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Future Expectations of Occupational Health and Safety Students: An Analysis Based on Educational and Socioeconomic Variables

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Abstract

This study examines the future expectations of Occupational Health and Safety (OHS) students regarding socioeconomic determinants and the emerging digital competency gap. The sample comprises 359 students selected through convenience sampling using the "Future Expectation Scale." Results indicate students possess moderate future expectations ($\bar{x}$=2.66); while career optimism is high ($\bar{x}$=3.93), economic and social outlooks are significantly lower. Notably, students from foundation universities and industrially active regions exhibit significantly higher expectations. These disparities highlight a critical gap in accessing practical training resources. Consequently, the study concludes that traditional educational methods are insufficient to meet modern industry demands. Integrating immersive technologies, such as Virtual Reality (VR) and Augmented Reality (AR), into OHS curricula is essential to bridge the gap between theoretical knowledge and Industry 5.0 requirements, enhancing student motivation and career readiness.

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Introduction

The protection and continuation of all living and non-living entities that make up the workplace ecosystem are defined as occupational health and safety (OHS). OHS provides the opportunity for the continuation of the material and intangible existence of the workplace and the country, especially for the individual. Workplace accidents and occupational diseases cause material and intangible damage to the employees, materials, machines, tools, and equipment used in production and services. Preventing workplace accidents and occupational diseases contributes to the physical, mental, and social well-being of employees by preventing material and intangible damages and protecting all elements of the workplace.

The emergence of workplace accidents and occupational diseases as a very serious problem in the business world has led to the prominence of the concept of OHS in Turkey, as in other countries (TMMOB Chamber of Mechanical Engineers, 2015). The provision of OHS services has become mandatory in all workplaces in Turkey. Additionally, it has made it mandatory to contract a full-time or part-time occupational safety expert for the provision of occupational health and safety services at workplaces (Ministry of Labour and Social Security, 2012). Due to the insufficient number of qualified personnel in the field of OHS, OHS programs have been established in many foundation and public universities.

The number of OHS programs has increased day by day. While OHS education was provided in 36 different programs at 25 universities in 2012 (Ceylan, 2012), OHS education is now offered in 145 different programs at a total of 84 universities in 2019 (Tuna, 2021). The number of currently enrolled associate degree students in Occupational Health and Safety was 13,136 in the 2013-2014 Academic Year, while in the 2020-2021 Academic Year, this number reached 131,304. The number of undergraduate students has increased from 298 to 13,591. The number of graduates from the associate degree in OHS was 587 in the 2012-2013 academic year, while in the 2019-2020 academic year, this number reached 17,672. The total number of associate degree graduates in OHS is 64,442, while the total number of bachelor's degree graduates in OHS is 2,308 (Higher Education Information Management System, 2021).

The high number of associate, bachelor's, and graduate programs in the field of OHS, the increasing number of graduates over the years, the ability of individuals who have graduated from different bachelor's programs and OHS graduate programs to be employed as occupational safety experts by meeting the necessary conditions, the low employment rate of higher education graduates, the lack of defined professional standards (job description and professional profile) for OHS associate and bachelor's program graduates, the unclear status and titles of the graduates, the low employment rate in the public and private sectors, the postponement of the obligation to appoint/hire workplace physicians and occupational safety experts for workplaces in the public sector and private sector with fewer than 50 employees and classified as low-risk despite the mandatory implementation of OHS services in all workplaces under Law No. 6331 (the relevant article has been postponed until December 31, 2024, effective from July 1, 2020), and the weak appointment and job opportunities can affect the future expectations of students studying in the field of OHS.

The social and economic impacts of OHS education are not limited to workplace safety alone; they also contribute to national development and sustainability goals. The training of qualified personnel in the field of OHS minimizes economic losses by reducing workplace accidents and occupational diseases, while enhancing the quality of life for employees and strengthening social welfare. The increase in the number of OHS programs in Turkey has raised awareness in this field, but the employability of graduates and the uncertainty of professional standards have emerged as significant barriers shaping students' future expectations. This situation demonstrates that the quality of OHS education and its alignment with sectoral needs play a critical role in students' career planning (Kandiko & Mawer, 2013).

Rotter (1954) defines the concept of future expectations as "thoughts about success or performance in a specific area in the future based on past experiences and encounters." Nurmi (1991) defines future expectations as "cognitive maps that include fears and interests related to the future; powerful factors that shape the present." Future expectations are the situations that students hope will occur in the future (Tuncer, 2011), what individuals desire from their personal and social lives based on how, where, and with whom they want to be in the future (İkizoğlu et al., 2007), and goals related to the future (Kaya, 2014). According to Topaktaş (2015), future expectations shape individuals' goals and all their behaviors.

