

Occupational Health and Safety Performance of Turkey: An Overview of Current Trends

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Abstract

Occupational health and safety issues are one of the most important issues of the working life for Turkey as well as for the entire world. With the developing industrial activities, the working population is increasing day by day, and accordingly, there is an increase in the accident rates at workplaces. According to the latest estimates of the International Labor Organization (ILO), every year 2.78 million employees die from work accidents and diseases in the world, and 374 million employees are exposed to non-fatal work accidents. Again, according to ILO, the numbers of both work accidents and occupational diseases tend to increase from year to year. Occupational health and safety practices aim to minimize the accidents and occupational diseases that occur in the workplaces by adapting the working conditions to human beings. According to official data in Turkey, approximately 400 thousand accidents have been recorded in recent years and an average of 1500 employees died due to work accidents. Even though these data are supported by laws regarding occupational safety in our country, it still maintains its importance as a very important problem. In this study, the data of 2019 work accidents and occupational diseases published by the Social Security Institution (SSI) were analyzed to draw attention to this important problem. Moreover, Turkey's OSH performance was compared with Germany and Japan from various angles. Finally, various suggestions have been developed to solve the problem.

Keywords: Work Related Accident, Occupational Disease, Turkey, Germany, Japan

1. INTRODUCTION

The development of technology has been effective in our country as well as all over the world, and a significant increase has been observed in the working population due to industrialization. With people taking an active role in working life, work accidents and deaths due to these accidents have increased gradually (P. HÄMÄLÄINEN & J. TAKALA & KL. SAARELA, 2006). Work accidents have caused financial damage to workplaces as they cause loss of life and occupational diseases (HÄMÄLÄINEN P., 2009). Accordingly, the emergence and development of Occupational Health and Safety (OHS) field has been inevitable.

OHS, which has been defined in different ways by various institutions and organizations and whose goals are determined, has become an important topic that should be focused on for the whole world. The World Health Organization (WHO), which was established to lead international studies in the field of health, defines occupational health as "*ensuring the physical, mental and social well-being of employees*" (Mızrak K. C. & Tolon M., 2017). In addition, ILO, which was established under the United Nations to improve working and working life and to develop international standards in this field, defined occupational health as "*increasing the health and welfare level of the employees, clearing the working*

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environment from all negativities and creating a work environment suitable for the needs" (Ceren G. & Yıldırım S., 2018). Work safety is "*Determination and implementation of safety prevention in order to minimize the losses caused by work accidents*" (Allı B. O., 2008). These and similar definitions show that the main purpose of the common struggle carried out throughout the world within the scope of OHS is to prevent the death and injury of employees, the occurrence of health problems due to the working environment, and to humanize the working conditions.

According to the latest estimates made by the ILO, 1000 employees die from work accidents and 6500 employees die from occupational diseases every day. While there were 2.33 million work-related deaths worldwide in 2014, this figure increased to 2.78 million in 2017. These data show that deaths due to work accidents and diseases tend to increase significantly from year to year (ILO, 2019). Although issues such as loss of life and occupational diseases often come to mind when OHS is mentioned, the incident also has an economic dimension. According to ILO, the financial loss imposed on a country by work accidents and occupational diseases varies between 1% and 6% of the gross national product of that country (ILO, 2019). Employees, employers and governments are financially affected by these accidents. Employees lose income on days off. Employers experience various financial losses due to a decrease in production due to the interruption of work, machinery not working and loss of workforce. In addition, various compensation payments and loss of reputation are the financial losses that employers have to bear. The cost of social security institutions due to work accidents and occupational diseases is the financial losses of the states (Ceren G. & Yıldırım S, 2018; Gümüş R, 2017).

