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Sağlık Teknikeri Adaylarında İş Sağlığı ve Güvenliği İle İlgili Algılanan Yetkinliğin Sağlık Okuryazarlığıyla İlişkisi

The Relationship of Occupational Health and Safety Perceived Competence with Health Literacy in Health Technician Candidates

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Abstract

In this descriptive study investigating the relationship between health technician candidates' perceived competence in occupational health and safety and their health literacy, university students studying health technician training in Ankara and Bartın provinces formed the sample for the study. In the study, the 'Occupational Health and Safety Perceived Competence Scale' and the 'Turkey Health Literacy Scale (TSOY-32)' were administered to participants on a voluntary basis. Participants scored an average of 93.02±21.53 on the perceived competence scale related to occupational health and safety and an average of 34.89±8.26 on the health literacy scale. A significant relationship was found between age groups, perceived health levels, occupational health and safety training status, and health literacy training status ($p<0.05$). Statistically significant differences were found according to the participants' gender and whether they had received occupational health and safety training ($p<0.05$). A statistically significant relationship ($r= 0.260$; $p=0.001$) was found between the participants' perceived competence scores in occupational health and safety and their health literacy scores.
Keywords: Health literacy, Occupational health and safety, Health Technician

Öz

Sağlık teknikeri adaylarının iş sağlığı ve güvenliği algılanan yetkinliğinin sağlık okuryazarlığı ile ilişkisinin araştırıldığı tanımlayıcı çalışmada, Ankara ve Bartın ilinde sağlık teknikerliği eğitimi olan üniversite öğrencileri çalışmanın örneklemini oluşturmaktadır. Çalışmada "İş sağlığı ve güvenliği algılanan yetkinlik ölçeği ile Türkiye Sağlık okuryazarlığı ölçeği (TSOY-32) katılımcılara gönüllülük esasıyla uygulanmıştır. Katılımcıların iş sağlığı ve güvenliği ile ilgili algılanan yetkinlik ölçeğinden ortalama 93,02±21,53 puan, sağlık okuryazarlığı ölçeğinden ortalama

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34,89±8,26 puan aldıkları saptanmıştır. Yaş grupları, sağlık düzeyi algıları, iş sağlığı ve güvenliği eğitimi alma durumları ve sağlık okuryazarlığı eğitimi alma durumları arasında anlamlı bir ilişki saptanmıştır (p<0,05). Katılımcıların cinsiyetlerine ve iş sağlığı ve güvenliği eğitimi alma durumlarına göre istatistiki olarak anlamlı bir farklılık tespit edilmiştir (p<0,05). Araştırmaya katılanların iş sağlığı ve güvenliği algılanan yetkinlik puanları ve sağlık okuryazarlığı puanları arasında istatistiki olarak anlamlı bir ilişki (r= 0,260; p=0,001) bulunmuştur.
Anahtar Sözcükler: Sağlık okuryazarlığı, İş sağlığı ve güvenliği, Sağlık teknikeri

INTRODUCTION

Perceived competence in occupational health and safety (OHS) among employees is a multifaceted construct that significantly influences workplace and worker safety outcomes. Safety perceptions are shaped by various factors such as knowledge, social relations and management practices.

The relationship between perceived competence in occupational health and safety and health literacy is very important in terms of both employees feeling safe and managing the health risks they may encounter in the workplace more effectively.
Individuals with high health literacy generally find it easier to understand and apply health-related information. This leads them to feel more competent in terms of occupational safety practices. Individuals with high perceived competence exhibit proactive behaviours such as increased use of personal protective equipment and reporting workplace hazards. If OSH training includes modules that develop health literacy, an increase in employees' perceived competence can be observed. For example, employees who are knowledgeable about topics such as hygiene, ergonomics, and psychosocial risks in the workplace can integrate this knowledge with occupational safety and exhibit safer behaviours.

An important aspect of perceived competence in OHS involves the relationship between safety perception, knowledge and compliance. Effective managerial competence is linked to increasing employees' interest in safety issues and overall safety knowledge and perception, suggesting that training managerial staff in safety related competencies is essential to improve the overall workplace safety culture(Chung, 2018). In addition, there is a need for structured training and development programs, suggesting that safety awareness and competence is vital for employees to be aware of their health and safety responsibilities, especially in healthcare settings (Ünal, 2020).

In addition, social dynamics in the workplace significantly affect safety-related perceptions and compliance. It is conceivable that supervisors' and senior managers' perceptions of the safety climate profoundly influence employee behavior. Employees tend to imitate their supervisors' attitudes towards safety, which demonstrates the importance of effective leadership in fostering a safety-oriented organizational culture(Yagil & Luria, 2010). This leadership influence reveals an inverse relationship between employees' perception of safety climate and injury rates (Cook et al., 2016). One of the habits that negatively shape safety attitudes can be considered as fatalistic perceptions. Research shows that higher levels of fatalistic perceptions are associated

with less compliance with safety protocols and negatively affect workplace safety outcomes(Akbolat et al., 2022).

