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Global Policy Responses to the COVID-19 Pandemic: Results of the ICOH Survey



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ABSTRACT

Background: On the basis of its role for the development of occupational health research, information, good practices, the International Commission on Occupational Health (ICOH) launched the present survey to collect information on public health and prevention policies put in place by the governments of the countries in the world to contain the pandemic.

Methods: A cross-sectional study was conducted through an online questionnaire focused on COVID-19 data, public health policies, prevention measures, support measures for economy, work, and education, personal protective equipment, intensive care units, contact tracing, return to work, and the role of ICOH against COVID-19. The questionnaire was administered to 113 ICOH National Secretaries and senior OSH experts. Collected data refer to the period ranging from the beginning of the pandemic in each country to June 30, 2020.

Results: A total of 73 questionnaires from 73 countries around the world were considered valid, with a 64.6% response rate. Most of the respondents (71.2%) reported that the state of emergency was declared in their country, and 86.1% reported lockdown measures. Most of the respondents (66.7%) affirmed that the use of face masks was compulsory in their country. As for containment measures, 97.2% indicated that mass gatherings (meetings) were limited. Regarding workplace closing, the most affected sector was entertainment (90.1%).

Conclusion: The results of this survey are useful to gain a global view on COVID-19 policy responses at country level.

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1. Introduction

COVID-19 pandemic is continuing its spread across the world with 404 million confirmed cases in over 222 countries and over 5.7 million deaths as of December 5, 2021 [1]. The pandemic is leading to a dramatic loss of human life worldwide and presenting an unprecedented challenge to public health and the world of work with a huge effect on the jobs, livelihoods, and well-being of workers and on enterprises across the globe, particularly the small and medium sized [2].

COVID-19 crisis, lockdown, and economic recessions might exacerbate pre-existing health inequalities. Lower socioeconomic workers have less access to protective equipment, fewer options to work from home, and a higher risk of losing their job [3].

While the impact of the pandemic will vary from country to country, it will most likely increase poverty and inequalities at a global scale, making achievement of sustainable development goals (SDGs) even more urgent [4]. Estimates released by the Organization for Economic Co-operation and Development (OECD) in September 2020 indicate that real global gross domestic product (GDP) declined

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by 4.5% in 2020 before picking up by 5% in 2021. OECD showed that unemployment rose to 9.4% in the end of 2020 from 5.4% in 2019 [5].

Furthermore, there is evidence that vulnerable populations are disproportionately affected in terms of their health and the socio-economic impact. Individuals with increased vulnerabilities to the disease include people with disabilities, the elderly population, and people living in poverty [6].

Not all regions were equally equipped to battle the crisis, due to the lack of crisis management plans for pandemics, the lack of basic, essential equipment, such as masks, reduced public expenditure, and investment in health care and hospitals. Nevertheless, many governments at all levels have reacted quickly, applying a place-based approach to policy responses and implementing national and subnational measures in response to the COVID-19 crisis (e.g., mask and lockdown policies, fiscal support to protect firms, households and vulnerable populations, health system strengthening, and digitalization).

Italy has been among the countries with the highest impact of the coronavirus outbreak, making it one of the countries with the highest fatality rates worldwide, at least for the first wave. According to the estimates of the Italian National Institute of Health (ISS), as of February 12, 2022, the total number of COVID-19 cases in Italy reached more than 11 million, while the number of deaths reached more than 147 thousand [7]. The end of lockdown measures led to the adoption of a return-to-work plan, which in some cases involved the drafting of guidelines and protection of fragile workers, as well as all measures for the safety of workplaces and public transport services [8–12].

Occupational safety and health (OSH) can play an important role, also at policy level, by providing advice to workers and enterprises in creating safe employment and new, attractive ways of working, to help mitigating the health impact of a recession [3].

In this perspective, on the occasion of the Special Session of the WHO Executive Board on the implementation of resolution WHA73.1 COVID-19 response, on October 5–6, 2020, the International Commission on Occupational Health (ICOH) highlighted the importance of successful prevention and management of the COVID-19 pandemic at work [13].

