European Agency for Safety and Health at Work

Health and safety risks at the workplace: a joint analysis of three major surveys

European Risk Observatory
Executive summary

European Agency for Safety and Health at Work

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Executive summary

In order to better protect the more than 217 million workers in the European Union (EU) from work-related accidents and diseases, in 2014 the European Commission adopted the Strategic Framework on Health and Safety at Work 2014-2020 ([1]), which identifies key challenges and strategic objectives for health and safety at work. The Strategic Framework aims to ensure that the EU continues to play a leading role in the promotion of high standards for working conditions, to improve implementation of existing safety and health rules, in particular by enhancing the capacity of micro- and small enterprises to implement effective and efficient risk prevention strategies and to improve the prevention of work-related diseases by tackling new and emerging risks, without neglecting existing risks. This Framework proposes to address these challenges with a range of actions, including the improvement of statistical data collection to generate better evidence and to make more appropriate use of the data, as well as further improvements in monitoring tools.

As part of a series of secondary analyses of data from the second European Survey of Enterprises on New and Emerging Risks (ESENER-2), the European Agency for Safety and Health at Work (EU-OSHA) commissioned a study to combine data from the survey with data from two other major European surveys — the LFS 2013 ad hoc module on accidents at work and other work-related health problems, and the 6th European Working Conditions Survey — in one joint analysis. The aim was to provide answers to relevant questions in the area of occupational safety and health (OSH) risk management that could not be answered by analysing the individual datasets in isolation, such as 'When OSH risks are managed at the enterprise level, do employees perceive that their exposure to OSH risk is reduced or lower?' and 'What about their work-related health outcomes?'. To promote risk management, it is important to know which factors influence OSH risk management; for instance whether risk management is impacted by the level of exposure of employees to work-related risks, both general and specific, whether the incidence of health problems gives impetus to the decision to manage OSH risks, and whether drivers of and barriers to OSH risk management — such as management commitment, employee participation or a lack of resources — are also important factors for consideration. This knowledge may be relevant to policy-makers, employer and employee representatives, and OSH professionals, so that all of them can further encourage occupational risk management.

The following research questions were addressed in this study:

1. Is exposure to OSH risks, both in general and more specifically to environmental risks, risks of musculoskeletal disorders (MSDs) and psychosocial risks (PSRs), as reported by employees, related to risk awareness and risk management in enterprises?
2. Are work-related health outcomes and well-being, as reported by employees, related to risk awareness and risk management in enterprises?
3. How well is risk management explained by exposure to work-related risks, both general and specific, and by work-related health outcomes, as reported by employees?
4. Do success factors, such as management commitment and levels of employee participation, or barriers, such as a lack of resources or expertise, explain the relationship between risk management at the enterprise level and the risk perception of employees? If so, what impact do these factors have?
5. Can a typology of enterprises be defined according to either the background of the enterprise (such as country, sector and size) or the main features of its OSH risk management approach, including its drivers and barriers?

One of the surveys considered is at the enterprise level, EU-OSHA's ESENER-2 ([2]), which in 2014 surveyed risk awareness, risk management and the presence of drivers and barriers to risk management. The other two are at the employee level, dealing with exposure to risks and health outcomes as reported by employees. One of these surveys, the Labour Force Survey (LFS) 2013 ad hoc module on accidents at work and other work-related health problems (LFS 2013 ad hoc module) ([3]), inventories risk exposure

([1]) http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0332
([2]) https://osha.europa.eu/en/surveys-and-statistics-osh/esener
([3]) http://ec.europa.eu/eurostat/statistics-explained/index.php/EU_labour_force_survey_-_ad_hoc_modules

overall, identifying general OSH and MSD risks and PSRs in general, and indicators for general work-related health, MSDs and mental health outcomes related to work. The second employee survey used in this analysis, the 6th European Working Conditions Survey (EWCS) ([4]), was carried out in 2015. It inventories more specific work-related risks, such as environmental risks, risks of MSDs and PSRs, as well as some more specific work-related health outcomes.

