

Evaluation of Knowledge, Behavior, and Attitudes of Construction Workers about Occupational Health and Safety in Turkey

Turabi KARADAĞ^b, Ulaş ÇINAR^{a, c}

Abstract

This study was planned as a descriptive cross-sectional study to evaluate the knowledge, behavior, and attitudes of workers working in the construction industry about occupational health and safety. The research was conducted with 356 workers employed at randomly selected nine high-rise residential construction sites between January and July 2021 in Turkey. It was found that 36.3% of the workers wore seat belts while working at heights of seven meters and above. According to 98.4% of the workers, occupational safety meant "life safety". It was stated that the most important reasons for occupational accidents were carelessness at a rate of 66.3% and not taking safety measures at a rate of 33.7%. In addition, 61.8% of the workers thought that occupational health and safety training was necessary. It was determined that as the working experience of the workers increased, the workers found the occupational health and safety training given before starting work more useful ($p < .0001$). It was determined that the workers who experienced work accidents most were those with low education levels and less work experience.

Keywords

Occupational Health
Occupational Safety
Knowledge Level
Construction Workers

About Article

Received: 13.01.2023

Published: 28.12.2023

Doi: 10.18026/cbayarsos.1233560

Türkiye'de İnşaat İşçilerinin İş Sağlığı ve Güvenliği Konusunda Bilgi, Davranış ve Tutumlarının Değerlendirilmesi

Özet

Bu çalışma, inşaat sektöründe çalışan işçilerin iş sağlığı ve güvenliği konusundaki bilgi, davranış ve tutumlarını değerlendirmek amacıyla tanımlayıcı kesitsel bir araştırma olarak planlanmıştır. Araştırma, Türkiye'de Ocak-Temmuz 2021 tarihleri arasında rastgele seçilen dokuz yüksek katlı konut inşaat şantiyesinde istihdam edilen 356 işçi ile gerçekleştirilmiştir. Çalışanların %36,3'ünün yedi metre ve üzerindeki yüksekliklerde çalışırken emniyet kemeri taktığı tespit edilmiştir. Çalışanların %98,4'üne göre iş güvenliği "can güvenliği" anlamına gelmektedir. İş kazalarının en önemli nedenlerinin %66,3 ile dikkatsizlik ve %33,7 ile güvenlik önlemi almama olduğu belirlendi. Ayrıca çalışanların %61,8'i iş sağlığı ve güvenliği eğitiminin gerekli olduğunu düşünmektedir. Çalışanların çalışma deneyimi arttıkça işe başlamadan önce verilen iş sağlığı ve güvenliği eğitimini daha faydalı buldukları belirlenmiştir ($p < .0001$). En çok iş kazası geçiren işçilerin eğitim düzeyi düşük ve iş tecrübesi az olan işçiler olduğu belirlenmiştir.

Anahtar Kelimeler

İş Sağlığı
İş Güvenliği
Bilgi Düzeyi
İnşaat İşçileri

Makale Hakkında

Geliş Tarihi: 13.01.2023

Yayın Tarihi: 28.12.2023

Doi: 10.18026/cbayarsos.1233560

^a İletişim Yazarı: ulas.cinar@comu.edu.tr

^b Dr., Boğaziçi Üniversitesi, İstanbul. ORCID: 0000-0001-9481-5718

^c Dr., Çanakkale Onsekiz Mart Üniversitesi, İş Sağlığı ve Güvenliği Eğitim Uygulama ve Araştırma Merkezi, Çanakkale. ORCID: 0000-0003-3924-0768

Introduction

The working class represents half of the world's population and contributes greatly to economic and social development. Occupational health is affected not only by the dangers in the workplace but also by social and individual factors and access to health services (WHO, 2007).