Working in a healthy and safe environment is one of the most basic rights for all people. In our country, an effective OHS legislation has been established in order to ensure that people work in a healthy and safe manner and to prevent dangers and diseases that may occur. The Labour Law No. 4857 regulates the rights and responsibilities of workers, working on the based on an employment contract with employers regarding the working conditions and the working environment (Official Gazette, 2003). Likewise, the duties, authorities, responsibilities, rights and obligations of employers and employees have been determined in order to ensure OHS in workplaces and to improve existing health and safety conditions within the scope of OHS Law No. 6331 (Official Gazette, 2003). In addition, dozens of regulations issued based on the law numbered 6331 constitute an important part of the OHS legislation. However, legal legislation is not enough to ensure the health and safety of employees. There is a need to create a safety culture in businesses. For this purpose, both employers and employees should be aware of OHS through training.

One of the ways to increase the welfare of the society is to reduce work accidents and occupational diseases. From 2012 on this issue when you look at the work carried out in Turkey; An independent OHS law has been enacted, certain regulations related to this law have been established, OHS professionals have been trained, OHS professionals have been assigned to workplaces, inspections have been increased, and most importantly, an awareness of work accidents and occupational diseases has been tried to be created in the society. Although these studies are at a considerable level, they were not sufficient in reducing work accidents and occupational diseases.

The most effective way to prevent work accidents and occupational diseases is to reveal the causes that cause them. For this purpose, this study analyzed work accidents and occupational diseases in Turkey in 2019. Each year, the effect of increasing work accidents or deaths related to these accidents on professional groups, economic activities, provinces and age groups was examined. In addition, in order to see Turkey's OHS performance more clearly, the OHS data of Germany and Japan, two developed countries, were compared with

Turkey using various comparison criteria. Finally, various solutions have been proposed in this issue, which is an important problem for our country.

2. BASIC CONCEPTS

2.1. Work Accident

There are many definitions of work accidents made in the literature. Accidents at work in general are preventable events that occur at unexpected times that endanger the lives of employees and cause injuries (Ceylan H, 2011). According to the ILO, occupational accidents work accidents are defined as "accidents at work or during work that can result in death, personal injury or illness" (ILO, 2020). Failure to establish a safety culture in workplaces and failure to comply with the determined safety rules are the main causes of work accidents.

2.2. Occupational Disease

According to the Social Insurance and General Health Insurance Law No.5510, occupational diseases caused by the exposure of employees to chemical or biological factors in their workplaces are defined as "temporary or permanent illness, physical or mental disability, which the insured suffered due to a recurring reason or due to the nature of the job" (Official Gazette, 2006).

2.3. Danger and Risk

Danger, defined as damage to people, the environment or property, is events with a potential to cause harm. The probability of unwanted events (that is, danger) occurring is risk (Ceylan H. & Başhelvacı V, 2011). All risks that may occur in working environments must be calculated and hazards must be eliminated. In this way, property and moral damages that may occur can be prevented.

2.4. General Incidence Rate of Work Accident

In a workplace, the value obtained by multiplying the number of accidents during a certain period by 1.000 and dividing it by the number of employees is expressed as "General incidence rate". This value is a benchmark that shows how many of 1,000 employees experience work accidents in a working year (Ceylan H, 2012). It is used to compare businesses or countries with each other. It is calculated by the formula below.

$$\text{GIRWA} = \left(\frac{\text{NEI}}{\text{NE}} \right) * 1.000 \quad (1)$$

(GIRWA: *General Incidence Rate of Work Accident*, NEI: *Number of Employment Injures*, NE: *Number of Employees*)

2.5. Fatal Incidence Rate of Work Accident

In a workplace, the value obtained by multiplying the number of cases of death as a result of an accident at work during a certain period of time by 1.000.000 and dividing it by the number of employees is expressed as "fatal incidence rate". This value is a benchmark that shows how many of the 1.000.000 employees died as a result of an occupational accident in a working year (SSI, 2020). It is used to compare businesses or countries with each other and calculated by the formula below.

$$\text{FIRWA} = \left(\frac{\text{ND}}{\text{NE}} \right) * 1.000.000 \quad (2)$$

(FIRWA: *Fatal Incidence Rate of Work Accidents*, ND: *Number of Death*, NE: *Number of Employees*)