We used two common background variables, *country* and *sector*, to combine these datasets in multilevel analyses. There were two levels used in the analysis:

- higher level: countries (analysis at country level, reporting at the level of country clusters);
- lower level: sectors within countries (analysis at sector level, taking into account country-level differences).

Company size was also considered as a potential third lower level for combining datasets, but it was not used, as the classification used in the EWCS could not be matched with the other surveys.

Relationships between indicators were studied using correlation and regression analyses.

Risks, work-related health and risk management in enterprises: principal conclusions

The general relationship noted in this study, which supports earlier studies using single datasets, shows that *exposure to risks*, and especially to specific occupational risks, is associated with increased risk management in enterprises. This finding is supported for:

- environmental OSH risks and OSH risk awareness and management;
- general MSD risks, heavy lifting and tiring positions, repetitive movements and MSD risk awareness and management;
- general PSRs and PSR awareness and management;
- violence and harassment, job insecurity and PSR management.

The presence of *health problems* is only marginally associated with more management of OSH risks and MSD risks in enterprises. Only when employees report work-related mental health problems is this associated with increased PSR management in enterprises; this is in addition to the impact from exposure to general and specific PSRs.

The main conclusions for the first three research questions are that:

1. Exposure to risks in general, as reported by employees, is positively related to risk awareness and risk management for all three types of risks studied here (OSH, MSD and PSR): greater risk exposure reported by employees is related to greater risk management in enterprises.
2. The availability of specific information on exposure to risks, as reported by employees, is strongly related to risk management taking place in enterprises.
3. General as well as specific health outcomes, as reported by employees, particularly on work-related general health, MSDs and mental health, are positively related to risk awareness and risk management in enterprises. However, for general health (LFS) as reported by employees, there is no relationship between OSH risk awareness and OSH risk management in enterprises.
4. When information on exposure to general and specific risks is taken into account, information on health problems reported by employees is only marginally related to management of OSH and MSD risks in enterprises taking place. However, when employees report work-related mental health problems, the relation to PSR management in enterprise is increased, even when exposure to general and specific PSRs is taken into account.

These findings suggest that enterprises do respond to high risk exposure reported by employees, and especially to exposure to specific risks. Particularly in the case of PSR management, mental health

([4]) http://www.eurofound.europa.eu/surveys/european-working-conditions-surveys

problems encountered by employees also appear to be positively related to PSR management, on top of the exposure to PSRs.

With regard to country and sector differences, it was found that sectors are more of a 'driver' of OSH and MSD risk awareness and management. Countries, on the other hand, are stronger drivers of more PSR management and awareness. This may mean that political and cultural factors play a larger role here.

Drivers of and barriers to risk management in enterprises: principal conclusions

Several drivers and barriers are known to directly influence risk management in enterprises. Some drivers and barriers can also influence or moderate the *relationship* between risks and risk management. Drivers that were found to have a direct enhancing impact on both OSH and MSD risk management are the presence of a formal employee representative, management commitment and informal employee involvement in OSH management. For the other drivers, such as meeting employees' expectations, increasing productivity or the organisation's reputation, and barriers, such as a lack of time and staff, lack of resources, lack of knowledge etc., direct relationships were not found. For PSR management, the only relevant and statistically significant driver found is employee involvement in the design and set-up of measures aimed at managing PSRs.

When the moderating effect of drivers to risk management was assessed, and drivers were found to be absent or low, the relationship between the exposure to risk and risk management also appears to be absent. When these drivers are present, in general a positive relationship is found between the risk exposure, as reported by employees, and risk management in enterprises moderated by a specific driver, e.g. employee involvement. Formal employee representation moderates the relationship between specific environmental risks, repetitive movements and OSH and MSD risk management; by comparison, the moderating impacts of other drivers on the relationship between OSH and MSD risk, and risk management, are rather small. The expectations of employees are the only driver that moderates the relationship between repetitive movements and MSD risk management.

