2018 ICOH SURVEY - FINAL REPORT

Contribution of ICOH to occupational safety and health (OSH); Members' satisfaction with ICOH scientific activities, benefits, and tools

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INTRODUCTION

Since its foundation in 1919, the International Labour Organization (ILO) has always regarded the right to decent, safety and healthy working conditions as one of its central issues. About half of ILO Conventions and Recommendations focus on occupational health and safety (OSH) issues and have contributed, over the last century, to the development of a significant body of laws and regulations at the national level, covering many topics relevant to OSH [1]. The global political economy went through significant changes in the last quarter of the twentieth century, which have progressively led the way to the concept of "safety culture", i.e. the need for more comprehensive national policies to address increasingly divergent challenges of OSH, overcoming the traditional single OSH issue approach [2]. The consequences of this new thinking were reflected, for instance, in the Occupational Safety and Health Convention, 1981 (No. 155) and its accompanying Recommendation (No. 164), adopted at the 67th session of the International Labour Conference. The Convention No. 155 provided the basic principles for the adoption of a coherent national occupational safety and health policy, as well as actions to be taken by governments and within enterprises to implement OSH preventive and protective measures [3]. A renewed global approach to OSH was advocated also by the ILO's Global Strategy on Occupational Safety and Health, which confirmed the central role of international labour standards for the promotion of OSH, calling for a high level of political commitment for effective implementation of national OSH systems. The document also stressed the importance of promoting the collaboration with international organizations and bodies involved in various activities related to OSH [4]. The United Nations (UN) and the World Health Organization (WHO), established in the second post-war period, joined ILO's goal of improving working conditions and OSH globally. In September 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development including workers' health and decent jobs among its goals [5]. The inclusion of this important issue in the UN resolution marked a continuity with the WHO Global Plan of Action on Workers' Health (2008-2017), which promoted the protection of health at the workplace through the adoption of regulations and a basic set of occupational health standards [6]. Despite the joint commitment of these supranational organizations, many problems persist and further coordinated action should be needed at the international and national levels to reinforce mechanisms for continued improvement of national OSH systems. According to recent estimates released by the ILO, each year 2.78 million workers die from occupational accidents and work-related diseases and an additional 374 million workers suffer from non-fatal occupational accidents [7]. In such a scenario, UN, WHO and ILO consider international and regional networks pivotal to the effective development and exchange of OSH knowledge and data and call for the contribution of non-governmental organizations (NGO) to achieve this objective.

As non-governmental organization in official relationships with WHO and ILO, the International Commission on Occupational Health (ICOH) boasts a long-lasting collaboration with WHO and ILO and contributes to programs and campaigns aimed at improving the OSH system on a global level. Since its foundation in 1906, ICOH has been pursuing the goal of fostering the scientific progress, knowledge and development of occupational health and safety (OSH) in all its aspects. In more than a hundred years of history, ICOH has progressively expanded its network of OSH professionals and experts all over the world.

Today, ICOH is the world's leading international scientific society in the field of occupational health with a membership of 2,000 professionals from 105 countries with a balanced distribution between industrialized and developing countries. This survey project originates from the intention of involving, for the first time, the whole ICOH membership in a study aimed at investigating the coverage of OSH policies and their level of enforcement in different countries worldwide. This study is in continuity with previous surveys conducted with the aim of gathering and completing information on different OSH aspects. In 2008-09, the ILO carried out a General Survey concerning OSH focusing on the implementation of the Occupational Safety and Health Convention, 1981 (No. 155), its accompanying Recommendation (No. 164), and the 2002 Protocol. The survey showed that many member States, whether or not they had ratified the Convention, were making increasing efforts to give effect to the provisions. In addition, a significant number of countries, particularly among the developing countries, reported that they were in the process of elaborating or updating their national policies and strategies, as well as their regulatory and enforcement systems [8]. In 2017, the "Global survey on occupational health services in selected international commission on occupational health (ICOH) members countries", was conducted with the aim of monitoring the status of occupational health services (OHS) in a sample of ICOH countries through the involvement of the ICOH National Secretaries as key informants [9]. Forty-nine ICOH National Secretaries, representing countries covering 75% of the whole ICOH membership, were involved as key informants for the Global survey. The study showed that the majority of the countries had drawn up policies, strategies and programs for OHS, even though their implementation remained insufficient in the majority of countries. In two thirds of the respondents' countries, a wide gap in the implementation of policies into practice left the majority of workers without access to OHS. This survey project follows the Global Survey with the aim of further complementing the data on OHS coverage with those on OSH policies implementation worldwide. The study has a wide geographical representativeness thanks to the participation of 384 respondents from 79 countries. The present report gives an exhaustive description of the survey results. The findings contributed to identify needs and perceptions of members with respect to ICOH commitment in the OSH sector and to better target the scientific activities of ICOH in the years to come.

MATERIALS AND METHODS

The survey was conducted by carrying out an online questionnaire among the 1929 members of ICOH. The questionnaire was circulated in English through the dedicated web-based platform SurveyMonkey; the researchers involved received an electronic invitation by email, directly generated by the system. Two reminder emails were sent in order to increase the response rate. The survey took place between February 2018 and March 2018. The preliminary results were reported on the occasion of the 32nd International Congress on Occupational Health held in Dublin in May 2018 [10]. A peer-review article, recently published, maps the coverage of OSH rules and provisions and their enforcement at a country level worldwide. It also describes members' participation in the ICOH activities [11].

Questionnaire form

The questionnaire consists of the following sections:

- **Contact information.** Members were asked to give some information about the socio-demographic variables (gender, year of birth, country, spoken languages, education, profession, main activity, the institution they belong to), as well as some more specific information about the participation in ICOH (year of join, position held within ICOH) or in other scientific societies.
- **OSH in your country and ICOH contribution at national and international level.** This section investigates the existence of rules at a national level regulating occupational health and safety in the workplaces; the sources and tools used for training in the OSH field, and any objective difficulties in using these sources. The existence of training procedures and tools to improve workers' awareness and knowledge on the protection of health and safety in workplaces was also investigated. The interviewees were requested to express the level of importance, using a scale from 0 (not at all important) to 5 (extremely important) of a set of research topics in consideration of whether they address a real OSH research gap in their country. Then, the interviewees were invited to give an opinion on the importance of ICOH in the implementation and in the development of the scientific knowledge and international policies in the OSH.
- **Scientific Committees.** This section investigates the involvement of the respondents in the ICOH Scientific Committees. They are requested to indicate the Scientific Committee they belong to – if any – and if their own Scientific Committee has an active role within ICOH with respect to the organization of meetings/events during the triennium, membership promotion activities, and communication exchange among SC members.
- **National Secretaries.** This section explores the relationship between members and the ICOH National Secretaries. The respondents are asked about the frequency of contacts with the National Secretary of their country and how they evaluate the role played by the National Secretaries with respect to the organization of meetings/events during the triennium, membership promotion activities, communication exchange among members, and members' active engagement at country level.
- **International Congresses.** The questions included in this section investigate the participation of the respondents in the ICOH international triennial congresses and the contribution given to these events in terms of abstract submission, attendance of the General Assembly, participation in the voting procedures for the selection of ICOH congress venue, and the election of ICOH Officers and Board members. For those who never attended an ICOH congress, the main causes were also investigated.

- **ICOH communication tools (website, newsletter and social media).** This section explores the level of awareness of the main ICOH communication tools (i.e. the official website, the Newsletter and the social media) and their use.
- **Secretariat General management and operating activities.** This is the last section of the questionnaire aimed at gathering useful information on how the respondents' evaluate the support provided by the Secretariat General, the membership fee system currently in place, and the modes of payment available for members to pay the triennial fees. Furthermore, the respondents are asked if they are aware of the several benefits they can enjoy as ICOH members. Using a scale from 0 (not useful) to 5 (extremely useful), the interviewees are requested to express their opinion on each of the ICOH members' benefits.

Statistical analysis

Data were analyzed using SPSS, version 22. 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. The Chi Square test (X2) was used to highlight statistically significant associations with some sociodemographic variables such as gender, class of age and country. $P<0.05$ was considered statistically significant. For multiple choice questions both percentages of cases and percentages of responses were reported. For quantitative variables mean values and standard deviations (SD) were calculated.

RESULTS

Sample description

384 completed questionnaires were received with a response rate of 19.9%.

The sample is composed of 384 respondents, of whom 58.1% is represented by males and 41.9% by females. The predominant age group is 45-64 (53.6%). As for education, the highest percentage of individuals has a PhD (45.8%) followed by a master's degree (31.5%). With regard to the profession, 57.0% are physicians. Other professions such as epidemiologist, nurse, hygienist, engineer, etc., remain below 9%. Moreover, 40.9% are practitioners, 24.5% are academicians, and 19.3% are researchers. Around a third of the sample (32.8%) works in the academic/university field, followed by 27.6% working in a governmental/public institution, and 24.2% in a private company.

