



Investigation of Relationship between Occupational Health and Safety Awareness Level of Employees and Education Level

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Keywords

Occupational safety training, occupational accident, education level, SPSS analysis.

Abstract

In this study, it was aimed to examine the relationship between the occupational safety awareness level of the employees and the education level. The participants of the study consisted of 326 employees who were working in Burdur province, Turkey and had different demographic characteristics. Of these employees, 147 were female and 179 were male. In addition, the employees had different education level as primary school, secondary school, high school, vocational high school, university and graduate school. In each education level, the number of the participants was between 50 and 90. In the selection of the participants convenience sampling method was employed. In the study, the data were obtained by a questionnaire prepared by the researchers based on the literature. The questionnaire consisted of 11 questions providing information about demographic information of the participants and their opinions on occupational safety training. As a result of the study, occupational safety training, whether the participants had an occupational accident or not, their attitudes towards occupational safety were handled according to the education level variable. The obtained data were analyzed in MS Excel and SPSS statistics program. As a result of the research, it was concluded that as the level of education increases, occupational safety awareness increases and OHS education should be given face to face.

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Eğitim Düzeyine Göre İş Sağlığı ve Güvenliği Farkındalığının İncelenmesi

Anahtar Kelimeler

İş güvenliği eğitimi, iş kazası, eğitim seviyesi, SPSS analiz.

Özet

Bu çalışmanın amacı çalışanların iş güvenliği farkındalık düzeylerinin eğitim seviyesi değişkeni açısından incelenmesidir. Araştırmanın örneklem grubunu Burdur ilinde çalışan ve farklı demografik özelliklere sahip 326 çalışan oluşturmuştur. Çalışanların 147'si kadın 179'u erkektir. Ayrıca çalışanlar ilköğretim, ortaokul, lise, meslek yüksekokulu, üniversite ve yüksek lisans olmak üzere farklı eğitim düzeyine sahiptir. Her eğitim düzeyinde ortalama 50 ile 90 çalışan yer almıştır. Çalışma grubunun belirlenmesine kolay örnekleme yöntemi kullanılmıştır. Araştırmanın verileri literatüre bağlı olarak araştırmacılar

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tarafından hazırlanan bir anket formu ile elde edilmiştir. Soru formunda katılımcıların kişisel bilgilerine ve iş güvenliği eğitimine ilişkin görüşlerine yönelik 11 soru yer almıştır. Çalışmanın sonucunda katılımcıların iş güvenliği eğitimi, iş kazası geçirip geçirmediikleri, iş güvenliğine yönelik tutumları eğitim seviyesi değişkeni açısından ele alınmıştır. Elde edilen veriler MS Excel ve SPSS istatistik programında analiz edilmiştir. Araştırma sonucunda eğitim düzeyi arttıkça iş güvenliği bilincinin arttığı ve İSG eğitiminin yüz yüze verilmesi gerektiği kanaati ortaya çıkmıştır.

1. Introduction

It has become a necessity to adopt the importance of Occupational Health and Safety (OHS) and to create occupational safety awareness among employers and employees. The formation of this awareness is possible only by performing an effective training and for the companies to assess their own profile (Dizdar, 2008).

Each day, 6000 people die because of the work-related accidents or occupational diseases in the world (ILO). According to the report of Turkey Chamber of Mechanical Engineers, in Turkey one occupational accident happens in every 7 minutes and an employee loses his/her life in every 10.8 hour. In addition, an employee becomes permanently disabled in every 5.5 hour (Yardım et al, 2007). One of the biggest problems in occupational safety is occupational accidents. There are different definitions of occupational accidents. According to the International Labor Organization (ILO) accident is defined as an unexpected, unplanned event that leads to certain damage or injury. According to Akyüz (1980), accident is defined as unplanned, previously unknown, uncontrolled and potentially damaging events.

Accidents are known to happen as a result of the interaction of many factors at different rates (Dizdar; 2008). In his study on 75.000 industrial accident reports conducted in the late 1920s, Herbert W. Heinrich, the first pioneer of accident prevention and industrial safety, stated that 88% of the accidents were caused by unsafe movements, 10% by unsafe conditions, and 2% by unpredictable causes of accidents (Dizdar; 2008; Akyüz 1980). The psychological factors that cause the accidents are listed as: Personality, accident susceptibility, accident liability, ignorance, stress, emotional state and slacking in the work. Nowadays, the dominant view states that accident susceptibility exists; but it is not permanent and irreversible for the individual. Accident susceptibility is a behavior that can be affected by both personal and environmental factors that can be changed over time (Oberna,1995). One of the more commonly used explanations in occupational accidents is apathy, carelessness, recklessness or "Ignorance" in short. This problem can be solved by eliminating the lack of education. It is both cheaper and wise for employers to organize training programs and to hold meetings for safe work, which alone is not enough to prevent all accidents (Tufan, 1994; Oberna,1995 ; Dizdar,2008).

In their study "In the OHSAS 18001 Contents FMEA Application" conducted on an automotive factory, Kahraman and Demirer (2010) found out that there were 84 human-induced hazards and that this situation caused by lack of knowledge and training on OHS and that the training of personnel in the enterprise should be reviewed and emphasis should be given to training. They also stated that

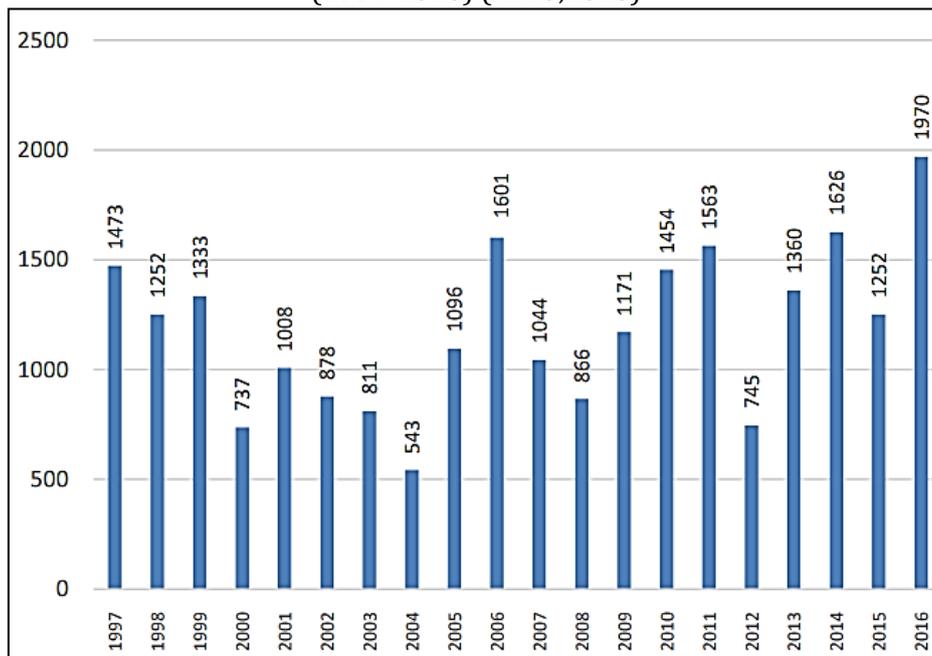
occupational safety meetings had significant value in work activation and occupational accidents decreased as a result of FMEA.

