Original research

Recognition of COVID-19 with occupational origin: a comparison between European countries

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ABSTRACT

Objectives This study aims to present an overview of the formal recognition of COVID-19 as occupational disease (OD) or injury (OI) across Europe.

Methods A COVID-19 questionnaire was designed by a task group within COST-funded OMEGA-NET and sent to occupational health experts of 37 countries in WHO European region, with a last update in April 2022.

Results The questionnaire was filled out by experts from 35 countries. There are large differences between national systems regarding the recognition of OD and OI: 40% of countries have a list system, 57% a mixed system and one country an open system. In most countries, COVID-19 can be recognised as an OD (57%). In four countries, COVID-19 can be recognised as OI (11%) and in seven countries as either OD or OI (20%). In two countries, there is no recognition possible to date. Thirty-two countries (91%) recognise COVID-19 as OD/OI among healthcare workers. Working in certain jobs is considered proof of occupational exposure in 25 countries, contact with a colleague with confirmed infection in 19 countries, and contact with clients with confirmed infection in 21 countries. In most countries (57%), a positive PCR test is considered proof of disease. The three most common compensation benefits for COVID-19 as OI/OD are disability pension, treatment and rehabilitation. Long COVID is included in 26 countries.

Conclusions COVID-19 can be recognised as OD or OI in 94% of the European countries completing this survey, across different social security and embedded occupational health systems.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ At the time of the study, there was knowledge about the epidemical situation in most countries, but no real knowledge regarding the legislation on occupational diseases (OD) and specifically on COVID-19. The pandemic situation called for a global approach on topics such as preventative measures and treatment. Now more then ever seemed like the moment to investigate how harmonised or how different the various European countries handle diseases with occupational origin.

WHAT THIS STUDY ADDS

⇒ There is much agreement on topics such as possibility of recognition of COVID-19 with occupational origin and on principle compensation benefits. On the other hand, there are major differences in regard to other criteria of recognition. Although most European countries are part of the EU, there is still a long way to go to harmonise national systems for recognition of OD/occupational injury (OI).

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Harmonising national systems for recognition of OD/OI within Europe seems an important future goal, since this is currently not the case. Not only the current pandemic situation but also globalisation call for a future harmonised approach.

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INTRODUCTION

On 31 December 2019, the WHO China Country Office was informed of cases of pneumonia of unknown aetiology in Wuhan City, China. On 7 January 2020, Chinese authorities identified a new type of COVID-19 as the cause, which was named SARS-CoV-2. A live-animal market in Wuhan was identified as the most likely source of this novel COVID-19.[1] The disease caused by this virus was named COVID-19 by the WHO in February 2022.

On 30 January 2020, the WHO declared the outbreak a public health emergency of international concern. At that time, there were almost 8000 confirmed cases and more than 12 000 suspected cases in China. The virus had also spread to other countries, as there were already 83 cases in 18 countries. All countries were informed that further international spread of cases could happen and that they should prepare for containment, active surveillance, early detection, isolation and case management, contact tracing and prevention of onward spread of the virus.[2]

Despite major public health interventions including wide-ranging lock-downs, the virus quickly spread around the world and was declared a pandemic by the WHO on 11 March 2020. By that time, there were already more than 118 000 cases in 114 countries and 4291 deaths. With 20 000 confirmed cases and almost 1000 deaths, the European Region was at the centre of the pandemic.[3]

Particularly during the early stages of the pandemic, the transmission of the virus was not fully understood to implement effective organisational measures, availability of effective personal protective equipment (PPE) was scarce, testing, tracing and quarantining was limited, and there was no effective vaccine.[4–6]

Certain economic sectors or occupations represented a higher risk of exposure or infection with SARS-CoV-2, especially those with close contact to diseased people in healthcare institutions or a high likelihood of close contact with infected coworkers or clients.[7 8] Due to the nature of their jobs, the so-called 'essential' workers, whose work was essential during lockdowns to ensure the continuity of critical functions,[9] were often not able to work from home, and they tended to work in sectors where frequent and sometimes close contacts with infectious people are part of their job. These include workers in healthcare, protective services, maintenance workers, etc.[10] If workers get infected through their work, COVID-19 should be recognised as an occupational disease (OD) or occupational injury (OI) to compensate for the negative consequences.[6] Soon the first countries considered recognising COVID-19it as an OD or OI.

