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Review Paper

STATISTICAL INDICATORS FOR ACCIDENTS AT WORK IN CONSTRUCTION SECTOR ACCORDING TO THE PART OF BODY INJURED AND TYPES OF INJURIES

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Abstract. *In this paper, the statistical indicators related to the number of non-fatal and fatal accidents at work according to certain injuries of human body parts and type of injury in the construction sector in the member states of the European Union (EU-28) for 2017 were analyzed. The most common body parts injured in non-fatal workplace accidents were the upper extremities (shoulders, arms and hands), with 42.3 % of the total number. The most common body parts injured in fatal workplace accidents in the EU-28 were whole body and multiple sites, with 32.5 % of the total number of non-fatal accidents at work in the construction sector. Most common injuries in the EU-28 resulting from non-fatal accidents in construction activity were wounds and superficial injuries (32.4% of the total number), dislocations, sprains and strains (25.8 %), concussion and internal injuries (18.0 %) and bone fractures (13.9 %). Poisoning and infections comprise 26.6% of the total number, dislocations, sprains and strains comprise 26.5 %, concussion and internal injuries make up 18.0 %, while bone fractures account for 13.9 %. The next most frequent types of injuries from all fatal accidents are unspecified injuries (18%) and bone fractures.*

Key words: *construction activity, injuries to body parts, type of injury*

1. INTRODUCTION

Construction is one of the riskiest activities in terms of accidents at work. Construction workers are exposed to many accidents at work, especially serious and fatal injuries. Despite the Occupational Health and Safety Law, there are more accidents in this line of

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work every year. Increasing the quality of employee occupational health and safety in the construction sector, and the workplace in general should be the primary goal of every employer. Project owners, contractors, supervisors, and all other parties involved should take appropriate actions to ensure the project is successfully completed given the challenging and unsafe working conditions and risks, that workers face [1]. The process of building and constructing facilities includes activities on temporary and mobile construction sites that include the flow of materials, workers as well as machinery and mechanical equipment. The workers on the construction site work in difficult and dynamic conditions. A complete classification of the hazards and harmfulness of a mobile construction site is given by Hughes and Ferrett [2]:

- hazards when working at height,
- hazards during excavation,
- hazards during demolition,
- hazards due to the movement of vehicles (internal transport),
- hazards when using equipment on a construction site,
- dangers of electricity,
- fire hazards,
- chemical and biological harmfulness, and
- physical and mental health hazards.

In this paper, statistical indicators for non-fatal and fatal accidents at work in the construction sector in the EU-28 Member state in 2017 according to the injured body parts and types of injury were presented.

2. STATISTICAL INDICATORS

In this paper, the number of non-fatal and fatal accidents at work is the main type of statistical indicator. For this purpose, the database Eurostat was used for the number of accidents at work (non-fatal or fatal) were used [4]. The description of an accident at work includes information on the injured body part. The following options are available for documenting an accident at work: injury to the head, neck, back, torso and organs, upper extremities, lower extremities, whole body and multiple sites, and other unspecified body parts.

3. RESULTS AND DISCUSSIONS

The statistical indicators on the number of non-fatal accidents at work in the member states of the European Union, EU-28 for 2017 according to an injured body part for the construction sector are shown in Table 1.

Table 1 Non-fatal accidents at work by injured body part in the construction sector, EU-28, 2017, (%)

	Head	Neck	Back	Torso and other organs	Upper extremities	Lower extremities	Whole body and multiple sites	Other parts of the body injured	Not specified
Total-All NACE activities	6.5	2.5	12.0	3.7	39.2	28.5	2.8	0.7	4.2
Construction (F)	7.4	1.8	11.2	4.5	42.3	28.7	2.0	0.6	1.5

Last update 10.06. 2022 *Source*: Eurostat

From Table 1 it is obvious that the most common body parts injured in non-fatal workplace accidents in the EU in 2017 were the upper extremities (shoulders, arms and hands), with 42.3 % of the total number of non-fatal accidents at work, and lower extremities (hips, legs and feet), with 28.7 %. The back, which accounted for 11.2% of all injuries, was the only other body part type to have a share that exceeded one-tenth of the total.

In figure 1 the non-fatal accidents at work in total all NACE activities and in the construction sector by part of body injured in EU-28 for 2017 are shown.

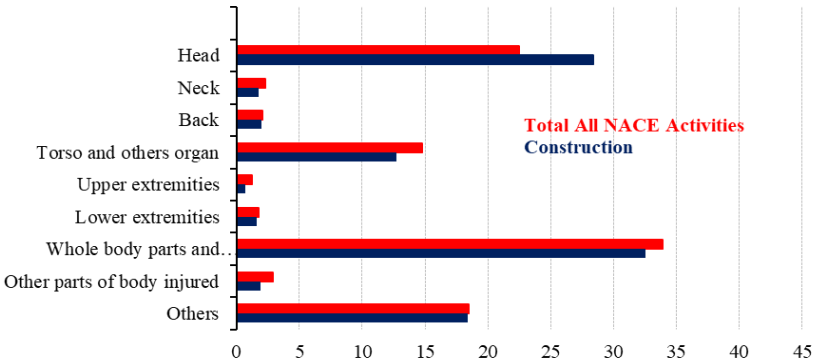

Fig. 1 Non-fatal accident at work, by part of body injured, EU-28, 2017 (%)

Table 2 displays the statistical indicators for the number of non-fatal workplace accidents in the EU-28 member states for 2017 by the type of injury for the construction sector.