Occupational diseases are another important issue in terms of OHS. Preventive measures for occupational diseases are examined in three groups in the literature. These are as medical measures, work-environment related measures and worker-related measures. Worker-related measures are examined in two groups. First, “the use of personal protection instruments” and another important measure is Training. Employees should be informed about the damages of certain substances used in the workplace, seminars should be given about which conditions are harmful and what measures should be taken, and also work related warning signs and brochures must be displayed in the workplace. This is also a legal obligation (Dizdar, 2008).

The employers should undertake the responsibility of informing and training the employees and informing the employees and their representatives on all matters related to occupational health and safety. OHS trainings of employees should be repeated in the periods specified in the relevant legislation and in cases where the results of the risk assessment carried out in the workplace are required (İSG, 6331 s.k.)

The employer provides safety equipment to employees free of charge and meets all maintenance and costs. It is also the responsibility of the employer to provide hands-on training to employees regarding equipment and to make information and instructions understandable and easily available to employees. Ineffective equipment must be replaced. In addition to the information and training of the employees in the **Vibration at work Regulation**, it is foreseen that the opinions of the employees and their participation shall be ensured with the article 11 (Laçiner, 2013).

Figure 1. Deaths in Turkey Caused by Occupational Accidents and Occupational Diseases (1997-2016) (MMO,2018)



The quantitative data on the number of the employees who died due to occupational accidents and occupational diseases in Turkey between 1997 and 2016 are given in Figure 1. Unfortunately, this number reached the highest value in 2016 with 1970 people. In 2016, 151 male employees suffered from temporary incapacity for work due to occupational diseases, of which 72 were outpatients and 79 were hospitalized patients. On the other hand, temporary incapacity for work records as outpatients and hospitalized patients cases for female employers due to the occupational diseases were not encountered in Social Security Institution data. The number of losses of work because of occupational accidents was 3.060.654 days for males and 249.219 days for females; in total 3.453.702 days. It is assumed that 7.500 working days are lost if a worker becomes permanently incapacity or dies. According to Occupational Health and Safety Assembly data, at least 3 employees in 2013; at least 29 employees in 2014; at least 13 employees in 2015, at least 15 employees in 2016 lost their lives due to occupational diseases.

The high number of occupational accidents is based on the factors such as insufficiency of occupational health and safety measures, employing untrained personnel on the job, increasing fatigue as the working time increases and consequently not regulating the working hours by considering the employees (MMO/689,2018).

Table 1. Distribution of the Occupational Accidents in Terms of the Activities of Workplace (2016) (MMO,2018)

BRANCH OF THE ACTIVITY	Occupational Accidents	Percent %
Manufacturing Sector of Fabrication Metal Products, Except Machinery and Equipment Sector	20.616	7.21
Building Construction	20.159	7.05
Land-Developing Activities	14.877	5.20
Food manufacturing sector	14.351	5.02
Manufacturing of Textile Products	13.446	4.70
Basic metal industry	13.081	4.57
Food and Beverage Sector	12.626	4.41
Manufacturing of other non-metallic mineral products	11.721	4.10
Buildings and Environmental Organization Activities	11.631	4.07
Retail trade (except of motor vehicles and motorcycles)	9.759	3.41
Manufacturing of Motor vehicles (trailers and semi-trailers)	9.553	3.33
Construction of non-building structures	9.516	3.33
Storage and support activities for transportation	9.496	3.32
Rubber and plastic products manufacturing	9.258	3.24
Mining of Coal and Lignite	8.274	2.89
Land transport and pipeline transportation	7.246	2.53
Electrical equipment manufacturing	6.315	2.21
Not specified Manufacturing of machinery and equipment	6.276	2.19
Other
Total	286.068	100.00

Table 2. Distribution of deaths caused by Occupational Accident in Terms of Activities of Workplace (2016) (MMO,2018)

BRANCH OF THE ACTIVITY	Occupational Accidents deaths	Percent %
Building Construction	239	17.01
Land transport and pipeline transportation	179	12.74
Construction of non-building structures	130	9.25
Land-Developing Activities	127	9.04
Other mining and quarrying	64	4.56
Manufacturing of other non-metallic mineral products	48	3.42
Wholesale trade except of motor vehicles and motorcycles	44	3.13
Retail trade except of motor vehicles and motorcycles	40	2.85
Buildings and Environmental Organization Activities	40	2.85
Storage and support activities for transportation	37	2.63
Food manufacturing sector	32	2.28
Basic metal industry	30	2.14
Manufacturing of Textile Products	27	1.92
Manufacturing Sector of Fabrication Metal Products, Except Machinery and Equipment Sector	27	1.92
Other
Total	1.405	100.00

When the related activity groups in 2016 are interpreted together it is seen that the distribution of the death number in terms of activity groups from the highest to the lowest is as: construction sector 496 people (35.30%); transportation (land transportation and pipeline transportation and Storage and support activities for transportation) 216 people (15.377%); retail trade and wholesale trade 84 people (5.98%); mining (Mining of Coal and Lignite and other mining and quarrying) 75 people (5.34%); metal industry (fabrication metal products and basic metal industry) 57 people (4.06%). Unfortunately, Turkey is in the first rank in Europe for fatal occupational accidents.

The distribution of the deaths in terms of branch of activity in 2016 is as: 1 unknown; 5 qualified agricultural, forestry and aquaculture employees, 24 of them were professionals; 32 of them were managers; 33 of them were working in office service; 42 of them were **technicians and assistant professionals**; 114 of them were service and sales staff; 132 of them were working as craftsmen and in related jobs; 336 of them were plant and machine operators and installers; 686 were professions that do not require qualifications.

20 people who died as a result of an occupational accident in 2016 died on the day of their employment; 78 people lost their lives in the first week of their employment. 165 of those died as a result of occupational accidents were among the employees who worked 8-30 days; 266 of them were among the employees who worked 1-3 months; 376 worked 3 months – 1 year; 164 of them worked for 1–2 years; 134 of them worked for 2–5 years; 70 of them worked for 5–10 years; 40 of them worked for 10 + and 92 of them were in “unknown” group in SSI data (TUIK, 2016). In other words, 64.4% of the employees died in the first 3 months. This shows the importance of start-up training strikingly.

It is known that occupational safety training is effective in terms of occupational accident and occupational diseases. However, the factors such as insensitivity, indifference, lack of education and insufficient information about the work done and the desire to use cheap labor are thought to cause accidents and deaths and economic losses such as workday. When some questionnaires and literature on this subject were examined, the following studies were found:

Sauter et al.(1990), stated that National Institute of Occupational Safety and Health recognizes psychological disorders as a leading occupational health problem. Moreover, they expressed that roles are identified for industry, labor, government, and academia

Siegrist et al.(2004) investigated the psychometric properties of the effort-reward imbalance (ERI) at work model by using comparative data from five countries. It was obtained that reward points do not consistently differ by gender, but there is a tendency to score higher among older employees, especially among men, and employees with higher levels of education have a positive relationship with the degree of education, and tend to exhibit higher over-commitment scores. The average levels of effort and rewards are higher for those who are better educated, and have found that the desire to receive higher rewards is associated with increasing age, especially among men.