Occupational accidents and diseases in Turkey are among the most important issues that never fall off the agenda of working life. Many workers die or become disabled every year in the construction industry as a result of occupational accidents. In addition, this situation creates important social and economic problems and losses. Since 2009, the top three sectors with the highest number of occupational accidents are metal manufacturing, coal lignite extraction, and construction (Cinar and Cebi, 2022). The sector with the highest number of deaths due to work accidents in the construction sector (Cavus, 2016). The overall number of occupational accidents that occurred in Turkey between the 2005-2009 period is 1153 and 400 of them happened in the construction industry. The distribution of 5239 occupational accidents according to accident types is 37.4% human fall, 10.1% material drop, 11.5% limb compression, and 7.1% electric shock. Death was found in 42.9% of human falls. 29.6% of the human fall type accidents occurred as a result of falling from the slab-platform edge, 25.3% from the pier, and 11.5% from the gaps in the structures. Among the accident types in the building construction site, the fall of people is the first with 49.2% and the second is limb loss with 12.2%. 57.3% of deaths in the building construction site occur as a result of human falls and 9.8% of material falls (Mungen, 2011).

In Turkey, according to No. 6331 Occupational Health and Safety Law, workers' occupational health safety is workers' awareness of the dangers in their working environments and being protected in the framework of safety rules against those dangers. It is the employer's responsibility to raise this awareness among their employees and protect them. The employer is obliged to ensure the health and safety of employees. Employees are also required to continue this after reaching this awareness. Employees are obliged not to endanger the health and safety of themselves, and other employees affected by their actions or work, in line with the training they receive on occupational health and safety and the instructions of the employer. According to Law No. 6331, the responsibility of the management staff is quite high. If the employer takes seriously the occupational health and safety legislation, the management and lower-level employees will take seriously it (Korkmaz & Avsalli, 2012).

In a developing country, the disintegration of agriculture, rapid migration from the village to the city caused the unqualified labor force that has been involved in agriculture for years to accept to work in heavy and dangerous jobs to find jobs in the cities. Occupational risks faced by workers in working life have increased with industrialization. Occupational accidents are caused by reasons such as the insufficiency of the education level of the workers, the failure of small and medium-sized enterprises to comply with the necessary occupational health and safety measures, and the lack of occupational health and safety awareness (Camkurt, 2013).

The construction industry is a high-risk industry and the health and safety of workers working in this sector is of great importance. Precautions to be taken regarding occupational health and safety in construction works are the responsibility of both workers and employers (Baradan, 2006).

The construction industry is an area that involves many risks and potential dangers. People working in construction may face many risks such as falling from heights, falling materials, electric shock, and machine accidents. For this reason, work accidents and occupational diseases are quite common in the construction industry (Forteza v.d., 2020).

Occupational accidents in the construction industry in Turkey are quite common. According to official data, the construction sector accounts for the majority of occupational accidents in the country. According to the Turkey Occupational Accident Statistics Report in 2020, the number of work accidents in the construction industry is over 10,000. Most of these accidents are caused by reasons such as inadequate safety measures, untrained workers, irregular working hours and uncontrolled working environments (Zengin, 2022).

Occupational accidents occurring in construction works can often lead to serious injuries and even death. There are precautions to be taken for the safety of workers. For example, precautions can be taken such as ensuring that workers use appropriate safety equipment against the risk of falling, using insulated gloves and shoes when working with electrical tools, and attending occupational safety training (Forteza v.d., 2020).

In addition, workers working in construction must be protected against occupational diseases. Factors such as dust, noise, chemicals can cause occupational diseases. Therefore, it is important for workers to use protective equipment and undergo regular health checks to avoid exposure to such factors (Duman & Etiler, 2013).

One of the most important issues to be considered regarding occupational health and safety in construction works is the training and awareness of workers. It is of great importance for workers to know occupational health and safety rules and to act in accordance with these rules in terms of preventing work accidents. For this reason, employers need to provide regular occupational health and safety training to workers and carry out awareness raising activities on this issue (Yakut & Akbıyıklı, 2013).

Another issue that needs to be taken into consideration regarding occupational health and safety in construction works is the regular maintenance and safe use of work equipment. Regular maintenance and safe use of work equipment used in construction sites is of great importance in preventing work accidents. It is also very important to provide training to workers on the use of necessary protective equipment while using work equipment (Aydoğın & Uçan, 2022).

Other precautions to be taken regarding occupational health and safety in construction works include issues such as arranging the working environment of workers in a safe manner, regulating the working hours of workers, and meeting the rest and nutrition needs of workers (Ercan, 2010).