ICOH is the oldest and leading global professional organization in OSH field with more than 2,100 members from over 100 countries worldwide. On the basis of its role for the development of occupational health research, information, good practices, and training and education of occupational health experts and related professionals [14], ICOH has launched a series of activities/measures for outbreak prevention and management at work, an issue which demands competence in occupational health and a good knowledge of work, working environments, and working conditions.

At this regard, the ICOH Scientific Committee on Occupational Health for Health Workers, in collaboration with WHO's department of Occupational and Workplace Health, compiled a survey of health and safety of health workers during COVID-19 [15].

Taking a cue from the success of previous investigations conducted among the ICOH scientific community on the status of national occupational health services (OHS) systems at national level [16–18], ICOH developed the present study to collect information on public health policies, prevention measures, and other policies put in place by the governments of the countries in the world to contain the COVID-19 pandemic.

2. Materials and methods

2.1. Research approach

This was a cross-sectional study conducted through an online questionnaire. The questionnaire survey is a research method

involving the use of questionnaires to collect data directly from persons involved in the research through a set of questions organized in a particular order and intended to capture responses in a standardized manner. This has become one of the most frequently used methods for quantitative research. It allows obtaining information about a given phenomenon by formulating questions that reflect the thoughts, opinions, and perceptions of a group of individuals [19].

One of the most recent types of questionnaire survey is an online or web survey that can be administered by forwarding a web link by email. These systems offer several benefits such as low cost and immediate availability of the results in an online database. The management of the surveying campaign is also very simple and allows for a real-time check of responses, scheduling of reminders, etc. This type of questionnaire survey was selected for the present study because of the possibility to reach the entire population at a low cost and in short times.

2.2. Instrument development

The questionnaire sections included some preliminary questions aimed at gathering information on the geographical origin and on the profession of respondents, followed by the following sections: (1) *COVID-19 data*, investigating the quality of COVID-19 epidemiological data, (2) *public health policies and prevention measures*, investigating a wide range of public health policies and prevention measures adopted by governments in order to contain the pandemic (e.g., the declaration of a state of emergency and the announcement of lockdown; use of face masks; the application of measures concerning local, territorial and national level movements; limitation of mass gatherings and meetings between friends and relatives; closure of schools, universities, and workplaces; implementation of psychological support services at the workplace; impact of the OSH aspects in the fight against the pandemic), (3) *Support measures for economy, work, and education*, investigating the measures adopted in the various countries to support work, economy, and education (e.g., the use of remote work and distance learning). Support measures for unemployment or support to businesses, incentives for health workers to use public transport, etc., were also investigated. (4) *Personal protective equipment (PPE), intensive care unit (ICU), contact tracing*, analyzing the aspects concerning the availability of PPE and the production capacity of each country, the potential re-organization of the health system (establishment of COVID hospitals, increase in ICU beds, hiring of new health workers, etc.), the contact tracing system, and a study on seroprevalence, (5) *return to work*, investigating the implementation of possible measures, possibly aimed at ensuring a safe return to work (social distancing, use of face masks, re-organization of workspaces, etc.), the existence of a plan for the identification and management of COVID-19 cases in the workplace, measures for public transport, etc. (6) *ICOH against COVID-19*, in which respondents were asked to comment on the usefulness of the ICOH's contribution in relation to the pandemic.

A preliminary pilot test was conducted to gather feedback on the sequence, flow, and clarity of questions, on the response options, and accessibility of the online platform. The pilot test involved 13 senior ICOH members including the officers and staff. Suggestions and observations obtained were considered to implement the final version of the questionnaire. Following an informative email describing the study and its aims, an electronic invitation automatically generated by the SurveyMonkey system with a link to the online questionnaire was sent to the sample. The questionnaire was administered from July 22 to August 22, 2020, with one reminder to increase the response rate. The questionnaire was circulated in English, which is the official language of ICOH.