Tam et al. (2004) aimed to examine the status of safety management in the Chinese construction industry, concluded that the lack of provision of personal protection equipment, regular safety meetings, and safety training were at critical level.

Choudhry and Fang (2008) investigated the reasons for the unsafe behaviors of construction workers in Hong Kong who had been accident victims. The findings indicated that workers were involved in unsafe behavior because of: a lack of safety awareness; to exhibit of being 'tough guys'; work pressure; co-workers' attitudes; and other organizational, economic and psychological factors. The results substantiate the significant role of management. Safety procedure; psychological and economic factors; self-esteem; experience; performance pressure; job security; and education as well as safety orientation and training were also stated as the causes of the unsafe behaviour. Interestingly, when the accident rate between local workers and foreign (subcontracted) operators were examined, it was found that the scores of the foreign workers were lower than local workers, and the reason for this is considered as education levels. Workers with low level of education explained that they could not understand what was discussed in security meetings, that they were uneducated people, that they could only write their name and that they could not read security materials.

Robson et al. (2012), in their study, firstly examined whether OHS training has a positive effect on employees. They found that employees had strong evidence of the effectiveness of training on OHS behavior, but that their effectiveness on health (symptoms, injuries, diseases) was insufficient.

OHS training is an important training that minimizes occupational accidents, death, disability retirement and serious situations such as disability and injury. In Turkey, OHS training is mostly given in vocational schools and at the beginning stage and during the work process.

In this study, 326 participants working in different branch of activities were handled and 11 questions were asked to examine employees' perceptions on OHS training, occupational safety, awareness, and the relationship with accidents and occupational diseases. The results of the study were analyzed using SPSS statistics program and graphs were given in MS Excel format. The following hypotheses were tested in the study:

H1: The relationship between occupational safety training and occupational accident and occupational disease differs significantly according to the education level of the participants.

H2: Opinions of the participants on occupational safety and behaviors of the participants differ significantly according to education level.

2. Method

In this section the model of the study, the participants of the study, the data collection tool, the data collection process, and the techniques of data analysis employed are presented.

2.1. Research Model

In the study, the survey method was employed. Survey methods investigate, analyze, describe and interpret a situation that has existed in the past or present without any change or influence effort in the current situation (Sonmez and Alacapinar, 2013). Based on this information in this study, the awareness levels of employees on OHS are examined with their current situation.

2.2. Sample of the Study

The participants of the study consisted of 326 employees who were working in Burdur province, Turkey and had different demographic characteristics. Of these employees, 147 were female and 179 were male. In addition, the employees had different education level as primary school, secondary school, high school, vocational high school, university and graduate school. In each education level, the number of the participants was between 50 and 90. In the selection of the participants convenience sampling method was employed. Convenience sampling method gives the researcher speed and practicality (Yıldırım and Şimşek, 2008).

2.3. Data Collection Tool

In the study, the data were obtained by a questionnaire prepared by the researchers based on the literature. The questions in the questionnaire were prepared in a way so as to reflect the purpose of the research in the best way. Firstly, the pilot study was conducted to see whether or not the questions were clear, understandable, related to the topic, and could provide the necessary data. For this purpose, the questionnaire was applied on 30 employees. As a result, the essential corrections were provided and the final form of the questionnaire was obtained. The questionnaire consisted of 11 questions providing information about their branch of activity, their opinions on OHS training.

The questionnaire consisted of three parts. In the first part, the questions related to the education level, gender, age, branch of activity, work experience and the

number of the employees were included in order to obtain demographic information about the employees. In the second part, the questions about where and how the participants received occupational safety training and to what extent they find this training sufficient were included. In the third part, the questions about employees' opinions on exposure to occupational accident and occupational disease and occupational safety training were included.

2.4. Data Collection

In order to collect the research data, the questionnaires were applied to the participants of the study individually. For this purpose, face-to-face interviews were conducted, which lasted nearly 10 minutes. The questionnaires were applied to the employees working in different branch of activities in May, 2019. The data collection lasted for one month. Prior to the interviews taking place, the employees were given information about the aim of the study and the questions in the questionnaire form. The study was conducted on the volunteering basis. Therefore, only volunteer participants took part in the study.

2.5. Data Analysis

The obtained data were transferred to the computer environment and later analyzed. The questionnaire forms which were incomplete and incorrect and not appropriate for the analysis were excluded. Since the number of the participants with graduate education level was less, they were evaluated within the participants with university education level. The data were analyzed using MS Excel and SPSS statistical analysis program. The answers of the participants to each question were processed; frequencies were then determined, and the findings were defined and interpreted. As a result of the study, the opinions of the employees on OHS training and occupational accidents, their awareness level of occupational safety were evaluated in terms of educational level variable. The results obtained from the employees working in metal, wood, ceramic, plastic, etc. branches of activity were evaluated and interpreted.

3. Findings

In this section, the findings of the study are presented as follows:

Findings on the Demographic Information of the Participants

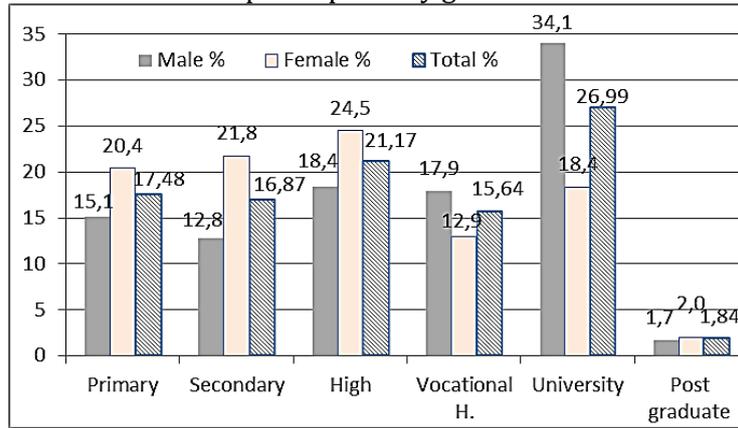
The findings on the demographic information of the participants are given in Table 3.