Employers and workers need to act together to prevent work accidents and occupational diseases in the construction industry. Employers must provide the necessary equipment, organize training and conduct regular inspections to ensure the safety of workers. Workers

must comply with safety rules, use protective equipment and be aware of occupational health and safety. Creating a safe working environment by employers and workers acting in cooperation can reduce these risks and prevent work accidents. In addition, regular training and health checks are an important step to protect the health of workers (Erol, 2015).

The precautions to be taken regarding occupational health and safety in construction works are the responsibility of both workers and employers. Issues such as training and awareness-raising of workers, regular maintenance of work equipment, and a safe arrangement of the working environment are of great importance in preventing work accidents. For this reason, everyone working in the construction industry must take the necessary precautions and be careful about occupational health and safety.

Employees' perception of occupational safety is very important for preventing occupational accidents and providing a safe environment in the workplace. An employee's perception of occupational safety has a great impact on his/her awareness of risks in the workplace, being careful about these risks and taking the necessary precautions. If an employee does not realize or does not care about risks in the workplace, this may increase the likelihood of occupational accidents (Bayraktarođlu v.d., 2018).

An employee's perception of occupational safety depends on many factors to prevent occupational accidents and ensure a safe environment in the workplace. Factors such as workplace safety measures, training, inspections and employee participation can affect employees' perception of occupational safety. If a workplace does not take adequate precautions regarding the occupational safety of its employees or does not ensure the participation of employees, this may increase the likelihood of occupational accidents.

Therefore, in order to prevent occupational accidents and ensure occupational safety, workplaces should care about employees' perception of occupational safety and take the necessary precautions in this regard. It is of great importance for employees to have a high perception of occupational safety in preventing work accidents and providing a safe environment in the workplace. For this reason, workplaces need to take the necessary steps to increase employees' perception of occupational safety and to constantly work on this issue.

Method

Aim of the Study

This study was carried out as a descriptive cross-sectional study to evaluate the knowledge, behavior, and attitudes of workers in the construction industry about occupational safety.

The Place, Time, and Sample of the Research

Construction workers working at 9 sites randomly selected from 15 high-rise housing construction sites in Istanbul/Turkey between January-July 2021 constitute the main universe of the study. In the open epi program, the number of universes was determined as 550, the incidence of the event was 50%, the absolute precision: 5%, and the Design effect: 1 were taken, and the number of samples was determined as 227 in the 95% confidence interval. 356 workers were included in the sample of the study.

Data Collection Tool

The questionnaire includes 21 questions asked to determine the socio-demographic characteristics of the workers (such as age, education, how many years you are a worker) and their knowledge, behavior, and attitudes about worker health and safety (do you wear a helmet, what does occupational safety mean to you, what do you do when you see an attached cable, according to you, the most important cause of work accidents...). The data were collected through face-to-face interviews with the workers working in the construction industry. The questionnaire was also filled out by the workers during breaks.

Ethical Aspect of the Research

The research was conducted with individuals who wanted to participate voluntarily and verbal and written consents of the individuals participating in the study were obtained. As individual rights must be protected during the research, the human rights Declaration of Helsinki was adhered to. Ethical committee approval of the study was obtained from Istanbul Okan University, Institute of Science and Technology with the number 2019/2560.

Statistical Analysis

Percentage, frequency, and chi-square were used for statistical analysis. In all tests, the significance level was taken as $p < .05$.

Results

It was seen that 37.9% of the workers participating in the study were aged between 25 and 31, and 37.4% were aged between 32 and 38. 69.4% of the participants were primary school graduates and 27% of them worked for 12 years or more. 58.7% of the workers lived outside of Istanbul, they were in Istanbul for work and 41.3% lived in Istanbul (Table 1).

Table 1. Distribution of demographic characteristics of workers (n: 356)

Variables	n	%
Age		
18-24	24	6.7
25-31	135	37.9
32-38	133	37.4
39 and Above	64	18.0
Educational Status		
Primary School	247	69.4
Secondary School	86	24.2
High School	23	6.4
Working Year		
0-2	63	17.7
3-5	65	18.3
6-8	59	16.5
9-11	73	20.5
12 and Above	96	27.0
Residence Status of the Family in Istanbul		
Not Dwell	209	58.7
Dwell	147	41.3
Total	356	100