For PSR management, some specific drivers were found to moderate the relationship between exposure to PSRs, as reported by employees, and PSR management in enterprises. In general, the main conclusions reported above for OSH and MSD risk management apply here too. However, PSR management particularly benefits from employee involvement in managing PSRs (rather than participation in OSH risk management in general), as well as good OSH communication, a respectful workplace and the opportunity to discuss organisational issues in a more formalised way.

The relationship between job insecurity and PSR management is somewhat different. This relationship is a negative one, which can be interpreted as indicating that, where job insecurity is high (and therefore the value of staff retention may be low), PSR management is low, indicating that it is not a priority.

Barriers to risk management, such as a lack of resources, do not have a major effect on risk management, but do have a moderating effect on OSH management and minor effects on MSD and PSR management: when there are fewer barriers, the relationship between the risk, as reported by employees, and risk management is absent. However, when barriers are present, it is only high levels of exposure to risks such as violence and harassment that are associated with greater risk management.

From these results it can be concluded that improving management commitment, formal employee representation and employee involvement in OSH management are associated with greater OSH and MSD risk management. Employee involvement in managing specific PSRs is positively related to overall workplace PSR management. PSR management may also benefit from a workplace that is respectful towards employees and transparent communication, as well as the opportunity to discuss potential risks.

Enterprise typologies: principal conclusions

The final research question aimed to investigate the possibility of defining typologies of enterprise according to either the background of the enterprise (such as country or sector) or their main features of OSH risk management, including drivers and barriers. The results of the analyses show that typologies can be made for countries, country clusters and sectors based on the main determinants of risk management. These typologies present the relative status of the drivers for general or specific risk management and indicate room for improvement in risk management in a given country, country cluster or sector.

Several examples are given in the full report building on the characteristics that were found to be related to higher levels of risk management. For example, in Figures A and B we show the typology for OSH risk management and PSR management in the Nordic countries and the Baltic states, as these are quite different.

The OSH management typology for country clusters shows that, for example, a country cluster such as the Baltic states (Figure A) rates more favourably than average (0.0 on the horizontal axis) with respect to overall OSH risk management and that this is comparable to overall OSH risk management in the Nordic countries (Figure B). However, the figures also show that, to a large extent, different drivers contribute to the level of OSH risk management in each of these two country clusters. This suggests that in both country clusters there is considerable room for further improvement of OSH risk management. It may be argued that, in the Baltic states, the focus for improving OSH risk management could be shifted to more employee representation, more actual employee involvement in OSH risk management and more management commitment. In the Nordic countries, more attention could be paid to the environmental risks, and management commitment could also be improved further. OSH barriers, e.g. lack of resources, negatively contribute to OSH risk management in both country clusters, and lowering the barriers may also improve risk management.

Figure A: The typology of OSH risk management for the Baltic states.