Table 2 Non-fatal accidents at work by type of injury in the construction sector, EU-28, 2017, (%)

	Wounds and superficial	Bone fractures	Dislocation, sprains and strains	Traumatic amputations (Loss of body parts)	Concussions and internal injuries	Burns scalds and frostbites	Poisonings and infections	Other not elsewhere mentioned	Unspecified
Total-All NACE activities	29.1	11.3	27.4	0.4	17.7	1.7	0.4	7.5	4.4
Construction (F)	32.4	13.9	25.8	0.5	18.0	1.3	0.4	5.4	2.3

Last update 10.06.2022 *Source*: Eurostat

From Table 2 it is evident that the most common injuries in the EU-28 resulting from non-fatal accidents in construction activity were wounds and superficial injuries (32.4% of the total), followed by dislocations, sprains and strains (25.8 %), concussion and internal injuries (18.0 %) and bone fractures (13.9 %). However, none of the other types of injuries are represented by a double-digit share in the total number of non-fatal accidents at work in the construction activity.

In Figure 2, non-fatal accidents at work in total all NACE activities and in the construction sector by type of injury in EU-28 for 2017 are shown.

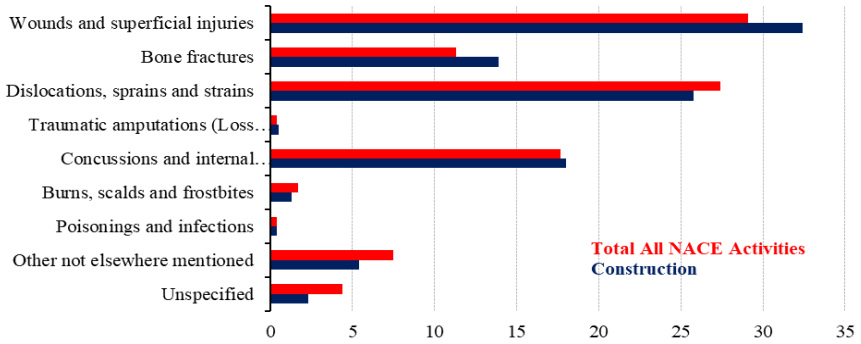

Fig. 2 Non-fatal accidents at work, by type of injury, EU-28, 2017 (%)

Table 3 presents the statistical indicators on the number of workplace fatalities in the EU-28 for 2017 by injured body parts for the construction sector.

Table 3 Fatal accidents at work by injured body part in the construction sector, EU-28, 2017 (%)

	Head	Neck	Back	Torso and other organs	Upper extremities	Lower extremities	Whole body and multiple sites	Other parts of the body injured	Not specified
Total-All NACE activities	22.5	2.3	2.1	14.8	1.2	1.8	33.9	2.9	18.5
Construction (F)	28.4	1.8	2.0	12.7	0.7	1.6	32.5	1.9	18.3

Last update 10.06.2022 *Source*: Eurostat

From Table 3, it is obvious that the most common body parts injured in fatal workplace accidents in the EU-28 in 2017 were whole body and multiple sites, with (32.5 %) of the total number of non-fatal accidents at work, and head injuries, with (28.4 %). The only other type of body part with a share that was more than one-tenth of the total was the torso and other organs, accounting for (12.7 %) of all injuries. In Figure 3, the fatal accidents at work in total all NACE activities and in the construction sector by part of body injured in EU-28 for 2017 are shown.

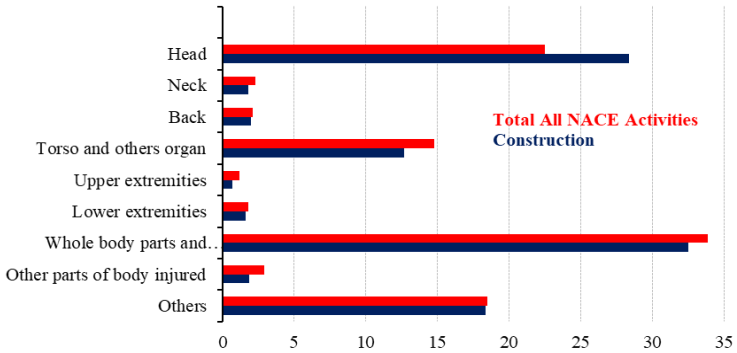

Fig. 3 Fatal accidents at work, by part of body injured, EU-28, 2017 (%)

Table 4 shows the statistical indicators on the number of workplace fatalities in the EU-28 member states for 2017, broken down by injury type for the construction sector.