As far as the year of join is concerned, 48.7% joined ICOH between 2011 and 2018. A large proportion of the sample (67.4%) does not hold any position within ICOH. The other 125 individuals declare to hold or have held the following positions: Scientific Committee Officer (52.8% of responses; 60.0% of cases), Officer/Board member (27.5% of responses; 31.2% of cases), National Secretary (19.7% of responses, 22.4% of cases). As for other spoken languages than the mother tongue, the highest percentages are represented by English (51.2%) and French (13.1%).

Table 1 – Sample description

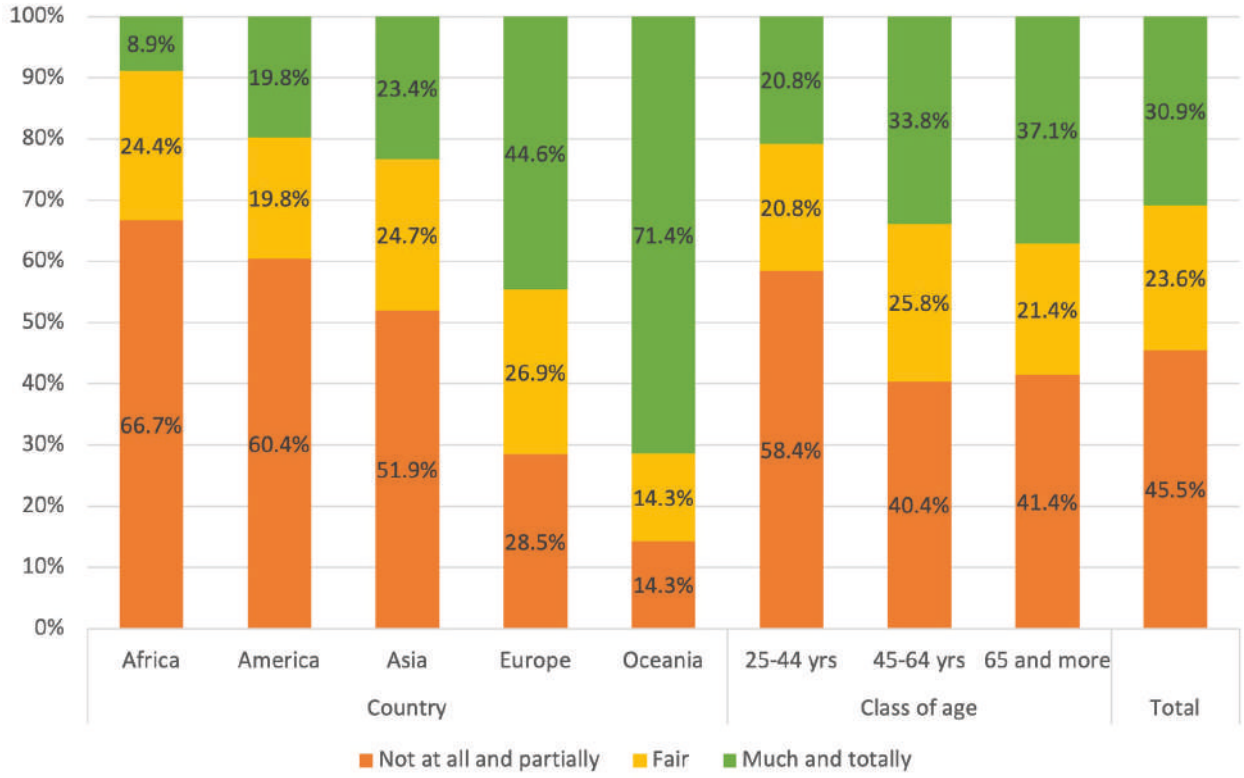
	n (%)		n (%)
Gender		**Working for:**	
Male	223 (58.1%)	Academia/University	126 (32.8%)
Female	161 (41.9%)	Governmental/public institution	106 (27.6%)
Education		Private company	93 (24.2%)
High school	7 (1.8%)	Self employed	28 (7.3%)
Bachelor's degree	30 (7.8%)	Non-profit OH agency	8 (2.1%)
Master's degree	121 (31.5%)	Other	23 (6.0%)
PhD	176 (45.8%)	**Languages spoken other than mother tongue***	
Other	50 (13.0%)	English	317 (51.2%)
Class of age		French	81 (13.1%)
25-44 yrs.	107 (27.9%)	Spanish	60 (9.7%)
45-64 yrs.	206 (53.6%)	German	39 (6.3%)
65 and more	71 (18.5%)	Indian	18 (2.9%)
Country		Arabic	10 (1.6%)
Europe	133 (34.6%)	Russian	9 (1.5%)
America	98 (25.5%)	Chinese	7 (1.1%)
Asia	82 (21.4%)	Other	78 (12.6%)
Africa	50 (13.0%)		
Oceania	21 (5.5%)	**Year of join**	
Profession		1971-1980	10 (2.6%)
Physician	219 (57.0%)	1981-1990	27 (7.0%)
Epidemiologist	34 (8.9%)	1991-2000	50 (13.0%)
Nurse	25 (6.5%)	2001-2010	84 (21.9%)
Hygienist	15 (3.9%)	2011-2018	187 (48.7%)
Engineer	12 (3.1%)	Don't remember	26 (6.8%)
Psychologist	12 (3.1%)	**Position held within ICOH***	
Toxicologist	10 (2.6%)	Scientific Committee Officer	75 (52.8%)
Other	54 (14.1%)	Officer/Board member	39 (27.5%)
Main activity		National Secretary	28 (19.7%)
Practitioner	157 (40.9%)		
Academician	94 (24.5%)	**Belonging to other scientific organizations**	
Researcher	74 (19.3%)	Yes	276 (71.9%)
Other	59 (15.4%)	No	108 (28.1%)

*Multiple choice question, percentages of responses

OSH in your country and ICOH contribution at national and international level

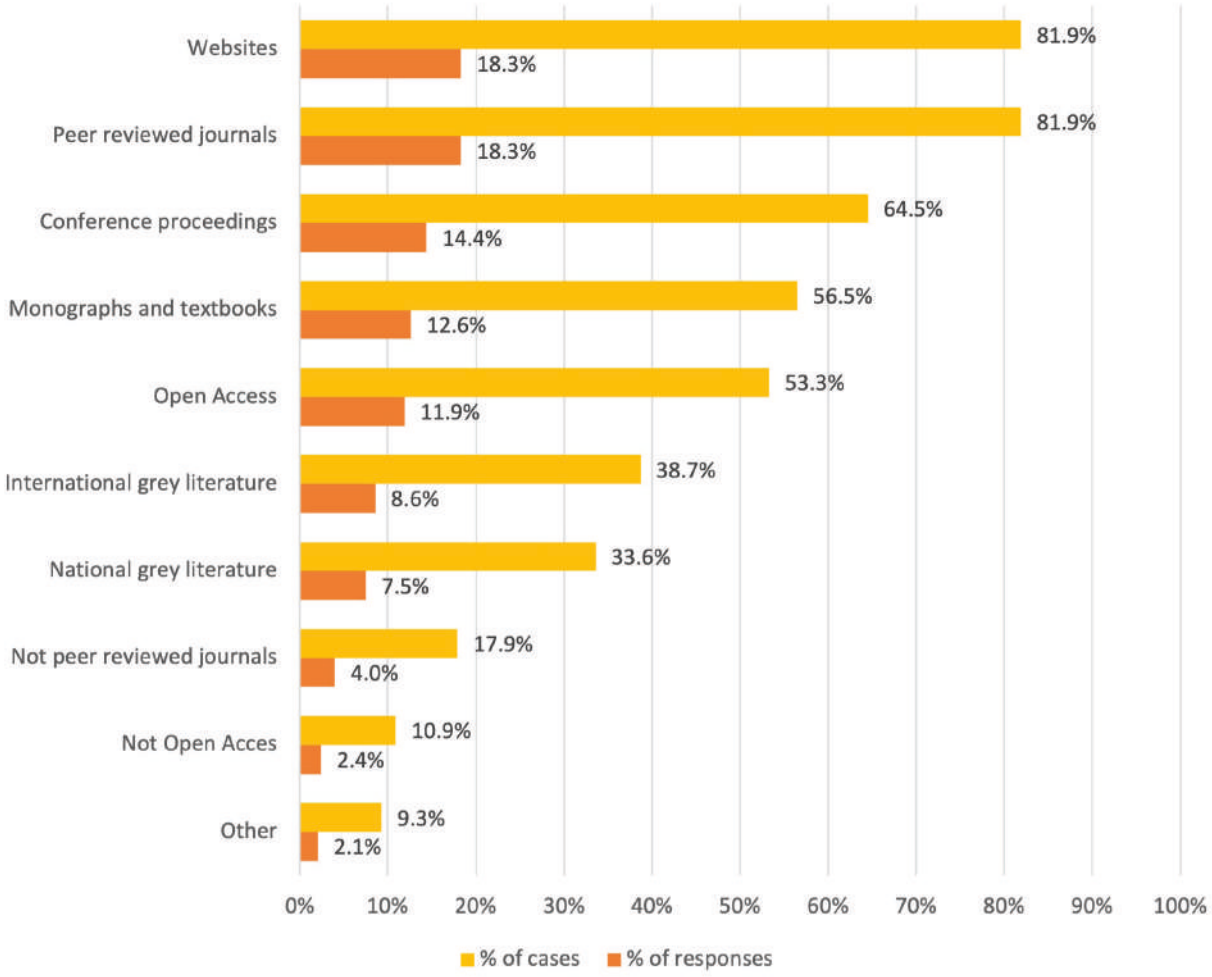
Almost all of the respondents (98.1%) declare that in their own country a set of rules and provisions regulating occupational safety and health in the workplaces were established. Among them, 45.5% believe that these rules have never been enforced or only partially enforced; 23.6% believe that rules were fairly enforced and 30.9% much or totally enforced. Cross tabulation with country and class of age variables shows a statistically significant association ($p<0.001$, $p=0.030$ respectively). In particular, from Fig. 1, it can be noted that the percentage of those who believe that the regulatory system is highly and fully enforced goes from 8.9% in Africa to 44.6% in Europe or 71.4% in Oceania. On the other hand, considering the age group, it should be noted that among the youngest (25-44 yrs.), the percentage of those considering the rules to be much or totally enforced (20.8%) is lower than in the other two age groups, where it reaches 33.8% (45-64 yrs.) and 37.1% (over 65 yrs.).