100% of the participants stated that they wear helmets, 98% of them wore work shoes. 21.3% of those who wore helmets stated that they wore it because they were required against their will. 64.6% of the participants stated that they worked on the scaffolding, 84% of them were checked by the civil engineer and occupational safety specialist after installing the scaffold, and 70.5% of the workers stated that they wore their safety harnesses on the scaffolding. 8.4% of the participants stated that they tied the scaffolding with wire when there were no scaffolding rods, and 6.2% of them did a job that was not taken any precautions by the employer. 3.4% of the participants stated that they continued to walk when they saw a cable running in the water they walk, 2.2% of them put the cable ends into the socket with bare hands when they saw a broken plug and 97.8% of them do not work in places without enlightenment at night. 98.6% of the participants stated that they did not do a job that was not taken any precautions (Table 2).

It was stated that 51% of the participants feared falling from a height, 36.3% of them wore seat belts at 7 meters and above. According to 98.4% of the workers participating in the research, occupational safety meant "life safety". According to the participants, it was stated that the most important reasons for occupational accidents were carelessness at a rate of 66.3% and not taking safety measures at a rate of 33.7%. In addition, 61.8% of the participants stated that the occupational health and safety training given before starting work is important (Table 3).

Table 2. Distribution of Knowledge, Behavior and Attitudes of Workers Towards Occupational Accidents (n: 356)

Precautions	Yes		No	
	n	%	n	%
Do you wear a helmet?	356	100	0	0
Do you wear work shoes?	349	98.0	7	2.0
Do the civil engineer and occupational safety specialists check the scaffolds after they are installed?	299	84.0	57	16.0
Do you wear a helmet of your own will?	280	78.7	76	21.3
Do you wear a safety harness at piers?	251	70.5	105	29.5
Have you ever worked at piers?	230	64.6	126	35.4
When there are no scaffold rods, would you connect the scaffold with wire?	30	8.4	326	91.6
If you were asked to do a job that you think your employer is not taking precautions for, would you do it?	22	6.2	334	93.8
If you saw a cable running through the water you were walking on, would you continue walking?	12	3.4	344	96.6
If you saw a broken plug, would you plug the cable ends into the outlet with bare hands?	8	2.2	348	97.8

Table 3. Distribution of Workers' Behaviors Against Occupational Accidents (n: 356)

Variables	n	%
What are you most afraid of in construction, what work does an accident happen?	Falling From High	182 51.0
	Shaft Clearance	95 26.9
	Electricity	79 22.1
How many meters would you wear the safety harness when working?	1-3	113 31.7
	4-6	114 32.0
	7 and Above	129 36.3
What does occupational safety mean to you?	Nothing	6 1.6
	Life Safety	350 98.4
What would you do when you see an attached cable?	I would cut it.	6 1.7
	I would call a competent.	336 94.4
	Nothing	14 3.9
What would you do when you see a cable in the water you're walking on?	Nothing.	12 3.4
	I would call a competent.	340 95.5
	I would take it off from its'	4 1.1
What is the most important reason for work accidents?	Inattention	236 66.3
	Not taking any safety	120 33.7
Before starting work, are the training for occupational health and safety important for you, should they be done regularly?	Yes, it is important, should	220 61.8
	No, it is not important, should not be done regularly	136 38.2

Evaluation of Knowledge, Behavior, and Attitudes of Construction Workers about Occupational Health and Safety in Turkey

The most important reason for occupational accidents was carelessness in primary school graduates, while safety measures were not taken as the education level increases ($p = .009$). As the education level increases, it was seen that the rate of wiring of the scaffold increases when there were no scaffold rods ($p = .017$). It was found that the higher the education level, the lower the number of workers working at the pier ($p < .0001$) (Table 4).

Table 4. Comparison of Workers' Education Status and Their Knowledge, Behaviors, and Attitudes towards Occupational Safety (n: 356)

Parameters		Educational Status						X ²	p
		Primary School		Middle School		High School			
		n	%	n	%	n	%		
Cause of Occupational Accidents	Inattention	176	71.3	46	53.5	14	60.9	9.335	.009
	Not Taking Any	71	28.7	40	46.5	9	39.1		
When there are no scaffold rods, the	Yes	15	6.1	10	11.6	5	21.7	8.198	.017
	No	232	93.9	76	88.4	18	78.3		
Status of Working On Scaffolding	Yes	175	70.9	48	55.8	7	30.4	18.864	.000
	No	72	29.1	38	44.2	16	69.6		

It was determined that the training for occupational health and safety before starting work was more important as the age increases ($p < .0001$). In addition, it was determined that as the age increased, the ratio of tying the scaffold with wire without scaffolding rods decreased ($p < .0001$). At most, workers between the ages of 25-31 worked on the piers. This ratio decreased with increasing age ($p = .004$) (Table 5).