2.3. Sampling and data collection

The online questionnaire was administered to the 113 ICOH National Secretaries and OSH experts (for those countries with no National Secretary appointed) and representatives of all the countries in which ICOH has an active membership. The National Secretaries are appointed by the ICOH President for three-year tenures, and they represent the activities of ICOH in the country or area for which they are designated. They promote the active cooperation and communication among ICOH members at country level and they have good contacts with the OH communities, stakeholders, and actors in their respective countries. No sampling was performed because the questionnaire was addressed to the whole population of ICOH National Secretaries and to other OSH experts. Requested data refer to the period ranging from the beginning of the pandemic in each country to June 30, 2020.

2.4. Statistical analysis

Questionnaires were analyzed using IBM SPSS version 25 (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.). In the case of the Likert scales and the questions with nominal/ordinal answers, the absolute frequencies and the percentages in the total sample were calculated. Then, considering a greater level of detail, the frequency rates in the various subgroups generated by the variable income were calculated through a cross-table to highlight any peculiarities. The chi-square test (X^2) was used, and the $p < 0.05$ values were considered significant. Below is a description of the main results obtained, with an in-depth analysis related to some statistically significant comparisons.

2.5. Demographics

The questionnaire was sent to the 113 ICOH National Secretaries and OSH experts' representatives of all the countries in which ICOH has an active membership. After a screening of incomplete responses, 73 questionnaires from 73 countries were considered valid, with a 64.6% response rate. Demographic and professional details of respondents are described in Table 1.

Table 2 shows the detail of the countries belonging to each of the three groups according to their GDP per capita: low-income (<5,000 USD), middle-income (5,000–15,000 USD), and high-income countries (>5,000 USD).

3. Results

3.1. COVID-19 data

Most of the respondents (71.2%) declared that there was an adequate classification for data on COVID-19 pandemic in their own country. Among these, 94.2% stated that the use of such data for the definition of national policies for the epidemic control was at least adequate (adequate, mostly, and totally adequate). The percentage of those affirming the existence of an adequate data classification system in their country increases as income increases, although no statistically significant associations emerge. A similar trend is recorded on the opinion on the use of such data for setting national policies for epidemic control.

3.2. Public health policies and preventive measures

Most of the respondents (71.2%) reported that the state of emergency was declared in their country, in most cases beginning in March 2020. Moreover, 86.1% of the countries adopted lockdown measures, of which total lockdown throughout the national

Table 1
Description of sample

Variables	n = 73	%
Profession		
Physician	50	68.5%
Epidemiologist	4	5.5%
Hygienist	4	5.5%
Other	15	20.5%
Working for		
Academia	27	37.0%
Public institution	22	30.1%
Private sector	16	21.9%
Self-employed	3	4.1%
Other	5	6.8%
Primary area of interest		
Occupational health and safety	43	58.9%
Public health	5	6.8%
Epidemiology	4	5.5%
Other	9	12.4%
No answer	12	16.4%
Geographical area		
Europe	23	31.5%
Africa	18	24.7%
Asia	17	23.3%
America and Oceania	15	20.5%
GDP per capita		
Low-income (<5,000 USD)	25	34.2%
Middle-income (5,000–15,000 USD)	23	31.5%
High-income (>5,000 USD)	25	34.2%

territory (71.0%) and partial lockdown of specific regions or areas (29.0%). A large proportion of respondents (66.7%) stated that the use of face masks was compulsory in their country, while their use was only recommended in 25.0% of responding countries. A small proportion (8.3%) replied that in their country there was no prescription for the use of masks. In the countries where the use of masks was prescribed or recommended, some relevant differences can be detected. In fact, 37.9% of respondents stated that in their country, the use of face masks was compulsory everywhere; a slightly lower percentage, 34.8%, stated that face masks were always compulsory indoors, while, as for outdoors, only when social distancing was not possible; 7.6% stated that in their countries, face masks were only provided or recommended outdoors and 19.7% chose the answer "other". It should be noted that the compulsory nature of masks use reaches higher percentages in middle-income countries (73.9%) than in high-income countries (56.0%). On the other hand, among the latter, 20.0% of the countries have no prescription for the use of masks. Furthermore, with regard to the type of face mask, in those countries that prescribed or recommended it, cloth masks are used by 81.5%, medical face masks by 69.2%, and 18.5% reported to use another type.