Table 4 Fatal accidents at work by type of injury in the construction sector, EU-28, 2017, (%)

	Wounds and superficial	Bone fractures	Dislocation, sprains and strains	Traumatic amputations (Loss of body parts)	Concussions and internal injuries	Burns scalds and frostbites	Poisonings and infections	Other not elsewhere mentioned	Unspecified
Total-All NACE activities	4.3	11.2	25.5	2.2	0.5	3.2	23.4	11.5	18.1
Construction (F)	3.0	12.8	26.5	1.8	0.3	2.5	26.6	8.6	18.0

Last update 10.06.2022 *Source*: Eurostat

From Table 4, it is evident that the most common injuries in the EU-28 resulting from fatal accidents in construction activity were poisonings and infections (26.6% of the total), dislocations, sprains and strains (26.5 %). The following most frequent types of injuries from all fatal accidents are unspecified injuries (18%) and bone fractures (12.8%). Figure 4 shows the fatal accidents at work in total all NACE activities and in the construction sector by type of injury in EU-28 for 2017.

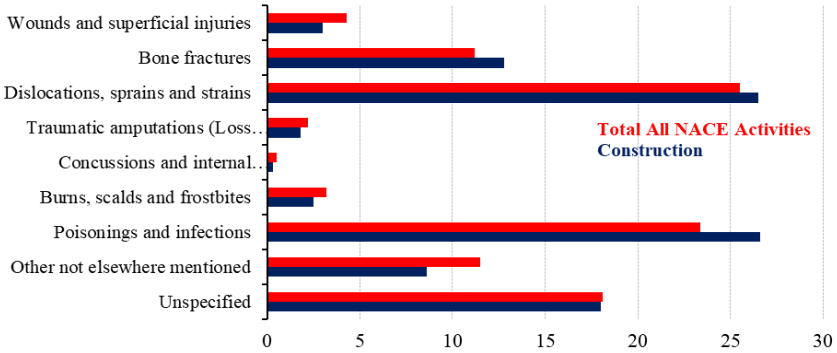

Fig. 4 Fatal accidents at work, by type of injury, EU-28, 2017 (%)

CONCLUSION

In this study, the statistical indicators related to the number of non-fatal and fatal accidents at work by part of the body injured and by type of injury in the construction sector in the EU member states (EU-28) for 2017 were analyzed. According to the results of a statistical analysis of the number of non-fatal and fatal accidents at work by part of body injured, the most common body parts injured in non-fatal workplace accidents were the upper extremities, while the most common body parts injured in fatal workplace accidents were whole body and multiple site injuries.

Wounds and superficial injuries, dislocations, sprains and strains are the three most common types of injuries as a result of fatal accidents at work. The most common injuries in the EU-28 resulting from fatal accidents in construction activity were poisonings and infections, dislocations, sprains and strains, concussion and internal injuries and bone fractures. Therefore, it is necessary to establish and maintain a preventive culture and introduce a systemic approach to managing occupational safety and health, as an important prerequisite for reducing the number of workplace accidents in the construction sector.

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STATISTIČKI INDIKATORI POVREDA NA RADU U GRAĐEVINSKOM SEKTORU U ZAVISNOSTI OD POVREĐENOG DELA TELA I VRSTE POVREDA

U radu su prikazani statistički indikatori koji se odnose na broj nesreća na radu bez smrtnog ishoda i sa smrtnim ishodom u građevinskom sektoru, u zavisnosti od povređenog dela tela i vrste povrede, u zemljama članicama Evropske unije (EU-28) za 2017. godinu. Najčešće povrede u nezgodama na radnom mestu bez smrtnog ishoda su povrede gornjih ekstremiteta (ramena, ruke i šake), koje čine 42,3 % ukupnog broja povreda. Najčešće vrste povreda u nezgodama na radnom mestu sa smrtnim ishodom u zemljama članicama EU-28 su povrede celog tela i više delova tela, što čini 32,5% od ukupnog broja nesreća na radu bez smrtnog ishoda u građevinskom sektoru. Najčešće povrede u EU-28 koje su nastale usled nezgoda na radu bez smrtnog ishoda u građevinskom su bile rane i površinske povrede (32,4% od ukupnog broja), iščašenja, uganuća i istegnuća (25,8%), potres mozga i unutrašnje povrede (18,0%) i prelomi kostiju (13,9 %). Trovanja i infekcije čine 26,6% od ukupnog broja, iščašenja, uganuća i istegnuća 26,5%, potres mozga i unutrašnje povrede 18,0%, dok prelomi kostiju čine 13,9%. Sledeći najčešći tipovi povreda u nezgodama sa smrtnim ishodom su nedefisane vrste povreda (18%) i prelomi kostiju.

Ključne reči: *građevinska delatnost, povrede delova tela, vrsta povrede*