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Research Article

Changes in the Level of Compliance with Construction Workers' Occupational Health and Safety Legal Legislation (2013-2018) in the Five-Year Period

Şahin Tolga GÜVEL[a,*]

[a] *Department of Civil Engineering, Faculty of Engineering,Osmaniye Korkutata University, Osmaniye, TURKEY*
* *Corresponding author's e-mail address: stolgaguvel@yahoo.com*
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ABSTRACT

The construction sector is one of the those with the highest number of occupational accidents. There are problems in the implementation of legal regulations on occupational health and safety in the sector. In this study, the questionnaire answered by the construction workers in 2013, was repeated in 2018. Considering the data obtained from studies and legal regulations, the survey results from the questionnaire of in 2013 and 2018 are compared. The results of the comparison indicate the change in the five-year period between 2013 and 2018. The results are examined for the level of compliance of the construction workers with the legal regulations on occupational health and safety. According to this study, some improvements has been achieved in this five-year period at occupational health and safety legislation in construction sector in Turkey.

Keywords: *Occupational health and safety, Work accidents, Health and safety legislation*

İnşaat İşçilerinin İş Sağlığı ve Güvenliği Yasal Mevzuatına Uyum Düzeyindeki Beş Yıllık Değişim (2013-2018)

ÖZ

İnşaat sektörü, en fazla iş kazası yaşanan sektörlerden biri olup, iş sağlığı ve güvenliğiyle ilgili yasal düzenlemelerin inşaat sektöründe uygulanmasında sorunlar görülmektedir. Bu çalışmada işçi-usta-formen, grubu çalışanlarına 2013 yılında uygulanan anket, 2018 yılında tekrar uygulanmıştır. Geçmiş çalışmalardan elde edilen veriler ve yasal düzenlemeler dikkate alınarak 2018 ve 2013 yıllarında yapılan anket sonuçları karşılaştırılmıştır. Karşılaştırma sonuçlarına göre inşaat işçilerinin iş sağlığı ve güvenliği yasal mevzuatına uyum düzeyinde 2013 ve 2018 yılları arasındaki beş yıllık değişim incelenmiştir. Yapılan çalışmaya göre beş yıllık dönem içinde Türkiye inşaat sektöründeki iş sağlığı güvenliği uygulamalarında iyileşmeler görülmüştür.

Anahtar Kelimeler: *İş sağlığı ve güvenliği, İş kazaları, İş sağlığı ve güvenliği mevzuatı*

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I. INTRODUCTION

From 2012 onwards, the implementation of the health and safety legislation that went into effect in Turkey seems to have positive improvements on occupational health and safety. According to the relevant research and studies, the occupational health and safety in construction works is not applied as specified by the legal regulations. In the construction industry, the highest risk rating sector in terms of occupational accidents, it appears that the improvements in occupational health and safety practices will take time to reach the desired level.

There are many studies in the international literature on occupational safety practices. This study focuses on the occupational health and safety practices in Turkey. The presented results are based on questionnaires conducted in Turkey on this issue in 2013 and 2018. The findings reflecting the level of application of legal regulations examined are listed below:

Use of Personal Protective Equipment (PPE):

According to legal regulations in Turkey, the employer determines the occupational health and safety measures to be taken as a result of the risk assessment to be made and the protective equipment or equipment that should be used (Occupational Health and Safety Law No.:6331) and the employees are responsible from using suitable PPE for the task performed (Occupational Health and Safety Services Regulation, Item 8, Turkish Official Newspaper Date: 29.12.2012, No.:28512), and the employers are held responsible for providing and enruing the usage of the necessary PPE by their employees (Occupational Health and Safety Regulations in Construction Works, Item 5, Turkish Official Newspaper Date:05.10.2013, No.:28786). The suitable personal protective equipment to be used is determined according to the risk assessment based on the task and related working conditions. The general practice in construction works related to the use of PPE states that a hard hat and work shoes should be used by all employees at any construction site (Regulation on the Use of Personal Protective Equipment in Workplaces, Item 7, Turkish Official Newspaper Date:02.07.2013, No.:28695).