Table 3 illustrates the adoption of containment measures. Almost all respondents (over 93%) declared that their own country adopted limitations on mass gatherings and social gatherings, school and university closing.

With reference to the workplace closing, the responses provided show that it mainly affected the entertainment sector (indicated by 90.1% of respondents), sports facilities (88.7%), discos and concert arenas (88.7%), museums (83.1%), restaurants and cafés (81.7%), and personal care (74.6%). Percentages lower than 70% are represented by the closure of shopping centers (67.6%), shops (60.6%), artisan businesses (57.7%), public offices (45.1%), factories (43.7%), and construction sites and private companies (42.3%). Mines and farms registered percentages lower than 30%, 28.2%, and 19.7%, respectively.

Table 2
Distribution of countries by income

Low-income	Democratic Republic of the Congo, Egypt, Ghana, Guatemala, India, Indonesia, Ivory Coast, Kenya, Liberia, Mali, Morocco, Mozambique, Nepal, Nigeria, Pakistan, Philippines, Senegal, Tanzania, Togo, Tunisia, Uganda, Ukraine, Uzbekistan, Venezuela, Zimbabwe
Middle-income	Argentina, Belarus, Brazil, Bulgaria, Chile, China, Croatia, Grenada, Jamaica, Kazakhstan, Malaysia, Mauritius, Mexico, Montenegro, North Macedonia, Paraguay, Peru, Romania, Russian Federation, Serbia, South Africa, Thailand, Turkey
High-income	Australia, Belgium, Canada, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Portugal, Republic of Korea, Saudi Arabia, Singapore, Slovenia, Spain, Sweden, Switzerland, Taiwan (China), United Arab Emirates, Uruguay, USA

More than half of the respondents (53.5%) stated that specific psychological support services in the workplace were activated in their country. Among these ones, counselling centers (43.9%) and guidelines for management of stress (42.4%) were the main measures to be made available. In low-income countries, those confirming the existence of psychological support amount to about 35%, against 73.9% in middle-income countries and 52.0% in high-income countries.

Finally, in this section, it was investigated how much OSH aspects had been taken into consideration in the fight against the pandemic. Less than a quarter of the respondents (23.9%) stated that OSH aspects had not been taken into account or had little consideration in the development of the epidemic containment policies in their countries. On the contrary, 46.5% reported that these aspects had been taken into account (“mostly” or “totally” were the selected answers), and 29.6% took an intermediate position. In this case, there are no statistically significant associations with the variable relating to the income.

With specific reference to the implementation of a compensation scheme for work-related COVID-19 cases, 57.7% of the total sample declared that it was guaranteed in their country, around 72–74% in high and middle-income countries and 26.1% in low-income countries.

3.3. Support measures for economy, work, and education

More than 90% of the respondents stated that remote work was extended in their country as a result of the spread of the pandemic. There is a slight statistically significant association with the income variable. In fact, 100.0% of high-income countries declared that

Table 3
Adoption of the containment measures aimed at slowing down the pandemic. Percentage of countries

Type of containment measures	% of countries
Limit on mass gatherings	97.2%
School closing	94.4%
University closing	94.3%
Limit on social gatherings	93.0%
Reduction in public transport services	88.6%
Limit on outdoor activities	84.5%
Domestic travel restriction	80.3%

remote work was increased as a result of the pandemic spread. This percentage decreases for middle-income (91.3%) and low-income (78.3%) countries.