Table 3. Demographic Information

	N	%
EDUCATION LEVEL		
Primary School	57	17.48
Secondary School	55	16.87
High School	69	21.17
Vocational High School	51	15.64
University	88	26.99
Post-Graduate	6	1.84
GENDER		
Male	179	54.91
Female	147	45.09
AGE		
18-25	82	25.15
26-35	107	32.82
36-45	89	27.30
46-55	40	12.27
56-65	8	2.4
WORK EXPERIENCE (YEAR)		
1-3 Year	84	25.77
4-6 Year	90	27.61
7-9 Year	61	18.71
10-12 Year	31	9.51
13-15 Year	11	3.37
16 Year and Above	49	15.03
BRANCH OF ACTIVITY		
Metal	55	16.87
Wood	44	13.50
Plastic	35	10.74
Ceramic	54	16.56
Others	138	42.33
OCCUPATION		
Worker	210	68.63
Foreman	21	6.86
Technician	19	6.21
Engineer	14	4.58
Employer	42	13.73

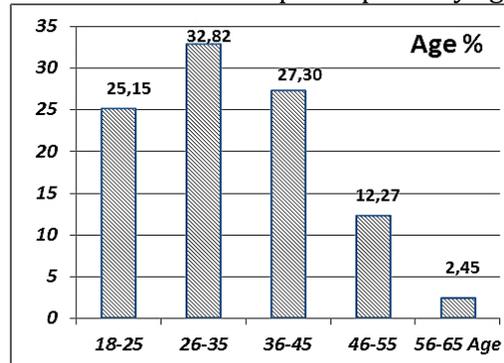
In the figures below, the demographic information of the participants is presented separately.

Fig. 2: Distribution of the participants by gender and education level (%)



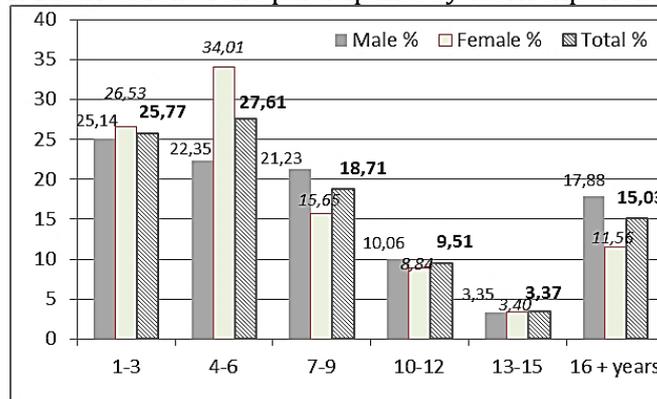
As seen in Fig. 2, the participants have five different education levels. 7.48% of the participants have primary school education level, 16.87% of them have secondary school education, 21.17% of the students have high school education level, 15.64% have vocational high school education level, 26.99% have university education level and 1.84% of them have pot-graduate education level. Therefore, most of the participants are in university education level group. Distribution of the participants in terms of age variable is given in Fig. 3.

Fig. 3: Distribution of the participants by age (%)



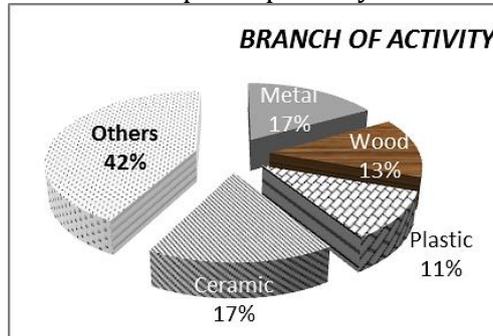
As can be seen in Fig. 2, the participants are mostly (32.82%) aged between 26-35 age group. 85.2 % of the participants, which constitutes the highest portion, were between the ages of 18-45. Distribution of the participants in terms of work experience variable is presented in Fig. 4.

Fig. 4: Distribution of the participants by work experience (%)



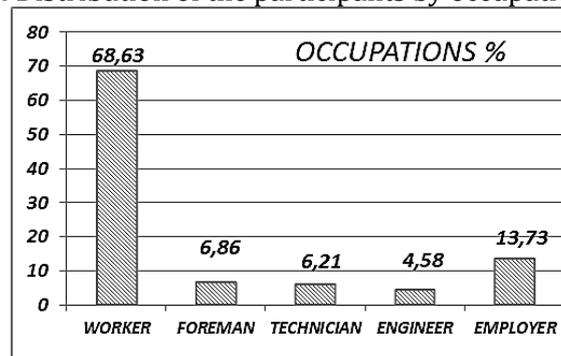
When the work experience of the participants is examined, it is seen that 27.61% of the participants have 4-6 years of work experience. Distribution of the participants in terms of branch of activity variable is shown in Fig. 5.

Fig. 5: Distribution of the participants by branch of activity (%)



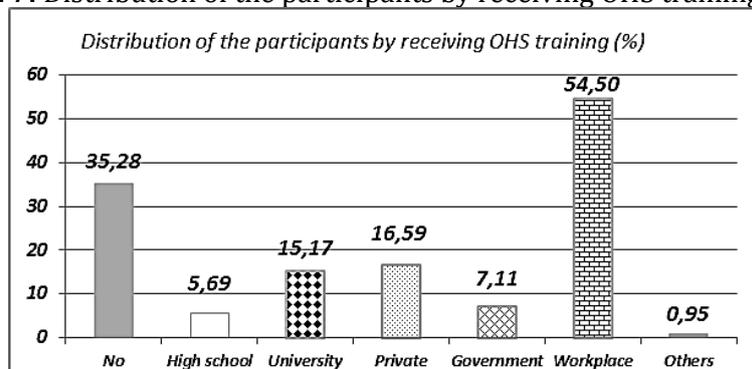
As seen in the figure, 17% of the participants work in ceramic sector, 11% work in plastic sector, 13% work in wood sector, 17% work in metal sector and 42% work in other sectors. Distribution of the participants in terms of their occupation is presented in Fig. 6.

Fig. 6: Distribution of the participants by occupations (%)



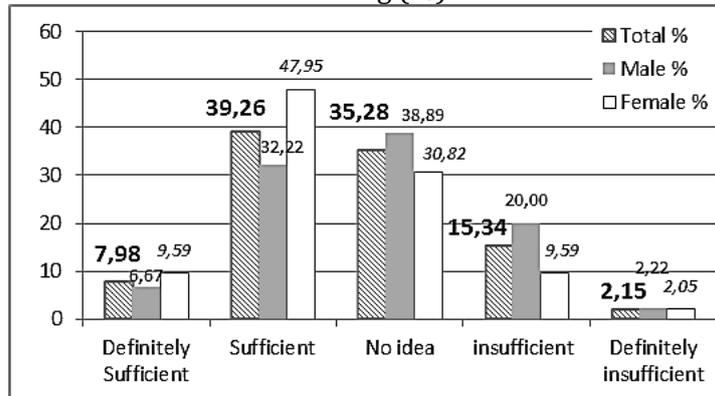
68.6% of the employees are workers, 13.7% are employers, 6.8% are foremen, 6.2% are technicians and 4.6% are engineers. Distribution of the participants in terms of receiving OHS training is given in Fig.7.