In Hong Kong, PPE usage percentages were determined to be; 87.5% for helmets, 80% for gloves, 77.5% for glasses, 70% for work shoes, 56% for face protector and 50% for the seat belt [1]. 46% of construction site workers use helmets, gloves and seat belts for occupational safety while 46% do not use helmets, gloves and seat belts and 8% of the employees did not even comment on this issue [2]. The PPE usage rates were determined as “never use” at 0%, “I use it sometimes” at 14.7%, “I use it often” at 28.8% and “I always use it” at 56.5% [3]. The rates of PPE usage of construction workers were determined; 67.95% for helmets and 68.80% for work shoes. Those who did not use any PPE were found to be 7.26% [4]. Another survey study was conducted by the construction companies and their employees in Ankara. In this study, it was observed that the employees used the PPE given to them fully by 21.6%, the partially by 19.8% and the none by 58% [5].

Health Reports:

According to the legal regulation, the construction sector is categorised as dangerous and very dangerous classes. Besides for those who will work in this sector categorised in these classes are required to obtain a health report proving that the bearers are suitable for the job before they start working (Occupational Health and Safety Law No.:6331).

It was identified that 81.12% of the construction workers received a health report indicating that they can work in heavy and dangerous business while 11.59% did not receive and 7.30% received the health report after starting at the workplace [4].

The survey study applied to 305 employees and 56 employers, mainly operating in the construction sector in the districts of Trabzon, it was determined that the ratio of employers to have a health report before starting work was about 87.50% [6].

Employing the Certified Workers:

According to the legal regulations, it is obligatory for the employees performing dangerous jobs in the dangerous and very dangerous classes to document that they have received the relevant vocational training related to the job. It is necessary to employ the masters who have the authorization certificate in the construction of civil and plumbing works in the dangerous and very dangerous classes, and to keep a copy of the authorization certificates in the relevant workplace file (Occupational Health and Safety Law No.:6331).

The rate of employees, who work as workers, masters and foremen, has professional qualification certificate, was determined as 70.83% [4].

The survey study applied to 305 employees and 56 employers, operating in the construction sector in the districts of Trabzon, it was determined that the employers' ratio of paying attention to the fact that their employees have vocational training certificates or not was about 60.70% [6].

The rate of having professional qualification certificate was determined to be about 60.80% and the rate of those who were not was about 39.20% according to the survey applied to 398 construction sector employees working in 30 different projects in Trabzon in 2015 [7].

It was determined that only 85.50% of the employees had the necessary vocational training, according to the survey study covering 103 participants working in construction sites in Izmir, Denizli, Akhisar and Manisa provinces in 2016 [8].

Occupational Safety Training:

According to legal regulations employers dealing with jobs in the very dangerous class, it is obliged to provide training on occupational safety to its employees. Before starting the job, in the case of work area or job change, when work equipment changes, when a new technology related to work is applied and at least once a year. Employers are also responsible for providing occupational safety training to their employees including employees of subordinate employers, part-time or full-time employees, and fixed-term, indefinite-term and temporary-term employees (Occupational Health and Safety Law No.:6331).

Occupational health and safety trainings should be provided to employees according to the legal regulation. The training should be given by workplace doctors and occupational safety specialists as assigned, employees, employers and public servants organizations or educational foundations established by these organizations and training centers jointly established by these organizations, universities, educational units of public institutions, public professional organizations or as defined by

educational institutions authorized by the Ministry (Regulation on the Procedures and Principles of Occupational Health and Safety Training of Employees, Item 13, Turkish Official Newspaper Date: 15.05.2013, No.:28648).