The aim of this study was to present an overview regarding the recognition of COVID-19 as an OD or OI in Europe, providing details on the different criteria for recognition in each country, and the respective compensatory benefits.

METHODS

OMEGA-NET, a Network on the Coordination and Harmonisation of European Occupational Cohorts, is a European Commission COST-funded action around 300 participants from 37 countries in the WHO European region. In November 2020, a COVID-19 Task Group was formed within OMEGA-NET to investigate occupational aspects of the COVID-19 pandemic. One of the objectives was to develop a descriptive summary on current national legislation on COVID-19 with occupational origin. A 19-item questionnaire (online supplemental appendix 1) was developed by the task group over the course of several virtual meetings, building on the group's expertise on occupational health systems (list system vs open system) and the evolving understanding of COVID-19. In a list system for recognising ODs, a predefined list of specific diseases is established, and for a disease to be recognised as occupational, it must match one of the conditions on this list. The diseases listed are typically those that have a well-established and scientifically recognised association to certain occupational exposures. This system provides clarity and simplicity in the recognition process, but it might not encompass all potential ODs, especially those that have not yet been extensively studied or documented. In an open system for recognising ODs, one needs to provide scientific evidence of the link between a specific disease and the work environment. This system allows for the recognition of a broader range of diseases in relation to certain occupational exposures. Medical experts and scientific evidence play a crucial role in determining whether a particular disease is work-related. The open system tends to be more flexible and adaptable to emerging health risks as new connections between work conditions and diseases are discovered.

The digital questionnaire (Qualtrics XM software) was pilot-tested and refined before the collection of the data

For full coverage of countries in the WHO European region, occupational health experts were identified within and beyond the OMEGA-NET network. In December 2020, the survey was sent by email to occupational health experts with esteemed affiliations and authoritative roles either in occupational medicine unit of universities or national occupational health institutes. In addition, the experts were thoughtfully chosen based on their qualifications, affiliations and substantial contributions to their respective fields and knowledge of their national occupational health system and the recognition and compensation of ODs in their countries, ensuring a well-rounded and knowledgeable group of respondents. Because of the dynamic evolution of the pandemic, the same experts were recontacted in October 2021 and April 2022 to clarify and confirm some responses for quality purposes.

RESULTS

In total, experts from 35 countries (minimum one per country) completed the survey: Austria; Belgium, Bosnia Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Luxembourg, Malta, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, R. North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the UK.

Definition of OD/OI

The definition of an OD is slightly different in each country, but the uniform core message is that it is a disease caused by an exposure to risks/hazards at work (whether biological, physical, chemical or psychological). Also mentioned by some countries is that the disease must be primarily caused by the occupational risk (eg, with an occupational probability of causation of more than 50%) or that it must be highly unlikely that the disease is due to a non-occupational cause.

The main difference with OI for most countries is the time factor: an OI is caused by a sudden event or accident during work (typically within one work-shift) or due to a work-related commuting accident. The consequence of the exposure is direct whereas an OD develops more slowly and/or by a prolonged exposure.

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National systems of ODs

Twenty countries (57%) have a mixed system: a combination between a list system and an open system. Fourteen countries have a list system (40%) and only one an open system (the Netherlands). Cyprus' national system for prevention of OD is a mixed system, and their national system for insurance benefits allowances is a list system. In a list system, only conditions or diseases mentioned in the list can be recognised as ODs. In an open system, a claim can be made, but proof regarding the causality needs to be provided by the claimant or supporting medico-legal experts. In a mixed system, both options exist.