2.6. Weight Rate of Work Accident

This parameter represents the number of days lost due to cases of work accidents per 1.000.000 working hours (SSI, 2020). Its formula as follows,

$$WRWA = \left(\frac{TLD}{NDPA * 8} \right) * 1.000.000 \quad (3)$$

where,

$$TLD = DTI + (TLPI * 75) + (ND * 7500) \quad (4)$$

(WRWA: *Weight rate of work accidents*, TLD: *Total number of working days lost due to cases of occupational injury with temporary incapacity for work*, NDPA: *number of days of premium accrued represents total number of working days of all insured persons during calendar year*, DTI: *Duration of temporary incapacity (days)*, TLPI: *Total levels of permanent incapacity*, ND: *Number of death*)

3. ANALYSIS OF TURKEY'S OHS DATA FOR 2019

In Turkey, after work accidents occur and occupational diseases are diagnosed, they must be reported to the SSI by the employer within 3 working days (Official Gazette, 2012). SSI creates a database from the data notified to it and publishes the data of occupational diseases and work accidents every year in the form of statistical yearbooks. In this study, the analysis of work accidents and occupational diseases in Turkey was made using the 2019 data of the SSI. In 2019, a total of 422,463 employees were involved in work accidents in Turkey and 1147 people, 21 of whom were women and 1126 of whom were men, died as a result of work accidents. In addition, 1088 employees were got by occupational disease in 2019. The number of employees who died as a result of occupational disease was recorded as 0 (SSI, 2020). According to ILO, the number of deaths as a result of occupational diseases is expected to be approximately 6-7 times the number of deaths as a result of work accidents. But the absence of any cases of death as a result of occupational disease in Turkey is an indication that occupational diseases has not been registered in 2019 (ILO, 2019).

Table 1. Distribution of the Number of Insured Persons with Work Accidents by Economic Activity and Gender, 2019

Economic Activity	Number of Insured Persons with Work Accidents			
	Male	Female	Total	%
Construction Sector	47.211	490	47.701	11,29
Metal Industry	38.439	2.059	40.498	9,58
Textile Manufacturing	19.327	9.077	28.404	6,72
Transport Activities	22.726	3.747	26.473	6,26
Food / Beverage Service	16.886	9.083	25.969	6,14
Food Manufacturing	14.319	8.978	23.297	5,51
Building / Landscaping	12.140	7.543	19.683	4,65
Vehicle Manufacturing	17.193	1.573	18.766	4,44
Accommodation	11.361	6.096	17.457	4,13
Mining Sector	14.081	86	14.167	3,35

Table 1 shows the distribution of the number of insured employees who had work accidents by economic activities and gender (for the first 11 sectors where accidents are concentrated). According to the table, it is seen that the highest accident rate is in the construction sector. While the construction sector took the first place with a rate of 11.79% in work accidents, the metal industry took the second place with a rate of 9.58%. These sectors were followed by textile manufacturing and transportation activities respectively. When this table is viewed in terms of gender, approximately 81% of the victims of the accident are men and 19% are women. In Turkey, women's labor force participation rates are low compared to men, especially in heavy and dangerous jobs such as mining, construction, and women's work is subject to various restrictions.

Table 2. Distribution of the Deceased Persons as a Result of Work Accidents by Economic Activity and Gender, 2019

Economic Activity	Number of Deaths as a Result of Work Accidents			
	Male	Female	Total	%
Construction Sector	368	0	368	32,08
Transport Activities	210	2	212	18,48
Trade (Wholesale / Retail)	73	1	74	6,45
Metal Industry	49	1	50	4,35
Mining Sector	48	0	48	4,18
Building / Landscaping	29	2	31	2,70
Livestock / Forestry	31	0	31	2,70
Food Manufacturing	27	0	27	2,35
Textile Manufacturing	23	4	27	2,35
Food / Beverage Service	20	2	22	1,91

In Table 2, the distribution of those who died as a result of a work accident by economic activity and gender is given (for the first 10 sectors where deaths were concentrated). According to the table, when the distribution of employees who lost their lives as a result of work accidents in 2019 according to their economic activities, it is seen that 368 deaths and 32.08% were the most deaths in the construction sector. The Transport sector follows the construction sector with 210 deaths.

