

SURVEY OF EMPLOYEES' AWARENESS REGARDING OCCUPATIONAL HEALTH AND SAFETY IN THE AUTOMOTIVE INDUSTRY

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Purpose: The aim of the research was to assess the awareness of middle-level employees in the field of health and safety at work and the rules related to work safety in the plant being the subject of the analysis.

Design/methodology/approach: For the purposes of this study, a four-stage methodology of own work was adopted. Adopting a four-stage approach allowed for the assessment of the awareness of middle-level employees regarding issues related to occupational health and safety in the automotive industry. To assess the awareness of middle-level employees regarding issues related to occupational health and safety, a criterion was adopted, according to which awareness was rated as low or high.

Findings: On the basis of the conducted research, it was found that middle-level employees have knowledge of the methods and tools used to improve work safety, and also see their significant impact on improving safety at the positions they are directly responsible for.

Research limitation/implications: The analysis carried out was limited to quantitative data obtained from a survey addressed to a specific group of respondents - middle-level employees.

Practical implications: The conducted research may constitute important information for management staff in assessing the awareness of middle-level employees in the field of occupational health and safety. They also allow for the identification of areas requiring further improvement aimed at achieving the goals set by the management staff and the occupational health and safety department.

Social implications: The article raises the issue of awareness of middle-level employees of the automotive industry in the field of occupational health and safety.

Originality/value: The conducted research made it possible to assess the awareness of middle-level employees in the field of occupational health and safety and to determine the directions of future research directions in an enterprise in the automotive industry in Poland.

Keywords: occupational health and safety (OSH), surveys, employee awareness, automotive industry.

Category of the paper: Research paper.

1. Introduction

The formation of safe and hygienic working conditions is an important issue in terms of scientific work and company management. Every day, employees are injured at work, and suspicions of occupational diseases or near misses are registered. Therefore, an important element is shaping the awareness of all employees in the field of occupational health and safety. The key element is the involvement of employees in pro-safe activities and raising their awareness in this regard.

Employers, in accordance with applicable EU and national law, are obliged to cooperate with employees in the field of occupational health and safety. Awareness raising can take place through training, even in the form of short thematic lessons, providing information on workplace safety through visual messages (pictograms, the LOTO system, quantitative data on noise measurement or the number of registered accidents, etc.). The work refers to the process of assessing the awareness of direct superiors, and middle-level employees. Due to the fact that these people have contact with their subordinates every day, they know the employees that make up the group they manage best. In connection with the above, this group was the target group in terms of assessing awareness of general OSH issues and applicable rules related to ensuring safety at the workplace, as well as the requirements set by the employer.

The aim of the study was to assess the awareness of middle-level employees regarding issues related to occupational safety. The conducted research allowed for the assessment of employees' awareness in the field of occupational health and safety training, methods, and tools supporting the development of safe working conditions, accident rates, and communication in the workplace on occupational health and safety. The research has practical significance for the company and will help determine the direction of future research in this field.

2. Literature review

Awareness is a complex concept (Berkowska et al., 2014) and in the field of occupational health and safety, it refers to the set of information and beliefs of employees about how to perform work without an accident, as well as the company's strategy in the field of health and safety and training (Gajdzik, 2008). Employees' awareness is influenced, among other things,

by knowledge about adopted patterns of safe behavior, methods used to improve occupational safety, and employee involvement in pro-safety activities. However, a lack of safety awareness may cause negative actions that may translate into the occurrence of accidents and thus generate economic and social costs (Chomątowska, 2009). Therefore, building awareness based on cooperation between all employees becomes an important element (Gajdzik, 2009, 2013). The issue of employees' awareness of the occurrence of threats in the workplace, their involvement and influence on solutions to improve safety, behavioral patterns, and a comprehensive approach to health and safety issues is also a key element from the point of view of health and safety culture (Ejdys, 2010). Awareness and safety culture is important for all employees, but also for those who supervise employees, plan, organize, and monitor the performance of specific types of work (e.g., in various industries). In the literature, safety culture (safety climate) is defined as attitudes, behaviors, norms and values, personal responsibility, and a set of shared views and beliefs that employees have about safety in the workplace (Cooper et al., 1994; Glendon et al., 2000; Mohamed, 2003; Nowacki, 2019). It also refers to the extent to which employees consider safety to be a priority and its measurement is considered to be an early warning of a potential safety system failure (Cooper et al., 2004).