In our statistics this was counted as a list system since we focus on recognition for compensation benefits. Romania has a mixed system but since the procedure to be included via the open system is very long there has not been any claim yet. Therefore, Cyprus and Romania were counted as having a list system. An overview of the national systems of ODs is graphically shown in online supplemental appendix 2.

OD agency: compensation, statistics and decisions

In most of the countries, the agency that handles compensations of OD/OI is not the same institute that gathers numbers on OD/OI (63%). The agency that handles the compensations is mostly the same that decides on recognition of individual claims (71%). In one out of four countries, the decision on recognitions of individual claims is not made by the agency that is responsible for the compensation (26%). In the Netherlands, there were no provisions until recently to get a compensation specifically for having an OD.

Recognition of COVID-19

COVID-19 can be recognised as an OD in 57% of the countries (figure 1). In four countries, it can be recognised as an OI (11%) and in seven countries either as OD or OI (20%). In the Republic of Moldova, COVID-19 was not recognised as an OD, but the medical workers from the first line (COVID-19 specialised hospital units, laboratories) benefit from a one time payment as compensation. In the UK, COVID-19 was not yet recognised as OD or OI although a one-time payment to the estate of eligible individuals who died from COVID-19 during their front-line essential work is possible.

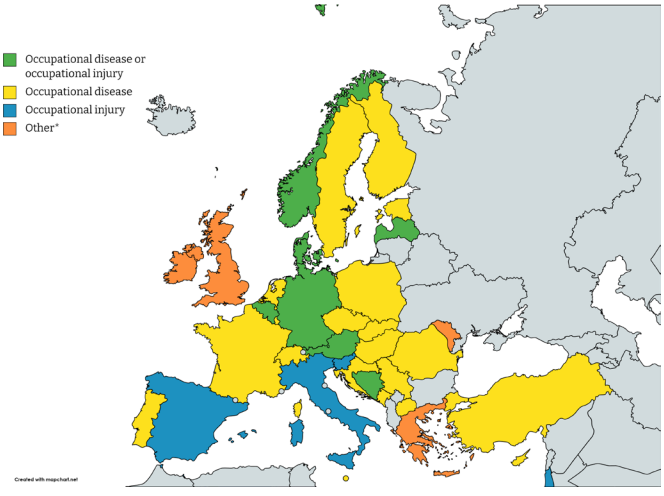


Figure 1 Distribution of different types of recognition of COVID-19 (April 2022). *Other: No recognition as occupational disease or occupational injury.

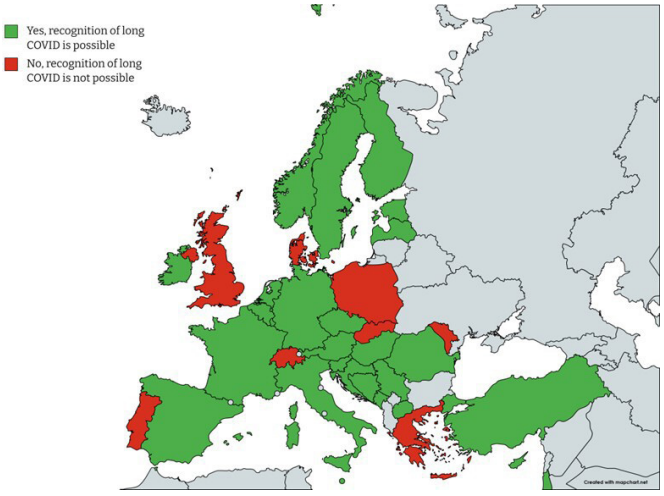


Figure 2 Distribution of recognition of long COVID in Europe (April 2022).

In Denmark, it can be recognised as OD, if the exposure to people with COVID-19 or possibly infected with COVID-19 is more than 5 days, while if the exposure is less than 5 days, it can be recognised as OI. In Germany, Austria and Belgium, the economic sector determines whether it can be recognised as OD or OI.