Construction and mining sectors are sectors where both accidents at work and deaths due to accidents at work are experienced intensively all over the world. The working areas and working conditions of both sectors are different from other sectors. Workers in these sectors work under more severe conditions. Work accidents caused by the employment of unqualified and inexperienced persons have increased in recent years. The mining, construction and metal sectors, where work accidents are common in our country, have been declared as priority sectors in terms of combating work accidents and occupational diseases by the Ministry of Labor. For many jobs to be done in these sectors, employees are tried to obtain a professional competence certificate, provide employees with at least 16 hours of OHS training every year, and many other measures to create a safety culture. However, despite all the measures taken, especially the Construction and Mining sectors are the two sectors with the highest fatal accident frequency. Metal sector is one of the sectors with the most accidents.

When Table 2 is analyzed in terms of gender, it is seen that approximately 99% of all victims are men and 1% are women. Especially in very risky sectors such as construction, mining, it is noteworthy that no female employee died due to an accident at work in 2019. The reasons for this striking result are that women are not allowed to work underground, pregnant and lactating women are prohibited from working in heavy and dangerous jobs, and pregnant and lactating women employees cannot be legally employed in overtime and night work.

Table 3. Distribution of the Number of Insured Having Work Accident by Province and Gender, 2019 (Top 5 Province)

City	Number of Insured Having Work Accident			
	Male	Female	Total	%
İstanbul	85.298	24.397	109.695	25,96
İzmir	27.076	7.542	34.618	8,19
Ankara	24.286	6.000	30.286	7,16
Kocaeli	21.884	4.060	25.944	6,14
Antalya	16.103	7.380	23.483	5,55

Table 4. Distribution of the Number of Insured Deaths as a Result of Work Accidents by Province and Gender, 2019 (Top 5 Province)

City	Number of Deaths as a Result of Work Accidents			
	Male	Female	Total	%
İstanbul	198	1	199	17,34
Ankara	87	1	88	7,67
İzmir	51	4	55	4,79
Bursa	45	3	48	4,18
Antalya	47	0	47	4,09

Table 3 and Table 4 give the distribution of the provinces with the highest number of work accidents and deaths in 2019 (top 5 provinces with the concentration). Looking at these tables, it is seen that both deaths and accidents are concentrated in big cities. Approximately 53% of all work accidents and approximately 39% of all deaths occurred in only 5 provinces. Istanbul was the city where the most accidents and deaths occurred at work. Large cities, having extensive working opportunities, high industrialization and high construction due to population density can be considered as the reason for these concentrations.

Table 5. Distribution of the Number of Insured Persons, Who Had Work Accidents, Dies Due to Work Accidents and Occupational Diseases by Age Groups and Gender, 2019

Age	Number of Insured Having Work Accident			Number of Deaths as a Result of Work Accidents			The Number of Insured Exposure to Occupational Diseases		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
14-17	4.553	1.812	6.365	5	0	5	1	0	1
18-25	86.370	25.715	112.085	128	4	132	15	6	21
26-35	111.056	22.088	133.144	203	2	205	159	17	176
36-45	87.887	24.510	112.397	224	10	334	402	31	433
46-55	39.758	10.287	50.045	305	5	310	218	30	248
56-65	7.087	910	7.997	133	0	143	21	3	24
65+	397	33	430	18	0	18	4	0	4

The distribution of the number of insured persons who had a work accident, died as a result of a work accident and an occupational disease by age groups and gender is given in Table 5. When Table 5 is examined, approximately 97% of all work accidents and approximately 98% of all death cases are seen in employees between the ages of 18-55. Because people over 55 years of age experience a weakening of the senses and reflexes due to aging, people in this age group work less. Accordingly, work accident and death cases are less than other age groups. Although it is legally prohibited to employ young and child labor in our country, a total of 6.365 employees between the ages of 14-17 experienced work accidents in 2019, while 5 employees died. Looking at the 2019 data, the most work accidents are seen between the ages of 26-35, while most of those who lost their lives as a result of work accidents and those who suffer from occupational diseases are between the ages of 36-45.