It is very important to determine and meet the expectations of students studying in higher education institutions. In the literature, it is observed that many studies have been conducted on young people's future expectations. In the study conducted by Yavuzer et al. (2005) to determine the future expectations of youth, the top three priorities, in order of importance, were being a respected individual in society, having a good job, and expecting a peaceful life and wealth. Research evaluating young people's future expectations has revealed that future expectations are related to motivation, planning, and evaluation processes (Şimşek, 2012).

In a study conducted by Güleri (1998), it was determined that the levels of young people's abilities and skills, family resources, and educational opportunities are significant in shaping their future expectations. McCabe and Barnett (2000) stated that the psychological process predominantly influences the future orientation of young people, while Şanlı and Saraçlı (2015) indicated that the most important factor determining future expectations is personality traits. Şimşek (2012) also determined that the future expectations of young

people are influenced by family, school, and socio-economic status. In shaping their futures, the social environment of friends and family, as well as the infrastructure, management, and desirability of educational institutions, are considered to be at least as important as other factors (Temple et al., 2014). Additionally, there are many different factors that influence young people's expectations, such as age, gender, economic opportunities, family, parental occupation, and environment, alongside education (Işık & Bahat, 2021).

The professional motivation and future hopes of OHS students are not only limited to individual success but also affect the development of the occupational health and safety culture in Turkey. Determining the expectations of these students will enhance the quality of education and contribute to the reshaping of employment policies. However, while the concept of "future expectations" has been frequently researched for general student groups or different disciplines in the literature, there are only a limited number of studies specifically focusing on students in the field of occupational health and safety. This situation indicates a gap in the literature and reveals the potential of this study to make unique contributions to the field. Furthermore, the rapid shift towards Industry 5.0 has highlighted the resilience and well-being of the workforce. With this new trend, occupational health and safety training is no longer limited to traditional lectures; the use of innovative technologies such as Virtual Reality (VR), Augmented Reality (AR), and Artificial Intelligence (AI) to safely experience hazardous scenarios has become increasingly necessary. As noted by Kabiesz et al. (2025), traditional training methods often fail to adapt to dynamic industrial risks, necessitating innovative training strategies that enhance employee risk awareness and engagement. Therefore, understanding students' future expectations is closely linked to their readiness to embrace these digital tools and their perceptions of the modernization of occupational health and safety training.

OHS students represent the future workforce that will play an active role in reducing work accidents—a serious problem in Turkey—and in ensuring safe working environments. However, the ability of this workforce to fulfill this critical mission depends not only on their technical knowledge but also on their future expectations and adaptation to digital safety technologies. Therefore, understanding their career outlook is essential for designing technology-supported educational strategies that sustain their professional motivation. Students' professional motivation and hopes are directly connected to the opportunities they encounter during their education processes, employment possibilities in the sector, and

societal perceptions. In this context, determining the future expectations of OHS students provides an important data source for shaping educational policies and reforms that meet the digital transformation needs of the job market. This study aims to contribute to the development of more effective education and employment strategies in the field of OHS by analyzing the impact of students' demographic characteristics on their future expectations.

It is important to identify the future expectations shaped by the motivations and values of students studying in the field of occupational health and safety, as well as to provide information on how they perceive their current situation. Additionally, the realization of students' future expectations not only keeps their hopes high but also positively impacts the development and transformation of society (Kandiko & Mawer, 2013). From this perspective, it is of great importance to determine the extent to which the expectations of OHS students are met in order to train and employ qualified personnel in the field of occupational health and safety. This research aims to reveal the future expectations of students studying at the associate and undergraduate levels in the field of occupational health and safety, and the demographic variables affecting these expectations.

In line with this general purpose, the study seeks answers to the following research questions:

1. What are the levels of economic, social, educational, and career future expectations of OHS students?

2. Do the future expectations of OHS students differ significantly according to their education level (associate/bachelor's degree) and university type (public/foundation)?

3. Do the future expectations of OHS students differ significantly according to gender and parental employment status?

4. Do the future expectations of OHS students differ significantly based on the type of high school graduated from, region of residence, and family income level?

