health on the internet instantly. The age mean of the students in the experimental group was determined 21.89±3.40; in the control group determined 22.17±0.85. According to the statistical analysis, it determined that there is no significant difference between the personal characteristics of the students in the experimental and the control groups (p>0.05). When comparing the mean THLS-32 scores of the students participating in the study, the mean THLS-32 score of the students in the experimental group before the training is 38.03±6.29, the mean THLS-32 score after the training is 41.22±6.02. The difference between groups is determined to be statistically significant (p<0.05). The mean THLS-32 score of the students in the control group pre-training is 38.91±7.82, and post-training is 39.22±8.65. The difference between groups is not statistically significant (p>0.05). In the comparison of the mean THLS-32 scores of the students participating in the study by groups,

Table 2: Distribution of Personal Characteristics of Experimental and Control Group Students

Personel Characteristics		Experimental Group (n=39)	Control Group (n=39)	Total	Test; p
		n (%)	n (%)	n (%)	
Gender *	Female	31 (79.5)	33 (84.6)	64 (82.1)	0.349;0.555
	Male	8 (20.5)	6 (15.4)	14 (17.9)	
Lived Place*	Dorm	5 (12.8)	2 (5.1)	7 (9.0)	0.959;0.581
	Family	29 (74.4)	32 (82.1)	61 (78.2)	
	Alone	1 (2.6)	2 (5.1)	3 (3.8)	
Income Status*	Friends	4 (10.3)	3 (7.7)	7 (9.0)	0.468;0.792
	Less than expense	9 (23.1)	8 (20.5)	17 (21.8)	
	Equal expense	28 (71.8)	30 (76.9)	58 (74.4)	
Chronic Disease*	More than expense	2 (5.1)	1 (2.6)	3 (3.8)	1.101;0.294
	No	36 (92.3)	38 (97.4)	74 (94.9)	
Use Regular Medication*	Yes	3 (7.7)	1 (2.6)	4 (5.1)	0.000;1.000
	No	37 (94.9)	37 (94.9)	74 (94.9)	
Use of Addictive Drugs*	Yes	2 (5.1)	2 (5.1)	4 (5.1)	0.564;0.453
	No	34 (87.2)	36 (92.3)	70 (89.7)	
	<b>Min-Max</b>	<b>X±SS</b>	<b>Min-Max</b>	<b>X±SS</b>	<b>Test, p</b>
Age**	19-40	21.89±3.40	21-24	22.17±0.85	0.502;0.617

\*Likelihood Ratio; \*\*Student t test

Table 3: Comparison of Health Literacy Scores of Students in Experimental and Control Groups

THLS-32	Experimental Group (n:39)		Control Group (n:39)		Test; p
	Min-Max	X±SS	Min-Max	X±SS	
Pre-Training	23.44-48.96	38.03±6.29	23.96-50.00	38.91±7.82	*0.550;0.584
Post-Training	30.73-48.96	41.22±6.02	17.71-50.00	39.22±8.65	*1.131;0.262
Test; p	**2.336; 0.025		**0.212; 0.871		

\*Student-t-test, \*\*Paired Sample t-test

there is no significant difference between the mean THLS-32 scores of the students in the experimental and control groups pre- and post-training ( $p > 0.05$ ). When the distribution of the students participating in the study was analyzed in terms of THLS-32 categories, 41% of the students in the experimental group had adequate health literacy level pre-training, and 46.2% had excellent health literacy level post-training; 41% of the students in the control group have excellent health literacy level pre-training and 38.5% have excellent health literacy level post-training. However, there is no statistically significant difference between the groups ( $p > 0.05$ ).

## DISCUSSION

In this study which is designed to improve the health literacy levels of nursing students at a university in west Turkey, the study results in terms of personal characteristics of students, THLS-32 mean scores, and THLS-32 categories are discussed as follows. This study was carried out in a quasi-experimental design and the scale started to use Turkish in 2016. Since there are limited studies on the subject in the literature, it is predicted that this study will play an important role in the development of nursing students, who are an important member of health professionals, in health