It also shows that when employees perceive their environment as unsafe, it reduces their overall job satisfaction and their engagement in safety practices, and job satisfaction is associated with perceptions of safety (Yassi & Hancock, 2005). Organizational commitment and employee well-being are known to be interlinked within the OHS framework. When employee health and safety is perceived to be threatened by poor management practices, this is seen to lead to withdrawal behaviors such as absenteeism. It also shows that perceived inadequacies in safety-related management can lead to a cycle of negative outcomes for both employee and organizational safety cohesion (Amponsah-Tawiah & Mensah, 2016).

The importance of continuous training and clear communication of safety norms is crucial for OHS awareness. Probst and Brubaker (2001) emphasize that employees who experience job insecurity report lower safety motivation and compliance, which contributes to increased accidents. This underlines that creating a safe and supportive work environment can increase perceptions of safety and commitment to safety practices(Probst & Brubaker, 2001).

Improving perceived competence in occupational health and safety is critical to promoting a safer work environment. This requires a multi-pronged approach that includes developing managerial competencies, effectively communicating safety perceptions and addressing social dynamics in the workplace. By fostering a positive safety climate and investing in ongoing employee training, organizations can significantly reduce workplace injuries and improve overall employee well-being.
Health literacy is a crucial determinant of health outcomes, defined as the ability to access, comprehend, evaluate, and utilize health information to make informed health decisions.

Health literacy goes beyond understanding written medical instructions. It also means being able to understand the consequences of certain health conditions, understand why it is important to take drugs properly, recognize the causes of illnesses or stress, understand how to lead a healthier life or recognize where to find drugs or other health services.

WHO (2013) defines health literacy as "the willingness and capacity of people to develop opinions and make decisions about health care issues throughout their lives, to access health related information sources to protect, maintain and improve their health and to improve their quality of life, and to perceive and understand health-related information and messages accurately."

Weak health literacy competencies have been shown to result in less healthy choices, riskier behavior, poorer health, less self-management and more hospitalization(WHO, 2013). Low health literacy is a significant barrier to effective healthcare and can lead to poorer health outcomes across various demographics. Studies have found that health literacy is associated with income, education, language problems, health level, health problems, old age and being a minority(Nielsen-Bohlman et al., 2004).

Furthermore, health literacy is dynamic and context-dependent. Duong et al. emphasize that health literacy is influenced by interactions among individuals, healthcare providers, and the structure of the healthcare system(Duong et al., 2017). This highlights that improving health literacy is interconnected with broader systemic factors, necessitating community and organizational engagement.

Health literacy can be determined with different scales. In this study, the TSOY-32 scale developed by the Ministry of Health in 2016 was used (Okyay & Abacıgil, 2016). Although health literacy has been associated with various health conditions in studies, there is no evidence of a relationship between health literacy and perceived competence in occupational health and safety.

1. Method

1.1. Objective

This study was designed as a descriptive research to examine whether there is a relationship between occupational health and safety perceived competence and health literacy of health technician candidates. In addition, the other objectives of the study are to measure the participants' perceived competence level in occupational health and safety and health literacy levels, and to determine whether there is a difference between these levels according to demographic characteristics such as age, gender, education, income, marital status, and perceived health level and health service utilization. The main research questions of the study are as follows.

• Is there a significant relationship between the occupational health and safety perceived competence scale scores and health literacy scale scores of the participants in the study?

• Is there a significant relationship between the sub-dimensions of the occupational health and safety perceived competence scale and the sub-dimension scores of the health literacy scale?

1.2. Sample

The research was conducted in Bartın and Ankara between February and April 2025. The population of the study consisted of university students studying health technician education in Bartın and Ankara. When determining the sample size, the convenience sampling method was used from among the non-probability sampling methods. According to De Vellis (2003), ten times the number of items in the scale will be sufficient to determine the sample size (De Vellis, 2003). A total of 513 questionnaire forms were collected, 37 of them were excluded from the evaluation due to incomplete or incorrect filling and a total of 486 questionnaire forms were evaluated as valid.

1.3. Data Collection Tool

A questionnaire form was used as a data collection tool in the study. The questionnaire consists of three sections and 70 questions. In the first part, there are 9 questions about the demographic characteristics, perceived health level and health services utilization of the participants. The second section included the "Turkish Health Literacy Scale-32 (TSOY-32)" consisting of 32 questions to determine the health literacy levels of the participants, and the third section included the "Turkish Occupational Health and Safety Perceived Competence Scale" consisting of 29 questions to determine the perceived competence in occupational health and safety.