Fig. 1 – Is the regulatory system in your country effectively enforced? Distribution by country and class of age.



With regard to the consultation papers for professional training in OSH, from the analysis conducted by multiple answers, it emerges that the most consulted sources are the peer reviewed journals and websites -with identical percentages- (18.3% of responses, 81.9% of cases), followed by the conference proceedings (14.4% of responses, 64.5% of cases) (Fig. 2).

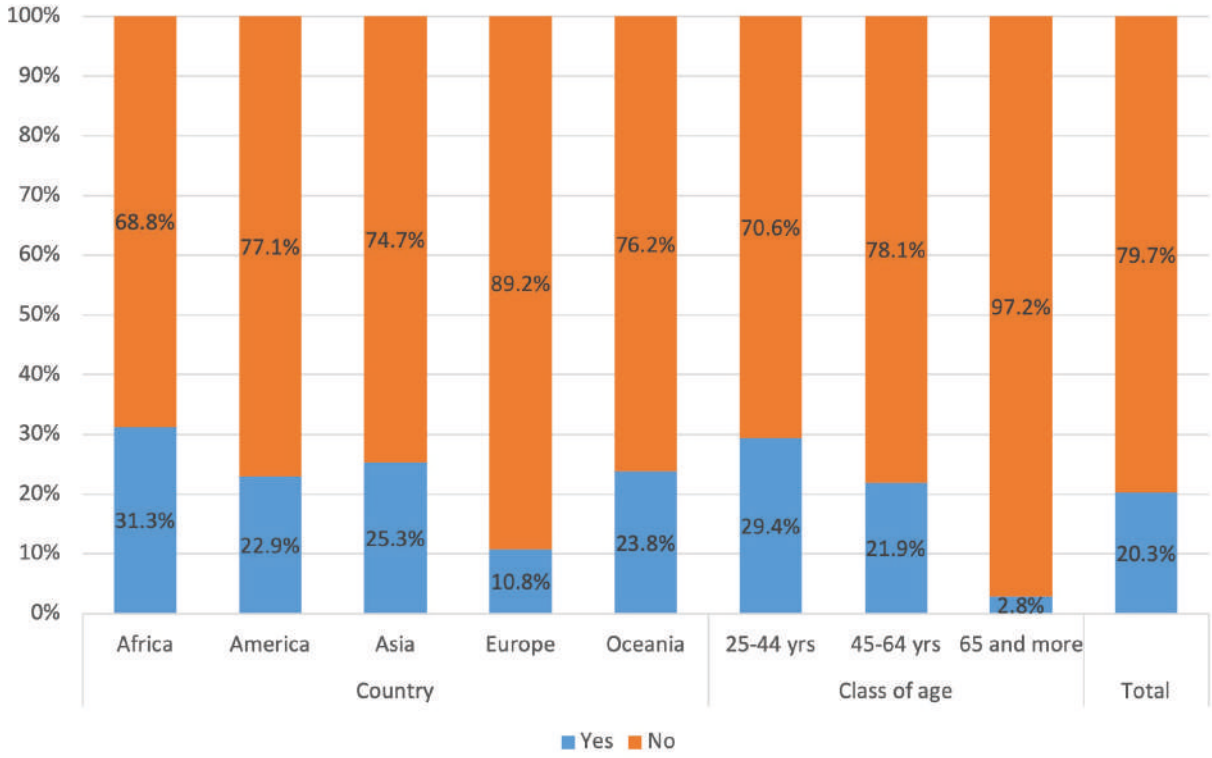
Fig 2 – What are the sources you consult for your professional training in OSH? Multiple choice question*.



*375 cases, 1682 responses

The majority of the sample (79.7%) has no difficulty in consulting these sources. Cross tabulation with the socio-demographic variables shows statistically significant associations with the country ($p=0.013$) and the class of age ($p<0.001$) variables. In particular, Europe records the highest percentage of subjects who declare not to have experienced difficulties (89.2%). In other countries, these percentages remain between 68% and 77%. Considering the age groups, the percentage of those who do not have difficulties in consultation increases with increasing age, passing from 70.6% in the 25-44 age group, to 78.1% in 45-64 age group and 97.2% in people over 65 (Fig. 3).

Fig. 3 – Do you find any difficulty in consulting such sources? Distribution by country and class of age.



The most frequent reason (45.3%) that concerns 20.3% of individuals experiencing difficulties in accessing these sources is "not easy access", followed by "high costs" (36.8%). Other reasons ("excessively technical language", "language gap" and "other") approximately amount to 17%.

Most of the sample (87.1%) declare that in their own country there are training procedures and tools to improve workers' awareness and knowledge on the protection of health and safety in the workplaces, against 9.1% who claim that these ones do not exist and 3.8% who do not know.
Among those responding "yes", it is asked if training procedures and tools are effectively utilized. Almost half of respondents (49.4%) answer "not at all" and "partially", followed by "fair" (31.5%) and "much" and "totally"(19.1%). Cross tabulation with the socio-demographic variables shows a statistically significant association with the country variable ($p=0.021$): in particular, it has to be noted that percentages on training procedures and tools regarding the answers "not at all" and "partially utilized" are higher in Africa (67.6%) and lower in the other countries, namely in America (58.8%), Europe (45.2%), Asia (43.9%) and Oceania (19.0%) (Fig. 4).

Fig. 5 shows the percentages of the importance attributed to ICOH in developing scientific knowledge and professional skills and the significant influence of ICOH publications on the development of international policies in OSH. Even in these cases, some statistically significant associations emerge, in the first case with the country and class of age variables and in the second case also with the gender variable (Fig. 6-7).

Fig. 4 – Do you think that the training procedures and tools are effectively utilized? Distribution by country.

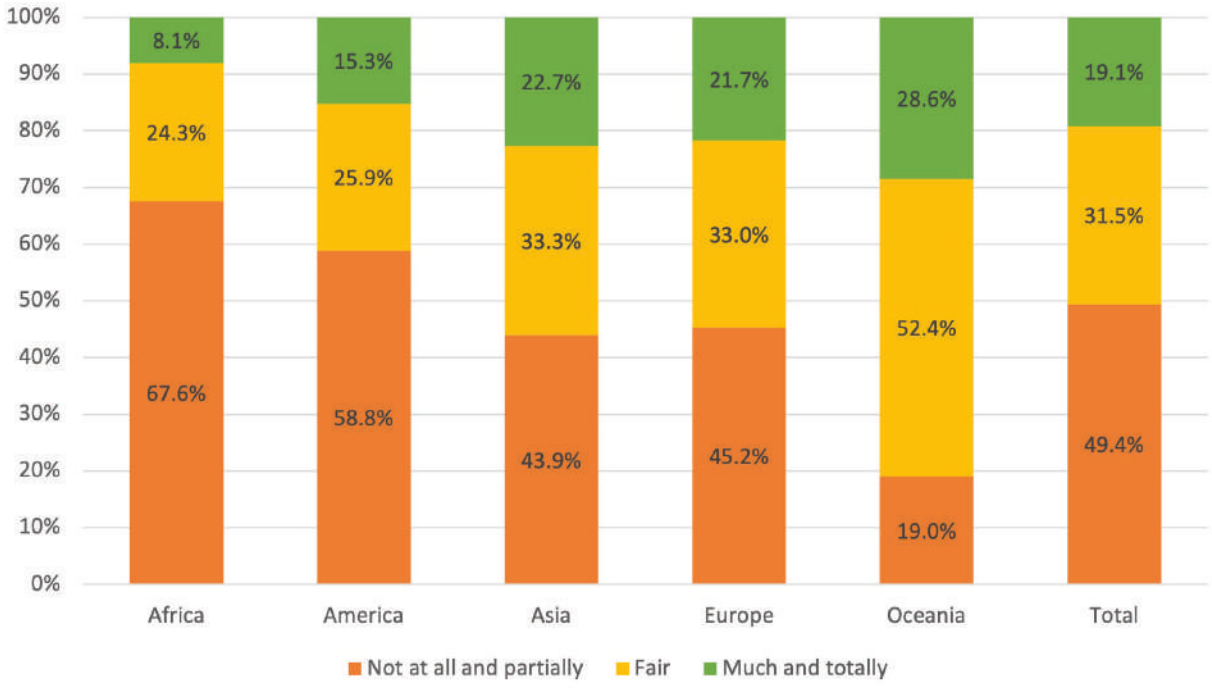


Fig. 5 – Importance of the ICOH role in developing scientific knowledge. Significance of the influence of ICOH publications on the development of international policies in the OSH.