In Table 6, the distribution of the number of employees who had a work accident, died and occupational disease was given by months. In 2019, the highest number of work accidents

were observed in July and the most deaths in April. As construction activity decreases in the winter months and the number of seasonal workers increases with the arrival of the summer months, the most cases of accidents and deaths at work are observed in the summer months.

The distribution of the number of insured persons who died as a result of an accident at work and suffered an accident at work by professional groups and gender is given in Table 7. In 2019, employees in professions that do not require the most qualifications had an accident and lost their lives. Accident and death rates are rising as employers hire inexperienced, uninformed and unqualified workers for cheap labour. Occupations that do not require qualification due to the death of 539 people as a result of work accidents take the first place in Table 7, while drivers / operators / assemblers take the second place with 286 death cases.

Table 6. Distribution of the Number of Insured Persons, who had Work Accidents, Dies and Occupational Diseases by Months and Gender, 2019

Months	Number of Insured Having Work Accident			Number of Deaths as a Result of Work Accidents			The Number of Insured Exposure to Occupational Diseases		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
January	24.361	6.263	30.624	93	2	95	106	11	117
February	23.397	5.714	29.111	87	1	88	68	8	76
March	26.480	6.620	33.100	74	0	74	102	11	113
April	26.144	6.507	32.651	108	3	111	96	6	102
May	27.999	6.538	34.537	95	1	96	70	5	75
June	25.729	6.877	32.606	90	2	92	51	9	60
July	33.792	8.585	42.377	107	1	108	84	13	97
August	26.751	7.198	33.949	80	0	80	56	6	62
September	31.494	7.935	39.429	99	4	103	35	2	37
October	33.090	8.166	41.256	93	3	96	68	8	76
November	29.722	7.570	37.292	102	2	104	49	4	53
December	28.149	7.382	35.531	98	2	100	35	4	39

Table 7. Distribution of the Number of Insured Deaths and Work Accidents by Occupational Groups and Gender, 2019

Profession Group	Number of Deaths as a Result of Work Accidents			Number of Insured Having Work Accident		
	Male	Female	Total	Male	Female	Total
Professions that do not require qualification	528	11	539	181.347	44.987	226.334
Drivers / Operators / Installers	283	3	286	71.116	8.681	79.797
Craftsmen and Employees in Related Jobs	114	0	114	32.177	2.263	34.440
Service and Sales Staff	90	2	92	25.965	13.591	39.556
Technician / Technician	42	0	42	12.196	3.415	15.611
Office Staff	30	1	31	5.647	4.667	10.314
Professionals	13	4	17	4.236	6.601	10.837
Managers	14	0	14	3.230	914	4.144
Qualified Agricultural Workers	11	0	11	883	191	1.074

The distribution of the number of insured persons who died as a result of an accident at work according to the causes of the accident is given in Table 8. When Table 8 is examined, death cases due to unclassified injuries take the first place with a rate of 45.85%. Then there are deaths due to object impact or collision with a rate of 26.67%. Deaths as a result of crushing, electric shock and drowning are also seen as important causes of death. When the

distribution of the injured who had a work accident related to these, according to injury types (Table 9) is examined, it is seen that the types of injuries such as superficial injuries (44.52%) and sprains / dislocations (14.81%) are experienced more due to crashes and falls.

Table 8. Distribution of the Number of Insured Deceased as a Result of Work Accident by Causes of Accident, 2019

Causes of Accident	Number of Insured Deaths as a Result of Work Accidents	%
Unclassified Injury	526	45,85
Object Collision / Collision	306	26,67
No information	126	10,98
Being entangled / crushed	80	6,97
Electric Shock / Contact with toxic substance	57	4,96
Choking / Burial / Hug	31	2,7
Contact with a Pointed or Hard Metal Tool	13	1,13
Physical / Spiritual Pressure	7	0,61
Biting / Kicking	1	0,087
Total	1147	100

Table 9. Distribution of the Insured Persons with Work Accidents by Injury Type, 2019