Developed by the Ministry of Health based on the conceptual framework of the European Health Literacy Study (HLS-EU), TSOY-32 differs from the HLS-EU in that it

is structured as a 2X4 matrix with two basic dimensions. There are eight components in the matrix, two dimensions and four processes (Okyay & Abacıgil, 2016). When evaluating the scale, the indices are standardized between 0 and 50. This ensures compatibility with the HLS-EU study. The formula Index = (mean-1) x (50/3) was used to calculate the index. The calculated indices are "0-25 points: Inadequate; >25-33: Problematic-limited; >33-42: Adequate; >42-50: Excellent". Before the score calculation, the scale was recoded as 4=Very easy, 3=Easy, 2=Difficult, 1=Very difficult. In the original study, Cronbach's alpha coefficient was calculated as 0.927. In this study, Cronbach's alpha coefficient was found to be 0.930.

The third part of the questionnaire includes the "Turkish Occupational Health and Safety Perceived Competence Scale" developed by Kocaay and Ocaktan (2021). Consisting of 29 questions, the higher the score obtained from the occupational health and safety perceived competence scale, the higher the competence. The Cronbach's alpha coefficient, which was found to be 0.914, 0.911 and 0.872 for the basic approaches and practices, basic knowledge and concepts and protective measures and rules sub dimensions of the scale, was found to be 0.933, 0.947 and 0.910, respectively. For the overall scale, this figure was calculated as 0.973.

1.4. Data Analysis

The data obtained were analyzed using the statistical package program. The participants' occupational health and safety perceived competence and health literacy scores (P≤0.05) do not show a normal distribution according to the results of the normality test. Kurtosis and skewness values also support this situation. Since the scores were not normally distributed, non-parametric methods were used. Descriptive statistics included percentages, frequency distributions, mean scores, standard deviation and median.

In the comparison of categorical variables on the basis of groups, Mann-Whitney U test was used for the comparison of paired groups and Kruskal Wallis test was used for the comparison of groups with three or more variables. The relationship between health literacy and perceived competence in occupational health and safety was examined using Spearman's rho correlation analysis. Cronbach's alpha coefficient was calculated to measure the reliability of the scale and P

1.5. Ethical Dimension

Gazi University Ethics Commission was applied to conduct the research. It was unanimously decided by the Ethics Commission of Gazi University at the meeting dated 10.12.2024 and numbered 20, and it was unanimously decided that there was no ethical drawback in conducting the study with code number 2024-1912. The decision was notified to us with the letter dated and numbered 18.12.2024-E.1121262. Participation in the study is completely voluntary. In addition, the participants were briefly informed about the survey before the survey was administered and the survey was started after this information. No identity information was obtained from the participants.

2. Findings

A total of 486 people participated in the study. It was found that the participants received an average score of 93.02±21.53 points from the Occupational health and safety perceived competence scale, 35.56±8.07 points from the basic approaches and practices sub-dimension of the scale, 34.56±8.79 points from the basic knowledge and concepts sub-dimension, and 22.90±5.75 points from the protective measures and rules sub-dimension. It was observed that they received an average score of 34.89±8.26 points from

the health literacy scale, 35.58±8.13 points from the treatment service sub dimension of the scale and 34.21±9.46 points from the disease prevention/health promotion sub-dimension (Table 1).

Table 1: Participants' occupational health and safety perceived competence and health literacy scale scores

Scale	N	Min.	Maks.	Average	S.S.
Occupational Health and Safety Perceived Competence	486	29	145	93,02	21,53
Basic Approaches and Practices	486	11	55	35,56	8,07
Basic Information and Concepts	486	11	55	34,56	8,79
Protective Measures and Rules	486	7	35	22,90	5,75
Health Literacy	486	2,08	49,48	34,89	8,26
Treatment Service	486	4,17	50	35,58	8,13
Disease prevention /Health promotion	486	0	50	34,21	9,46

When the perceived competence levels of the participants in occupational health and safety were analyzed, it was found that the participants received a score above the average. When we look at the health literacy levels, 68.3% of the participants had adequate and excellent health literacy levels, while 36.7% had limited and inadequate health literacy levels.

Table 2: Participants' demographic characteristics and health service utilization

		N	%
Gender	Female	391	80,5
	Male	95	19,5
Age Groups	18 - 19	194	39,9
	20 - 21	201	41,4
	22 - 23	52	10,7
	24+	39	8,0
Marital Status	Single	464	95,5
	Married	20	4,1
	Divorced	2	0,4
Income Level	Income less than expenditure	166	34,2
	Income matches expenditure	259	53,3
	Income more than expenditure	61	12,6
Health Level	Perfect	18	3,7
	Pretty good	76	15,6
	Good	229	47,1
	Not bad	142	29,2
	Bad	21	4,3
Referred Health Institution	Family physician (Family health center)	148	30,5
	State hospital	310	63,8
	University hospital	12	2,5
	Private hospital	16	3,3

		N	%
OHS Training Status	Yes	371	76,3
	No	115	23,7
HL Education Status	Yes	138	28,4
	No	348	71,6
Work Accident history	Yes	42	8,6
	No	444	91,4
Health Literacy Levels	Inadequate	49	10,1
	Problematic/Limited	105	21,6
	Adequate	224	46,1
	Perfect	108	22,2
	TOTAL	**486**	**100,0**

It was determined that 80.5% (n=391) of the health technician candidates were female and the average age was 20.71±3.77. Almost half of the participants were between the ages of 20 and 21 and 95.5% (n=464) were single. 53.3% (n=259) stated that their monthly income was equal to their expenses.