Fig. 7: Distribution of the participants by receiving OHS training (%)



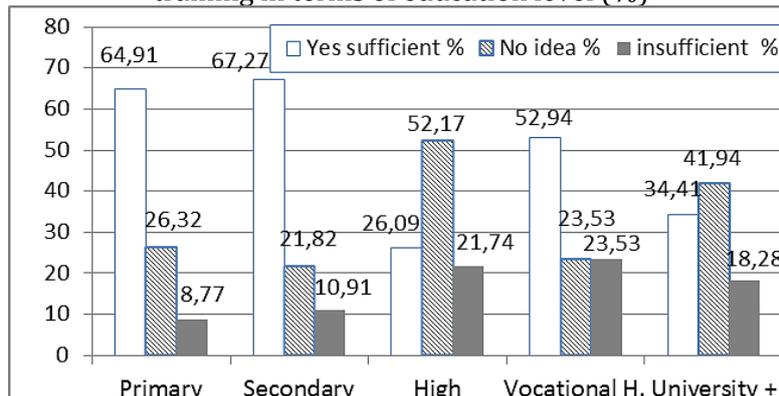
Most of the employees (54.5%) stated that they received occupational safety training in the workplace and one third (35.3%) stated that they did not receive any formal occupational safety training. Fig. 8 presents the distribution of the participants on to what extent they find the training they received on OHS efficient.

Fig. 8: Distribution of the opinions of the participants about the efficiency of the OHS training (%)



As seen, 17.49% (15.34 + 2.15) of the participants do not consider the training sufficient. On the other hand, 35.28% of the participants stated that they do not have an idea about this issue. Fig. 9 presents the distribution of the participants on the efficiency of the OHS training in terms of the education level variable.

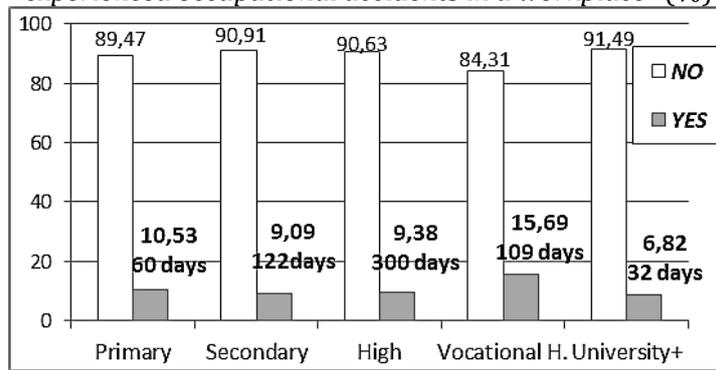
Fig. 9: Distribution of the opinions of the participants about the efficiency of the OHS training in terms of education level (%)



When the answers of the participants to the question “Do you believe that the OHS training you received is sufficient?” are examined, it is seen that the participants with primary and secondary school education level mostly (65-67%) stated as “Yes, it was sufficient”, while the participants with high school and university education level mostly stated (52.17% - 44.94%) as “I do not have an idea”. It is also concluded from the finding that the participants with vocational high school education level received OHS training before since these institutions give education related to the occupation.

The distribution of the participants’ answers for the question “Have you ever experienced occupational accidents in a workplace” is presented in Fig. 10.

Fig. 10: Distribution of the participants' answers for the question "Have you ever experienced occupational accidents in a workplace" (%)

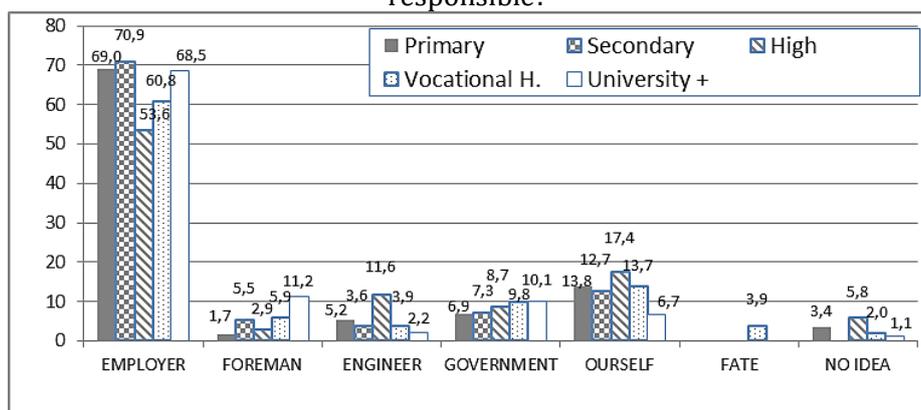


When the cases of work accidents are examined in Figure 10, university and graduate level employees experience loss of at least one working day, while vocational high school graduates experience less loss of working day than high school and secondary school graduates. It is seen that loss of working day is at low level (32 days) in primary school graduates. The reason for this situation may be the fact that the participants were timid while answering this part and some of them (6 participants) were not workers, but employers. The most work losses (300 days) were obtained from the participants with high school graduates.

About 25% of the participants answered the question "Do you think occupational accident is a fate?" as Yes. 10.71% of primary school graduates and secondary school graduates interpret occupational accidents as fate at a higher rate (12.73%) than others.

The question of "If you have an accident in a workplace where no measures are taken for occupational safety, who do you think is responsible?" is asked to the participants and the distribution of the answers are presented in Fig. 11.

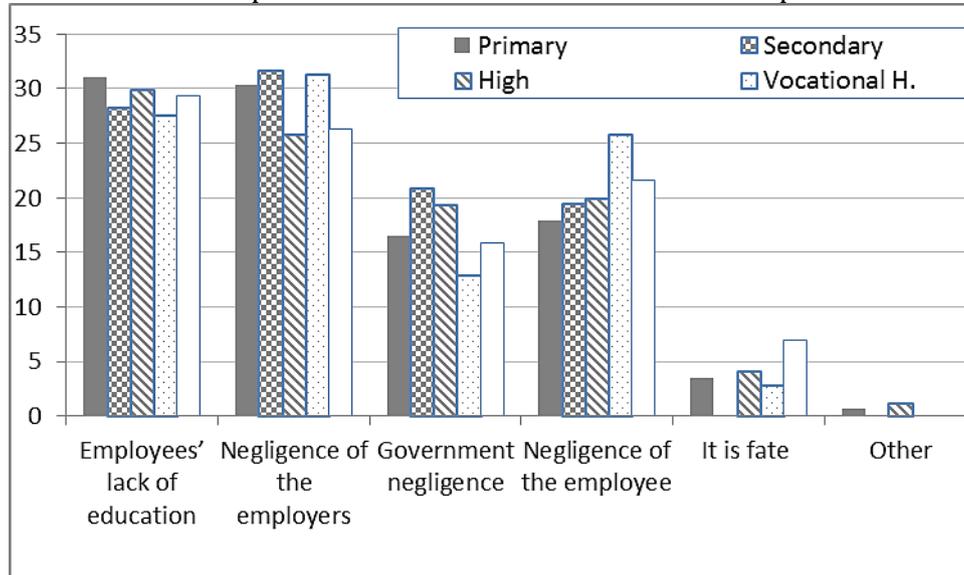
Fig. 11: The distribution of the answers for the question of "If you have an accident in a workplace where no measures are taken for occupational safety, who do you think is responsible?"