5. Do the future expectations of OHS students differ according to age, grade level, and parental education level?

Method

This study was designed using the relational screening model, a quantitative research method, to examine the future expectations of OHS students and the demographic factors shaping these expectations. Karasar (2012) defines the relational screening model as 'a

research arrangement aimed at determining the existence and/or degree of co-variation between two or more variables.' In this context, the study bears a cross-sectional nature as it describes the participants' current 'future expectation' phenomenon within their natural conditions at a specific point in time, without any experimental intervention. The specific variables analyzed in this framework are the demographic/socioeconomic characteristics of OHS students (independent variables) and their future expectation levels (dependent variable). Prior to data collection, the purpose of the study was explained to the participants, informed consent was obtained, and the principle of voluntary participation was strictly observed.

Study Group

The population of the research consists of all students studying in associate and bachelor's degree programs in OHS in Turkey. The study group is limited to 359 students who were selected from this population using the convenience sampling method due to accessibility and availability during the 2020-2021 academic year. Convenience sampling was preferred as it allows for reaching a accessible group of participants effectively within the constraints of time and resources.

Data Collection Tool

The 'Future Expectation Scale,' developed by Şimşek (2012), was used to determine the future expectations of occupational health and safety students. The scale consists of four dimensions: 'Economic Future Expectations,' 'Social Future Expectations,' 'Educational Future Expectations,' and 'Career Expectations.' In the original development study, the construct validity of the scale was established through Exploratory Factor Analysis (EFA). The results yielded a Kaiser-Meyer-Olkin (KMO) value of .95 and a significant Bartlett's test result (χ 2 =22372.605,p<.05). The analysis confirmed that the four-factor structure explained 59.82% of the total variance. The scale, consisting of 33 items, is a 5-point Likert-type scale where each item ranges from 'Strongly disagree (1)' to 'Strongly agree (5).' Future expectations were evaluated as follows: 1–1.79 = low, 1.8–2.59 = below average, 2.6–3.39 = average, 3.4–4.19 = above average, and 4.2–5 = high.

The data were collected between August 2021 and December 2021 using an online survey form (via Google Forms) due to the pandemic conditions. An 'Informed Consent Form' was presented on the first page of the online survey. This form explained the purpose of the study, guaranteed the anonymity of the participants, and stated that participation was

entirely voluntary. Only students who clicked the 'I agree to participate' button were able to access the scale items.

Data Analysis

IBM SPSS 22.0 software was used for the statistical analysis of the data. First, the normality of the data distribution was examined using the Kolmogorov-Smirnov test ($p>.05$), skewness, and kurtosis values, which confirmed that the data were suitable for parametric tests. Therefore, the Independent Samples t-test was employed to analyze differences in variables with two categories (e.g., gender), while the One-Way Analysis of Variance (ANOVA) was used for variables with three or more categories. To determine the source of significant differences in ANOVA, homogeneity of variances was assessed using Levene's test. In cases where variances were homogeneous ($p>.05$), the Tukey HSD test was selected as the post-hoc method; conversely, when the assumption of homogeneity of variances was violated ($p<.05$), Tamhane's T2 test was utilized. Finally, Cronbach's Alpha coefficients were calculated to determine the internal consistency reliability of the scale.

Table 1. Internal consistency coefficients of the future expectation scale and its sub-dimensions

Dimensions	Number of items	Reliability Coefficients
Economic future	7	0.96
Social future	9	0.943
Educational future	7	0.941
Career Expectations	10	0.933
All dimensions	33	0.964

When Table 1 is examined, it is seen that the Cronbach Alpha values of the future expectations scale are calculated as α=0.96 for the economic future dimension, α=0.943 for the social future dimension, α=0.941 for the educational future dimension, and α=0.933 for the career future dimension. The Cronbach Alpha internal consistency coefficient for the entire scale was calculated as 0.964. It is suggested that a Cronbach Alpha coefficient higher than 0.70 is sufficient in terms of the reliability of the measurement tool (Nunnally, 1978; Fraenkel & Wallen, 2006; Şencan, 2005). Therefore, it can be said that this scale is quite reliable.

Findings

First, the demographic characteristics of the study group were examined. The distribution of the participants according to various variables is presented in Table 2.