In addition, when we look at the health service utilization characteristics of the participants, 47.1% of the participants evaluated their general health level as good (n=229), while they stated that they prefer public hospitals (63.8%; n=310) when they encounter any health problem.

76.3% (n=371) of the participants stated that they had received occupational health and safety training, 71.6% (n=348) had not received health literacy training and 91.4% (n=444) had not been exposed to a work accident before.

Table 3: Comparison of participants' occupational health and safety perceived competence and health literacy scores according to variables

Demographic Characteristics		n	Health Literacy			OHS Perceived Competence		
			Mean Rank	U / H	P	Mean Rank	U / H	P
Gender	Female	391	251,25	15.540,50	**0,013**	238,37	20.580,00	0,102
	Male	95	211,58			264,63		
Age Groups	18 - 19	194	233,10	5.918,000	0,116	238,84	9.261,000	**0,026**
	20 - 21	201	239,83			233,35		
	22 - 23	52	282,12			253,20		
	24+	39	262,69			306,05		
Marital Status	Single	464	242,61	1153,000	0,562	240,46	5050,000	0,080
	Married	20	254,13			312,25		
	Divorced	2	343,25			261,50		
Income Level	Income less than expenditure	166	230,83	2100,000	0,350	227,33	4624,000	0,099
	Income matches expenditure	259	250,71			247,58		
	Income more than expenditure	61	247,34			270,16		
Health Level	Perfect	18	223,36	2974,000	0,562	225,47	12153,000	**0,016**
	Pretty good	76	265,22			293,47		
	Good	229	244,60			233,43		
	Not bad	142	234,32			233,01		

Demographic Characteristics		n	Health Literacy			OHS Perceived Competence		
			Mean Rank	U / H	P	Mean Rank	U / H	P
	Bad	21	232,19			258,79		
Referred Health Institution	Family physician (Family health center)	148	235,02	1445,000	0,695	248,86	2454,000	0,484
	State hospital	310	245,36			238,71		
	University hospital	12	265,13			237,54		
	Private hospital	16	269,63			291,28		
OHS Training Status	Yes	371	251,52	18.358,50	**0,023**	265,57	13.143,00	**0,001**
	No	115	217,64			172,29		
HL Education Status	Yes	138	260,52	21.663,00	0,091	289,12	17.716,50	**0,001**
	No	348	236,75			225,41		
Work Accident history	Yes	42	221,92	10.230,50	0,295	263,27	8.493,50	0,339
	No	444	245,54			241,63		

Table 3 shows the scores of the participants regarding perceived competence in occupational health and safety and health literacy and the distribution of these scores. Accordingly, no significant difference was found between the participants' occupational health and safety perceived competence scores according to gender, marital status, income level, health institution consulted and occupational accident history ($p>0.05$). A significant relationship was found between the participants' age groups, health level perceptions, occupational health and safety training status and health literacy training status ($p<0.05$).

Those aged 24 years and over, those who defined their general health level as quite good, those who received occupational health and safety training and those who received health literacy training had higher mean ranks. It can be said that advancing age increases the perceptions of individuals, those who define their health level as quite good also have good perceptions of competence, and the trainings on occupational health and safety and health literacy contribute to the increase in the perceived competence levels of individuals in occupational health and safety.

When the health literacy scores of the participants were examined, no statistically significant difference was found between the health literacy scores according to age groups, marital status, income level, perceptions of health level, health institution consulted, health literacy training status and occupational accident history ($p>0.05$). However, a statistically significant difference was found according to the gender of the participants and their status of receiving occupational health and safety training ($p<0,05$). It is observed that the health literacy scores of female participants are higher than the health literacy scores of male participants. It can be said that gender has a determining effect on health literacy. Receiving occupational health and safety training positively affects health literacy. It can be said that the mean ranks of those who received occupational health and safety training are significantly higher than those who did not. This finding indicates that occupational health and safety trainings will make a positive contribution to increase the level of health literacy. While organizing programs to

increase the level of community health literacy, occupational health and safety issues should be included in the content of training programs.