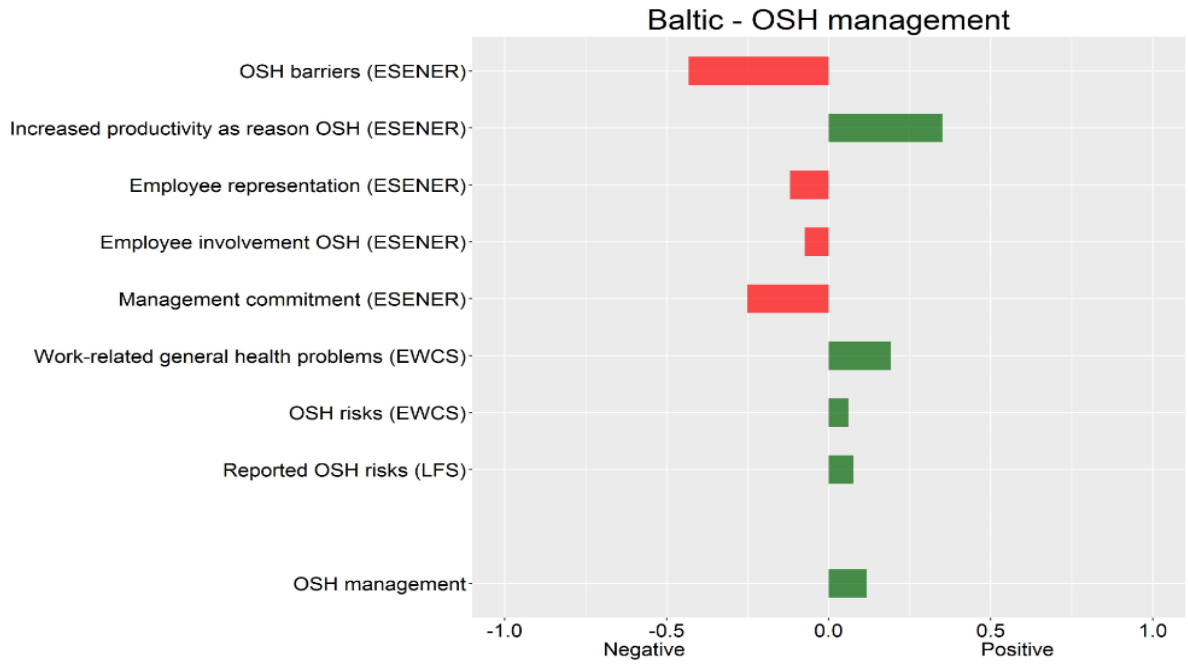
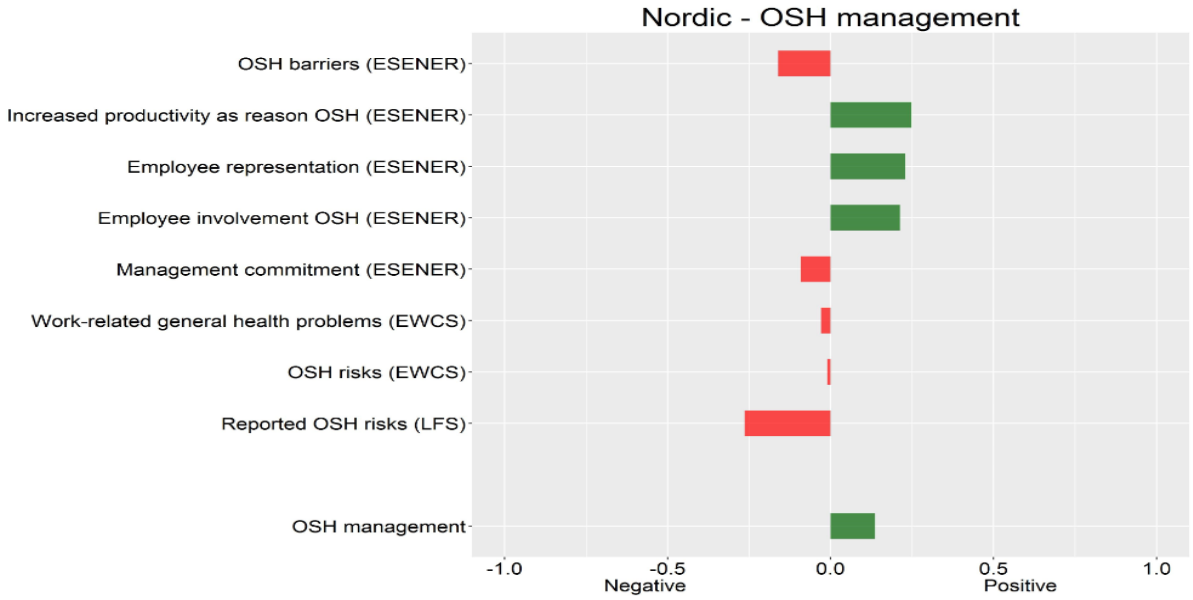


Figure B: The typology for OSH risk management for the Nordic countries.