The occupational safety training status of construction workers was determined that; those who get trained before starting work is about 69.30%, those whose working area changed is about 10.53%, when working machine or equipment changed is about 13.60%, and at least once a year rate is about 12.71%. The rate of no occupational safety training was determined to be about 14.04%. According to the same study, 12.23% of construction workers mentioned that the occupational safety training was not provided to them at the work site where they were working. Only 75.55% of them mentioned that occupational safety training was provided by the occupational safety specialist or workplace doctor in accordance with the legal regulation [4].

The rate of giving occupational safety and health training to the employees was determined to be about 31.0% based on the results of the study performed for participants working in construction sector in Ankara [5].

The survey study applied to 305 employees and 56 employers, operating in the construction sector in the districts of Trabzon, it was determined that the ratio of employees had trained about occupational safety and health was about 32.10% [6].

The rate of receiving occupational safety training was about 76.63%, and the rate of those who did not receive was about 23.37% according to the survey study applied to 398 construction sector employees working in 30 different projects in Trabzon in 2015 [7].

The rate of employee training was determined to be about 92.20% according to the survey study on 103 participants working in construction sites located in Izmir, Denizli, Akhisar and Manisa provinces in 2016 [8].

20% of the firms in the construction sector started the work with an informal job compliance training while the other 20% of companies seems to provide their employees with formal job training. Companies other than these have never provided training to workers for job adaptation. According to the result of the study, foremen are responsible for the adaptation of newly recruited workers to the job in 20% of the companies [9].

Researchers analysed a total of 800 accident reports. They found out that about 74% of occupational safety training is not provided in small-scale construction companies. As a result, there is an increase in the habit of doing work unsafely [10].

Mentioned as a result of their survey that there is a significant deficiency in occupational safety training as most workers have not received comprehensive occupational safety training [11].

While 50% of the responses received were given internal training periodically about health and safety, about 34% of them were given no internal training. About 97% of the responses are that occupational health and safety training was definitely given to newly hired employees [12].

The rate of employee occupational safety training was determined to be about 15% according to the survey results applied to 250 employees working in the construction industry in 5 different provinces in the Eastern Anatolia Region [13].

Occupational Health and Safety Inspection:

Regarding the inspection of occupational safety, it is generally evaluated under the obligation of employer, occupational safety specialist and the deputy of the employer and site supervisor. Legal regulation does not impose any responsibility on this issue to other technical staff. Occupational safety specialists with (A) class certificate should be appointed in work places of sectors classified for very dangerous class. In the process of compliance with the legal legislation, it was also possible to temporarily assign occupational safety specialists with a class (B) specialization certificate until 01.01.2018. The item about temporary assignment has been repealed as of 22.02.2019 (Occupational Health and Safety Law No.:6331).

Those who perform OHS inspections, according to those who work as workers, masters and foremen, were identified as site supervisors with a rate of 28.14%, field engineers with a rate of 19.05%, and occupational safety experts with a rate of 64.95% [4].

The ratio of inspection by the public authorities in construction projects on occupational health and safety was determined to be about 42.3% [12].

The ratio of the required inspections by the inspection mechanisms in the working environment was about 11% according to the survey results applied to 250 employees working in the construction sector in 5 different provinces in the Eastern Anatolia Region [13].

A work safety implementation study based on performance management in the construction industry was conducted in Finland. As a result of the one-week inspection method application, the level of occupational safety applied in two construction sites was observed by the supervisor and employees and the occupational safety index. As a result of the reviews, it was determined that the index level for the first construction site increased from about 60% to about 89% and for the second construction site from about 67% to about 91% [14].

The purpose of the study that forms the basis of this research is to examine changes in the level of compliance with construction workers' occupational health and safety legal legislation (2013-2018) in the five-year period. The study also covers the level of implementation in the relevant laws and regulations for occupational health & safety and identifies the problems experienced in the practice of propagation, sets priorities and provides solutions related to them. As a part of the study, the result of the survey conducted for this purpose is evaluated together with the legal regulations and past survey results.