The answers of the participants to the question showed that most of them (64.6%) considered the employers as the responsible for the occupational accidents. The other opinions were as 12.9% ourselves, 5.4% Foreman, 5.4% Engineer. On the other hand, university graduates stated that the foreman (11.2%) and the Government (10.1%) were responsible for the occupational accidents.

The distribution of the answers of the participants to the question “*What do you think on the importance order of the reasons for occupational accidents?*” is given in Fig. 12.

Fig. 12. Distribution of importance order of the reasons for the occupational accidents (%)

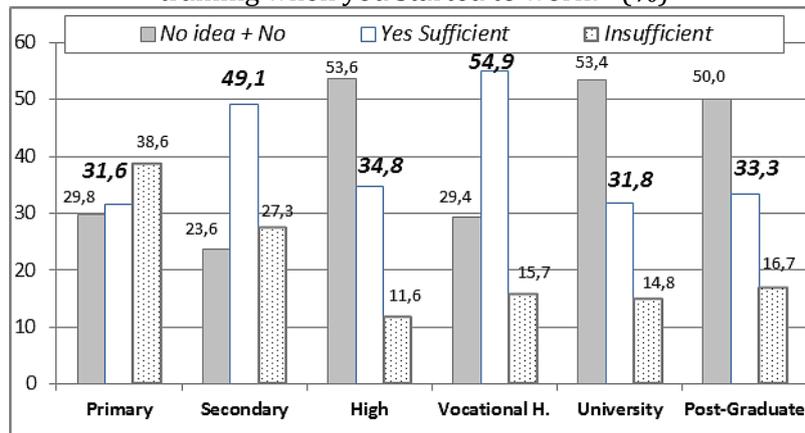


When the cause of occupational accidents is examined according to the level of education of employees, it is seen that they have almost the same idea. In the first order “Employees’ lack of education -average 29.2%”, in the second order “Negligence of the employers- average 29%”, in the third order “Negligence of the employee - average. 20.9%” and the fourth order was “Government negligence – average 17.1%. The general opinion is that the lack of OHS training is the first cause of occupational accident.

When the answers of the question “*Have you ever exposed to an occupational disease?*” were examined, it was seen that vocational high school graduates and university graduates stated that they were not exposed to an occupational disease. However, primary school (1.8%) and high school graduates (10.1%) stated that they exposed to occupational disease.

Distribution of the answers to the question “*Did you receive occupational safety training when you started to work?*” is given in Fig. 13.

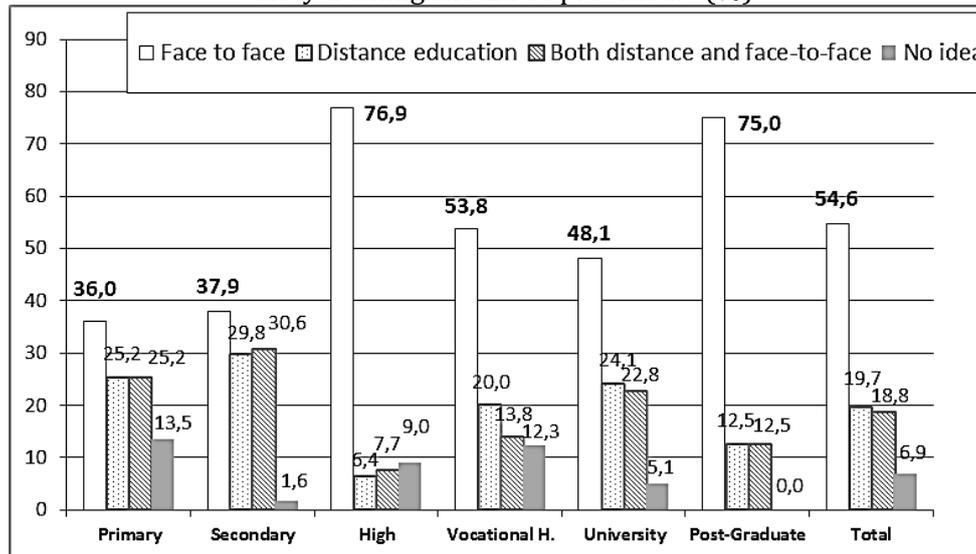
Fig 13. Distribution of the answers to the question “Did you receive occupational safety training when you started to work?” (%)



More than half of university and postgraduate employees (53.6% - 53.4% and 50%, respectively) stated that they did not receive any training and did not have any idea on this issue. Therefore, it can be concluded that mostly primary and secondary school graduates receive training during their employment. Those who stated that they have received adequate training are as graduates of Vocational High School (54.9%), Secondary School (49.1%) and High School (34.8%) respectively, and others have approximately the same level (31-33%). Employees with primary and secondary school education level were the ones who found the training they received as inadequate.

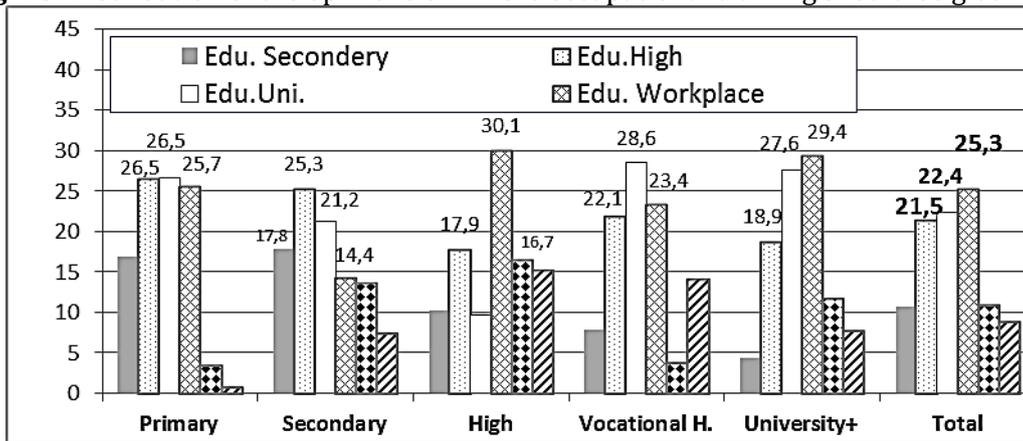
Distribution of the answers to the question of “How do you think occupational safety training should be provided?” is presented in Fig. 14.

Fig. 14: Distribution of the answers to the question of “How do you think occupational safety training should be provided?” (%)



As seen from the figure, all employers were on the opinion that occupational safety training should be provided “face to face”. This idea followed by “distance education” and “both distance and face-to-face”. Distribution of the opinions related to where occupational training should be given is presented in Fig. 15.