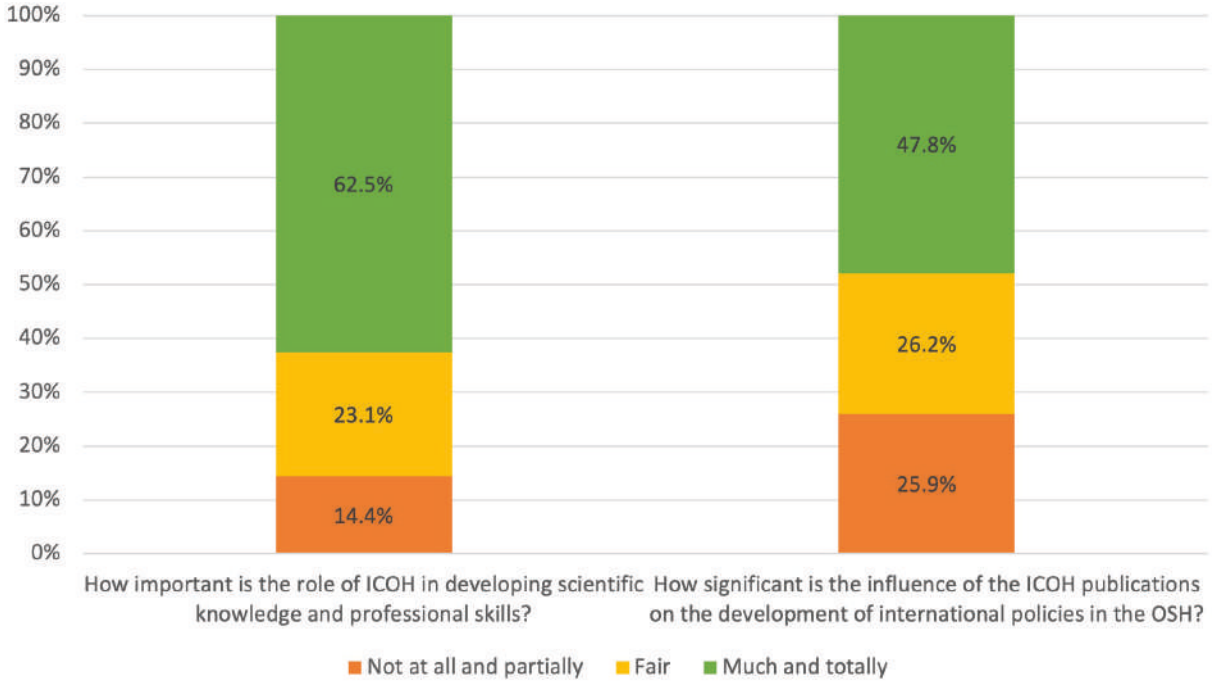


Fig. 6 – How important is the role of ICOH in developing scientific knowledge and professional skills? Distribution by country and class of age.

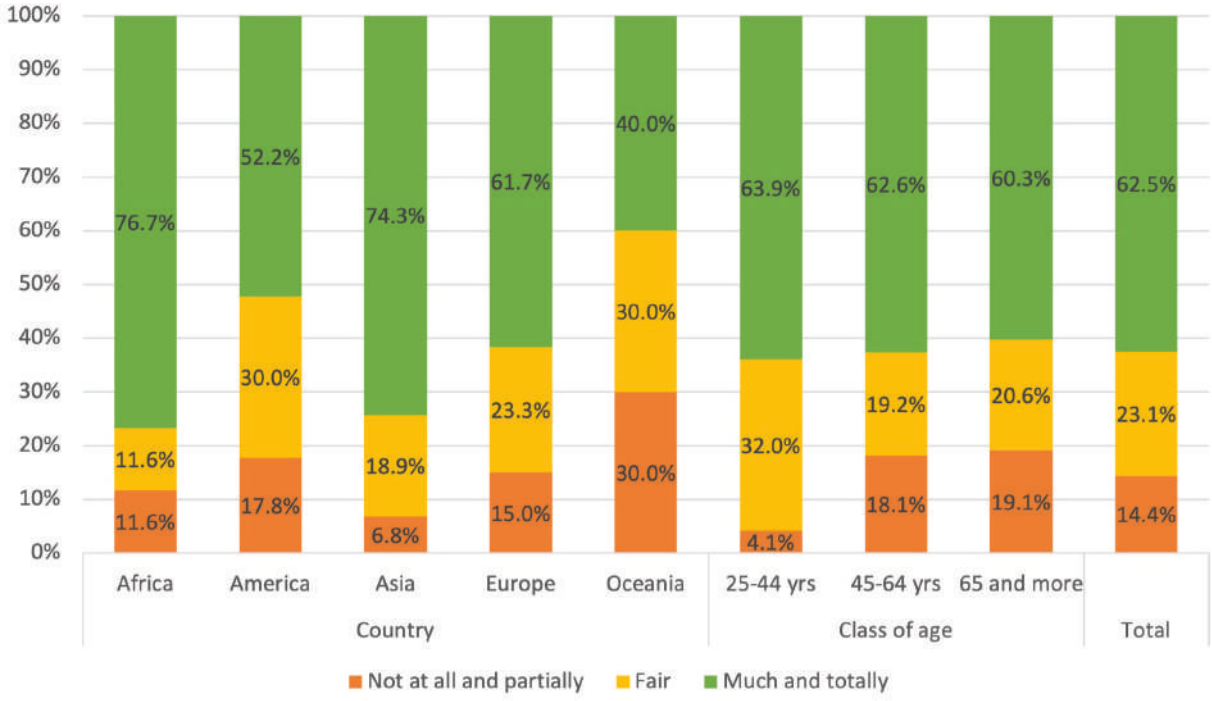
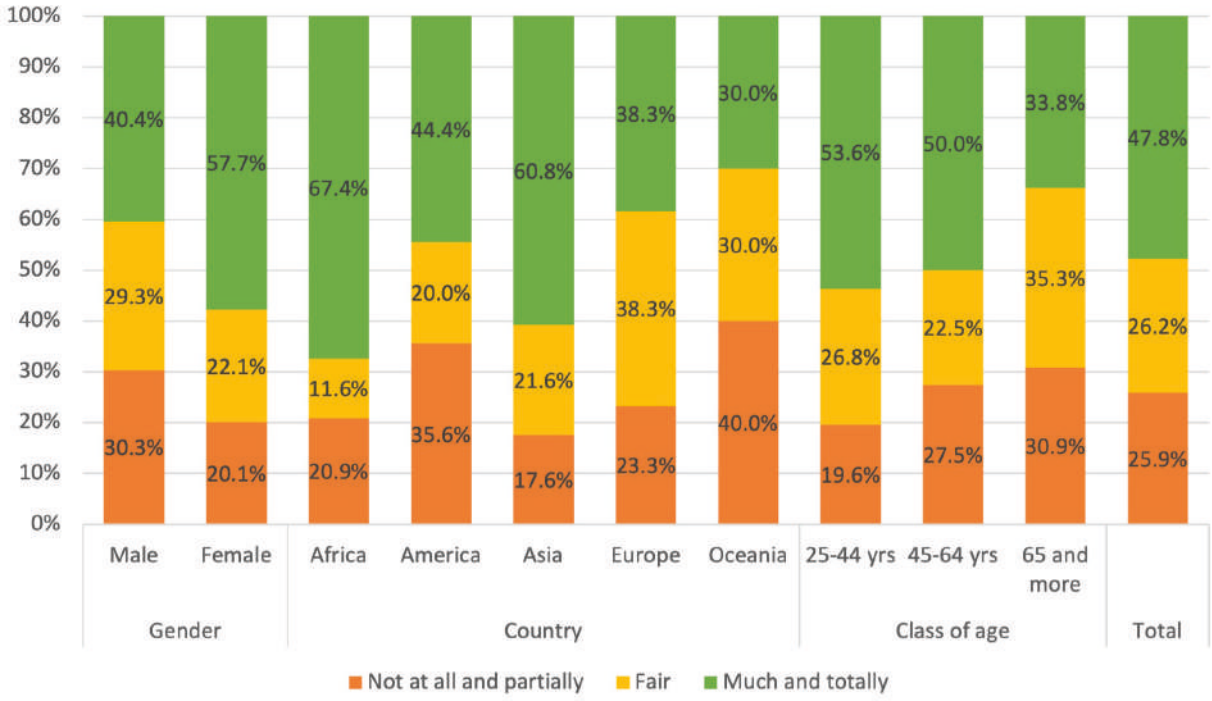


Fig. 7 – How significant is the influence of the ICOH publications on the development of international policies in the OSH? Distribution by gender, country and class of age.