Table 2. Demographic information related to the working group

Factor		f	%	Factor		f	%
Gender	Male	161	44.85	Education Level	Associate Degree	236	65.74
	Female	198	55.15		Bachelor's Degree	123	34.26
Age	Under 20	56	15.6	Type of High School Graduated From	Private High School	27	7.52
	20	83	23.12		Regular High School	52	14.49
	21	92	25.63		Vocational High School	135	37.61
	22	55	15.32		Anatolian/Science High School	108	30.08
	Over 22	73	20.33		Religious Vocational High School	37	10.3
Class Level	1st Year	122	33.98	Family Income Level	No fixed Income	90	25.07
	2nd Year	166	46.24		Less than 3000 TL	109	30.36
	3rd Year	38	10.59		3000–6000 TL	107	29.8
	4th Year	33	9.19		More than 6000 TL	53	14.77
Father's Education Level	Illiterate	12	3.34	Mother's Education Level	Illiterate	57	15.88
	Primary School	162	45.13		Primary School	179	49.86
	Middle School	81	22.56		Middle School	75	20.89
	High School or above	104	28.97		High School or above	48	13.37
Residential Area	Mediterranean	58	16.16	University Type	Foundation	54	15.04
	Black Sea	50	13.93		Public	305	84.96
	Aegean	46	12.81	Mother's Employment Status	Unemployed	289	80.5
	Marmara	84	23.4		Employed	70	19.5
	Central Anatolia	46	12.81	Father's Employment Status	Unemployed	171	47.63
	East/Southeast Anatolia	75	20.89		Employed	188	52.37

As summarized in Table 2, the study group consisted predominantly of female students (55.15%) and participants enrolled in associate degree programs (65.74%). The vast majority attended public universities (84.96%). In terms of academic standing, second-year students constituted the largest group (46.24%), followed by first-year students. Demographically, participants were primarily graduates of Vocational and Anatolian High Schools, with the highest residential concentration in the Marmara Region. Socioeconomic data indicated that a significant portion of students had limited or no fixed income. Regarding family background, the majority of mothers were unemployed and had lower educational attainment compared to fathers, whose employment rates were more evenly distributed.

Following the demographic analysis, the future expectations of the students were determined. The descriptive statistics regarding these expectations are presented in Table 3.

Table 3. Students' expectations for the future

Dimensions	$\bar{x}$	SS
Economic future	2.04	1.03
Social future	1.95	0.89
Educational future	2.37	0.96
Career Expectations	3.93	0.9
All dimensions	2.66	0.76

It has been determined that OHS students have a moderate level of expectation ($\bar{x}$=2.66). When examining the findings related to the dimensions of the future expectations scale, it was determined that students' Career Expectations were above average ($\bar{x}$=3.93), whereas their educational future expectations were below average ($\bar{x}$=2.37). Additionally, it is observed that the expectations in the dimensions of economic future ($\bar{x}$=2.04) and social future ($\bar{x}$=1.95) are also at a below-average level (Table 3).

The t-test results of the future expectations of OHS students according to their demographic characteristics (level of education, type of university, gender, parental employment status) are shown in Table 4, Table 5, and Table 6. The one-way ANOVA results of students' future expectations according to demographic characteristics (age, grade level, secondary education program graduated from, region of residence, family income level, and parental education level) are also shown in Table 7, Table 8, Table 9, and Table 10.

Table 4. Future expectations according to gender and parental employment factors

Variable		N	$\bar{x}$	SS	Levene Test	t	p	Cohen's d
Gender	Male	161	2.68	0.83	0.069	0.482	0.630	0.05
	Female	198	2.64	0.70				
Mother's Employment Status	Unemployed	289	2.70	0.78	0.213	1.836	0.067	0.25
	Employed	70	2.51	0.68				
Father's Employment Status	Unemployed	171	2.61	0.80	0.352	-1.225	0.222	0.13
	Employed	188	2.71	0.73				

The future expectations of OHS students did not show a significant difference according to the factors of gender (t=0.482, p>0.05), mother's employment status (t=1.836, p>0.05), and father's employment status (t=-1.225, p>0.05) (Table 4).

Table 5. Future expectations according to the level of education factor

Dimension	Educational level	N	$\bar{x}$	SS	Levene Test	t	p	Cohen's d
Economic Future Expectations	Associate Degree	236	2.09	1.02	0.378	1.211	0.227	0.14
	Bachelor's Degree	123	1.95	1.04				
Social Future Expectations	Associate Degree	236	2.01	0.87	0.742	1.847	0.066	0.21
	Bachelor's Degree	123	1.83	0.91				
Educational Future Expectations	Associate Degree	236	2.48	0.95	0.811	3.064	**0.002***	0.34
	Bachelor's Degree	123	2.15	0.96				
Career Expectations	Associate Degree	236	4.00	0.85	**0.044***	1.751	0.081	0.20
	Bachelor's Degree	123	3.81	0.99				
Total Future Expectations	Associate Degree	236	2.73	0.73	0.490	2.419	**0.016***	0.27
	Bachelor's Degree	123	2.53	0.80				

*p<0.05

It has been determined that the opinions of OHS students regarding their future expectations differ according to their level of education (t=2.419, p<0.05). It has been determined that the future expectations of associate degree students ($\bar{x}$=2.73) are higher than those of undergraduate students ($\bar{x}$=2.53). It has been determined that the educational future expectations sub-dimension (t=3.064, p<0.05) also varies according to the level of education, while other sub-dimensions do not show differences (Table 5).