Table 5. Comparison of Workers' Ages and Their Knowledge, Behaviors and Attitudes towards Occupational Safety (n: 356)

Parameters		Age								X ²	p
		18-24		25-31		32-38		≥39			
		n	%	n	%	n	%	n	%		
Are training before starting work for occupational health and safety important?	Y	14	58.3	67	49,6	86	64,7	53	82,8	21.0	.000
	N	10	41.7	68	50.4	47	35.3	11	17.2		
When there are no scaffold rods, would you tie the scaffold with wire?	Y	9	37.5	9	6.7	9	6.8	3	4.7	28.5	.000
	N	15	62.5	126	93.3	124	93.2	61	95.3		
Status of Working on Scaffolding	Y	8	33.3	95	70.4	89	66.9	38	59.4	13.3	.004
	N	16	66.7	40	29.6	44	33.1	26	40.6		

It was determined that as the working years of the workers increased, they found the training for occupational health and safety was more important before starting work ($p < .0001$). It was determined that as the years of work increased, the rate of wearing safety harness decreased ($p = .007$) (Table 6).

Table 6. Comparison of Workers' Years of Work and Their Knowledge, Behaviors and Attitudes towards Work Safety (n: 356)

Parameters	Working Year										χ^2	P	
	0-2		3-5		6-8		9-11		12 and above				
	n	%	n	%	n	%	n	%	n	%			
Should occupational health and safety trainings be given?	Y	9	14.3	20	30.8	40	67.8	65	89.0	86	89.16	1.4	.000
	N	54	85.7	45	69.2	19	32.2	8	11.0	10	10.4		
Do you wear safety harness at the pier?	Y	54	85.7	50	76.9	38	64.4	43	58.9	66	68.8	14.2	.007
	N	9	14.3	15	23.1	21	35.6	30	41.1	30	31.2		

Discussion, Conclusion and Recommendations

In this study, it was found that 98% of the workers wore work shoes, 100% wore helmets, and 21.3% of those who wore helmets didn't wear helmets of their own will. All workers in the construction industry in Hong Kong must legally wear helmets. However, in a study, it was determined that 40.7% of professionals wearing helmets, 40% of inspectors, 100% of machine operators, and 60% of front workers did not fasten the under-chin belt of the helmet. It was found that workers did not use helmets correctly (Fung et al., 2014). In a study conducted on 262 cleaning workers, it was seen that 80.1% of them did not use personal protectors while doing their job (İlhan et al., 2006). In a study conducted on timber workers, it was found that 56.9% of the workers did not use safety equipment. It was found that 36.3% of the reasons for not using safety equipment were not provided by the employer, 23.1% found the safety materials unnecessary, 19.8% were unusable and 20.9% did not use them because they forget to use them (Osagbemi et al., 2010). In this study, the rate of using helmets and work shoes of construction workers was found to be higher than in other studies. The reasons for this can be attributed to the high rates of occupational accidents in the construction sector, the legal obligations for workers to comply with safety measures, and the frequent workplace inspections.

In the study, it was determined that 2.2% of the workers attached the cable ends to the socket with bare hands when they saw a broken plug and 3.4% of them continued to walk when they saw a cable passing through the water. 64.6% of the workers worked on the scaffold and 84% of these workers stated that they were controlled by the civil engineer and occupational safety specialist after the scaffold was installed. It was determined that 51% of the workers were afraid of falling from a height, 94.4% informed the authority when they saw an attached cable, and 95.5% informed the authority when they saw a cable in the water where they were walking. In a study conducted in the USA, it was found that 31.9% of the piers are in danger of collapsing or there is insufficiency in the protection fingers. It was determined that scaffold