The explanatory variables for PSR management are quite different from those for OSH risk management. When considering PSR management for the same country clusters discussed above, the typology of the Baltic states shows more room for improvement (Figure C) than the Nordic countries (Figure D). PSR management in the Baltic states is relatively poor; exposure to PSRs in general is relatively high; employee involvement in the management of PSRs and the opportunities to discuss these risks are also quite low. Improving all these indicators may result in an increase in PSR management in the Baltic states. In the Nordic countries the typology for PSRs management is much more positive, both on risk management and on the most important drivers of PSR management (Figure D). However, even here there appears to be room for improvement in tackling barriers to PSR management and in improving management commitment, as well as tackling, job insecurity.

Figure C: The typology of PSR management in the Baltic states.

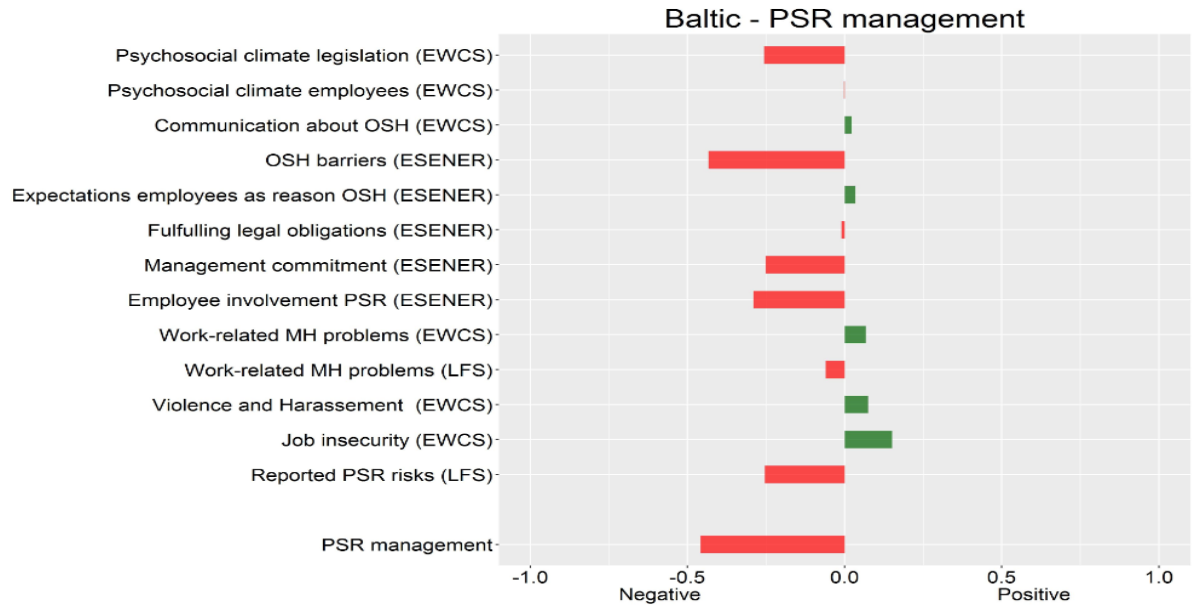
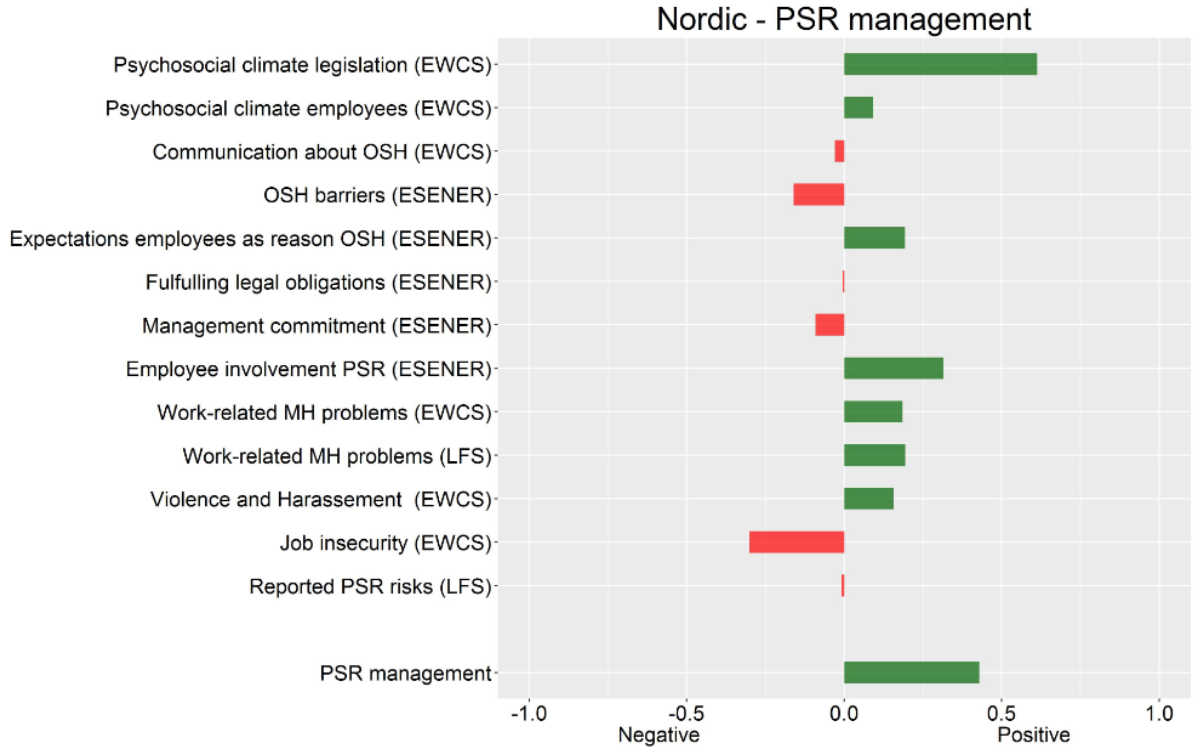