Table 6. Future expectations according to the university factor

Dimension	University Type	N	$\bar{x}$	SS	Levene Test	t	p	Cohen's d
Economic Future Expectations	Private/Foundation	54	2.34	1.19	**0.026***	2.019	**0.048***	0.34
	Public	305	1.99	0.99				
Social Future Expectations	Private/Foundation	54	2.22	1.04	**0.037***	2.128	**0.037***	0.36
	Public	305	1.90	0.85				
Educational Future Expectation	Private/Foundation	54	2.74	0.95	0.878	3.127	**0.002***	0.46
	Public	305	2.30	0.95				
Career Expectations	Private/Foundation	54	4.21	0.61	**0.009***	3.322	**0.001***	0.37
	Public	305	3.89	0.94				
Total Future Expectation	Private/Foundation	54	2.96	0.75	0.708	3.179	**0.002***	0.47
	Public	305	2.61	0.75				

*p<0.05

According to Table 6, a significant difference was found in the opinions of OHS students regarding their future expectations based on the type of university (t=3.179, p<0.05). The future expectations of students studying at foundation universities ($\bar{x}$=2.96) are significantly higher than those of students studying at public universities ($\bar{x}$=2.61). A significant difference was also found in all sub-dimensions of future expectations (p<0.05).

Table 7. Future expectations by region of residence

Dimension	Residential Area	N	$\bar{X}$	SS	df	Levene Test	F	p	Significant Difference**	η_p^2
Economic Future	Mediterranean	58	1.94	1.11	358	0.313	2.494	**0.031***	Black Sea-Eastern/Southeastern	0.03
	Black Sea	50	2.41	1.06						
	Aegean	46	1.88	0.85						
	Marmara	84	2.14	1.07						
	Central Anatolia	46	2.09	1.02						
	East/Southeast Anatolia	75	1.84	0.94						
	Total	359	2.04	1.03						
Social Future Expectation	Mediterranean	58	1.84	0.85	358	0.110	2.232	0.051	-	0.03
	Black Sea	50	2.28	1.03						
	Aegean	46	1.80	0.67						
	Marmara	84	2.00	0.91						
	Central Anatolia	46	1.99	0.90						
	East/Southeast Anatolia	75	1.82	0.86						
	Total	359	1.95	0.89						
Educational Future Expectation	Mediterranean	58	2.08	0.99	358	0.679	2.64	**0.023***	Mediterranean-Black Sea	0.04
	Black Sea	50	2.64	1.00						
	Aegean	46	2.29	0.86						
	Marmara	84	2.51	0.94						
	Central Anatolia	46	2.45	1.00						
	East/Southeast Anatolia	75	2.24	0.94						
	Total	359	2.37	0.96						
Career Future Expectation	Mediterranean	58	3.66	1.23	358	**0.004***	1.632	0.151	-	0.02
	Black Sea	50	4.08	0.85						
	Aegean	46	3.87	0.83						
	Marmara	84	4.05	0.69						
	Central Anatolia	46	3.98	0.91						
	East/Southeast Anatolia	75	3.94	0.89						
	Total	359	3.93	0.90						
Total Future Expectation	Mediterranean	58	2.47	0.87	358	0.545	2.892	**0.014***	Mediterranean-Black Sea	0.04
	Black Sea	50	2.93	0.81						
	Aegean	46	2.54	0.62						
	Marmara	84	2.76	0.71						
	Central Anatolia	46	2.71	0.76						
	East/Southeast Anatolia	75	2.55	0.74						
	Total	359	2.66	0.76						

*$p<0.05$; **Tukey's test*

The opinions of OHS students regarding their future expectations show a significant difference according to the region they reside in (F= 2.892, $p<0.05$). As a result of the Tukey test conducted to determine between which regions the difference lies, the future expectations of students residing in the Black Sea region ($\bar{x}$=2.93) are significantly higher than those of students residing in the Mediterranean region ($\bar{x}$=2.47). In the educational future expectations dimension of the future expectations scale, the future expectation levels of

students residing in the Black Sea Region ($\bar{x}$=2.64) are significantly higher than those of students residing in the Mediterranean Region ($\bar{x}$=2.08). At the same time, in the dimension of economic future expectations, it was observed that the future expectation levels of students residing in the Black Sea Region ($\bar{x}$=2.41) were significantly higher than those of students residing in the Eastern and Southeastern Anatolia Regions ($\bar{x}$=1.84) (Table 7).