II. MATERIAL AND METHOD

For determining the five-year change in the level of compliance to legislation in the construction industry about occupational health and safety in Turkey; the survey work carried out in 2013 which was applied to the construction workers, was repeated again in 2018. The questionnaire forms were

distributed between January-May 2018. In total 198 questionnaire forms were received until July 2018. The results obtained through the received surveys were evaluated together with the relevant legal regulations and compared with the 2013 survey results. In assessing the change between 2013 and 2018, the significance test of the difference between the two percentages was used. The hypothesis determined for the lowest absolute change rate among the data was tested.

Table 1. *Data table of the significance test of the difference between the two percentages.*

Group	Sample Quantity	Quantity of Occurrence	Percentage of Occurrence(%)
A	n_1	a	$a/ n_1= p_1$
B	n_2	b	$b/ n_2= p_2$
Total	$n_1+ n_2=$ n	a+b	(a+b)/n=p

$q=1-p$ (1)

$sd = n_1+ n_2-2$ (2)

Hypothesis:

H_0 : There is no difference between the two percentages ($p_1=p_2$)

H_1: There is difference between the two percentages ($p_1 \neq p_2$)

Test Statistics:

$$t = \frac{p1 - p2}{\sqrt{\frac{p * q}{n1} + \frac{p * q}{n2}}} \quad (3)$$

Error Level:

α=0.01 and α=0.05 (4)

III. RESULTS AND DISCUSSIONS

A. PARTICIPANTS PROFILE

Distribution information of the construction sector employees who participated in the survey in 2013 and 2018 is given in Table 2.

According to the table, in 2013 there were 234 participants working as construction workers, and there were 198 participants working as construction workers in 2018.

Table 2. *Participants of questionnaire.*

Rank No.	Participants of Questionnaire	Quantity of Participants (2013)	Quantity of Participants (2018)
1	Construction Workers	234	198

B. PERSONEL PROTECTIVE EQUIPMENT (PPE) USAGE

According to the average results of those surveyed in 2013; the ratio of hard hat usage on site was about 67.95%, the ratio of steel toe work shoes usage was about 68.80% and the ratio of no PPE usage was found to be about 7.26% (Table 3).

According to the average of the respondents in 2018; the ratio of hard hat usage increased by about 25.61% compared to 2013 and reached about 85,354%. Steel toe shoes usage increased by about 15.99% compared to 2013 and reached about 79.80%. Again, those who never used PPE in the same period decreased by about 65.16% compared to 2013 and decreased to about 5.05% (Table 3).

In order to evaluate the change between 2013 and 2018 regarding the PPE used, a hypothesis test of the difference between the two percentages was applied.

According to the results obtained, the t value for “steel toe shoes” calculated is about 2.2350, and the difference between the hard hat usage percentages in 2013 and 2018 is not significant in the 99% confidence interval. But it is significant in the 95% confidence interval.

According to the results obtained, the value of t for the "hard hat" calculated is about 3.2605, and the difference between the hard hat usage percentages in 2013 and 2018 is found to be significant in the about 99% confidence interval.

Table 3. *Personal protective equipment usage.*

Rank No.	PPE Usage at Site	Hard Hat	Work Shoes	None of Them	Total of Participants
1	Year 2013 (Quantity)	159	161	17	234
2	Year 2013 (%)	67.95	68.80	07.26	100
3	Year 2018 (Quantity)	169	158	10	198
4	Year 2018 (%)	85.35	79.80	05.05	100
Percentage of 5 Year Change [(2018/2013)-1]		25.61%	15.99%	-30.44%	

C. HEALTH REPORTS

When the 2013 survey results are analysed; it is observed that the rate of receiving health report before starting work is about 80.77%, the rate of not receiving is about 11.54%, and the rate of receiving health report after starting work is about 7.26% (Table 4).