Table 4: Comparison of participants' health literacy scale sub-dimension scores according to variables

Demographic Characteristics		n	Treatment and Service			Disease Prevention / Health Promotion		
			Mean Rank	U / H	P	Mean Rank	U / H	P
Gender	Female	391	250,91	15.676,50	**0,018**	250,39	15.877,50	**0,027**
	Male	95	213,02			215,13		
Age Groups	18 - 19	194	230,48	9.356,000	**0,025**	240,41	2.858,000	0,414
	20 - 21	201	238,11			240,25		
	22 - 23	52	281,42			274,11		
	24+	39	285,50			234,83		
Marital Status	Single	464	241,95	1565,000	0,457	243,69	1318,000	0,517
	Married	20	271,20			228,80		
	Divorced	2	327,25			346,75		
Income Level	Income less than expenditure	166	229,05	3157,000	0,206	233,56	1332,000	0,514
	Income matches expenditure	259	253,55			247,79		
	Income more than expenditure	61	240,12			252,34		
Health Level	Perfect	18	213,97	2558,000	0,634	239,92	4162,000	0,384
	Pretty good	76	261,01			269,79		
	Good	229	245,16			244,28		
	Not bad	142	237,50			229,71		
	Bad	21	227,90			236,19		
Referred Health Institution	Family physician (Family health center)	148	231,88	2362,000	0,501	236,71	1040,000	0,792
	State hospital	310	246,44			244,84		
	University hospital	12	271,67			269,08		
	Private hospital	16	272,94			261,22		
OHS Training Status	Yes	371	250,39	18.774,50	0,050	251,41	18.399,00	**0,025**
	No	115	221,26			217,99		
HL Education Status	Yes	138	260,90	21.611,00	0,084	255,10	22.411,00	0,248
	No	348	236,60			238,90		
Work Accident history	Yes	42	225,52	10.079,00	0,383	226,00	10.059,00	0,395
	No	444	245,20			245,16		

When the scores of the participants from the treatment and service sub-dimension of the health literacy scale were evaluated (Table 4), no significant relationship was found between the participants' marital status, income levels, health level perceptions, the health institution they applied to, occupational health and safety training status, health

literacy training status and work accident history (P>0.05). A significant relationship was found between the gender and age groups of the health technician candidates and the scores they received from the treatment service sub-dimension of the health literacy scale (p<0,05). The treatment service sub-dimension rank averages of the female gender were significantly higher than the male gender. When the age groups were evaluated, it was observed that the mean ranks of the health technician candidates aged 22-23 and 24 and above were significantly higher.

When the scores of the participants from the disease prevention/health promotion sub dimension of the health literacy scale were evaluated (Table 4), no significant relationship was found between the participants' age groups, marital status, income levels, health level perceptions, the health institution consulted, the status of receiving health literacy training and the history of occupational accidents (P>0,05). A significant relationship was found between the gender of the health technician candidates and their status of receiving occupational health and safety education and the scores they received from the health literacy scale disease prevention/health promotion sub dimension (p<0,05). The mean ranks of the female gender in the sub-dimension of disease prevention/health promotion were significantly higher than the male gender. The mean ranks of health technician candidates who received occupational health and safety training were found to be statistically significantly higher than those who did not receive training.

Table 5: Comparison of participants' occupational health and safety perceived competence scale sub-dimension scores according to variables

Demographic Characteristics		n	Basic Approaches and Practices			Basic Information and Concepts			Protective Measures and Rules		
			Mean Rank	U / H	P	Mean Rank	U / H	P	Mean Rank	U / H	P
Gender	Female	391	239,87	19.991,50	0,247	237,75	20.821,00	0,066	236,55	21.289,50	**0,026**
	Male	95	258,44			267,17			272,10		
Age Groups	18 - 19	194	240,12	6.688,000	0,083	237,78	8.710,000	**0,033**	238,00	11.570,000	**0,009**
	20 - 21	201	236,18			235,41			230,95		
	22 - 23	52	243,04			249,79			263,30		
	24+	39	298,63			305,31			309,14		
Marital Status	Single	464	241,02	3556,000	0,169	240,41	5120,000	0,077	240,10	6079,000	**0,048**
	Married	20	301,40			311,85			314,60		
	Divorced	2	240,00			278,00			321,75		
Income Level	Income less than expenditure	166	229,18	3725,000	0,155	225,60	4927,000	0,085	225,98	6676,000	**0,036**
	Income matches expenditure	259	246,95			249,39			246,34		
	Income more than expenditure	61	267,84			267,22			279,11		
Health Level	Perfect	18	216,69	9779,000	**0,044**	233,28	12977,000	**0,011**	246,56	14950,000	**0,005**
	Pretty good	76	287,73			293,14			294,30		
	Good	229	240,27			227,64			233,84		
	Not bad	142	229,93			241,20			225,89		
	Bad	21	233,40			261,17			281,48		
Referred Health Institution	Family physician (Family health center)	148	253,31	1949,000	0,583	250,52	2070,000	0,558	245,90	5779,000	0,123