Figure D: The typology of PSR management in the Nordic countries.



Summary findings of the joint analysis

Based on the results of this joint analysis of the three major European surveys on OSH, the following summary conclusions can be drawn:

- Exposure to risks, as perceived by employees, and particularly to specific environmental and specific MSD risks and PSRs, appears to be an important driver of the management of OSH risks, risks of MSDs and PSRs.
- Additionally, information on mental health problems, as reported by employees, significantly and relevantly adds to the management of PSRs in enterprises, as does information on exposure to general and specific PSRs. This is not the case for general work-related health or MSDs.
- Drivers and barriers to risk management may influence how policy-makers and other stakeholders — employers, employees and their representatives, and OSH professionals — manage OSH risks in enterprises, particularly MSD risks and PSRs.

Recommendations for policy-makers, national and sectoral stakeholders

Based on the results of this joint analysis, the following recommendations can be made:

- It is important to support moves to *strengthen management commitment* to OSH management in general, as well as the specific management of OSH and MSD risks. Although this driver was not found to be related to PSR management, the literature suggests that it is relevant to PSR management. The present study suggests that specific support for PSR management is necessary to fully develop PSR management.
- It is also recommended that employer and employee representatives and other relevant stakeholders, such as representatives of sector-level organisations and OSH professionals,

encourage employee participation to facilitate the management of OSH in general, as well as more specific management of MSD risks and PSRs. This is because:

- Improving *formal employee representation* is strongly associated with OSH and MSD risk management. Again, no association with PSR management is found.
- Improving *informal employee participation* can also improve OSH management.
- *Involvement in the design and set-up of measures to manage PSRs* is strongly associated with greater PSR management.

National and sectoral stakeholders could also:

- *Support the development of risk assessment tools*. Examples of such tools are often already available at EU and national levels for general, as well as specific, risks.
- Aim to *improve formal employee representation in companies* to support OSH management.
- *Encourage formal employee representation* as an important driver in the reporting of exposure to OSH and MSD risks by employees and in risk management by the establishments. Employee representation was found to be important. However, representation does not have to be formal, particularly when considering the findings about PSR management. The key factor is employee involvement in risk management, particularly for PSR management, which is greatly improved when employees are involved in managing specific PSRs.
- *Encourage management commitment to risk management*, as it is important for managing OSH and MSD risks. It may be that management commitment specifically directed at psychosocial issues is also important for PSR management, but information on this type of management commitment is not yet available in ESENER.
- *Promote fair and respectful workplace environments and the presence of employee representation in the workplace* to effectively manage PSRs. These, together with the opportunity to formally discuss organisational issues, are particularly important drivers of PSR management.
- *Aim to increase resources for risk management in enterprises*. In general, limited resources in enterprises mean that there is no relationship between risks reported and risk management. The findings indicate that only in the case of specific risks, such as violence and harassment, are sparse resources allocated to these risks.