For the study, the assessment of awareness was related to middle-level staff managing employees and their attitudes, knowledge about the safety of subordinates, and, above all, their knowledge and involvement in activities aimed at limiting dangerous situations that may lead to negative effects on the life and health of employees. Employee awareness understood in this way can have a significant impact on shaping a culture regarding health and safety.

The issue of awareness and shaping of occupational health and safety culture is important in both scientific and practical terms. Scientific studies draw attention to the need to build employee awareness (Gajdzik, 2009, 2013) and shape an appropriate occupational health and safety culture (Bąk et al., 2016), its creation (Cierniak-Emerych et al., 2013), as well as the impact of national culture on organizational safety culture (Yorio et al., 2019). There is also talk about the use of solutions that have an impact on it, including the 5 minutes for safety method, aimed at reminding employees about the health and safety rules in force in the workplace (Woźny et al., 2018). Research on health and safety awareness and culture focuses on various sectors of the economy: metallurgy (Gajdzik, 2013; Wołowczyk, 2021) mining (Kapusta, 2017; Nędzka et al., 2009), construction (Al-Bayati, 2021), medical (Brborowicz et al., 2022; Wagner et al., 2020), railway (Rydzewska, 2018), manufacturing (Ociecek et al., 2016; Shan et al., 2022), metal (Lin et al., 2017), construction (Mohamed, 2003) - which indicates the essence of the subject of research. The authors refer to the role of people who have an impact on occupational health and safety in the workplace, including occupational health and safety specialists (Sadłowska-Wrzesińska et al., 2017), supervisory employees (Kapusta, 2017), as well as employee education (Ociecek et al., 2016) or the conflicts that shape it (Antonsen, 2009). Due to the above, a research gap was identified in the field of examining employees'

awareness of occupational health and safety in the automotive industry, with particular emphasis on the aspect of group selection by top management.

Therefore, the study focused on assessing the awareness of middle-level staff and the use of their knowledge in the field of shaping safe behavior at work in the automotive industry in Poland. Employee awareness has a significant impact on the safety culture (Gajdzik, 2008), which is unique to each organization individually. The literature on the issue mentions two types of security culture (Mielczarek, 2000; Żurkowski, 2015), i.e.:

- low safety culture - lack of interest of superiors in safety issues, failure to comply with applicable regulations, low rank of health and safety issues in the company, failure to apply risk mitigation measures,
- high safety culture – personal responsibility for safety matters, commitment to OHS activities, free and open communication, OHS training and recognition of employees' needs, knowledge of the applied risk mitigation solutions and their application.

3. Methodology

The study of awareness of occupational health and safety in enterprises was carried out based on a survey questionnaire addressed to a specific group of respondents - middle-level employees of automotive industry enterprises. The respondents were selected by top management and included middle-level employees employed in the following departments: quality assurance (17 employees), technology (13 employees), maintenance (8 employees), production (23 employees), logistics, and warehouse (18 employees), administration (11 employees). The largest group were respondents with 16-20 years of work experience in the enterprise where the research was carried out (25 respondents), while the smallest group were respondents whose work experience was 31 years or more (4 respondents).

The questionnaire addressed issues related to occupational health and safety, the use of methods, Lean Manufacturing tools, and management systems (first stage - development of the questionnaire). The subject of analysis as part of the work was only the area related to work safety and the awareness of middle-level employees in this respect.

As part of the second stage of the work methodology, the employees to whom the survey was addressed were identified. Because the research covered two workplaces and work in a two-shift system, the survey was addressed to 90 middle-level employees.