Then, the respondents are asked to rate the level of importance, using a scale from 0 (not at all important) to 5 (extremely important) of a set of researchtopics considering whether they address a real OSH research gap in their own country, based on the Futures study [12]. Table 2 shows the list of the 16 research topics with mean values and standard deviation (SD), as well as the number of respondents for each topic, in decreasing order.

Table 2 – General ranking of research topics

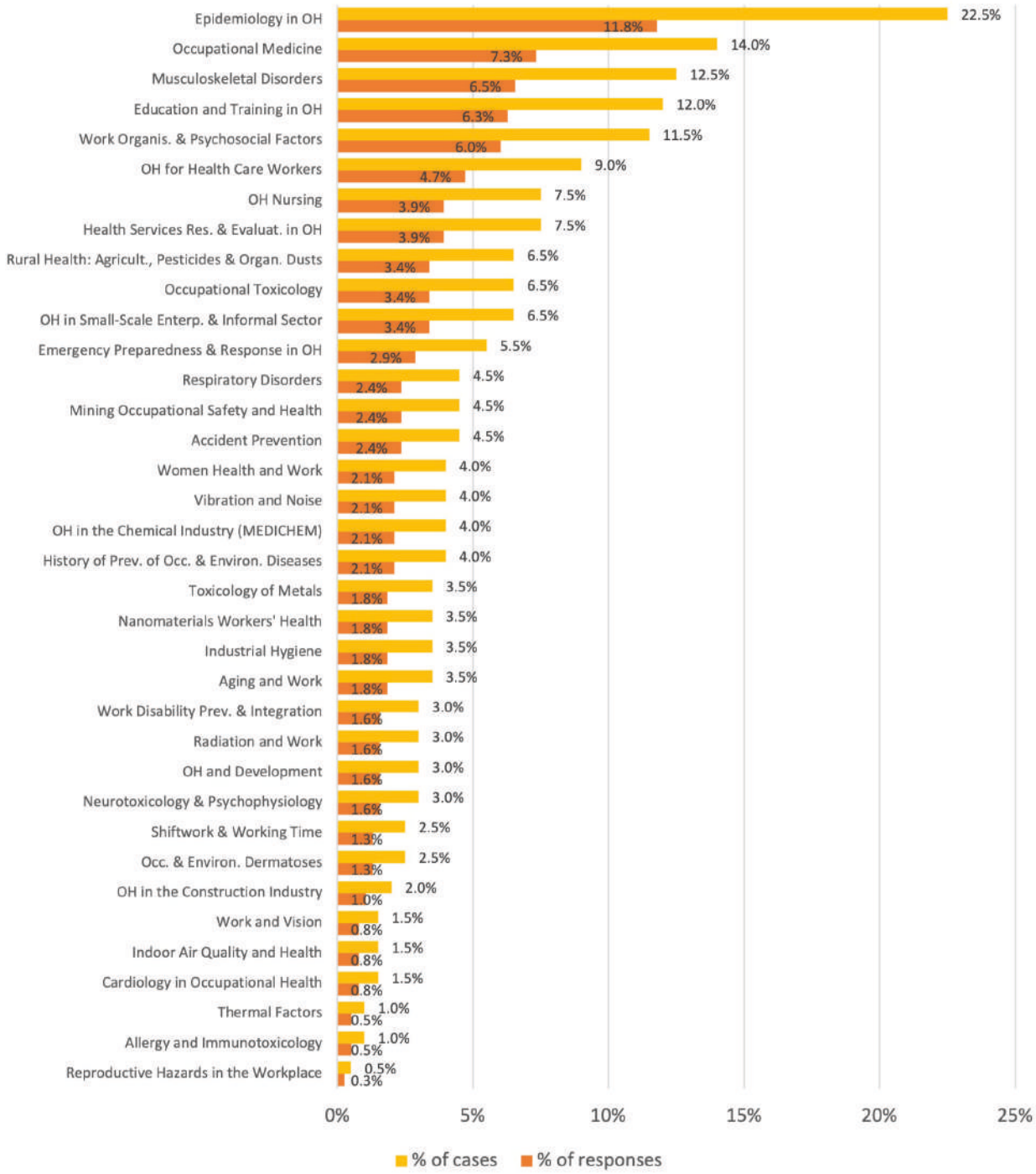
Research topics	n	Mean values (SD)
Working conditions, work organization and job content	340	3.91 (1.02)
Chemical agents	337	3.82 (1.04)
Health inequalities and work – vulnerable workers	337	3.69 (1.25)
Disabled and chronically sick workers	339	3.68 (1.12)
Women at work and gender aspects	342	3.58 (1.15)
Older workers	342	3.56 (1.22)
Biological agents	333	3.53 (1.14)
Changing employment patterns and practices	333	3.50 (1.97)
Information and communication technology	334	3.45 (1.15)
Migrant workers	333	3.31 (1.35)
Enterprises' reorganization processes	326	3.17 (1.25)
Green jobs	318	3.09 (1.35)
Emerging technological devices (e.g. robots)	330	2.92 (1.41)
Nanomaterials	324	2.90 (1.36)
OSH consequences of markets integration based on the reduction of barriers to free movement of goods	311	2.84 (1.27)
Electromagnetic fields	326	2.78 (1.27)

Scientific Committees

More than a half of the sample (58.2%, 202 subjects) declare to be a member of one or more Scientific Committees, against 41.8% (145 subjects) saying the opposite. Thirty-seven individuals do not answer. No statistically significant associations emerge with the socio-demographic variables. The reasons behind the non-participation in one or more Scientific Committees by the individuals who answered "no" to the previous question are to be found in the lack of time (30.1%), followed by unawareness of the existence of ICOH Scientific Committees (25.5%), lack of experience (12.6%), by the answer "not relevant topic for my area of specialization" (3.5%), and lack of interest (1.4%). Around a quarter of the sample (27.3%) chooses the option "Other".

The about 200 individuals who claim to be part of a Scientific Committee are asked to specify which one they belong to, with a multiple answer and a maximum of 3 answers to be indicated. Fig. 8 shows the results of the frequency analysis. In particular, the most frequently indicated Scientific Committee is Epidemiology in OH (11.8% of responses, 22.5% of cases). Occupational Medicine and Musculoskeletal Disorders are in the second and the third place, with lower percentages.

Fig. 8 – Scientific Committees membership. Multiple choice question*.



*202 cases, 382 responses.

None of the respondents stated to be a member of the SC Unemployment, Job Insecurity and Health.

Members of each Scientific Committee are asked to answer the following questions:

- If their own Scientific Committee has an active role within ICOH with respect to the organization of meetings and events during the triennium 2015-2018. The frequencies of response for the Scientific Committees having at least 10 members are reported in Fig. 9;
- If their own Scientific Committee has an active role within ICOH with respect to membership promotion activities. The frequencies of response for the Scientific Committees having at least 10 members are reported in Fig. 10;

- If their own Scientific Committee has an active role within ICOH with respect to communication exchange among SC members. The frequencies of response for the Scientific Committees having at least 10 members are reported in Fig. 11;
- If they have ever attended some conferences organized by their own Scientific Committee (Fig. 12).

Through a multiple-choice question, it is also asked to indicate the activities or aspects that, in the opinion of the interviewees, need to be more developed by their own Scientific Committee. Fig. 13 shows the multiple response frequencies, with the percentage of cases and of responses.

Fig. 9 – Has your Scientific Committee had an active role within ICOH with respect to the organization of meetings and events during the triennium 2015-2018?