According to the comparison of the surveys of year 2018 and year 2013; receiving health report before start working has decreased by about 8.72% compared to 2013 and decreased to about 73.73%. The ratio of those who did not receive a health report before starting work increased by about 35.70% compared

to 2013 and reached about 15.66%. In the same period, the rate of receiving health report after starting work increased by about 39.11% compared to 2013 and reached the level of about 10.10% (Table 4).

Hypothesis testing of the difference between the two percentages was carried out in order to evaluate the change between 2013 and 2018 regarding the status of receiving health report showing that it can work in very dangerous classified jobs before starting work.

According to the results obtained, t value calculated is about 1.5313 for the answer "yes", about 0.1582 for the answer "no" and about 0.3077 for the answer "after the job". The difference between the years 2013 and 2018 was found significant in the 95% confidence interval for all answers.

Table 4. *Getting health report before starting work.*

Rank No.	Getting Health Report Before Starting Work	Yes	No	After Starting Work	Total of Participants
1	Year 2013 (Quantity)	189	27	17	234
2	Year 2013 (%)	80.77	11.54	07.26	100
3	Year 2018 (Quantity)	146	31	20	198
4	Year 2018 (%)	73.73	15.66	10.10	100
Percentage of 5 Year Change [(2018/2013)-1]		-8.72%	35.70%	-39.11%	

D. EMPLOYING CERTIFIED WORKERS

When the year 2013 survey is examined; it is observed that the rate of employment of the construction workers with the authorization certificate is about 65.38%, and the rate of employment of the construction workers without the authorization certificate is about 26.92% (Table 5).

When the year 2018 survey is examined; it is observed that the employment rate of the construction workers with the authorization certificate decreased by about 24,30% compared to the year 2013, and the rate of employment of the construction workers without the authorization increased by 70.73% to 45.96%. (Table 5).

The hypothesis test of the difference between the two percentages was applied in order to evaluate the change between the years 2013 and 2018 regarding the authorization status.

According to the results obtained, t value calculated is about 2.489 for the answer “exist” and about 2.4255 for the answer “absent”. The difference between the percentage of existence of the professional qualification certificate in the years 2013 and 2018 was not found significant with 1% error level, but it was found significant with 5% error level.

Table 5. *Employing certified workers.*

Rank No.	Employing Certified Workers	Yes	No	Unanswered	Total of Participants
1	Year 2013 (Quantity)	153	63	18	234
2	Year 2013 (%)	65.38	26.92	07.69	100

3	Year 2018 (Quantity)	98	91	9	198
4	Year 2018 (%)	49.49	45.95	04.55	100
Percentage of 5 Year Change [(2018/2013)-1]		-24.30%	70.73%	-40.83%	

E. OCCUPATIONAL SAFETY TRAININGS

According to the survey study applied in the year 2013; it has been determined that occupational safety training was given at the rate of 13.25% when work equipment changes, 67.52% before starting work, 7.69% after starting work, 10.26% at workplace change, at least once a year, 12.39%. The rate of absence of occupational safety training was determined to be about 13.68% (Table 6).

According to the survey study applied in the year 2018; it has been determined that occupational safety training was given at the rate of 7.07% when work equipment changed, 71.21% before starting work, 16.67% after starting work, 13.64% at workplace change, at least once a year, 15.66%. The rate of absence of occupational safety training was decreased by about 92.62% compared to 2013 and decreased to about 1.01% (Table 6).

Hypothesis testing of the difference between the two percentages was applied for the rates of change between the years 2013 and 2018 regarding the time of receiving occupational safety trainings.

According to the results obtained, t value calculated is about 0.6456 for the answer "not given", about 0.6282 for the answer "when the new machine arrives", about 0.6900 for the answer "before work", about 0.9496 for the "after work" response, about 0.33733 for the answer "when the working place changes, and about 0.33660 for the answer "once a year".