Table 8. Future expectations by type of high school graduated

Dimension	High School Type	N	$\bar{X}$	SS	df	Levene Test	F	p	Significant Difference **	η_p^2
Economic Future Expectation	Private High School	27	2.17	0.76	358	**0.005***	3.394	**0.010***	Regular High School/ Anatolian/ Science High School	0.04
	Regular High School	52	2.47	1.36						
	Vocational High School	135	1.99	0.97						
	Anatolian/Science High School	108	1.86	0.96						
	Religious Vocational High School	37	2.07	0.94						
	Total	359	2.04	1.03						
Social Future Expectation	Private High School	27	2.02	0.58	358	0.278	2.123	0.077	-	0.02
	Regular High School	52	2.22	1.07						
	Vocational High School	135	1.92	0.89						
	Anatolian/Science High School	108	1.80	0.84						
	Religious Vocational High School	37	2.04	0.85						
	Total	359	1.95	0.89						
Educational Future Expectation	Private High School	27	2.52	0.88	358	0.494	1.382	0.240	-	0.02
	Regular High School	52	2.45	1.07						
	Vocational High School	135	2.33	0.98						
	Anatolian/Science High School	108	2.24	0.92						
	Religious Vocational High School	37	2.62	0.90						
	Total	359	2.37	0.96						
Career Future Expectation	Private High School	27	3.96	0.87	358	0.149	2.838	**0.024***	Anatolian/ Science High School- Religious Vocational High School	0.03
	Regular High School	52	4.14	0.72						
	Vocational High School	135	3.91	0.89						
	Anatolian/Science High School	108	3.76	1.03						
	Religious Vocational High School	37	4.24	0.68						
	Total	359	3.93	0.90						

Total Future Expectation	Private High School	27	2.75	0.60	358	0.165	3.213	**0.013***	Regular High School-Anatolian/ Science High School	0.04
	Regular High School	52	2.90	0.89						
	Vocational High School	135	2.62	0.73						
	Anatolian/Science High School	108	2.50	0.77						
	Religious Vocational High School	37	2.84	0.64						
	Total	359	2.66	0.76						

**p<0.05; **Tukey's test for homogeneously distributed data, Games-Howell test for non-homogeneously distributed data*

A significant difference was found in the students' views on their future expectations according to the secondary education program they graduated from (F=3.213, p<0.05). As a result of the Tukey test conducted to identify the difference, the future expectations of students who graduated from regular high schools ($\bar{x}$=2.90) are significantly higher than those of students who graduated from Anatolian/Science high schools ($\bar{x}$=2.50). In the dimension of economic future expectations of the scale, the future expectations of students who graduated from regular high schools ($\bar{x}$=2.47) are significantly higher than those of students who graduated from Anatolian/Science high schools ($\bar{x}$=1.86). At the same time, in the dimension of Career Expectations, the future expectations of students who graduated from Religious Vocational High School ($\bar{x}$=4.24) are significantly higher than those of students who graduated from Anatolian/Science High Schools ($\bar{x}$=3.76) (Table 8).

Table 9. Future expectations by family income level

Dimension	Income	N	$\bar{x}$	SS	df	Levene Test	F	p	Significant Difference**	η_p^2
Economic Future Expectation	No Fixed Income	90	1.88	0.95	358	**0.047***	3.320	**0.020***	-	0.03
	Less than 3000 TL	109	1.90	0.92						
	3000-6000 TL	107	2.23	1.04						
	More than 6000TL	53	2.23	1.26						
	Total	359	2.04	1.03						
Social Future Expectation	No Fixed Income	90	1.84	0.73	358	**0.011***	4.026	**0.080***	Less than 3000 TL-3000-6000 TL	0.03
	Less than 3000 TL	109	1.78	0.76						
	3000-6000 TL	107	2.13	0.96						
	More than 6000TL	53	2.13	1.11						
	Total	359	1.95	0.89						
Educational Future Expectation	No Fixed Income	90	2.38	0.94	358	0.296	3.223	**0.023***	Less than 3000 TL-3000-6000 TL	0.03
	Less than 3000 TL	109	2.15	0.94						
	3000-6000 TL	107	2.54	0.92						
	More than 6000TL	53	2.44	1.08						
	Total	359	2.37	0.96						
Career Future Expectation	No Fixed Income	90	3.92	0.94	358	0.915	1.321	0.267	-	0.01
	Less than 3000 TL	109	3.84	0.90						
	3000-6000 TL	107	3.94	0.90						
	More than 6000TL	53	4.14	0.85						
	Total	359	3.93	0.90						
Total Future Expectation	No Fixed Income	90	2.59	0.71	358	0.147	3.623	**0.013***	Less than 3000 TL-3000-6000 TL	0.03
	Less than 3000 TL	109	2.51	0.68						
	3000-6000 TL	107	2.79	0.79						