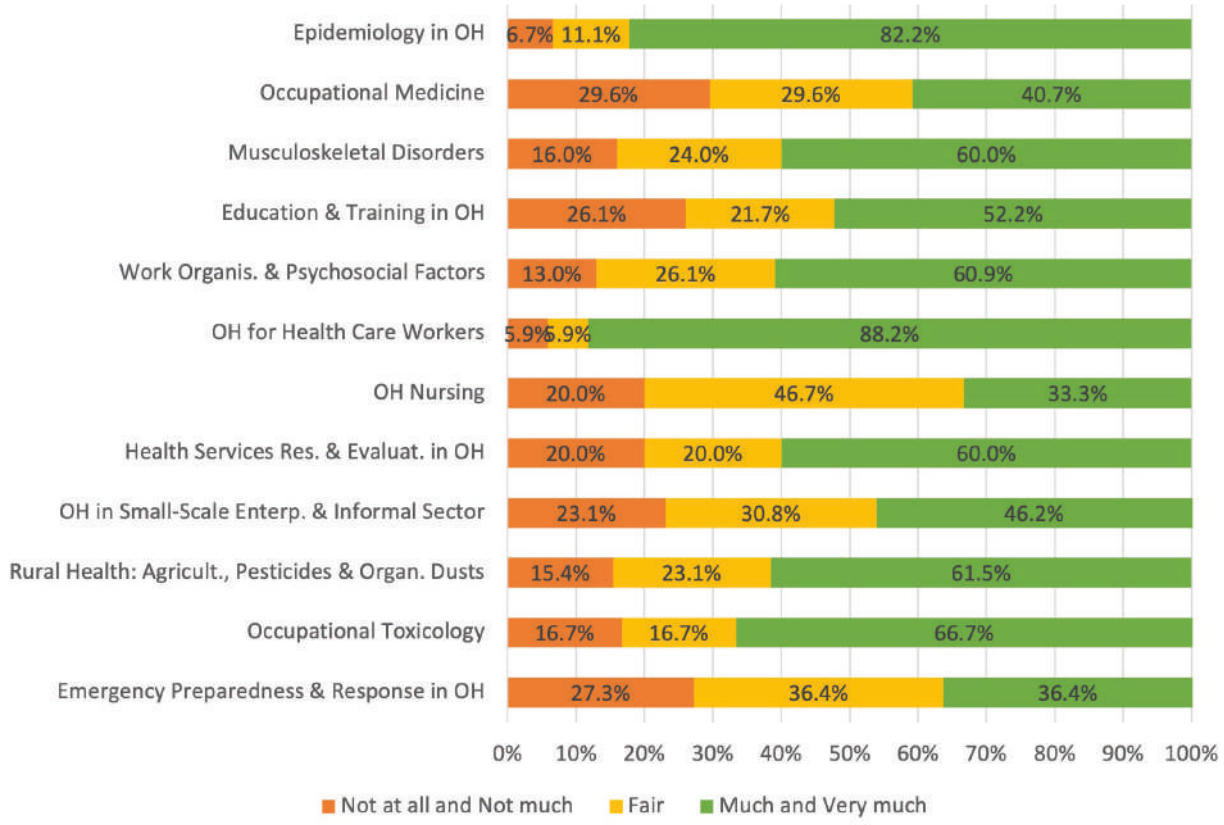


Fig. 10 – Does your Scientific Committee have an active role within ICOH with respect to membership promotion activities?

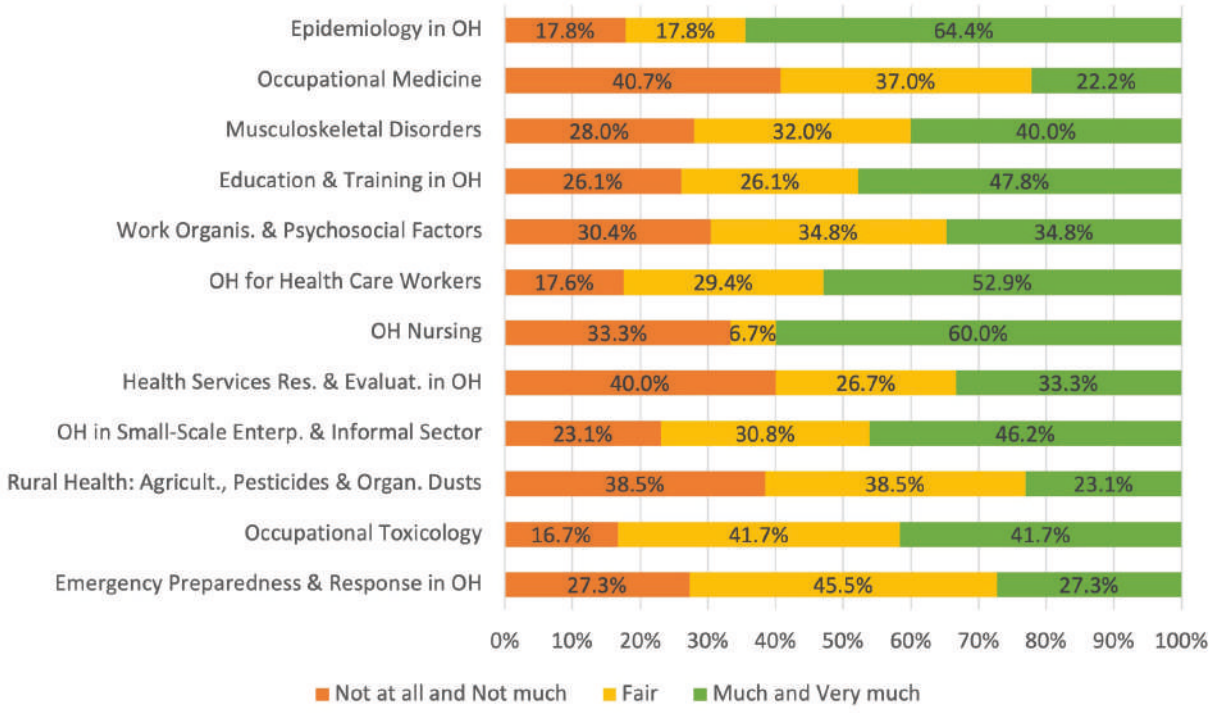


Fig. 11 – Does your Scientific Committee have an active role within ICOH with respect to communication exchange among SC members?

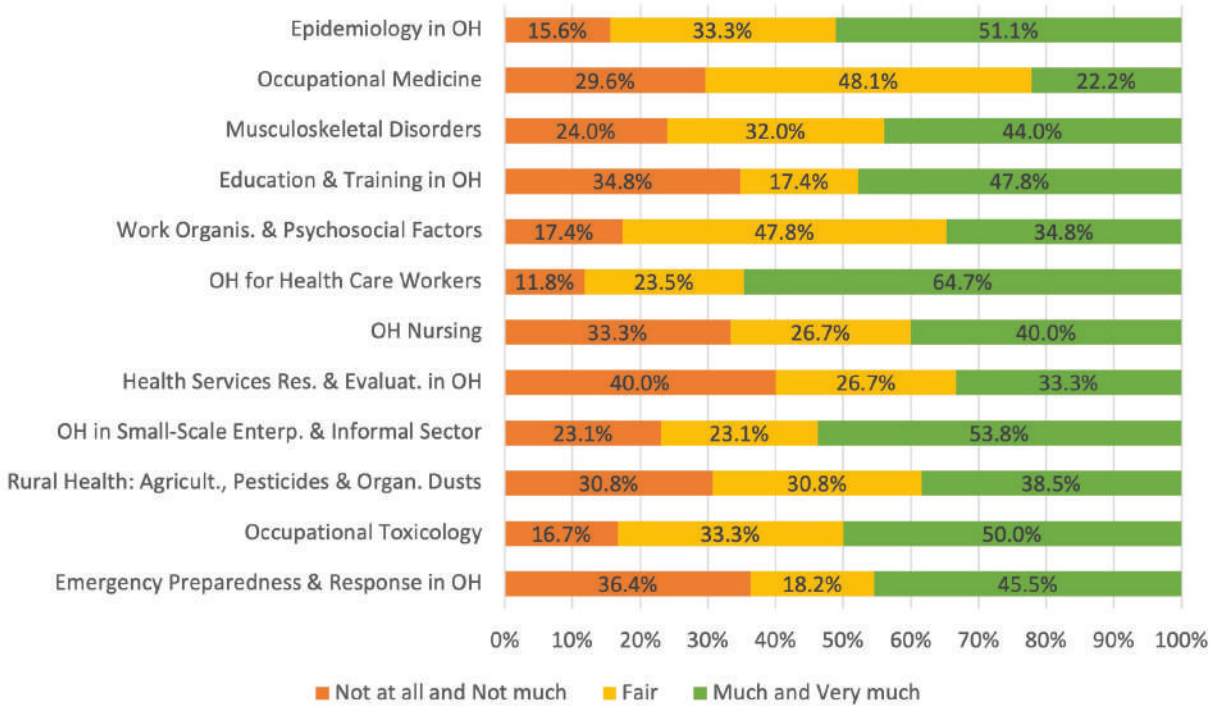


Fig. 12 – Have you attended conferences organized by your Scientific Committee?