Table 6. *Occupational safety training time at work.*

Rank No.	Safety Training Time at Work	No Training	When Used Machine Changes	Before Starting Work	After Starting Work	When Workplace Changes	Once a Year	Total of Participants
1	Year 2013 (Quantity)	32	31	158	18	24	29	234
2	Year 2013 (%)	13.68	13.25	67.52	07.69	10.26	12.39	100
3	Year 2018 (Quantity)	2	14	141	33	27	31	198
4	Year 2018 (%)	01.01	07.07	71.21	16.67	13.64	15.66	100
Percentage of 5 Year Change [(2018/2013)-1]		-92.62%	-46.64%	5.74%	116.78%	32.94%	26.39%	

According to the survey applied in the year 2013; it has been determined that the rate of not given occupational safety training was about 11.97%, the rate of the occupational safety training given by the workplace doctor was about 2.56%, the rate of the occupational safety training given by the occupational safety specialist was about 71.37% (Table 7).

According to the 2018 survey results, the percentage of employees who stated that they did not receive occupational safety training at their worksite decreased by about 57.81% compared to 2013 and fell to

about 5.05%. The rate of employees stating that occupational safety training was given by the workplace doctor increased by about 57.81% compared to 2013 and reached about 4.04%. In the same period, the rate of employees stating that occupational safety training was given by the occupational safety specialist increased by 24.55% compared to 2013 and reached the level of 88.89% (Table 7).

Hypothesis testing of the difference between the two percentages was applied for the rates of change between the years 2013 and 2018 for who was giving the occupational safety training.

According to the results obtained, the t value calculated is about 0.66631 for the answer "not given", about 0.1548 for the answer "workplace doctor", and the difference between percentages in the years 2013 and 2018 was not significant in the 95% confidence interval.

According to the results obtained, the t value was calculated as 3.2693 for the answer of “Occupational Safety Specialist”. The difference between the percentages of the occupational safety training given by the occupational safety specialist in the years 2013 and 2018 was found significant in the 99% confidence interval.

Table 7. *Occupational safety trainers.*

Rank No.	Who Gives Occupational Safety Training?	No Training	Doctor	Occupational Safety Specialist	Total of Participants
1	Year 2013 (Quantity)	28	6	167	234
2	Year 2013 (%)	11.97	02.56	71.37	100
3	Year 2018 (Quantity)	10	8	176	198
4	Year 2018 (%)	05.05	04.04	88.89	100
Percentage of 5 Year Change [(2018/2013)-1]		-57.81%	57.81%	24.55%	

F. OCCUPATIONAL SAFETY INSPECTIONS

According to the survey applied in the year 2013; it has been determined that the rate of site manager inspecting the occupational safety was about 27.78%, the rate of occupational safety specialist inspecting occupational safety was about 64.10% and the rate of nobody inspecting occupational safety was about 10.68% (Table 8).

According to the survey study applied in the year 2018; it has been determined that the rate of site manager inspecting the occupational safety decreased by about 30.92% compared to the year 2013 and decreased to about 19.19%. The rate of occupational safety specialist inspecting occupational safety increased by about 37.88% compared to the year 2013 and increased to about 88.38%. The rate of nobody inspecting the occupational safety decreased by about 52.72% compared to the year 2013 and decreased to about 5.05%. (Table 8).

Hypothesis testing of the difference between the two percentages was applied for the rates of change between the years 2013 and 2018, related to the occupational safety inspection at the workplace where they work.

According to the obtained results, t value was calculated as 0.9872 for the answer of "site manager". Accordingly, the difference between the percentages of conducting occupational safety inspections at the construction site in the years 2013 and 2018 by the site manager was not found significant in the 95% confidence interval.
According to the obtained results, t value was calculated as 5.0549 for the answer of "occupational safety specialist". Accordingly, the difference between the percentages of safety inspection by the occupational safety specialist at the construction site in the years 2013 and 2018 was found significant in the 99% confidence interval.