Long COVID is recognised as OD in 26 countries (74%) (figure 2). Romania described that although long COVID itself is not recognised as OD, it can be recognised as being a complication of an occupational COVID-19 infection. A similar approach exists in Croatia.

Coverage

Coverage for healthcare workers (HCWs) is typically included (92%). In 12 (34%) countries, coverage is restricted to HCWs, while 11 (31%) countries also recognise COVID-19 as an OD/OI in other jobs (eg, food store personnel, police, teachers, public administration, etc) and in 9 (26%) countries recognition is not restricted to certain jobs.

Volunteers are only fully covered in six countries (17%) and covered in case of payment of insurance fees (by employer or employee) or in specific jobs (eg, volunteers who work in blue light/emergency sectors).

Proof of occupational exposure

Twenty-six countries (71%) consider working in certain jobs (mainly healthcare) proof of occupational exposure. In 19 countries (54%), contact with a colleague with confirmed infection counts as proof of occupational exposure (in some countries only in healthcare), and in 21 countries (60%) the contact with clients with confirmed infection (in some countries only in preschool/kindergarten teachers) (table 1). In some countries, there are detailed definitions what constitutes a contact in terms of distance and duration.

Belgium adjusted its recognition criteria in December 2021: when there is a cluster outbreak at work recognition is possible (retroactively from 18 May 2020) when there are at least five persons with confirmed infection within 14 days in the same working space (not necessarily colleagues, might also be clients) under circumstances that promote virus transmission.

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Table 1 Proof of occupational exposure (April 2022)

	Work in certain jobs	Contact with colleague with confirmed infection	Contact with client with confirmed infection	Other
Austria	√	√	√	√
Belgium	√	√	√	
Bosnia and Herzegovina	√	√	√	√
Croatia				√
Cyprus	√			
Czech Republic	√		√	√
Denmark	√	√	√	√
Estonia	√		√	
Finland		√	√	√
France	√	√	√	
Germany	√	√		√
Greece				√
Hungary	√	√	√	√
Ireland	√	√	√	
Israel	√	√	√	√
Italy	√	√	√	
Latvia				√
Luxembourg	√	√	√	
Malta		√	√	
Moldova				√
Montenegro	√	√	√	
Netherlands		√	√	√
Norway	√	√	√	
Poland				√
Portugal	√			
North Macedonia	√	√	√	√
Romania	√			
Serbia	√	√	√	
Slovakia	√			
Slovenia	√	√	√	
Spain	√			
Sweden	√		√	
Switzerland	√			√
Turkey	√			√
UK				√
N=35	N=26	N=19	N=21	N=18

Proof of infection

A positive PCR test is in most countries considered proof of infection (57%). In 8 countries, a positive PCR test or serology is considered proof even without symptoms, but in 15 (42%) countries it must be accompanied by symptoms. In 15 (43%) countries, there are other minimum requirements; for example, in France, it must be a severe case with the need of requiring oxygen therapy or any other form of ventilatory assistance or a COVID-19-related death. Other countries also specify to only consider the severe cases (but without specific minimum requirements), evaluated case per case (figure 3).

Surgical masks and personal protective equipment

In all but one country (Estonia) (97%) the (non-)use of PPE would not have an impact on recognition. The arguments for this decision are that not everyone may have had access to appropriate PPE, or PPE can become dysfunctional and it is impossible to prove that somebody did or did not use PPE correctly at all times.