Types of Claims	Number of Insured Persons with Work Accidents	%
Wounds and Superficial Injuries	188.122	44,52
Dislocations / Sprains / Injuries	62.594	14,81
Injury of unknown type	23.396	5,53
Bone Fractures	19.982	4,72
Burn / Freezing	11.072	2,62
Poisoning / Infection	6.484	1,53
Multiple Injuries	1.980	0,46
Shock	946	0,22
Unspecified Injuries	107.887	25,53
Total	422.463	100

The distribution of the number of insured persons suffering from occupational disease by disease diagnosis is given in Table 10. When the data of 2019 were examined, a total of 1088 insured employees were diagnosed with occupational diseases. 37.31% of these patients have respiratory system diseases and 6.61% have muscular and skeletal system diseases. There are many factors in experiencing occupational diseases. In addition to chemical risk factors such as heavy metals, acids, and toxic gases, physical factors such as noise, pressure, and heat also cause occupational diseases. Workers in the construction, mining and metal sectors, which are the main sectors where work accidents occur, are more likely to suffer from respiratory system diseases and musculoskeletal diseases due to heavy working conditions and the materials they work with.

Table 10. Distribution of the Insured Number of Occupational Diseases by Disease Diagnosis, 2019

Occupational Disease Diagnosis	Number of Insured Persons with Occupational Diseases	%
Respiratory Diseases	406	37,31
Musculoskeletal System Diseases	72	6,61
Ear and Mastoid Protrusion Diseases	68	6,25
Nervous System Diseases	31	2,84
Skin and Subcutaneous Tissue Diseases	21	1,93
Diseases Not Specified in the List	108	9,92
Other	382	35,11
Total	1088	100

4. TURKEY'S OHS OUTLOOK, COMPARISON WITH GERMANY AND JAPAN

Table 11. Number of Work Accidents, General Incidence Rate of Work Accidents and Weight rate of Occupational injuries in Turkey (SSI, 2020)

Years	Number of Work Accidents	General Incidence Rate of Work Accidents (per 1000 person)	Weight rate of occupational injuries (days)
2012	74.871	6,27	395
2013	191.389	15,33	507
2014	221.366	16,72	514
2015	241.547	17,25	565
2016	286.068	21,32	665
2017	359.653	24,84	973
2018	430.985	30,29	1259
2019	422.463	29,51	548

According to SSI data, the number of work accidents in Turkey for the period 2012-2019, the accident frequency rate and accident rate by weight is given in Table 11. The given general accident frequency parameter shows how many of every 1000 employees have had a work accident in a calendar year. The weight rate of occupational injuries parameter shows how many workdays are lost due to work accidents per 1.000.000 hours worked in a calendar year. Both parameters show the size of the financial losses of work accidents. In 2012, the OHS Law No. 6331, which aims to reduce work accidents and occupational diseases to an acceptable level by humanizing, working conditions, entered into force. Looking at Table 11, it is observed that there is an increase from year to year in both the number of work accidents and accident comparison parameters contrary to the improvement expected with the OHS law. The number of recorded accidents in 2019 was approximately 6 times that in 2012. Similarly, General Incidence Rate of Work Accidents in 2019 was recorded as approximately 5 times that of 2012, and the Weight rate of occupational injuries as approximately 2 times. It is possible to conclude two conclusions from these data. The first of these is that the expected benefit from the OHS law could not be achieved. Second, the abnormal fluctuations in the data in the transition from year to year show that work accidents and occupational diseases cannot be properly recorded. *"Turkey has a robust OHS legislation. We're just having a little problem in the implementation of the legislation."* judgment is a well-known wrong. The above results cannot be explained solely by application errors. Problems in the legislation should also be carefully examined.

Table 12. Turkey, Germany and Japan Fatal Incidence Rate of Work Accident Values (2012-2019)

Years	Turkey	Japan	Germany
2012	62,31	22,14	23,34
2013	108,94	20,67	19,86
2014	122,81	21,05	20,61
2015	89,43	19,16	20,76
2016	104,73	17,98	18,34
2017	112,79	18,70	17,71
2018	108,30	16,95	19,22
2019	80,13	15,59	19,39
2012-2019 average	98,68	19,03	19,90

Table 13. Turkey, Germany and Japan General Incidence Rate of Work Accident Values (2012-2019)