More than 6000TL	53	2.83	0.90
Total	359	2.66	0.76

**p<0.05; **Tukey's test for homogeneously distributed data, Games-Howell test for non-homogeneously distributed data*

The opinions of OHS students regarding their future expectations show a significant difference based on the family's income level factor (F= 3.623, p<0.05). According to the results of the Tamhane's test applied to determine between which groups the difference exists, the future expectation levels of students from families with an income of 3000-6000 TL ($\bar{x}$=2.79) are significantly higher than those from families with an income of less than 3000 TL ($\bar{x}$=2.51). In the variable of family income level, in the social future expectation dimension of the future expectation scale, the future expectation levels of students from families with an income of 3000-6000 TL ($\bar{x}$=2.13) are significantly higher than those of students from families with an income of less than 3000 TL ($\bar{x}$=1.78). At the same time, in the educational future expectations dimension, it was observed that the future expectation levels of students from families with an income of 3000-6000 TL ($\bar{x}$=2.54) were significantly higher than those of students from families with an income of less than 3000 TL ($\bar{x}$=2.15) (Table 9).

Table 10. Future expectations by some demographic characteristics

Variable		N	$\bar{x}$	SS	df	Levene Test	F	p	η_p^2
Age	Under 20	56	2.62	0.64	358	0.119	0.828	0.508	0.01
	20	83	2.71	0.67					
	21	92	2.65	0.78					
	22	55	2.52	0.79					
	Over 22	73	2.75	0.89					
	Total	359	2.66	0.76					
Class Level	1st Year	122	2.69	0.74	358	0.316	1.111	0.345	0.01
	2nd Year	166	2.69	0.73					
	3rd Year	38	2.46	0.72					
	4th Year	33	2.59	0.99					
	Total	359	2.66	0.76					
Mother's Education Level	Illiterate	57	2.57	0.87	358	0.664	0.588	0.623	0.01
	Primary School	179	2.70	0.74					
	Middle School	75	2.68	0.73					
	High School or above	48	2.60	0.75					
	Total	359	2.66	0.76					
Father's Education Level	Illiterate	12	2.52	0.61	358	0.336	0.817	0.485	0.01
	Primary School	162	2.62	0.77					
	Middle School	81	2.63	0.68					
	High School or above	104	2.75	0.82					
	Total	359	2.66	0.76					

It has been determined that the opinions of OHS students regarding their future expectations do not statistically significantly differ according to their mothers' education level (F=0.588, p>0.05), fathers' education level (F=0.817, p>0.05), class levels (F=1.111, p>0.05),

and age (F=0.828, p>0.05) factors (Table 10). Overall, it is observed that students have high hopes for their career futures, but there is a noticeable decline in their economic and social expectations. This situation indicates that young people receiving OHS training maintain their individual motivation, but there has been a significant break in their expectations regarding employment and living standards in the sector.

Discussion and Conclusion

Although future expectations have been widely studied across various disciplines, research explicitly targeting OHS students remains limited. This scarcity overlooks a critical workforce segment essential for industrial safety culture. This study addresses this gap by providing a pioneer analysis of OHS students' career outlooks in Turkey. In this study, the future expectations of a total of 359 OHS students—236 associate degree and 123 bachelor's degree students—were examined, and the expectations were found to be at a moderate level. This finding differs from the studies by Akbaşlı et al. (2017) and Kaya and Göktolga (2014), which reported high future expectations among university students. This relatively low level of expectations among OHS students is thought to stem from the increase in the number of graduates, limited employment opportunities, and uncertainties regarding professional titles.