In the third stage, the minimum number of respondents was determined. For this purpose, the PQStat statistical analysis tool was used. Assuming a significance level of 0.05 and an estimation error of 0.02, it was estimated that the necessary number of surveys should be 87. Employees' awareness of the questions asked was also determined, referring to low awareness (+), and high awareness (+++). Table 1 explains the importance of low and high awareness in

relation to the questions listed in Table 2. The assessment carried out was subjective based on the analysis of the results of each question individually (Table 2).

Table 1.
Characteristics of low and high employee awareness

Low awareness	High awareness
Lack of awareness about occupational health and safety training that employees are subjected to, as well as their duration	Is aware of the occupational health and safety training that employees undergo and their duration
Lack of awareness about conversations regarding health and safety issues and their duration	Is aware of conversations regarding occupational health and safety issues and their duration
Lack of awareness of entities supervising work (OHS Service, Social Labor Inspectorate)	Knows the entities supervising work (OHS Service, Social Labor Inspectorate)
Lack of awareness of methods and tools supporting occupational health and safety	Is aware of methods and tools supporting occupational health and safety
Lack of awareness of registered accident events, places of injury, and protective preventive measures used	Is aware of recorded accident events, locations of injuries, and protective measures used

Source: Own elaboration.

In the fourth stage, the results obtained were analyzed (awareness rating low/high) and a proposal for improvement actions was presented in the areas requiring improvement. The step-by-step approach is graphically presented in Figure 1.

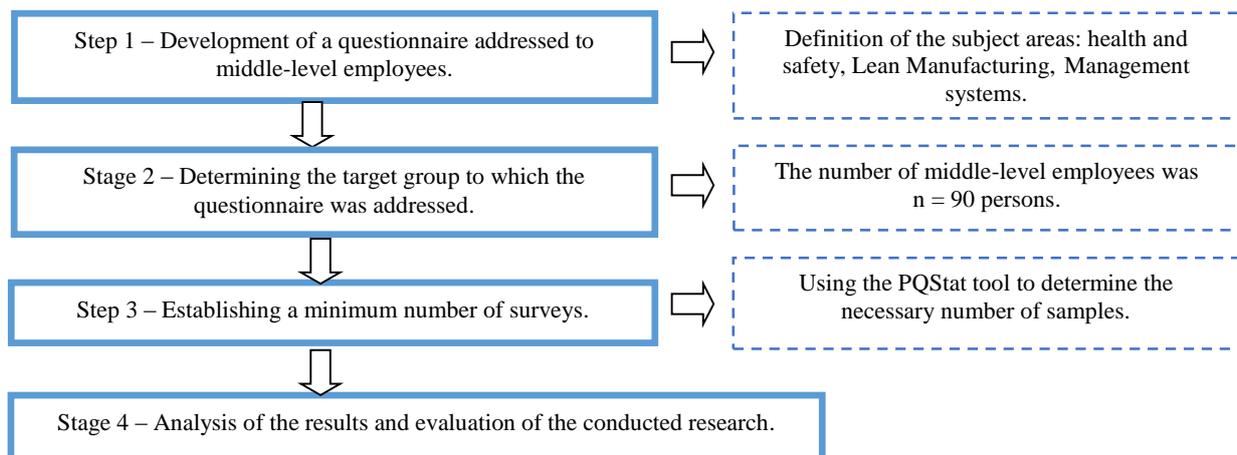


Figure 1. Methodology of own work.

Source: Own elaboration.