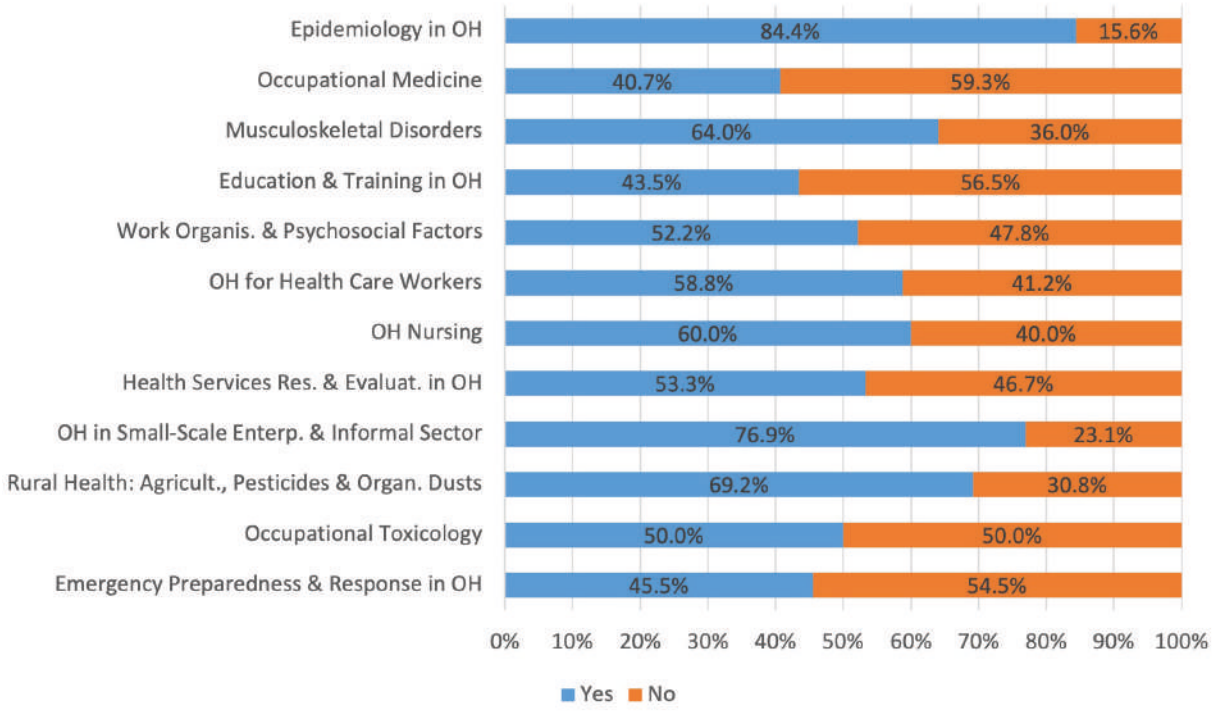
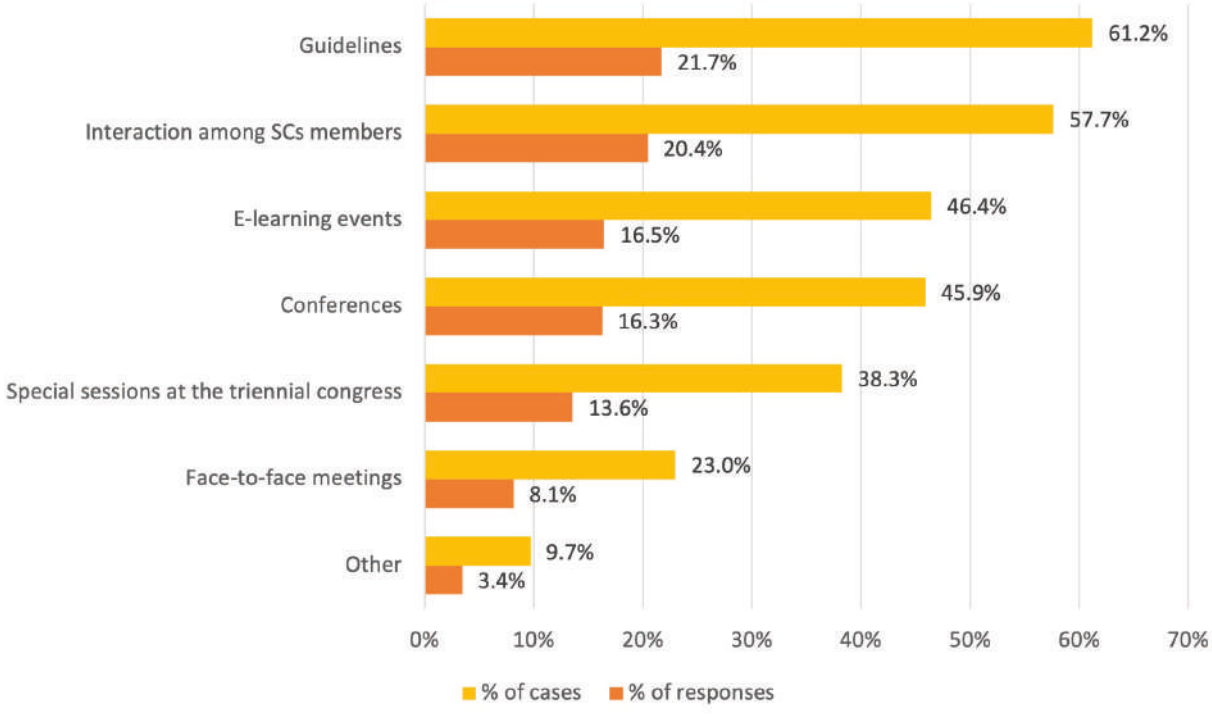


Fig. 13 – Which of these activities would you like to see more developed by your Scientific Committee? Multiple choice question*.



*196 cases, 553 responses

National Secretaries

Most of the respondents (74.0%) declare that there is an ICOH National Secretary in their own country. A small percentage (12.1%) answer "no" and 13.9% state that they do not know.

Among those who answered "yes", it is asked how often they have contacts with the National Secretary. 39.0% answer with "never or seldom", followed by "sometimes" (28.3%), and "often or always" (32.7%). Cross tabulation with the country variable shows a statistically significant association ($p<0.001$) (Fig. 14). As it can be seen from Fig. 14, in Asia more than half of the members (56.8%) has frequent contacts ("often or always") with the National Secretary, followed by Africa with 41.2%. Vice versa, in America and in Europe, the percentage of those declaring to have sporadic contacts ("never or seldom") with the National Secretary prevail, respectively 56,1% and 46,2%. In Oceania, most of the respondents (62.5%) answer "sometimes".

Furthermore, among those who answered in the affirmative about the presence of a National Secretary in their own country, it is also asked to what extent the National Secretary is active in relation to some aspects concerning: organization of meetings and events during the triennium 2015-2018, membership promotion activities, communication exchange among members, and members' active engagement at the country level (Fig. 15). As Fig. 15 shows, the percentages are very similar across the various subgroups.

Fig. 14 – If there is a National Secretary in your country, how often do you have contacts with him/her? Distribution by country.