Years	Turkey	Japan	Germany
2012	6,27	2,42	27,96
2013	15,33	2,37	27,27
2014	16,72	2,38	26,73
2015	17,25	2,29	26,53
2016	21,32	2,29	26,53
2017	24,84	2,30	25,79
2018	30,29	2,37	28,06
2019	29,51	2,32	25,46
2012-2019 average	20,19	2,34	26,79

It is not enough to evaluate a country's OHS performance only by looking at changes from year to year. It is also necessary to compare with countries that are similar in terms of risky sectors and remarkable in terms of population structures. Here, Germany and Japan, whose populations are 83 and 127 million and whose economy is based on industry, and Turkey are compared in terms of OHS indicators. In Table 12, the fatal accident frequency values are calculated for all three countries, and in Table 13, the general incidence rate of work accidents values are given (SSI,2020; DGUV; JISHA). While Table 12 shows how many of each 1.000.000 employees die due to work accident in a calendar year, Table 13 shows how many of each 1.000 employees are had an work accident in a calendar year.

Every country in the world aims to reduce work accidents and create a more efficient working order by controlling the OHS area in their country with their own laws and control mechanisms. Work accidents and deaths due to work accidents occur in every country, but countries can grow and develop if they can prevent these accidents. The most effective way to evaluate the performance of OHS services by country is to calculate the incidence rate of work accidents. The less the incidence rate of work accidents the better the OHS performance of the countries. When the average fatal accident incidence rates given in Table 12 for the years 2012-2019 are examined, Turkey is behind Germany and Japan with a rate of 98.68. These data show that a Turkish employee is about 5 times more likely to die from a work accident than a German or Japanese employee. Human life is above any economic value. In this respect, this result is not an acceptable situation.

When the general incidence rate of work accidents values are examined, Japan has been the best performing country with an average of 2,34. Considering the change in incidence rate of work accidents values by year, accident rates occurring from 2012 to 2019 tend to increase year by year in Turkey. This situation arises from the obligation to employ a work safety specialist after the OHS law. Therefore, more work accidents are now being recorded.

5. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

As in the whole world, due to the increase in technology, industry and production, the labor market has developed and OHS practices have progressed accordingly. Within the scope of OHS, it is aimed to reduce the possibility of accidents by employees, to minimize the loss of life and to prevent financial losses in workplaces. Although various legal arrangements are made to protect the rights of employees and to create a safe working environment, work accidents and occupational diseases remain important in our country as well as in the world.

When the OHS data for 2019 are analyzed, it is seen that male employees have more work accidents than female employees in our country and most of the death cases are

experienced by male employees. Although the rate of women's work accidents is low, the number of work accidents has also increased with women taking an active role in business life in recent years. In 2019, the most work accidents were seen in the construction and metal sector. While looking at the distribution of employees who had accidents by professional group, it was found that employees in unqualified jobs had an accident at work or died as a result of work accidents. According to age groups, the rate of having work accidents is most concentrated in the range of 26-35 years, while the deaths due to work accidents are in the age range of 36-45. When we look at the distribution of work accidents by months, it is seen that there are generally accidents in the summer months and the month with the most accidents are July. However, it is observed that the deaths due to work accidents occur mostly in April. When examined according to the type of injury, it can be said that almost half of those who had a work accident had superficial injuries and that cases such as sprains and dislocations are seen in the second place. Finally, when looking at its distribution according to occupational disease diagnoses, respiratory system diseases come first.

Work accidents can cause loss of life as well as psychological effects on employees. Employers experience financial losses with the work accidents, so both production and the economy of the country are negatively affected. Most of the work accidents and occupational diseases are preventable and the possibility of accidents can be reduced with the measures to be taken. In order to create a safe working environment, first an OHS culture must be created between employees and employers. It is necessary to raise awareness of all employees and employers through various trainings and to ensure that everyone works more selflessly. OHS courses are taught in the relevant departments of the universities and it is not enough to raise awareness. As it is difficult to gain consciousness and change working habits later, the issue of OHS should be processed in education and training at an early age. In this way, more conscious and high-awareness individuals will be raised. Increasing inspections at workplaces and keeping accident reports transparently enable employers to take the OHS field more seriously. Considering that the workers working in most of the accidents are inexperienced, the knowledge and experience of the employees in their fields will also reduce the risk of accidents. In this context, it should be the main duty of employers to provide necessary training to employees about their work. (HÄMÄLÄINEN P., 2009).