4. Researching employees' awareness of health and safety issues

4.1. Survey questionnaire and characteristics of research areas

In the developed research tool, which was a survey questionnaire addressed to $n = 90$ middle-level employees, 40 survey questions were formulated. For the study, reference was made to the area of occupational health and safety. This area covered 12 questions, divided into research areas. As part of the research, the following areas were distinguished:

- training and their duration - the study consisted in determining the awareness of middle-level employees in the field of initial training before a new employee starts work and its duration. The initial training in the analysis in question included, in accordance with applicable regulations, OHS training, however, due to the scope of tasks, the employer provides additional training resulting from the specific profile of the automotive industry;
- communication and entities supervising working conditions - the questions referred to analyzes of work safety between top-level employees and middle-level employees; analyzes of middle-level employees with the employee teams they manage; knowledge of the number of people dealing with health and safety issues or the presence of a Social Labor Inspector at the plant, representing employees;
- management methods and tools used in the field of occupational health and safety - the question referred to the methods used, such as 5S, visual management (VM), standardization, Kaizen and suggestion system, and autonomous maintenance, the implementation of which may improve safety at the workplace, therefore middle-level employees must be aware of their practical use;
- accidents at work – as part of the research, it was assessed whether middle-level employees are involved in accidents, and above all, their awareness of registered accident events;
- post-accident prevention - within this area, reference was made to the knowledge of middle-level employees in the form of accident prevention.

Table 2 presents data regarding the group of respondents as well as information regarding the assessment of employee awareness based on the analysis of the obtained research results.

Table 2.

Survey questions and data on the number of returned surveys along with an awareness assessment

Question	N	Z	Awareness
Analyzed area: Training and their duration			
Please specify the scope of training to which employees are subject.	90	89	+++ (high awareness)
How many hours does it take to train a new employee?	90	89	+++ (high awareness)
Analyzed area: Communication and entities supervising working conditions			
How often do you discuss health and safety issues with top management in your company? (Select one answer)	90	89	+++ (high awareness)
How often is OHS discussed in your company in the team? (Select one answer)	90	89	+++ (high awareness)
How many occupational health and safety service employees are employed in your company? (Select one answer)	90	90	+++ (high awareness)
Does your company have a Social Labor Inspector? (Select one answer)	90	88	+ (low awareness)

Cont. table 2.

Analyzed area: Management methods and tools used to improve occupational health and safety			
Please specify the type of impact of the management methods and tools used in your company on the improvement of health and safety at work.	90	90	+++ (high awareness)
Please specify which of the tools and methods has the greatest impact on improving health and safety at your company.	90	89	+++ (high awareness)
Analyzed area: Accidents at work			
How often are serious accidents registered in your enterprise? (Select one answer)	90	88	+++ (high awareness)
How often are other accidents registered in your enterprise? (Select one answer)	90	89	+++ (high awareness)
Analyzed area: Accident prevention and monitoring			
What form of accident prevention is used in your company?	90	88	+++ (high awareness)

N – number of respondents, Z – number of answers.

Source: Own elaboration.

4.2. Analysis of survey results

As part of the analyzes on the awareness of middle-level employees in terms of knowledge of training, including training related to occupational health and safety. Middle-level employees most often indicated the type of training that is carried out in the production plant. Of the 90 respondents to whom the survey was addressed, 88 indicated OSH training, which is graphically presented in Fig. 2a. When specifying the duration of training, the vast majority indicated that training is in 4 or more days (47 respondents out of 89 responding to the question in the survey). These results indicate that middle-level employees are aware of the implementation of training (high awareness +++) and the time they spend on them (high awareness +++) (Fig. 2b) - including days for other training devoted to quality, employee matters or management systems used in the production plant.

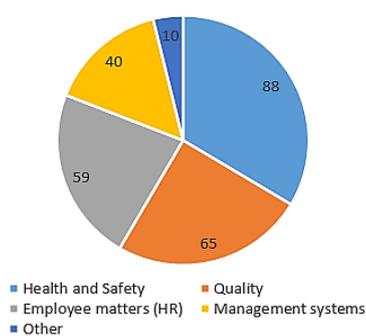


Figure 2a. Awareness of employees in the field of training.

Source: Own elaboration.