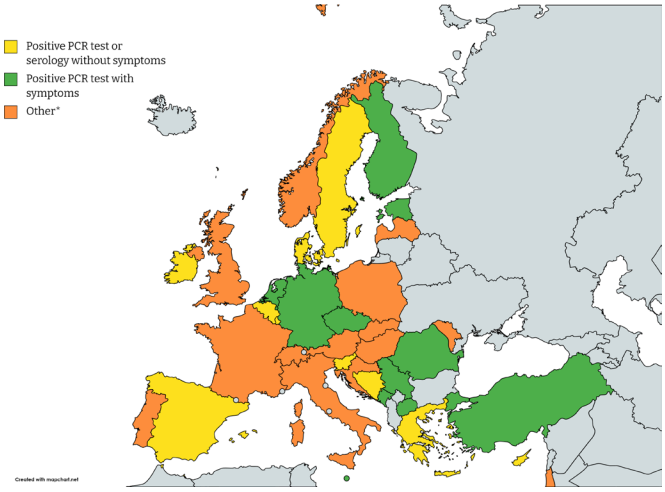


Figure 3 Minimum requirements of proof of infection (April 2022). *Other: other minimum requirements, for example, severe case with the need of requiring oxygen therapy or any other form of ventilatory assistance or a COVID-19-related death, severe cases (but without specific minimum requirements), evaluation case per case.

Work-relatedness

In 15 countries (43%), non-occupational exposure as another possible cause of COVID-19 is taken into consideration or investigated, while 8 countries (23%) do not consider non-occupational exposure or the insurance system/company needs to prove that non-occupational exposure was more likely (ie, 'opposite burden of proof').

Remotely working may involve occupational exposure and is covered in seven countries (20%), but some of these noted that this would not be the case for COVID-19 since there is no contact with colleagues or clients when working at home. Most countries (80%) do not cover OD/OI in home office.

In some countries, commuting-related accidents may be covered as an OI and, in principle, COVID-19 may be acquired when commuting, for example, by public transport. However, health experts are not aware so far of COVID-19 cases recognised as OI with a commuting-related exposure. Employer-organised group transports may constitute a special case, and coverage may even include grouped housing of workers under certain conditions. The exposures more distant from the direct occupational context the more important the consideration of competing non-occupational exposures are.

Benefits

The compensation benefits for COVID-19 as OI/OD are treatment (86%), rehabilitation (83%), fully paid long-term sick leave (83%), disability pension (91%), pension to surviving family member (66%) or other (eg, expenses for burial in case of death). Two countries (the Netherlands and Moldova) provide no specific compensation benefits for COVID-19 as an OD/OI (table 2).

DISCUSSION

Despite important differences between national systems in their approach to recognition of OD/OI in general (list, mixed or open system; responsible institutions), most surveyed countries fairly quickly amended their respective system and included an

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Table 2 Compensation benefits for COVID-19 as OI/OD (April 2022)

	Treatment	Rehabilitation	Fully paid long-term sick-leave	Disability pension	Pension to surviving family member	Other*	None
Austria	√	√	√	√	√		
Belgium	√	√	√	√	√	√	
Bosnia and Herzegovina	√	√	√	√	√		
Croatia	√	√	√	√	√	√	
Cyprus	√		√	√			
Czech Rep	√	√	√	√	√	√	
Denmark	√	√				√	
Estonia	√	√		√			
Finland	√	√	√	√	√	√	
France	√	√	√	√	√		
Germany	√	√	√	√	√	√	
Greece†	√	√	√	√	√	√	
Hungary	√	√	√	√			
Ireland	√	√		√			
Israel	√	√	√	√	√		
Italy	√	√	√	√	√		
Latvia	√	√	√	√	√		
Luxembourg	√	√	√	√	√		
Malta			√	√			
Moldova							√
Montenegro	√	√	√	√	√		
Netherlands							√
Norway	√	√	√	√	√	√	
Poland			√	√	√		
Portugal	√	√	√	√	√		
North Macedonia	√	√	√	√	√		
Romania	√	√	√	√			
Serbia	√	√	√	√	√		
Slovakia	√	√	√	√		√	
Slovenia	√	√	√	√			
Spain	√	√	√	√	√		
Sweden	√	√	√	√	√	√	
Switzerland	√	√	√	√	√		
Turkey	√	√	√	√	√	√	
UK				√			
N=35	N=30	N=29	N=29	N=32	N=23	N=11	N=2