***Table 8**. Occupational safety inspectors at construction site.*

Rank No.	Who Inspect Safety at Site?	Site Manager	Occupational Safety Specialist	No One	Total of Participants
1	Year 2013 (Quantity)	65	150	25	234
2	Year 2013 (%)	27.78	64.10	10.68	100
3	Year 2018 (Quantity)	38	175	10	198
4	Year 2018 (%)	19.19	88.38	05.05	100
Percentage of 5 Year Change [(2018/2013)-1]		-30.92%	37.88%	-52.72%	

IV. CONCLUSIONS

In this study; changes in the level of compliance with construction workers' occupational health and safety legal legislation (2013-2018) in the five-year period is presented. A questionnaire was applied to construction workers for this purpose.

The results obtained from the survey study, the findings obtained as a result of the evaluations made considering the legal regulation and the significance test of the difference between the two percentages are listed below.

PPE Usage:

The rate of use of hard hat and steel toe shoes, which are compulsory PPE in almost all conditions, has increased.

According to the statistical evaluation, there is a significant improvement in the use of PPE.

Health Reports:

It has been determined that the rate of receiving health reports that shows they can work in very dangerous classified jobs before starting work has decreased a little. Besides the rate of receiving reports has increased after starting work. Also a decrease was found in the rate of not getting any health reports. According to the statistical evaluation, there is no significant change in obtaining a health report.

Certificate of Professional Competence:

It has been determined that the rate of having professional qualification certificate of the construction workers has decreased.

According to the statistical evaluation, it is seen that there is a significant decrease in possession of professional qualification certificate. However, according to the regulation in force during the year 2013 survey study period, professional qualification documents issued by the employers were accepted, whereas only documents issued by the Vocational Qualification Authority were accepted according to the regulation in force during the year 2018 survey period. Considering this situation, it is evaluated that it is important to follow the rate of having professional qualification certificate in the future.

Occupational Safety Trainings:

It is obligatory to provide training on occupational safety before starting work, in the change of the working area, when the work equipment changes, if a new technology is applied and at least once a year in the very dangerous classified business. Although the rate of delivery of these trainings is not 100%; except for the change in work equipment, the rate of delivery of these trainings has increased. In the same period, a very high decrease was found in the rate of employees stating that training was never given. In the statistical evaluation, it is seen that the changes regarding the time of giving occupational safety training are not significant. In addition, it is evaluated that the decreased rate of no occupational training is a positive improvement

In the same period, an increase in the rate of giving occupational safety trainings by occupational safety specialists, workplace doctors and a decrease in the rate of non-training were determined. The statistical evaluation shows that there are positive improvements in the delivery of occupational safety trainings by occupational safety specialists.

Occupational Safety Inspections:

An increase in the rate of inspection occupational safety inspections by occupational safety specialists, and a decrease in the inspection by the site managers were observed.

The statistical evaluation shows that there are positive improvements in the conduct of occupational safety inspections by occupational safety specialists.

Suggestions:

Implementation of the necessary legislation for occupational health and safety in the construction sector in Turkey and the spread of applications have increased in the positive direction in the five-year period between 2013 and 2018. Although the occupational safety awareness has not yet reached the desired level, the effectiveness of occupational safety specialists in the sector has increased.

To continue the increase in the spread of the application and to reach to the desired level, it is important to implement the occupational health and safety legal legislation more effectively in the construction sector. Hence, the sector representatives, employees, the relevant ministries, professional organizations and universities should work in coordination with each other.

Although there are improvements regarding PPE usage and occupational safety inspections, it is still necessary to raise the awareness of the sector employees as it is still lower than the targeted level. The improvements in obtaining health reports before starting work, recruiting employees with a professional qualification certificate and providing occupational health and safety trainings in accordance with the

legislation are not considered sufficient and more attention needs to be paid to these issues. In particular, more attention should be paid to obtaining health report before starting work.

In this study; changes in the level of compliance with construction workers' occupational health and safety legal legislation (2013-2018) in the five-year period are reviewed. The results obtained from this study to examine the time-dependent change of the level of implementation of health and safety in the construction sector in Turkey, can be used in future studies.

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