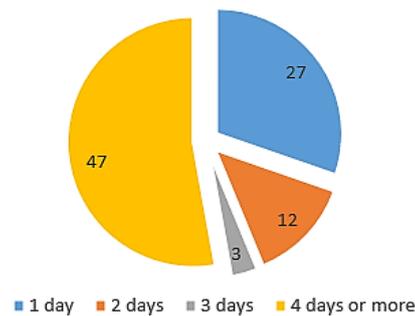


Figure 2b. Awareness of employees regarding the duration of training.

Source: Own elaboration.

In the production plant where the survey was conducted, an important issue is communication regarding health and safety issues. Therefore, questions were formulated (Table 1) regarding conversations of middle-level employees with top management (Fig. 3a), the team they lead (Fig. 3b), as well as awareness of which entities (occupational health and

safety service (Fig. 3c), Social Labor Inspectorate (Fig. 3d) supervise working conditions inside the workplace.

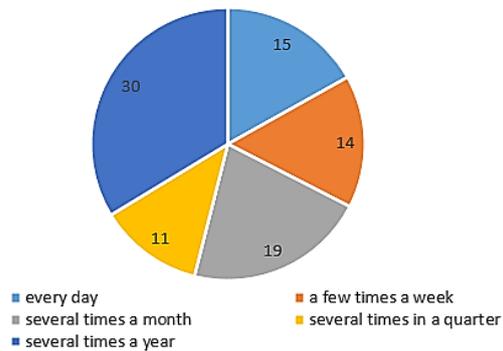


Figure 3a. Communication on health and safety issues with top management.

Source: Own elaboration.

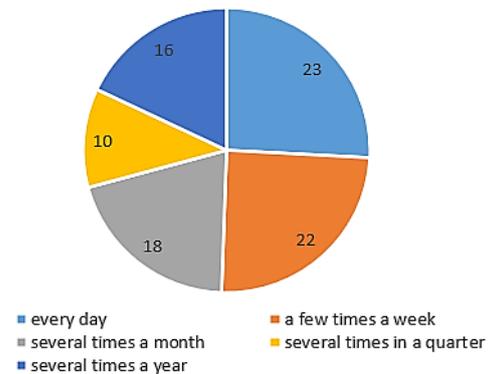


Figure 3b. Communication on health and safety issues for mid-level employees in the team.

Source: Own elaboration.

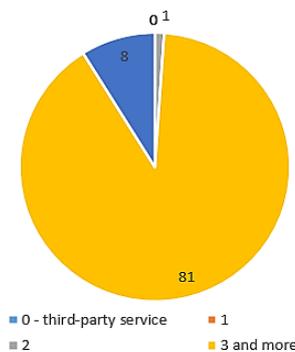


Figure 3c. Awareness of middle-level employees in the scope of operation of the OHS service.

Source: Own elaboration.

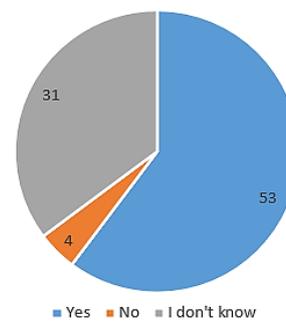


Figure 3d. Awareness of middle-level employees in the field of SIP operation.

Source: Own elaboration.

Based on the conducted analyses, it is concluded that middle-level employees often communicate with top management on topics related to occupational health and safety. An important element is the fact that the highest values are recorded for: every day - 15 respondents, 14 respondents several times a week, and 19 respondents several times a month (Fig. 3a) - high awareness (+++). The number of respondents may also depend on the type of department in which they are employed and the number of accidents or near misses recorded. Communicating and exchanging information with top management may indicate involvement in activities aimed at shaping safe working conditions, which is also a positive element in shaping the occupational health and safety culture in the organization. Similar to communicating in a team-high awareness (+++).