Education (93.7% of the respondents), private companies (90.5%), public administration (85.7%), and administrative offices of manufacturing companies (76.2%) represent the most affected sectors as far as remote work is concerned.

Most of the respondents (72.5%) stated that their own country put in place measures to prevent unemployment, and 87.1% of respondents stated that their country applied measures to support businesses. The percentage of those declaring that such measures had been implemented in their country are higher in middle and high-income countries, reaching 96.0%.

The use of distance learning to replace classroom teaching was also investigated. Almost all respondents (97.1%) stated that the main teaching method was distance learning, and 88.6% of the respondents stated that universities used technology to have online lectures and exams.

3.4. Personal protective equipment (PPE), intensive care unit (ICU), and contact tracing

The majority of the respondents (71.0%) stated that their country was not autonomous in the production of PPE or that they did not have this information, whereas 29.0% said they were autonomous. On the other hand, 70.0% of respondents stated that their country experienced a lack or scarcity of PPE, while 30.0% affirmed that PPE shortage was not a problem in their country, or they did not know. Among those countries which considered themselves autonomous in the production of PPE, 55.0% have in any case experienced a shortage phase; this percentage rises to 75.5% in those countries being declared not autonomous in the production of PPE. The strategies used to compensate for the lack were: increased production (87.5%), reconversion of existing industries for PPE production (64.6%), prolonged use of PPE (62.5%), and decontamination and reuse of PPE (52.1%).

Furthermore, the same individuals were asked to indicate what kind of healthcare facilities were most affected by the shortage of PPE. From the frequency analysis, it emerges that the prevailing response concerned public hospitals (62.5% of respondents), private care (10.4%), and retirement homes (10.4%). Each country needed to reorganize its health system, both from the point of view of infrastructure, such as COVID-19 hospitals and new ICU units, and the hiring of new health workers. Most of the respondents (75.7%) stated that their country set up dedicated COVID-19 hospitals, 82.9% declared that ICU beds were increased, and 65.2% that new health workers were hired to handle the emergency. There are no statistically significant associations with the income variable. Among those who increased the number of ICU beds, 68.4% hired new health workers.

In some cases, in order to assess the impact and the spread of the pandemic in the different population groups and areas of the country, and studies on seroprevalence were conducted. More than half of the respondents (58.0%) declared that an epidemiological study on seroprevalence exists in their country. With respect to the income variable, the percentage increases as the level of income increases, passing from 39.1% of low-income countries to 59.1% in middle-income countries, and 75.0% in high income-countries.

Furthermore, the survey aimed at assessing the contact tracing system used to identify positive cases and for contact tracing. Almost all the respondents (94.2%) declared that a contact tracing system exists in their country. This percentage remains almost stable depending on the income level, amounting at around 96% for low- and high-income countries, and around 91% for middle-income countries.

3.5. Return to work

The measures adopted for the return to work included social distancing (95.7% of cases), use of mouth and nose protective devices, such as cloth masks, medical face masks, face shields (94.2%), remote work (89.9%), re-organization of workspaces (85.5%), temperature checking (79.7%), re-organization of work schedules (75.4%), and shiftwork (40.6%) (Fig. 1).

Less than half of the respondents (47.8%) stated that social security measures for vulnerable workers were activated. Although there are no statistically significant associations with the income variable, this percentage increases as the income class increases, passing from 30.4% for low-income countries, to 54.5% for middle-income countries, up to 58.3% for high-income countries.

The prevailing measures envisaged to protect fragile worker were priority of remote work for vulnerable workers (97.0% of cases), individual rooms or physically separated workspaces (78.8%), and special sanitary surveillance (51.5%).

The measures adopted for the use of public transport after the lockdown included the compulsory use of face masks (91.3% of cases), social distancing (87.0%), reduction of seats (75.4%), physical barriers for the driver (53.6%), re-organization of entrance and exit (47.8%), and reservation through apps (18.8%).