No significant difference was found in expectations according to the gender variable (p>0.05). While this result is consistent with many studies in the literature (Akbaşlı et al., 2017; Dikmen, 2021; Güleri, 1998; Taşğın et al., 2021; Tuncer & Tanaş, 2020), it contradicts studies that found a significant difference (Topaktaş, 2015; Tuncer, 2011). This discrepancy is considered to arise from differences in samples, scale structures, and cultural characteristics.

When examined by education level, associate degree students were found to have significantly higher future expectations than bachelor's degree students (p<0.05). This result differs from the findings of Süleymanoğlu et al. (2020) and Işık and Bahat (2021). This difference may be attributed to the advantage that associate degree graduates, with shorter education periods, have in being eligible to take the same certification exam (Class C) as bachelor's degree graduates. In addition, moderate expectations may be associated with deficiencies in the integration of technology into education. Indeed, Biringkanae et al. (2025) state that technological innovations not supported by instructor competence do not improve graduate quality, which may negatively affect students' expectations.

A significant difference was found in OHS students' views on future expectations according to university type ($p<0.05$). Students studying at foundation universities have significantly higher future expectations than those studying at public universities. This can be explained by factors such as foundation universities being generally located in large cities like Istanbul and Ankara, offering more internship and practical training opportunities, and providing broader educational resources and industry collaborations. In addition to internship opportunities, differences in expectations between university types may also be related to the adoption of cost-effective modern technologies. Vukićević et al. (2021) emphasize that cloud-based mobile applications and "learning by doing" approaches significantly empower students by enabling them to identify unsafe behaviors and conditions in digital environments. Foundation universities generally have more resources to implement such interactive mobile solutions and sensor-based training, which directly increases students' self-confidence and career optimism. No findings related to this factor were encountered in the literature, and this result is considered to contribute to the field.

Regarding the type of high school graduated from, the expectations of general high school graduates were found to be significantly higher than those of Anatolian/Science high school graduates ($p<0.05$). It is thought that the fact that Anatolian/Science high school graduates, who generally have high academic achievement, prefer this department despite their scores may lower their expectations. While this finding differs from Tuncer and Tanaş (2020) it indirectly aligns with studies by Türkön (2019), and Ege (2018), which found differences according to high school type. Şimşek (2012) and Aktaş (2016), on the other hand, did not find a significant difference.

In the study, no significant differences were found for the variables of age, class level, parental education level, and parental employment status ($p>0.05$). While these results are consistent with studies such as Dikmen (2021), Işık and Bahat (2021), Taşğın et al. (2021), and Tuncer (2011), they differ from studies such as Thome-Dutra et al. (2015). This suggests that OHS students share a common perception of the future regardless of their demographic characteristics.

In terms of region of residence, students in the Black Sea Region were found to have higher expectations than those in the Mediterranean Region ($p<0.05$). In addition to regional differences, sectoral expectations are also important. Kabiesz et al. (2025) note that advanced OHS training in high-technology sectors (e.g., automotive) shapes expectations, while

Robson et al. (2025) emphasize the theoretical strength of distance education and Qawqzeh et al. (2025) highlight the superiority of VR simulations in practical skill acquisition. Regarding income level, students from middle-income families (3000–6000 TL) were found to have significantly higher expectations than those from low-income families. This finding is consistent with Taşğın et al. (2021).

Overall, in order to increase the moderate level of future expectations among OHS students, it is necessary to eliminate confusion regarding titles and authorities, increase employment opportunities, and update curricula in line with sector needs.

Based on the research findings, the following recommendations have been developed:

The factors affecting the low future expectations of OHS students can be identified using mixed research methods based on the views and suggestions of relevant stakeholders (faculty members, students, etc.).

Quantitative and qualitative studies focusing on psychological factors affecting OHS students' future expectations (self-efficacy, anxiety level, hope, academic motivation, etc.) can be carried out.

To contribute to the development of future expectations, the effects of supportive activities such as career planning, industry interaction, and internship practices in OHS programs at universities can be investigated.

The impact of educational models utilizing digital tools such as AI, VR, and AR on students' ability to integrate complex OHS systems in unfamiliar sectors should be investigated. Specifically, research should focus on how these technologies enhance professional self-efficacy by simulating real-world risks, thereby elevating students' future career expectations.

Ethical Committee Permission Information

Name of the board that carries out ethical assessment: Gümüşhane University Scientific Research and Publication Ethics Committee

The date and number of the ethical assessment decision: 01.07.2021 - 2021/5

Author Contribution Statement

Hasan TUNA: *Conceptualization, methodology, data analysis*

Ahmet KAPLAN: *Literature review, interpretation, supervision, review-writing and editing.*

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