Developed countries in Europe keep their occupational accident records regularly with different procedures.(JACINTO C., ASPINWALLA E., 2004) However, occupational accidents in Turkey are not be taken under a large proportion of records. According to SSI statistical annals, 74487 occupational accidents were recorded in 2012, while the number of recorded accidents increased steadily from year to year and reached 422463 in 2019. (SSI, 2020) Especially with the OHS law enacted in 2012, the increase in the number of occupational safety experts employed in enterprises increased the rate of keeping accident records. However, it is still a significant problem which failure to keep records of accidents for Turkey. Turkey's OHS performance in this study should also be taken into account when comparing these facts with Germany and Japan.

According to the SSI data of 2019, approximately 20% of those exposed to occupational accidents and approximately 2% of those who lost their lives as a result of occupational accidents are female employees. (SSI, 2020) When international accident data are analyzed, it is seen that female employees are less affected by occupational accidents compared to male employees. (DGUV, 2019; JISHA, 2019) However, in developed countries the proportion of women affected by work-related accidents is higher than in Turkey. For example, both Germany and Japan as industrialized as well as approximately 30% of those who died as a result of workplace accidents in countries where female employees while

creating a strong mechanism of OHS, this rate is only 2% in Turkey (HENDERSON J., 1983). There are many reasons for this situation. These are:

- *The labor force participation rate of women workers in Turkey is low.* Women constitute nearly half of Turkey's population, however according to the TSI (Turkish Statistical Institute) data released by July 2019, while the labor force participation rate for women is 71.8% to 34.5% of men. (ILO WCMS, 2020)
- *In Turkey, women are legally prohibited from working in risky sectors where there are many cases of occupational accidents and deaths as a result of occupational accidents.* For example, in the Article 72 of the Labor Law, the provision "It is forbidden to employ women of all ages in underground or underwater jobs such as mines and cable laying, sewage and tunnel construction". In addition, the labor code and many regulations have various restrictions on the employment of women in many jobs that may pose a risk to women.
- In Turkey, there are many restrictions on the Working Conditions of women in the work at night and overtime work. When occupational accident statistics are examined, it is seen that late work and overwork are more risky in terms of occupational accidents. The more limited participation of women workers in these risky work makes them less affected by occupational accidents.
- In Turkey, women in some sectors such as agriculture and home services unregistered run rate is higher than that of men. In order for an incident to be legally registered as a work accident, the casualty must work as insured. According to TSI data, the unregistered employment rate for 2019 is 34.52% (TSI,2020). This ratio is higher in women. If the employee is uninsured, it is not possible to record the work accident or occupational disease experienced by that employee.

Providing a safe working environment is important both for the progress of the country's economy and for ensuring international reliability. Although our country is not yet at the desired level in terms of OHS, it will show progress with the measures to be taken.

The measures to be taken in order to prevent accidents can be evaluated under two main headings: national and enterprise level. At national level:

- Work accident database should be strengthened. For this, it should be ensured that the accident report for recorded accidents is filled in fully and accurately. Some missing entries in the report should not be allowed, and the penalties given to those who enter data in a false or biased way should be increased. For the accidents that cannot be recorded, it should be investigated in which sectors and why the accidents could not be recorded and measures should be developed for recording them.
- The Work Accident Database should be made available to all OHS experts, researchers and faculty members. All those concerned should be encouraged to work on the database, and the findings from these studies should be used both in the creation of legal legislation and in inspections.
- All kinds of legal regulations should be applied meticulously.

At the business level:

- Danger elements of the system should be found by making risk analysis.
- Risks arising from these dangers should be determined.
- Measures to eliminate these risks or reduce them to an acceptable level should be determined.
- These measures should be implemented.
- Employees should be checked whether or not they comply with the measures.

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