injuries were caused by falling from the scaffold or the collapse of the scaffold (Halperin & McCann, 2004). In Taiwan, it was determined that 30.4% of the accidents in construction were falling from the pier, 20.6% falling from an open place, 11.3% falling from building beams or steel structures, and 10.5% falling from the roof. It has been determined that 16.7% of the reasons for falls are unprotected open spaces, 10% of a person's physical insecure movements, 7.1% person's inability to work, and 3.7% incorrect use of personal safety equipment (Chi et al., 2005). Falls are also a serious problem in the construction industry in Japan. Falls in construction constitute approximately 40% of deaths. For this reason, safety measures have been increased in piers in Japan (Ohdo et al., 2011). In a study conducted in 146 construction sites in Spain, it was determined that 96.7% of the scaffolds that comply with European standards connected the connections correctly and only 51.7% of the scaffolds that do not comply with the standards use this connection component. In Spain, many problems have been found in the balustrade bars, pier legs, and entrances to the pier (Rubio-Romero et al., 2013). Falls were the most important cause of deaths in construction in America between 2003 and 2012. According to 2009 fall data, there were a total of 264 deaths as a result of falls, 68 of which were falling from the stairs, 43 from the roof edge, and 37 from the pier. The number of deaths caused by the environment was found to be 126. It has been determined that 29 of these are caused by wires and cables in the environment (Mroszczyk, 2015). Mohseni et al. found that 17% of small construction sites, 16% of medium construction sites, and 39% of large construction sites provide the safety of electrical devices (Mohseni et al., 2015). In the examined work accidents in Turkey with a total number 5239, it is determined that 42.9% of those accidents have resulted in death caused by human falls. 20% of these falls are falling from the pier. There were 16.6% deaths and 3.1% injuries as a result of electric shock at building construction sites (Müngen, 2011). As a result of fall in the construction sector in Turkey, in another study conducted by the Gurcanli, it was determined that the death rate to be 42.9% and the injury rate to be 32.9%. Most of these falls are falls from the pier and stairs. It was found that 12.2% of death and 2.8% injury occurred as a result of electric shock (Gürcanli, 2013). In a similar study, it was found that the rate of the fall from an open edge was 45.2%, the rate of the fall from the pier was 25.4%, and the rate of the fall from the ground clearance was 7.3%. It was determined that 90% of the employer and 10% of the worker were at fault when safety belts were not used. Workers were found to be responsible for 80% of their insecure/careless behaviors (Talat Birgonul et al., 2016). As can be seen in similar studies above, falling from scaffolding in construction sites is the most common type of work accident. In this study, most of the workers work on the pier and they are afraid of working at high places. The reason for this may be the high number of occupational accidents and insufficient safety measures at the piers.

As a result of the research, it was found that the most important causes of occupational accidents according to the workers were carelessness at a rate of 66.3% and lack of safety measures at a rate of 33.7%. It was determined that 61.8% of the workers found the training given for occupational health and safety before starting work important. In a study conducted on 217 technical personnel, it was found that 27 of the personnel had a work accident. It was observed that 44.4% of work accidents were caused by an insecure environment and 55.6% due to unsafe behaviors (Aybek et al., 2003). In a study conducted on construction site chiefs, it was found that only 34% of the participants found the measures taken regarding occupational health and safety sufficient (Hergüner & Oral, 2015) In the study of Shin and his colleagues, it was emphasized that encouraging workers to take safe behaviors and sharing

accident news among workers caused the risk of accidents to be evaluated and necessary measures to be taken (Shin et al., 2014). In another study, it was found that the main causes of accidents in the construction sector are the lack of education and the misconduct of the workers (Gürcanlı, 2013). The above studies support this study. The carelessness and insecure behavior of the worker have an important place in the causes of workplace accidents.