Limitations of the joint analysis

The method used to combine data in this study has limitations. It is clear that combining three datasets is quite complex, particularly because there is no option to link the data at the individual worker or enterprise level. As a result, we were restricted to analyses at the higher cluster levels (i.e. country and sector). The variable ‘size’ could not be taken into account as a level for the linkage of the datasets when the EWCS was included. However, the impact of not including the size level was analysed using the ESENER-2 and LFS 2013 ad hoc module in combination, and was found not to have a major impact when considering only robust and relevant findings.

Another limitation of the study is that causality could not be established using these cross-sectional rather than longitudinal survey data. The data were taken from three different surveys collected around the same time. While we could analyse correlations and associations between all variables, it was not possible to indicate any causal direction in these relationships. Although the typologies are based on the findings of all joint analyses and present the relative impact of drivers of general OSH risk management and more specific MSD and PSR management, a causal relation can still be assumed, since they all suggest room for improvement. In the present study, only cross-sectional correlations could be considered. From the literature, however, some causal direction can be assumed for management commitment, and employee participation in risk management, as well as a lack of resources (e.g. Kompier and Marcelissen, 1990; Leka et al., 2010, 2011; Westgaard and Winkel, 2011; Nielsen and Randall, 2013).

In addition, the questions on specific drivers of PSR management and on PSR management itself in ESENER-2 were asked only of enterprises with 20 employees or more, excluding smaller enterprises. This resulted in some loss of power when analysing the impact of drivers and barriers on PSR management.

Strengths of the joint analysis

Combining datasets like this helps to produce relevant, interpretable results that can go further than what would be possible through separate analysis of these datasets. The analysis of combined datasets, as done in this study, is a cost-effective way to obtain results from several sources that could otherwise be obtained only through costly and time-consuming field work. It also allows us to make more use of existing data. For example, this study allows us to look at the associations between employee and enterprise data on OSH risk exposure at work as reported by employees and risk management at the enterprise level.

However, harmonisation of common variables for linking databases (e.g. country, sector and size) as done in this study is a prerequisite for the successful combination of different datasets. The more levels of information that can be linked, the more reliably and validly the results can be interpreted.

The joint analyses link important steering information (drivers and barriers) to OSH risk management in general as well as to the management of important specific OSH risks, PSRs and MSD risks. For PSR management, part of the information on drivers came from ESENER-2 and part came from the EWCS. Both sources were equally able to provide useful information that can be used to promote PSR management. The drivers are particularly important components of a typology that provides an overview of conditions in countries, country clusters or sectors, and indicates where there is room for improvement to actively promote risk management.

Future work

Joint analyses may become one type of analysis that will merit more use in the future. When datasets collecting information on OSH are better harmonised, including the levels at which the data can be combined, the usefulness of these type of analyses may increase further.

In future, with further adaptation to these surveys, we may also be able to consider other relevant drivers and barriers, particularly for specific types of OSH risks. For now, no specific information on drivers and barriers was available for MSD risk management. There are some specific drivers of PSR management, but, to better grasp the conditions for specific drivers, one may additionally need specific information about management support specifically for PSRs and MSD risks, and communication about these specific types of risks as well.

Although some of the future work proposed here is aspirational, these joint analyses already provide findings relevant both to general OSH risk management and more specifically to MSD risk management and PSR management, and help indicate which factors and potential policy and practice changes could further promote general and more specific OSH risk management in enterprises within different countries and different sectors.

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