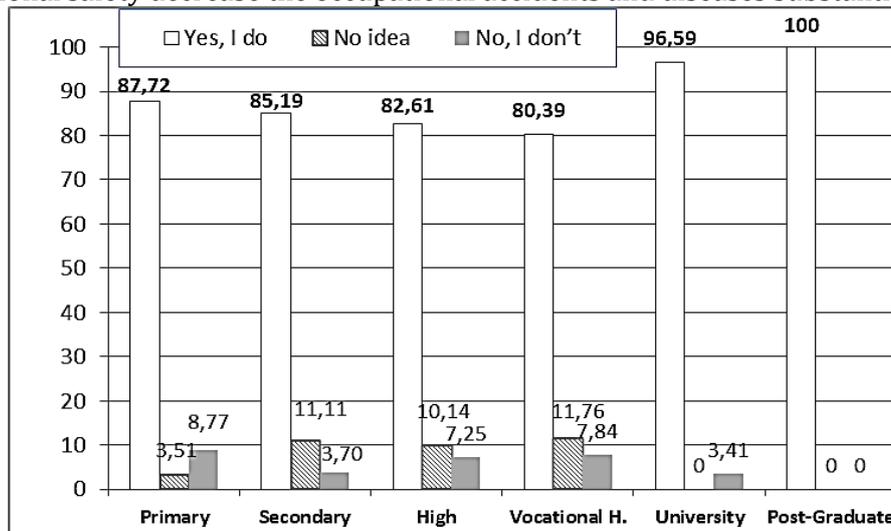
Fig. 15. Distribution of the opinions on where occupational training should be given (%)



The figure shows that the participants were mostly on the opinion that occupational training should be given at work, which was followed by at university and then at high school.

Distribution of the answers for the question “Do you think training on occupational safety decrease the occupational accidents and diseases substantially?” is presented below.

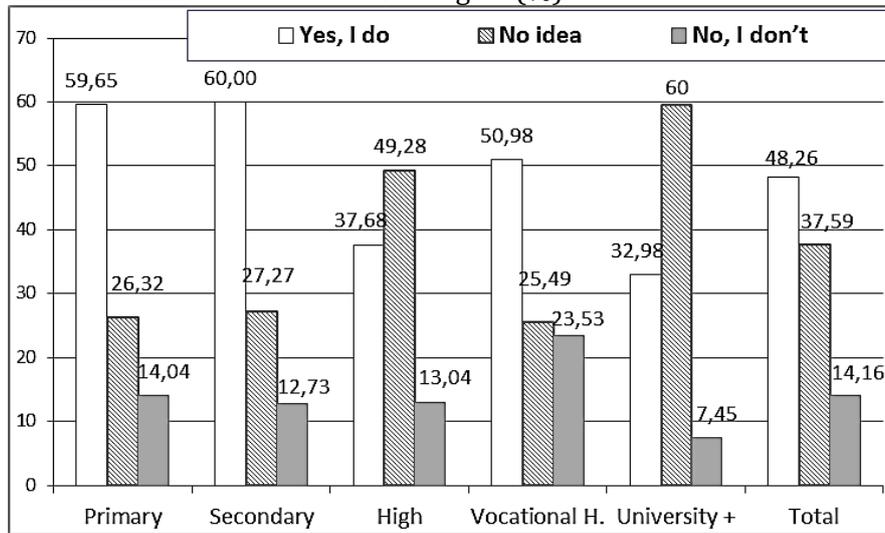
Fig. 16. Distribution of the answers for the question “Do you think training on occupational safety decrease the occupational accidents and diseases substantially?” (%)



As seen, more than 80% of the participants answered as “Yes” to the question. The employers who answered as “No” were less than 12%.

Distribution of the answers to the question “Do you think that the occupational safety experts (A-B-C class) that come to your business have enough information skill and knowledge?” is presented in Fig. 17.

Fig. 17. Distribution of the answers to the question “Do you think that the occupational safety experts (A-B-C class) that come to your business have enough information skill and knowledge?” (%)



While primary, secondary and vocational high school graduates found occupational safety experts sufficient, the participants with high school, university and graduate level education stated that they had no idea on the issue by over 50%. When all the answers of the participants were examined, the idea that OHS experts have sufficient skill and knowledge was below 50% (48.26%). Only 32.98% of the participants who have received education at university level and above had the opinion that OHS experts had sufficient skill and knowledge.

Table 4. Kruskal-Wallis H Test Results Showing the Differences of Expressions According to Educational Level

Expression	Chi Square	Sig. (p)	Education Level
2. Do you believe that the occupational safety training you received is sufficient?	24.206	0.000	Primary>High School Secondary>University VHS>High School University>High School
4. Do you think occupational accident is a fate?	11.752	0.038	Primary>High School Primary> University Primary>Graduate Secondary>High School Secondary> University
7. Have you ever exposed to occupational disease?	18.219	0.003	High School>Secondary High School>VHS High School>Graduate Primary>University
8. Did you receive occupational safety training about your job at the entrance to the workplace? (Was it sufficient?)	35.697	0.000	Secondary>Graduate Secondary>University University> Primary VHS>Secondary VHS>University
11. Do you think that the occupational safety experts (A-B-C class) that come to your business have enough information skill and knowledge?	13.874	0.016	Primary> University Secondary> University VHS> High School Secondary> High School

As seen in the table above, the opinions of the participants differ significantly in terms of education level of the employees. Primary school, Vocational High School and University graduates find the occupational training they received more sufficient than high school graduates employees. In addition, participants with secondary school level find the training more efficient compared to the university graduates. On the other hand, the belief that the occupational accident is a fate is more supported by the primary and secondary school graduates than high school, university and graduate graduates. Exposure to a certain occupational disease for high school graduates is more than the secondary school, vocational high school and graduate graduates. On the other hand the secondary school graduated had more positive opinions on the issue that the training they received on the occupational safety compared to the graduate employees and university graduates. A similar situation exists among vocational high school graduates and secondary school and university graduates. Finally, the attitude that the occupational safety experts have sufficient knowledge and skill is higher in primary and secondary school graduates than university graduates. Similarly, the attitude of the employees who graduated from Vocational High School is higher than high school graduates.

Table 5. Kruskal-Wallis H Test Results Showing the Differences According to the Branch of Activity

Expressions	Chi Square	Sig. (p)	Branch of Activity
7. Have you ever exposed to an occupational disease	11.400	0.022	Metal>Wood Metal>Ceramic
8. Have you received occupational safety training about your job at the entrance to the workplace? (was it sufficient?)	12.875	0.012	Metal>Plastic Metal>Other Wood>Plastic Ceramic>Plastic

Table 5 shows the results of the Kruskal-Wallis H Test, which shows the difference between occupational disease and occupational health and safety training in terms of branch of activity. Accordingly, it was found that the rate of exposure to occupational disease was higher in the employees working in metal enterprises than in the wood and ceramic enterprises. The attitude towards the adequacy of the occupational safety training received at the entrance to the workplace was found to be higher in metal workers than in plastic and workers in other enterprises. A similar situation exists between employees in wood and plastic enterprises and employees in ceramic and plastic enterprises.