In the study, it was found that the most important cause of occupational accidents was carelessness in primary school graduates, while not taking safety precautions as the education level increases. It was determined that as the education level increased, the number of workers working at the pier decreased. As the age increases, training for occupational health and safety have been found more important before starting work. At most, individuals between the ages of 25-31 work at the piers. It has been demonstrated that as the age increases, the number of workers working at the pier decreases. It has been determined that as the working years of the workers increase, workers' thought the training made for occupational health and safety before starting work is more important. In the study carried out on 400 blue-collar workers in İzmir, it was determined that workers between the ages of 18-25 assume the responsibility for occupational health and safety on the employer, and workers aged 46 and over assumed the responsibility for occupational health and safety on themselves. It has been determined that the higher the education level and working years of the workers, the more they feel responsible for occupational health and safety (Tozkoparan & Taşoğlu, 2011). Yılmaz and Tan found that 58% of workers in the 25-39 age group and 27% of workers between the ages of 18-24 were exposed to work accidents. The occurred accident ratio is 26.94% of those working on the construction site for 1-4 years and 22.75% of those who worked at the construction site for 1-5 months. As a result, it has been found that the highest rate of occupational accidents is seen in workers with less working experience. It was determined that 73.65% of primary school graduates experienced work accidents (Yılmaz & Tan, 2015). In the studies, occupational accidents were seen more in workers with low education levels, less work experience, and a young age group. This situation can be explained by increasing the sense of responsibility and the importance of occupational health and safety as the experience and age in working life increases.

In the study, it was determined that the knowledge, attitude, and behavior of the workers were generally good. Occupational accidents were seen at the highest rates among workers with low education levels and low work experience. Especially with the training given by occupational health and safety experts, it is considered that occupational accidents in construction will be reduced with effective inspection and surveillance in the field.

References

- Aybek, A., Güvercin, Ö., & Hurşitoğlu, Ç. (2003). Teknik personelin iş kazalarının nedenleri ve önlenmesine yönelik görüşlerinin belirlenmesi üzerine bir araştırma. *KSÜ Fen ve Mühendislik Dergisi*, 6(2), 91-100.
- Aydoğan, S.Ö., & Uçan, R. (2022). İş Sağlığı ve Güvenliğinin Saha Gözetimi ve İş Ekipmanları Açısından İncelenmesi: Yapı Sektörü. *Resilience*, 6(1), 111-125.
- Baradan, S. (2006). Türkiye İnşaat Sektöründe İş Güvenliğinin Yeri ve Gelişmiş Ülkelerle Kıyaslanması. Dokuz Eylül Üniversitesi Mühendislik Fakültesi Fen Ve Mühendislik Dergisi, 8(1), 87-100.
- Bayraktaroğlu, S., Mustafa, M., & Atay, E. (2018). Çalışanlarda iş güvenliği ve iş kazası algısı: Mavi yakalılar üzerine bir araştırma. *Uluslararası Yönetim ve Sosyal Araştırmalar Dergisi*, 5(9), 1-15.
- Camkurt, M. Z. (2013). Çalışanların kişisel özelliklerinin iş kazalarının meydana gelmesi üzerindeki etkisi. *TÜHİS İş Hukuku ve İktisat Dergisi*, 24(6), 70-101.
- Chi, C.-F., Chang, T.-C., & Ting, H.-I. (2005). Accident patterns and prevention measures for fatal occupational falls in the construction industry. *Applied ergonomics*, 36(4), 391-400.
- Cinar, U., & Cebi, S. (2022). A Novel Approach to Assess Occupational Risks and Prevention of Hazards: The House of Safety & Prevention. *Journal of Intelligent & Fuzzy Systems*. 42(1):517-528.
- Çavuş, A. (2016). Türkiye’de inşaat sektöründeki iş kazalarının sınıflandırılarak nedenlerinin incelenmesi. *Academic Platform Journal of Engineering and Science*, 4(2).
- Duman, E., & Etiler, N. (2013). İnşaat Sektörü ve İşçi Sağlığı. *TTB Mesleki Sağlık ve Güvenlik Dergisi*, 13(48), 30-38.
- Ercan, A. (2010). Türkiye’de yapı sektöründe işçi sağlığı ve güvenliğinin değerlendirilmesi. *Politeknik Dergisi*, 13(1), 49-53.
- Erol, S. (2015). İş Sağlığı Ve Güvenliği Konusunda İşveren, Çalışan Ve Devletin Rolü. *ASSAM Uluslararası Hakemli Dergi*, 2(4), 86-103.
- Forteza, F. J., Carretero-Gómez, J. M., & Sesé, A. (2020). Safety in the construction industry: accidents and precursors. *Revista de la construcción*, 19(2), 271-281.
- Fung, I. W., Lee, Y., Tam, V. W., & Fung, H. (2014). A feasibility study of introducing chin straps of safety helmets as a statutory requirement in Hong Kong construction industry. *Safety science*, 65, 70-78.
- Gürcanlı, G. E. (2013). Kuralsız ve baskıcı emek rejimine bakarken: İnşaat sektöründe işçi sağlığı ve iş güvenliği. *Eğitim Bilim Toplum*, 11(41), 48-80.
- Halperin, K. M., & McCann, M. (2004). An evaluation of scaffold safety at construction sites. *Journal of safety research*, 35(2), 141-150.