Demographic Characteristics		n	Basic Approaches and Practices			Basic Information and Concepts			Protective Measures and Rules		
			Mean Rank	U / H	P	Mean Rank	U / H	P	Mean Rank	U / H	P
	State hospital	310	237,63			239,06			238,34		
	University hospital	12	236,33			222,42			239,88		
	Private hospital	16	271,78			280,41			323,97		
OHS Training Status	Yes	371	267,46	12.443,50	**0,000**	264,64	13.490,00	**0,000**	261,16	14.779,00	**0,000**
	No	115	166,20			175,30			186,51		
HL Education Status	Yes	138	294,60	16.960,50	**0,000**	295,52	16.833,00	**0,000**	289,12	17.716,50	**0,000**
	No	348	223,24			222,87			225,41		
Work Accident history	Yes	42	252,07	8.964,00	0,679	259,71	8.643,00	0,432	275,51	7.979,50	0,120
	No	444	242,69			241,97			240,47		

When the scores obtained by the participants from the basic approaches and practices sub-dimension of the occupational health and safety perceived competence scale were evaluated (Table 5), no significant relationship was found between the participants' gender, age groups, marital status, income levels, the health institution they applied to and their occupational accident history (P>0.05).

A significant relationship was found between the health level perceptions, occupational health and safety training status and health literacy training status of the health technician candidates and the scores they received from the basic approaches and practices sub-dimension of the occupational health and safety perceived competence scale (p<0,05). The mean ranks of those who defined their health level as very good were found to be higher than the others. The mean ranks of health technician candidates who received occupational health and safety education and health literacy education were statistically significantly higher than those who did not receive education.

When the scores obtained by the participants from the basic information and concepts sub-dimension of the occupational health and safety perceived competence scale were evaluated (Table 5), no significant relationship was found between the participants' gender, marital status, income levels, the health institution they applied to and their occupational accident history (P>0.05).

A significant relationship was found between the age groups, health level perceptions, occupational health and safety training status and health literacy training status of the health technician candidates and the scores they received from the basic information and concepts sub-dimension of the occupational health and safety perceived competence scale (p<0,05). The mean ranks of the health technician candidates in the age group of 24 and above were higher than the other age groups. Similarly, the mean ranks of those who defined their health level as very good were higher than the others. The mean ranks of the health technician candidates who received occupational health and safety education and health literacy education were found to be statistically significantly higher than those who did not receive education.

When the scores obtained by the participants from the protective measures and rules sub-dimension of the occupational health and safety perceived competence scale were

evaluated (Table 5), no significant relationship was found between the health institution to which the participants applied and the history of occupational accidents and the scores obtained from the protective measures and rules sub-dimension (P>0.05).
A significant relationship was found between the gender, age groups, marital status, income levels, health level perceptions, occupational health and safety training status and health literacy training status of the health technician candidates and the scores they received from the protective measures and rules sub-dimension of the occupational health and safety perceived competence scale (p<0,05). It was determined that the mean rank of the male gender of the health technician candidates showed a statistically significant difference from the mean rank of the female gender. Those in the 24 and over age group had higher mean ranks than the other age groups. The mean ranks of those whose income was higher than their expenses were higher than the other groups. Similarly, the mean ranks of those who defined their health level as very good were higher than the others. The mean ranks of health technician candidates who received occupational health and safety education and health literacy education were statistically significantly higher than those who did not receive education.

Table 4: Examination of the relationship between perceived competence in occupational health and safety and health literacy

		Health Literacy Scale (TSOY-32)					
		Treatment and Service		Disease Prevention / Health Promotion		TOTAL	
		r	p	r	p	r	p
Perceived competence in occupational health and safety	Basic Approaches and Practices	0,263	0,001	0,243	0,001	0,265	0,001
	Basic Information and Concepts	0,233	0,001	0,204	0,001	0,239	0,001
	Protective Measures and Rules	0,227	0,001	0,190	0,001	0,213	0,001
	TOTAL	0,259	0,001	0,232	0,001	0,260	0,001

The relationship between the scores obtained by the participants in the study on the occupational health and safety perceived competence scale and the scores obtained on the health literacy scale was examined using Spearman's rho correlation test.

The participants' scores on the occupational health and safety perceived competence scale were examined in relation to the subscales of basic approaches and practices (r=0.263; p=0.001), basic knowledge and concepts (r=0.233; p=0.001), protective measures and rules (r=0.227; p=0.001) subscales, and scale total scores (r=0.259; p=0.001) with the treatment and service dimension of the health literacy scale.