*Compensation for pain, compensation for impaired life capacity, etc.
†All compensation benefits are available only if it is recognised as an OD.
OD, occupational disease; OI, occupational injury.

option for the recognition of COVID-19 as an OD or OI. In addition, common in most countries is the eligibility of HCW for recognition of COVID-19 as an OD. Beyond these commonalities major differences prevail regarding recognition as OD vs OI (with some countries providing both options, but for different scenarios and with different criteria); coverage of volunteers; the proof of exposure and coverage of jobs beyond HCW; the proof of disease (from positive PCR test without symptoms to restriction to very severe disease or death); and the potential inclusion of transmission during commute or in home office. While potential types of benefits are similar across countries (treatment, rehabilitation, fully paid long-term sick leave and disability pension), major differences are likely regarding the level of benefits.

In Europe, list systems and mixed systems dominate. While recognition in a list system is restricted to the prescribed ODs, it is typically easier to get recognition for these diseases than in an open system or for diseases not (yet) included in the list of a mixed system.

In the majority of the countries, COVID-19 can be recognised as OD, but in about 10% of the countries, it will be considered as an OI, and in one out of five countries it can be recognised either as OD or as OI. However, there may be important differences between the two options. For example, in Germany, COVID-19 among HCW can be recognised as an OD, while COVID-19 in any other occupation would be considered as OI, but the percentage of successful claims differed widely, with 43% and 3%, respectively.

Three different scenarios can be identified. First, the exposure is directly associated with the occupational activity. In most countries (92%), COVID-19 among HCW can be recognised as OD/OI and having worked as a HCW may already be sufficient proof, but in some countries proof of contact with an

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infected patient is required—mostly in general by working in close contact with infected patients. Second, a higher probability of exposure is associated with certain jobs, depending on the pandemic situation, exposure and infection may also occur via infected clients, particularly if working circumstances make it difficult to keep a safe distance (eg, bus drivers and front office workers). Finally, exposure may result from infected colleagues.

Therefore, in almost one-third of the countries certain other jobs (like police officers and teachers) are also covered. Nine countries do not restrict a potential recognition to certain jobs at all, but may instead require individual proof of occupational exposure. In Belgium, recognition criteria include proof of exposure when there is a documented cluster outbreak at work. In most countries, coverage depends on working in a job with paid contributions (typically by the employer) to the social insurance system. Therefore, volunteer workers are often not covered.

In several countries, the occupational health system also covers work in the home office and commuting accidents (eg, a fall with injury from the use of public transport). Therefore, the home office or the commute is a potential occupational sources of exposure to COVID-19 as a potential OD/OI. According to our survey, six countries are currently open to recognising OD/OI when contracted in the home office, particularly because of mandatory work from home in unprecedented numbers. However, individual claims for recognition as OD/OI would probably be difficult and require proof of the occupational nature of the exposure and rule out non-occupational exposures, for example, from family members.

For the recognition as an OD/OI countries require different proof of infection. For example, in some countries, symptoms with a positive test (PCR or serology) and in other asymptomatic test-positive cases. A problem in the beginning of the pandemic was the limited testing capacity. On 14 January 2020, the WHO published protocols for RT-PCR of 2019-nCov on its website. Even though the primer/probe sequences were available, the test implementation did not follow as quickly[11] Therefore, the Netherlands initially decided to recognise COVID-19 as OD based on typical clinical symptoms even in the absence of a positive test result, but later changed these criteria when PCR tests became more widely available. Similarly, the availability and wide use of rapid antigen tests in screening has led to the decision of some countries to accept antigen tests taken by a health professional.