In terms of entities supervising working conditions in the enterprise, the greatest awareness of employees is in the field of the OHS service and the OHS employees employed in its structures. In terms of this question, 81 respondents gave the correct answer – high awareness (+++). In the case of the Social Labor Inspectorate, which is also functioning, the awareness of

middle-level employees is already at a low level (+), only 53 respondents indicated the correct answer, while 31 respondents did not know this respect concerning the health and safety service operating in the company. This area should be improved, and the Social Labor Inspector should be informed about it.

To improve occupational health and safety as well as the ergonomics of working conditions, selected tools of the Lean Manufacturing concept (Autonomous Maintenance, Kaizen + suggestion system, standardization, visual management, 5S method) and accident prevention measures were introduced. Based on the conducted surveys, it is stated that middle-level employees notice the actions taken as part of preventive care (Fig. 4) and most often choose actions that improve occupational safety provided for in accident prevention - 50 respondents indicated such an answer (high awareness +++). In the case of solutions provided for in the LM concept, the choice may depend on the department in which these solutions have been applied. Standardization of the workplace (15 respondents) and Kaizen and the suggestion system (11 respondents) were the most frequently chosen.

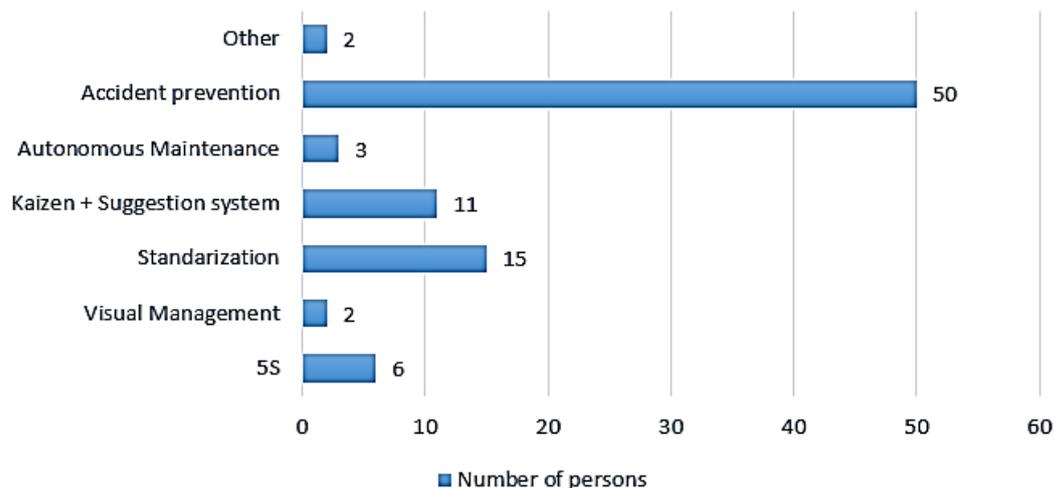


Figure 4. Methods and tools used to improve work safety.

Source: Own elaboration.

Concerning the applied solutions aimed at improving work safety, the respondents were asked about their subjective assessment of their impact on improving working conditions. Mid-level employees see the impact of selected methods and tools on improving security, assessing it as big (49 respondents), medium (24 respondents), and very big (13 respondents). Responses such as little or no impact were chosen by a total of 4 respondents (Fig. 5). The awareness of middle-level employees in the scope of the methods and tools used to improve safety at the workplace is an essential element in improving working conditions if they see the essence of their use and see a real impact on improving safety at workstations that are directly below them are subject to (awareness high +++).

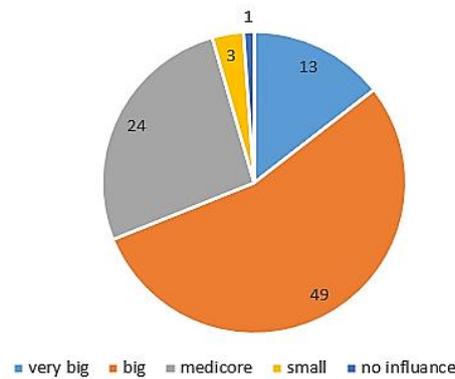


Figure 5. Assessment of employees' awareness of the impact of the methods and tools used on improving work safety.