3.6. ICOH against COVID-19

With regard to the work of ICOH against COVID-19, almost all of the sample (95.7%) considered that documents related to the management of the pandemic and drafted by the ICOH Scientific Committees may be useful. Among them, it was asked on which aspects they considered the contribution of the ICOH Scientific Committees to be useful. From the frequency analysis, it resulted that the topics of greatest interest are health worker protection (93.9%), vulnerable workers protection (83.3%), and emergency preparedness and response (74.2%).

Finally, respondents were asked to indicate the contribution they expect from ICOH to manage the pandemic. About 40% of the respondents chose the answer related to information sharing by ICOH, 39.1% stated that the development of guidelines may be useful, 13.0% chose e-learning, and 7.2% chose "other".

4. Discussion

This survey involved professionals with different competencies in the OSH field (physicians, epidemiologists, nurses, hygienists, psychologists, etc.) and active within different scientific communities (universities, public governmental institutions, etc.), and this is definitely a strong point of the present study. Also, the geographical distribution of the respondents, coming from 73 countries around the world (25 high-income countries, 23 middle-income countries, and 25 low-income countries), ensures a wide representation of the sample with a high response rate (64.6%).

Furthermore, if we consider the socio-demographic information of the respondents (gender, age, profession, etc.), they are representative of the ICOH membership in a proportional way. In addition, the crossing of the questions with the variable "income" made it possible to obtain, in some cases, significant information about different aspects such as public health policies and preventive measures; support measures for economy, work, and education; OSH and ICOH rules in the fight against the pandemic, etc.

The measures adopted for the return to work indicated by the respondents (Fig. 1) are in line with WHO and ILO recommendations to prevent the transmission of SARS-CoV-2 and manage COVID-19 outbreaks at work in non-healthcare settings [20]. In particular, the recommendations related to encouraging remote working and workplaces re-organization to limit occupancy, and favor physical distancing were also identified by ICOH respondents as key priorities for a safe reopening of workplaces. Furthermore, WHO and ILO emphasize the role of ventilation in indoor spaces and cleaning and disinfection procedures to prevent transmission