Table 6. Kruskal-Wallis H Test Results Showing the Differences According to the Work Experience

Expressions	Chi Square	Sig. (p)	Work Experience
2. Do you believe that the occupational safety training you received is sufficient?	11.213	0.047	16 years and above>4-6 year
7. Have you ever exposed to an occupational disease?	12.934	0.024	16 years and above>1-3 years
8. Did you receive occupational safety training about your job at the entrance to the workplace? (Was it sufficient?)	26.566	0.000	13-15 year>16 years and above

Kruskal-Wallis H test results, which show the differences of the employees according to their work experience, are given in Table 6. Employees with 16 years or more work experience have more positive beliefs about the adequacy of their training on occupational safety than those with 4-6 years of work experience. The rate of exposure to occupational disease is found to be higher for employees with 16 years or more work experience than those with the 1-3 years work experience. The employees with 13-15 years of work experience found the training they received about occupational safety as sufficient more than the employees with 16 years and more experience.

Table 7. Kruskal-Wallis H Test Results Showing the Differences According to the Position in the workplace

Expressions	Chi-square	Sig. (p)	Position
2. Do you believe that the occupational safety training you received is sufficient?	15,512	0,004	Technician>Foreman Engineer>Foreman employer>Foreman
3. Have you ever experienced an occupational accident in the workplace?	12,558	0,014	Employer>Worker Technician>Foreman Worker>Engineer
4. Do you think occupational accident is a fate?	10,373	0,035	Employer>Technician Technician>Worker Foreman>Worker
8. I Did you receive occupational safety training about your job at the entrance to the workplace? (Was it sufficient?)	21,002	0,000	Engineer>Employer Worker>Technician Worker>Employer

Kruskal-Wallis H test results, which show the differences of employees according to their position in their jobs, is given in Table 7. Accordingly, technician, engineer and employers find the OHS training they received more sufficient than foremen. When the cases of occupational accidents were examined, 42 employers stated that they had more accidents than the workers. Technicians were found to have more occupational accidents than foreman; and the workers were found to have more accidents than engineers. The opinion that work accidents are fate is higher in all employers compared to the others, but engineers do not think it is fate. In addition, technicians and foremen believe that it is fate for workers compared to the workers. When considering those who stated that they received OHS training related to work at the entrance to the workplace, it was found that workers had more training than technicians and employers. In addition engineers had more training than employers. Therefore, it can be said that the order of the employee who received OHS training more are as foreman, engineers, workers and technicians, and employers received less training on OHS.

4. Results and Discussion

In the study conducted by Robson et al. (2012) it is recommended that workplaces continue to deliver OHS training to employees since training positively affects employee practices. However, they stated based on research evidence that large impacts of training on health cannot be expected.

Sauter et al. (1990) stated that roles are identified for industry, labor, government, and academia. Moreover, they expressed that key initiatives should include (a) steps to improve working conditions and employee mental health services and (b) increased research and surveillance to advance understanding of the problem.

Choudhry and Fang (2008) concluded that the employees consider the training as a key factor for the safety of the employees. Wilson (1989) explained that employees learn by “doing” or following their colleagues or by “by following the co-workers or by “tail and error”. One of the problems with training is that they do not represent actual working environments. He also stated that the job site is quicker, site conditions are different, and even sometimes site conditions are

completely opposite of training. As a solution, it is clear that more formal training is required. Therefore, it can be argued that further research should be conducted to provide effective training that changes employees' belief in and attitude towards safety. Mohamed (2002) stated that training enables employees to have the ability to perform the job correctly in accordance with the safety requirements. However, training should focus on changing employees' attitudes to safety. They determined that the reasons for continuing unsafe work behaviors were as 1- Lack of ignorance and safety information 2- Psychological factors 3-Performance pressure 4- Lack of skills or safety training or lack of occupational training relevant to the occupation and training incompatible with field conditions 5-No to follow the procedures to get promotion and win the favor of the boss, etc.

Choudhry and Fang (2008) expressed that unsafe conditions cannot be recognized by the employees in general. The authors argue that management is responsible for predetermining insecure situations associated with each construction activity, including new tasks. In a construction project, comprehensive assessment and step-by-step safety analysis, followed by the development of safe working procedures, can affect employees' improvement in safety behavior when performing work tasks.

Tam et al. (2004) indicated that the main factors affecting safety performance include factors such as poor safety awareness of top management and lack of orientation training. They also recommended that the governments should play a more critical role in stricter legal enforcement and organizing safety training programs.

Demir and Öz (2018) examined the studies conducted on the issues of "occupational health and safety culture" and "occupational accidents and fate". They stated that theoretically, occupational accidents are fate, but it is not fate to blame for the imprudence of people, institutions and authorities and the failure to fulfill their duties. They examined theologically that the people who caused the accident and attributed this to the fate are actual responsible.

Based on the current study, the following conclusions are obtained:

- Most of the employees (54.5%) stated that they received OHS training in the workplace and 35.3% never received OHS training.
- As the education level increases, it is seen that the opinions stating that OHS training received is not sufficient also increase. This indicates that educated employees criticize the training they receive and realize their shortcomings.
- As the level of education increases, the loss of working days decreases. The highest losses of working days were obtained from the participants with high school graduates and middle level educated employees.
- As the level of education decreases, the opinion that occupational accidents are a fate predominates.
- It is stated by all employees (64.6%) that the first person responsible for the occupational accidents is the owner of the workplace and as the level of education increases, the opinion that the foreman and the government are

also responsible for the occupational accidents, respectively has become more intense. As the level of education decreases, it the idea that occupational accidents were caused by own mistakes of the employees has gained importance.

- When the employees are examined in terms of their opinions on the cause of occupational accidents according to their education level, it is seen that they have almost the same idea. The distribution of the opinions of the employees on the causes of the occupational accidents is obtained as: “Uneducated employee (an average of 29.2%)”, “negligence of the employer” (average 29%)”, “negligence of the employee (average 20.9%)”, “negligence of the government (average 17.1%)”. It is understood that general opinion is that the lack of OHS training is the first cause of occupational accident.
- Occupational disease is mostly related to the level of education. On the other hand, the percentage of the opinions of the high school and primary school graduates employees on the occupation disease were found to be higher. In the studies except surveys, it is seen that the working environment, protective use and OHS training are directly related to the education level.
- On average 40% of all employees stated that they did not receive the desired training at the entrance to the workplace or they did not have any idea. More than half of high school, university and post-graduate employees (53.6% - 53.4% and 50%, respectively) stated that they did not receive any training and had no idea.
- More than half of the high school, university and postgraduate employees (53.6% - 53.4% and 50% respectively) stated that they did not receive any training and had no idea. The majority of those who received training and found their training inadequate were primary and secondary school graduates.
- All employees are fully convinced that occupational safety training should be provided as face to face. Regarding the place where OHS trainings should be given, they said that they should be at workplaces, universities and high schools respectively.
- The belief that training in occupational safety will greatly reduce accident and occupational diseases is more than 80% and positive.
- The idea that OHS experts are well-equipped remains below 50% (48.26%). Only 33% of the participants who are educated at university and above think that they are sufficient. This reminds us that OHS experts need to be trained better and that they have to be well equipped.

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