The Occupational Medicine Section of the European Union of Medical Specialists published a 'Statement on COVID-19 as occupational disease' to propose minimum diagnostic criteria in March 2021. The proposal requires a positive PCR test accompanied by COVID-19 symptoms, specifically: (1) a SARS-CoV-2 positive PCR test and respiratory COVID-19 symptoms; (2) documentation of sufficient occupational exposure, that is, COVID-19 should be recognised as an OD in all workers where the increased risk for SARS-CoV-2 infection had been proven; and consideration of PPE should not exclude recognition of COVID-19 as an OD/OI; (3) exposure must precede health effects for 1–10 days and (4) differential diagnosis must be considered.[12] For some of the surveyed countries the proposal would result in more recognisable cases, while in other countries it would narrow the number of potentially successful claims, depending on how proven occupational exposure will be defined.

A problem in the beginning of the pandemic was the lack of proper personal protection equipment (PPE). Many countries were not prepared for a pandemic in terms of PPE and quickly experienced a shortage of masks, face shields, gowns and hand sanitisers. Not only the demand of PPE increased exponentially, but the production and distribution of PPEs were disrupted due to illness of workers. Reuse or extended use of PPE was tried as a temporary solution, and even homemade cloth masks were used, particularly in jobs outside healthcare. While implementation of occupational hygiene measures and the use of PPE prevented occupational COVID-19 cases, in individual recognition and compensation all but one countries (97%) consider the role of (non-)use of PPE without impact on recognition of COVID-19 as OD/OI.

Our survey has certain strengths and limitations. Compared with the survey on the possibility of recognising the occupational nature of COVID-19 by Eurostat,[13 14] the statistical office of the European Union (EU); our survey includes a larger number of countries, including not only almost all EU Member States (except Lithuania and Bulgaria), but also most EFTA countries, the UK and other countries of the European region. The survey equally showed that in all countries, the occupational risk of COVID-19 is considered with differences on the practical modalities of recognising this risk and to the sectors and occupations concerned (limited to the health sector or extended to wider range of sectors). Our survey is broader including additional questions (eg, on home office, commuting-related OI) that may be of particular interest not only for COVID-19 as an OD/OI, but also our 'new normal' after the pandemic.

For an individual case, the overall impact of some of the described differences between countries may be difficult to assess if not considered in context of the respective national system for recognition of OD/OI, and even in context of the respective social insurance systems. For example, the Netherlands provide no special benefits for COVID-19 as a recognised OD/OI, while most other countries had very similar responses in terms of principle types of benefits. However, in depth comparison would be more informative for a long-established prescribed OD (like asbestos-related lung cancer). This topic was beyond the scope and feasibility for our survey. Similarly, we compare official legislation and rules, but chances for recognition of claims may vary significantly between two countries that seem to have a very similar system. For COVID-19, it is too early to analyse the statistics because the number of claims are very high and many of these are still awaiting administrative decision. Next, for a harmonisation of the recognition of ODs across the EU a comparison of the process on how countries determine whether to formally recognise an OD or OI, and what difference the recognition makes in the context of the broader social insurance system would also be of interest. A last limitation is that the survey was sent by email to occupational health experts (within and beyond the OMEGA-NET network) working either in occupational medicine unit of universities or national occupational health institutes, which can result in response and selection bias.

CONCLUSION

COVID-19 can be recognised as OD or OI in 94% of the European countries completing this survey, across different social security and embedded occupational health systems. In most countries, COVID-19 can be recognised in HCWs, but there are considerable variations in regard to other criteria of recognition. There is better agreement on principle compensation benefits (treatment, rehabilitation, fully paid long-term sick leave, disability pension), although there may be important differences between countries in the level of benefits. Although most European countries are part of the EU, there is still a long way to go to harmonise national systems for recognition of OD/OI. The COVID-19 experience with its rapid and wide spread highlighted these differences. Since a positive test is required in most

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countries the ceasing test and trace in most countries will have an impact on the ability to get compensation for COVID-19 which should be considered in the criteria.

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