Participants' occupational health and safety perceived competence scale showed a significant relationship between the basic approaches and practices (r=0.243; p=0.001), basic knowledge and concepts (r=0.204; p=0.001), protective measures and rules (r=0.190; p=0.001) subscales, and the scale total scores (r=0.232; p=0.001) with the health literacy scale's disease prevention/health promotion dimension. Based on the findings

of the study, it was determined that perceived competence in occupational health and safety has an effect on predicting health literacy and that there is a weak relationship between them.
The participants' occupational health and safety perceived competence scale was found to have a significant relationship with the sub-dimensions of basic approaches and practices (r=0.265; p=0.001), basic information and concepts (r=0.239; p=0.001), protective measures and rules (r=0.213; p=0.001) sub-dimensions, and scale total scores (r=0.260; p=0.001) with the health literacy scale. Based on the findings of the study, it was determined that perceived competence in occupational health and safety has an effect on predicting health literacy and that there is a weak relationship between them.
According to the results obtained, a statistically significant relationship (r = 0.260; p = 0.001) was found between occupational health and safety perceived competence scores and health literacy scores. Based on the findings of the study, it was determined that perceived competence in occupational health and safety has an effect on predicting health literacy and that there is a weak relationship between them. This result shows us that increasing perceived competence in occupational health and safety contributes, albeit weakly, to raising health literacy levels.

Conclusion

A total of 486 people participated in the study. The participants consisted of health technician candidates studying in Bartın and Ankara provinces. The lowest and highest scores of the participants in the occupational health and safety perceived competence scale were 29 and 145, respectively, and the average score was 93.02±21.53.
A significant relationship was found between the health level perceptions, occupational health and safety training status and health literacy training status of the health technician candidates and the scores they received from the basic approaches and practices sub-dimension of the occupational health and safety perceived competence scale ($p<0,05$). The mean ranks of the health technician candidates who received occupational health and safety education and health literacy education were found to be statistically significantly higher than those who did not receive education. A significant relationship was found between the age groups, health level perceptions, occupational health and safety training status and health literacy training status of the health technician candidates and the scores they received from the basic information and concepts sub-dimension of the occupational health and safety perceived competence scale ($p<0,05$).

There are studies (ÇalışmaveSosyalGüvenlikBakanlığı, 2017; Demirbilek, 2005; Laberge & Ledoux, 2011) in the literature evaluating OHS education and indicating the importance of OHS education. In addition, there are studies (Reşitoğlu et al., 2018; Sarıkaya et al., 2009; Şahmaran et al., 2019) as well as studies(Aydoğan, 2021; Kocaay, 2020) in which the OHS courses given in universities are evaluated in the literature and it is stated that there is a significant differentiation in OHS competence perceptions whether or not to take OHS courses. In the study conducted Reşitoğlu et al. (2018) which supports the study, it was determined that the OHS education that students received in school life increased their knowledge about OHS and positively affected their attitudes and behaviors. In the study conducted by Şahmaran et al. (2019) it was determined that

there was an increase in the OHS perceptions of associate degree students taking OHS courses and a change in their perspectives on OHS. In addition, it was emphasized that in order to have permanent changes in terms of preventing accidents and diseases in working life, it is necessary to instill safety culture in the family long before OHS trainings, and then education and training should be provided at basic education levels and associate / undergraduate programs (Şahmaran et al., 2019). In the studies conducted by Topgül and Alan (2017) and Aydoğan (2021) , it was determined that OHS training was not effective on students' perceptions.

In the studies conducted, different findings were obtained in the relationship between taking OHS course or not and OHS competence. This difference is thought to be due to the different departments of the participants, the different training provided, the different scales used, the differences in the number of samples and the different cultural characteristics of the participants.

When the scores of the participants from the basic approaches and practices sub dimension of the occupational health and safety perceived competence scale were evaluated (Table 5), no significant relationship was found between the participants' gender, age groups, marital status, income levels, the health institution they applied to and their occupational accident history (P>0.05). In the study, a significant relationship was found between the participants' OHS training status and occupational health perceived competence. A significant relationship was found in all three sub dimensions of OHS perceived competence.

In the study of Kocaay and Biçer (2022), it is seen that working time (seniority) and trust in the working environment are not effective on the perception and awareness level about OHS. The monotony of the work environment and excessive workload of employees working in the health sector may have been effective on this result. In a study conducted on agricultural faculty employees and academicians, the participants' occupational health and safety competence perception scores were found to be higher in those who received occupational health and safety training and those who worked in OHS services (Kocaay, 2020). In a study conducted in the garment industry, it was observed that knowing the situations that jeopardize health and safety at work was not related to receiving OHS training. In the same study, it was determined that the most important expectation of employees was to receive OHS training (Ceviz & Tektaş, 2024). It is thought that standardizing the OHS trainings given by determining the deficiencies specific to the profession and supporting them not only at the beginning of the job but also with continuous in-service trainings will positively affect the perception of OHS competence (Kocaay, 2020).