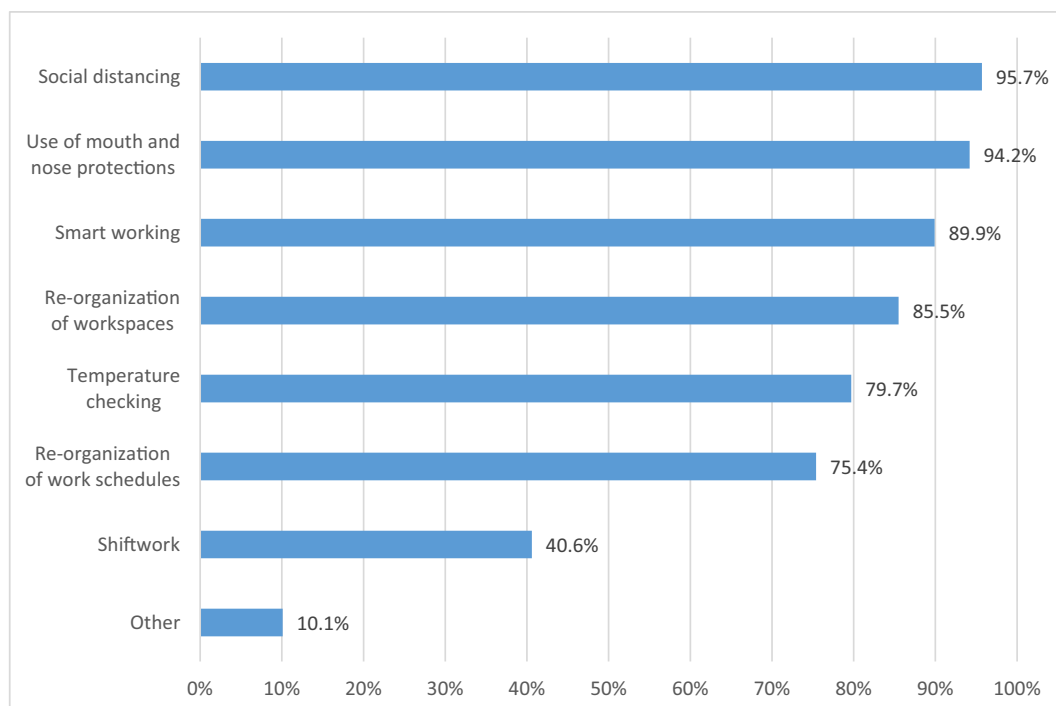


Fig. 1. Measures adopted for the return to work. Multiple-choice questions. Percentages of cases (respondents $n = 68$).

of COVID-19 in the workplaces. In this view, more detailed information may be included in the next ICOH survey to also explore the level of implementation of different measures in the workplace and the related impacts.

In fact, the present study was focused on the management of the first emergency phase, which led each country to acquire preventive experiences useful in the management of the second emergency phase. This aspect requires further investigation.

The presence of clear and detailed information, as well as precise epidemiological indicators, constitutes the basis to provide support to the political decision-maker in defining adequate policies to fight the epidemic. In this regard, the results of this survey show that almost 95% of respondents believe the existence of adequate data to be essential for the adoption of national epidemic control policies. The percentage increases as income increase. Relating to support measures for work, 100.0% of high-income countries declared that remote work was increased as a result of the pandemic spread. This percentage decreases for middle-income (91.3%) and low-income (78.3%) countries. The same trend concerns the percentage of those declaring that measures to support businesses and limit unemployment had been implemented in their country: the percentages are higher in middle- and high-income countries, reaching almost 96%.

The opposite trend is observed in the mandatory use of the mask. It should be noted that the compulsory nature of masks use reaches higher percentages in middle-income countries (73.9%) than in high-income countries, where it stands at 56%. However, it must be considered that almost 66% of the sample is represented by low- and middle-income countries.

This study shows how the shortage of PPE represented, in the first phase of the epidemic, one of the main critical issues in containing the infection at a global level. Only 29% of the sample stated that their country was autonomous in the production of PPE. Despite the autonomy in production, about 55% of respondents reported that their countries experienced a shortage phase that involved public hospitals in 62.5% and private care in 10.4%.

It is clear that OSH is of great importance in the management of the pandemic. More than 75% of the sample stated that in their country OSH aspects were taken into consideration for the development of national policies to contain the epidemic; moreover, almost 58% of the sample declared that in their country there was a compensation scheme for work-related COVID-19. However, it is above all the middle- and high-income countries, with percentages ranging from 72% to 74%, that have adopted this compensation scheme. This testifies that, while in upper-middle-income countries with a stronger culture of OSH the prevention of SARS-CoV-2 transmission is guided using core principles of hazard reduction, in low-income countries, there are still critical issues such as lack or deficiency of OSH programs and medical surveillance for occupational illnesses including COVID-19. Furthermore, neglecting core principles of OSH in the COVID-19 pandemic may have deadly consequences for high-risk occupations including healthcare workers [21].

The importance of OSH is reinforced by the results of this survey, which shows that the sharing of knowledge by ICOH is considered an essential tool in the fight against the pandemic. This reflects the key role of OSH professionals in helping corporate leaders, workers, and governments to protect lives and manage OSH and well-being risks, business continuity, and sustainability [22]. It should be remarked that almost 96% of the sample believes that documents related to the management of the pandemic and drafted by the ICOH Scientific Committees may be useful; in particular, these documents should focus on aspects considered as priorities such as

health worker protection (93.9%) and vulnerable workers protection (83.3%).

5. Conclusion

This pandemic has clearly underscored the key role of OSH in public health and the vital importance of building an integrated, multidisciplinary, and human-centered approach to public policy, in order to save lives and livelihoods, also in consideration of the impact of pandemics on OSH both at global and country level [22].

Conflicts of interest

There are no conflicts of interest to declare.

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