Source: Own elaboration.

The issue of accidents at work is an important issue for every company. In connection with the above, the survey questions addressed to middle-level employees referred to the occurrence of such events. The questions were limited to accidents whose effects were assessed as severe or light (other accidents). The topic of fatal accidents in the survey questions was omitted due to the fact that such events were not registered in the statistics of the company where the research was conducted.

In the case of middle-level employees, 70 respondents indicated that serious accidents are not recorded in their departments (Fig. 6). In other departments, such events occur once a year (10 respondents), and then a downward trend in the occurrence of serious accidents is recorded in other departments. A limited number of serious accidents may prove the effectiveness of the implemented preventive measures. Thus, it can be concluded that middle-level employees have a high level of awareness (+++) of the occurrence and frequency of such events.

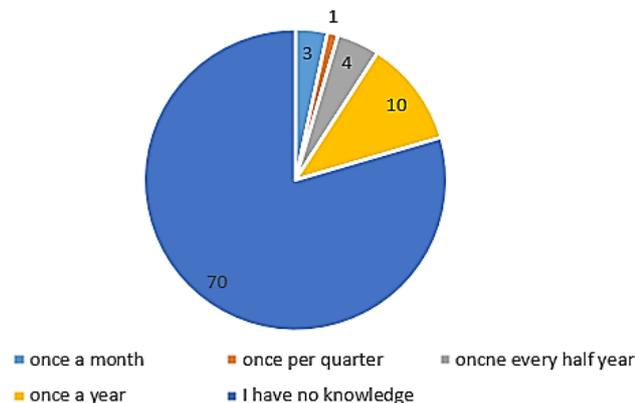


Figure 6. Evaluation of employees' awareness of the occurrence of serious accidents and their frequency.

Source: Own elaboration.

Other accidents (Fig. 7), which do not cause significant absenteeism, are also recorded in the company statistics. These events occur in department devices once a quarter (34 respondents) register the operation of this type of event, while 29 respondents do not register events other than in their own (+++ high awareness).

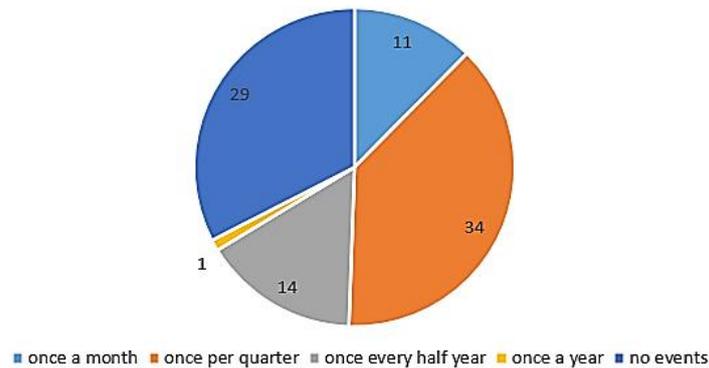


Figure 7. Evaluation of employees' awareness of the occurrence of other accidents and their frequency.

Source: Own elaboration.

The study of the occurrence of serious and other accidents made it possible to draw the attention of middle-level employees to the essence of the problem - the occurrence of accidents in the departments they manage. This information also made it possible to determine the departments where such events are registered, as well as the selection of actions to reduce their occurrence - a review of the methods and tools used.