When the scores obtained by the participants from the basic information and concepts sub-dimension of the occupational health and safety perceived competence scale were evaluated (Table 5), no significant relationship was found between the participants' gender, marital status, income levels, the health institution they applied to and their occupational accident history (P>0.05).

Kocaay and Biçer (2022) in a study conducted with healthcare workers, it was found that having an occupational accident and practicing as a doctor were related to the perception of OHS competence. There are studies showing that the perception of competence is

affected by occupational accidents. Another method used in the calculation of the frequency rate of occupational accidents in the study, the frequency rate of occupational accidents calculated by the number of occupational accidents per 100 employees, is 16.5. According to this calculation, the occupational accident frequency rate in Turkey in 2018 is 2.42 (Şen et al., 2018). The frequency of occupational accidents in healthcare workers is difficult to report. The most important reason for this may be that healthcare workers ignore these accidents and do not report them within the workload. More comprehensive research on this issue will reveal the real numbers. Cuts and needle sticks are the most common occupational accidents among healthcare workers. In the literature, 57% of nurses have cuts, 51% of healthcare workers have abrasions on their hands (Sencan et al., 2004) and 64% of them have been in contact with blood and body fluids at least once in their working life (Akgün, 2015; Şen et al., 2018). Especially during the COVID-19 crisis, many healthcare workers were exposed to the disease in the work environment. The level of OHS perception has increased due to this exposure.

Kocaay (2020) found that OHS competence perception scores were not related to occupational accidents in the OHS competence perception assessment study in agricultural faculty employees. The low frequency of occupational accidents in the same study and the fact that the risk of occupational accidents in agricultural faculty employees is relatively lower than the risk of occupational accidents in healthcare workers may have caused the result to be different. In addition, it has been shown in the literature that there is a direct relationship between organizational safety culture and individual safety. In workplaces where organizational safety culture is developed, individual safety culture is also positively affected (Bottani et al., 2009). For this reason, it is a known fact that any regulation related to OHS will give positive results in terms of reducing the risk of occupational accidents and occupational diseases.

It was found that the participants received a minimum score of 2.08, a maximum score of 49.48 and an average score of 34.89±8.26 from the health literacy scale. In studies conducted by different researchers, it was found that they received an average score between 29.99 and 37.8 points from the health literacy scale (Altun & Özkan, 2020; Çavdar & Suvak, 2023; Çelik et al., 2021; Ertem & Güzel, 2021; Güner et al., 2020; Güzel et al., 2022; Tanriöver et al., 2014; Türkmen & Türkoğlu, 2024)

In the European Health Literacy Survey, the average score of health literacy was calculated as 33.8(Hls-EuConsortium, 2012). While 68.3% of the participants had adequate and excellent health literacy, 31.7% had inadequate and problematic health literacy. In the study conducted by the Ministry of Health in 2018, it was found that 68.9% of the participants had inadequate and problematic health literacy and 31.1% had adequate and excellent health literacy. The findings obtained differ from the Ministry of Health study. It is thought that the fact that the research group is receiving education in the field of health is an important factor in the high level of health literacy.

One of the important determinants of health literacy is gender. As a result of the meta-analysis in which Elkin (2024) analyzed 21 studies, he defined the effect of gender on health literacy as a significant and small effect size. Research findings also support this proposition. Ezirmik et al. (2024) stated that gender is an important determinant in their study on teachers. However, Türkmen and Türkoğlu (2024) found no gender related difference in their study. The results obtained in the study showed that both the mean

scores and health literacy levels of women were higher than men. Therefore, it is important to develop programs to increase men's health literacy. It may be beneficial to reach a wider audience if some of the programs to be carried out to increase general health literacy consist of content that may be of interest to men and take place at times and on platforms that men prefer more.

No significant relationship (p>0.05) was found between health literacy and health level perceptions. Şantaş et al. (2023) stated that there was a significant relationship. A significant relationship was found between occupational health and safety training and health literacy (p<0,05). It can be said that occupational health and safety trainings have a positive effect on health literacy. Durmaz et al. (2020) stated that there was no correlation between health literacy and job-related training provided to marble workers. Since the research was conducted in the provinces of Bartın and Ankara, no generalization can be made based on the results obtained. However, the results obtained from the research draw attention to the need to improve health literacy and perceived competence in occupational health and safety. As a result of improving perceived competence in health and safety at work and health literacy, individuals will know how to make decisions about their own health and how to protect and improve it. This could lead to cumulative improvements in the general health of individuals, which in turn could contribute to the improvement of public health. In this context, activities and education aimed at improving health literacy are becoming increasingly important.
Both health literacy and occupational health and safety issues can be included in curricula at various educational levels. These trainings can increase both the level of health literacy and perceived competence in occupational health and safety. The acquisition of safety culture from childhood will contribute to increasing the level of health literacy both within the scope of OHS and health literacy.

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