literacy by contributing to the literature both at national and international levels. In this study, which is conducted by using a pre-post training test on nursing students, there is no significant difference in terms of personal characteristics of the students in both experimental and control groups ( $p_i < 0.05$ ). Also, Akca (3) has a similar result with us in the same way. There is no significant difference in the mean THLS-32 scores of students between experimental and control groups pre and post-training ( $p_i < 0.05$ ). However, according to Table 3; the THLS-32 scores of the students in the experimental group increase significantly post-training to pre-training ( $p_i < 0.05$ ). Muscat et al. (26) study students taking technical education, Coleman and Fromer (8) study health professionals, Weekes and Phillips (35) study nursing students, Hadden (15) study students studying in the field of health, Mackert et al. (22)'s and Ebrahimipour et al. (12)'s studies in health professionals in their health literacy training study show that there has a significant difference post-training, in line with our study. Likewise to our study, Çokluk and Dağlı (9) conclude that the post-training score of the THLS-32 scale is significantly higher than the pre-training score in both programs which are pharmacy and preschool teaching ( $p_i < 0.05$ ). Akca's (3) result is both the experimental and control groups increased their health literacy levels after

Table 4: Comparison of Students in Experimental and Control Groups in Terms of Health Literacy Categories

	THLS-32 Categories				
	Inadequate Health Literacy	Problematic-Limited Health Literacy	Adequate Health Literacy	Excellent Health Literacy	
	n (%)	n (%)	n (%)	n (%)	Test; p
Experimental (Pre-Training)	1 (2.6)	12 (30.8)	16 (41.0)	10 (25.6)	2.850;0.415
Control (Pre-Training)	2 (5.1)	10 (25.6)	11 (28.2)	16 (41.0)	
Total	3 (3.8)	22 (28.2)	27 (34.6)	26 (33.3)	
Experimental (Post-Training)	0 (0)	7 (17.9)	14 (35.9)	18 (46.2)	4.536;0.209
Control (Post-Training)	3 (7.7)	8 (20.5)	13 (33.3)	15 (38.5)	
Total	3 (3.8)	15 (19.2)	27 (34.6)	33 (42.3)	

\*Likelihood Ratio

training ( $p < 0.05$ ). According to the results of the research conducted on students, their health literacy levels increase through health literacy education. In this way, after a bachelor's degree in nursing, students will have very high levels of health literacy and will help to provide health care effectively. This shows that providing health literacy education at the bachelor's level is of significant importance for the development of health literacy. It is an important result of the study that the majority of the students in the experimental group had an excellent health literacy level (46.2%) after the training. Also, the majority of the students in the experimental group has an adequate health literacy level (41.0%) before the training. According to Table 4, there is no statistical difference between groups. In Gültop's (14) study, 25% of the participants have inadequate, 46.8% have problematic-limited, 23.2% have adequate, and 5% have excellent levels of health literacy. When Gültop (14) combined individuals with inadequate and limited problematic levels of participants, 71.8% of them report that they are severely negatively health literate. This situation indicates that this group is facing a highly severe public health problem. According to the study of Çokluk and Dağlı (9) after health training, pharmacy department students' inadequate and problematic-limited health literacy levels decrease, while adequate and excellent health literacy levels increase. Ağralı's (2) study indicates that training individuals with both high and low health literacy levels has positive effects on health behaviors. Our study is similar to the literature and clearly shows that THLS-32 categories can positively change via training. Practices to improve health literacy for all students who will serve in the field of health, especially nursing students, will contribute to the improvement of the quality of health services by increasing the level of knowledge and awareness of students on the subject.

*Limitations*

This study is an interventional study thus, students who participate in this study know from the beginning that they are in which group, experimental or control. Include the fact that the training and questionnaire process was conducted online and that randomization among the students

was not ensured limitations of this study.

**CONCLUSION**

In this study, which was conducted to improve the health literacy levels of nursing students, concludes that the health literacy training given to the students is effective. Improving the health literacy levels of nursing students will increase the quality of nursing care provided and this will increase the impact of health care by improving the awareness of the public on health literacy. Therefore, it is recommended to increase interventional studies to improve the health literacy level of nursing students.

**Ethics**

ADU Faculty of Nursing Non-invasive Clinical Research Ethics Committee- E-76261397-050.99-108709

**Authorship Contributions:**

Ideas and Planning: D.Y, F.A, M.Ö; Date Collection and Application Process: D.Y, M.Ö; Analkalaycuyze: D.Y, F.A; Writing: D.Y, F.A, M.Ö

**Declaration of competing interest:**

We declare that no conflict of interest is involved in this study.

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