Recording accidents at work in accident statistics requires the implementation of appropriate actions aimed at their elimination or reduction. Every company strives for a zero-accident policy and this is also the case in the company where the survey was conducted. As part of the conducted research, the following prevention activities were identified: meetings with employees, reporting near misses, reporting dangerous places, reporting dangerous behaviors, and visualization - of situations, and dangerous events. Depending on the department, middle-level employees indicate that the most frequently used prevention is reporting near misses (79 respondents), reporting dangerous behaviors (75 respondents), and reporting dangerous places (73 respondents) - Fig. 8. Under this question, employees could tick more than one answer, so it can be concluded that preventive measures may translate into improved occupational safety. Awareness (high awareness +++) in terms of the possibility of informing employees and communicating with them about dangerous events and dangerous situations may in the future translate into reducing accidents and improve working conditions. The exchange of information between employees and superiors is the most important element aimed at shaping a high culture of occupational safety. Each employee has an impact on safety, and good communication in this area translates not only into increased awareness of employees about existing threats but can also affect the occurrence of accidents at work.

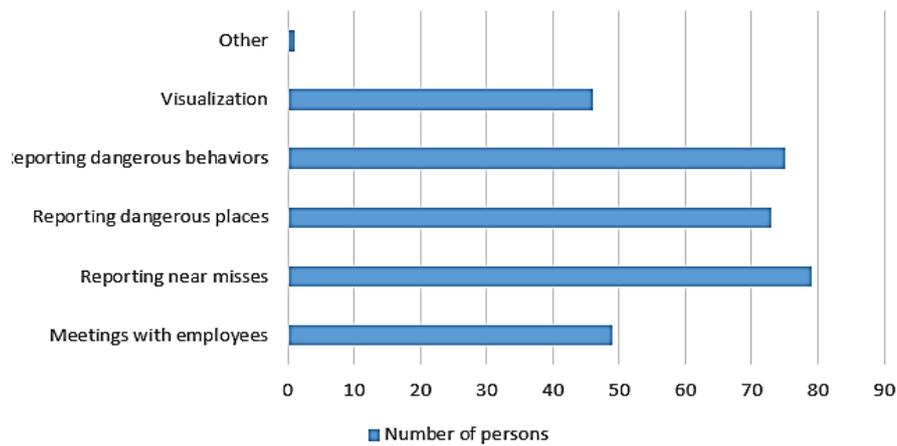


Figure 8. Solutions used as part of accident prevention.

Source: Own elaboration.

Summary

Shaping safety at work is an important element of the functioning of the enterprise, primarily the awareness and involvement of employees in activities aimed at improving occupational safety. The study presents the results of a survey addressed to middle-level employees, based on which employee awareness in selected areas related to occupational health and safety was assessed. Twelve survey questions were compiled in which respondents referred to issues related to occupational health and safety training, the methods and tools used in management, communication, and entities supervising working conditions, as well as the issues of accidents at work and accident prevention. The conducted research was directed to ninety respondents and was characterized by a high response rate of surveys and answers. The lowest number of responses (88 respondents) was recorded for the question on serious accidents. The registered number of respondents may result from the employee's lack of information on such events or the employee's omission of a survey question. However, it is believed that the number of 88 respondents providing the answer was satisfactory for the purposes of the research (methodological assumptions that the minimum number of people answering the question cannot be less than 87 respondents).

Based on the conducted analyzes of survey research, it is concluded that middle management is characterized by high awareness of health and safety issues (they engage in activities for health and safety), as evidenced by the obtained research results. Middle management is aware of:

- scope of health and safety training and time for their implementation,
- the scope of issues of registered accident events, taking into account the severity of the consequences,
- applied accident prevention, taking into account the methods/tools used in the company.

The area requiring improvement is the low awareness (+) of employees regarding the activities of the Social Labor Inspector, therefore improvement actions should be taken in this area. Based on the conducted analyses, it is concluded that the awareness of middle management is high and may have a significant impact on shaping safe attitudes and behaviors among the employees they manage. The awareness and knowledge of middle management in the field of occupational health and safety may translate into the level of safety culture in the workplace, which is also noted by other authors of works (Gajdzik, 2009). The obtained research results may also set directions for further improvement activities in the field of occupational health and safety undertaken by top management. Therefore, further research is planned to investigate the awareness of employees in the automotive industry. The research will be addressed to production workers and compared with the results presented in this study.

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