- Hergüner, M. A., & Oral, E. L. (2015). Şantiye Şeflerinin Sorumlulukları. Çukurova Üniversitesi Mühendislik-Mimarlık Fakültesi Dergisi, 30(1), 95-104.
- İlhan, M. N., Kurtcebe, Z. Ö., Durukan, E., & Koşar, L. (2006). Temizlik işçilerinin sosyodemografik özellikleri ve çalışma koşulları ile iş kazası ve meslek hastalığı sıklığı. Fırat üniversitesi sağlık bilimleri dergisi, 20(6), 433-439.
- Korkmaz, A., & Avsalli, H. (2012). Çalışma hayatında yeni bir dönem: 6331 sayılı iş sağlığı ve güvenliği yasası. Süleyman Demirel Üniversitesi Fen-Edebiyat Fakültesi Sosyal Bilimler Dergisi, 2012(26), 153-167.
- Mohseni, P. H., Farshad, A. A., Mirkazemi, R., & Orak, R. J. (2015). Assessment of the living and workplace health and safety conditions of site-resident construction workers in Tehran, Iran. International journal of occupational safety and ergonomics, 21(4), 568-573.
- Mroszczyk, J. W. (2015). Improving construction safety: A team effort. Professional Safety, 60(06), 55-68.
- Müngen, U. (2011). İnşaat sektörümüzdeki başlıca iş kazası tipleri. Türkiye Mühendislik Haberleri, 469(5), 32-39.
- Ohdo, K., Hino, Y., Takanashi, S., Takahashi, H., & Toyosawa, Y. (2011). Study on fall protection from scaffolds by scaffold sheeting during construction. Procedia Engineering, 14, 2179-2186.
- Osagbemi, G. K., La-Kadri, R. T., & Aderibigbe, S. A. (2010). Awareness of occupational hazards, health problems and safety measures among sawmill workers in North Central Nigeria. TAF preventive medicine bulletin, 9(4).
- Rubio-Romero, J. C., Rubio, M., & García-Hernández, C. (2013). Analysis of construction equipment safety in temporary work at height. Journal of Construction Engineering and Management, 139(1), 9-14.
- Shin, M., Lee, H.-S., Park, M., Moon, M., & Han, S. (2014). A system dynamics approach for modeling construction workers' safety attitudes and behaviors. Accident Analysis & Prevention, 68, 95-105.
- Talat Birgonul, M., Dikmen, I., Budayan, C., & Demirel, T. (2016). An expert system for the quantification of fault rates in construction fall accidents. International journal of occupational safety and ergonomics, 22(1), 20-31.
- Tozkoparan, G., & Taşoğlu, J. (2011). İş sağlığı ve güvenliği uygulamaları ile ilgili işgörenlerin tutumlarını belirlemeye yönelik bir araştırma.
- WHO. (2007). Workers' health: global plan of action Access: https://apps.who.int/gb/ebwha/pdf_files/WHA60/A60_R26-en.pdf
- Yakut, A., & Akbıyıklı, R. (2013). İşçi sağlığı ve güvenliği yönetimi ile toplam kalite yönetimi sistemleri veri analizi incelemesi. Sakarya University Journal of Science, 17(1), 97-103.

Evaluation of Knowledge, Behavior, and Attitudes of Construction Workers about Occupational Health and Safety in Turkey

- Yılmaz, F., & Tan, O. (2015). Bir inşaat şantiyesinde iş kazalarının neden olduğu iş-günü kayıplarının işverene maliyetinin belirlenmesi. *International Journal of Economic and Administrative Studies*, 7(14), 143-156.
- Zengin, M. A. (2022). Türkiye İnşaat Sektörü İş Kazalarının İstatistiksel Analizi, 2011-2020. *International Journal of Engineering Research and Development*, 14(2), 492-501.