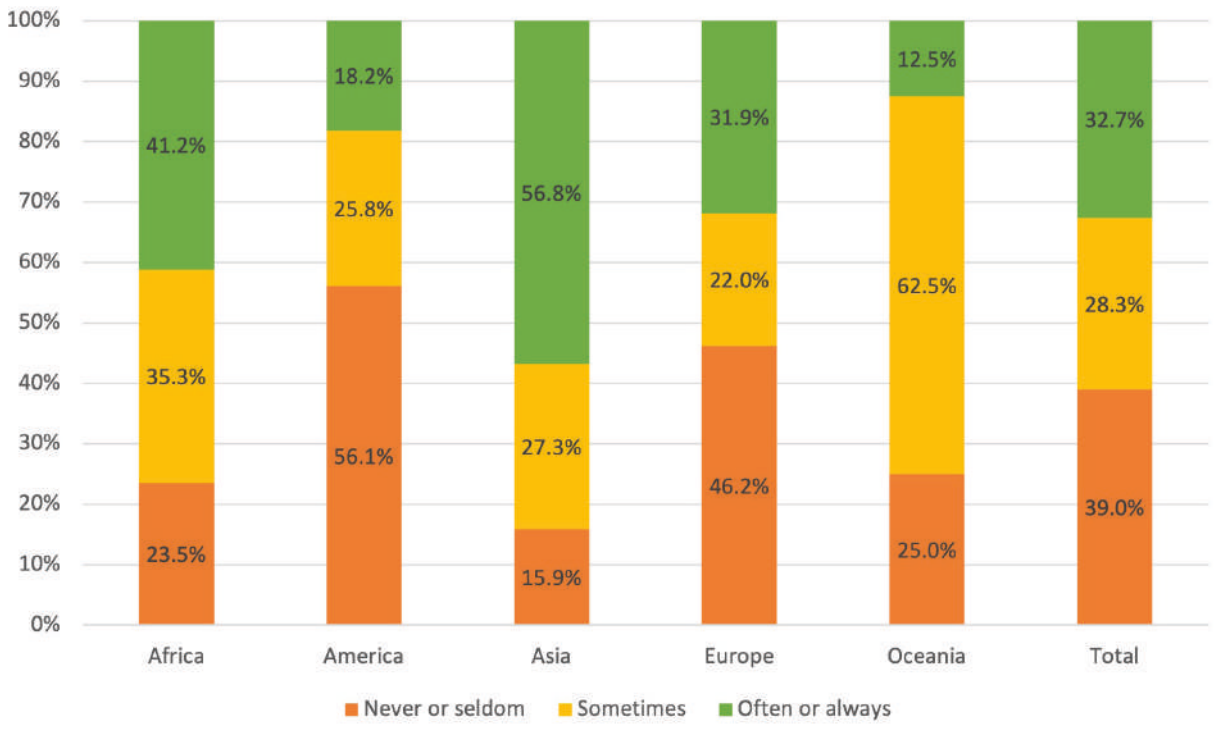
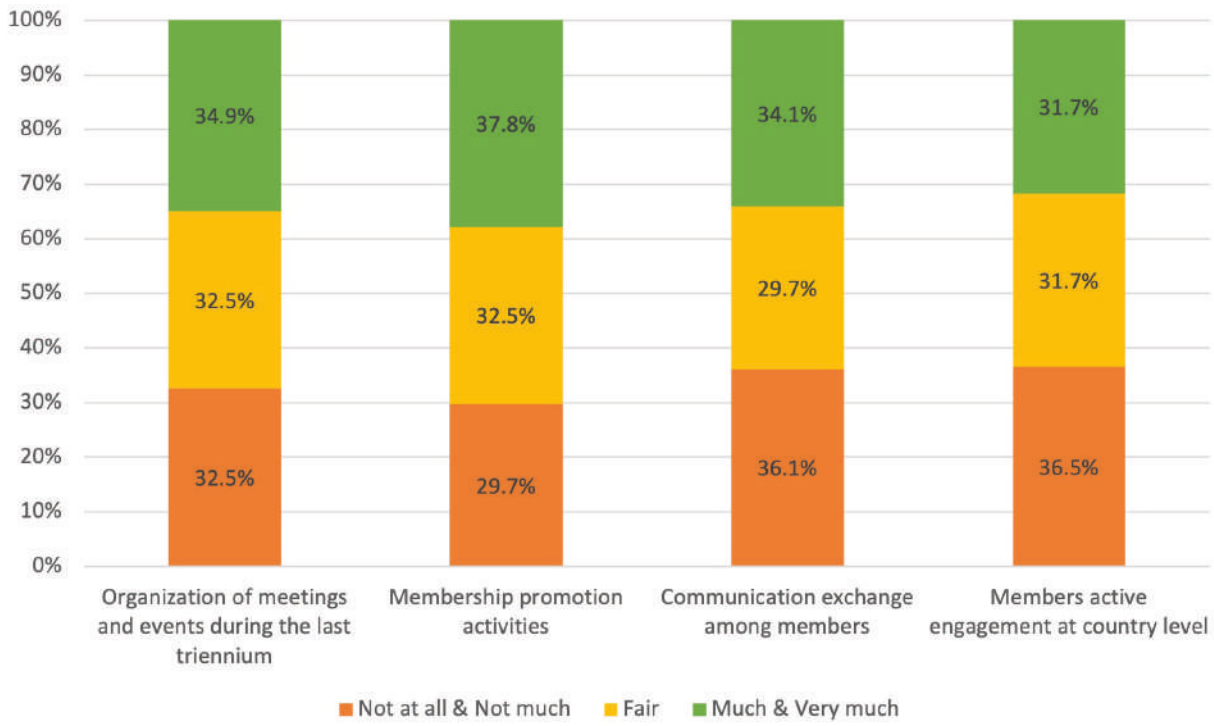


Fig. 15 – Does your National Secretary have an active role within ICOH with respect to:



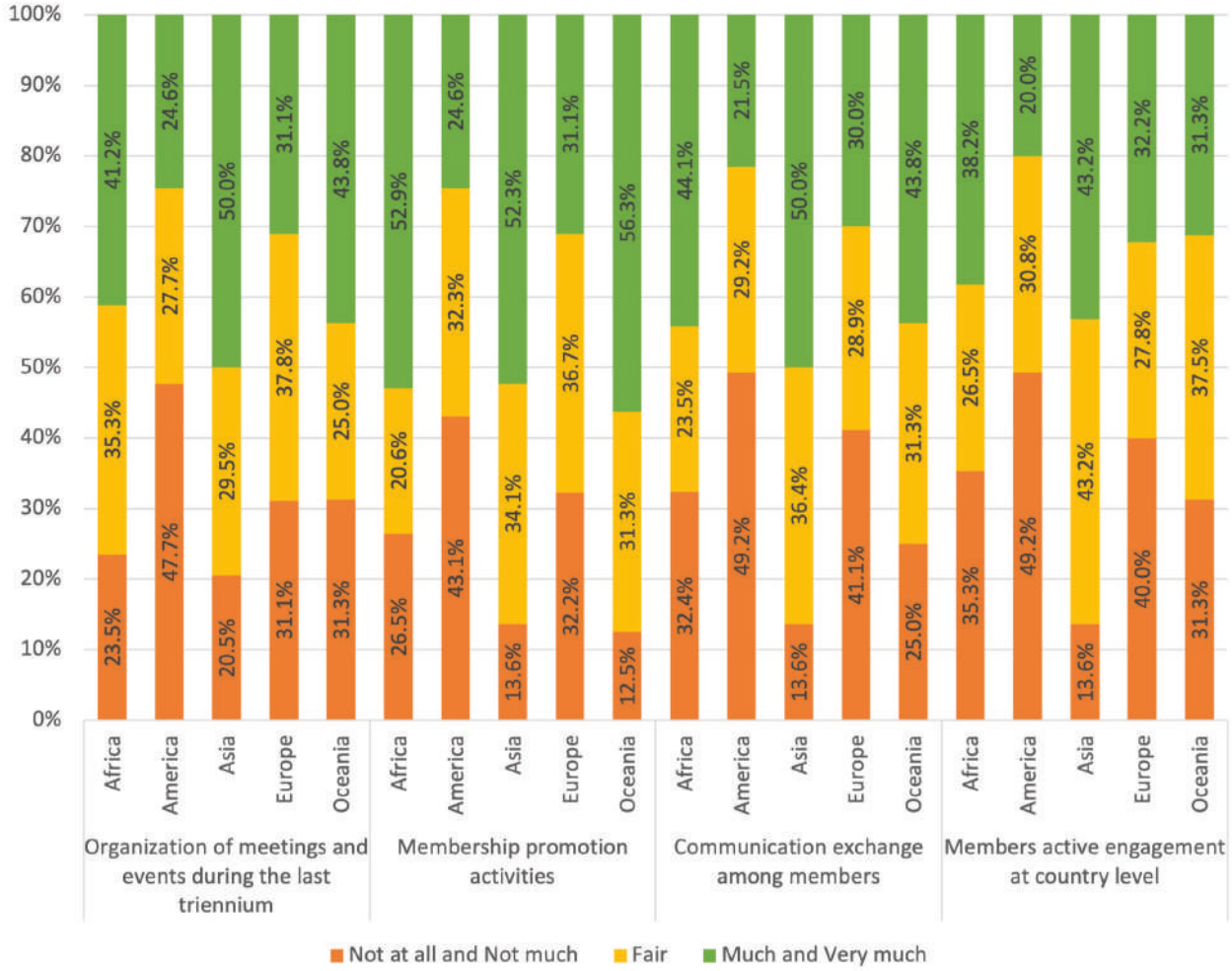
Cross tabulation with the socio-demographic variables shows some statistically significant associations. In particular, all the aspects investigated are statistically associated with the country variable.

As shown in Fig. 16, as far as America is concerned, the percentage of individuals declaring that their own National Secretary is "not at all or not much" active in the organization of meetings and events during the triennium 2015-2018 (tendentially significant, p=0.057) is higher. Vice versa, with regard to Asia, the percentage of individuals who declare that their own National Secretary is "much and very much" active stands at 50.0%.

As for the membership promotion activities, in Africa (p=0.006), Asia and Oceania, the percentages regarding the answer "much or very much active" amount to more than 50.0%. Vice versa, these percentages are 24.6% and 31.1% in America and Europe respectively.

A similar trend is observed in the communication exchange among members (p=0.011) and in the members' active engagement at the country level (p=0.026), as far as the activity of each National Secretary is concerned.

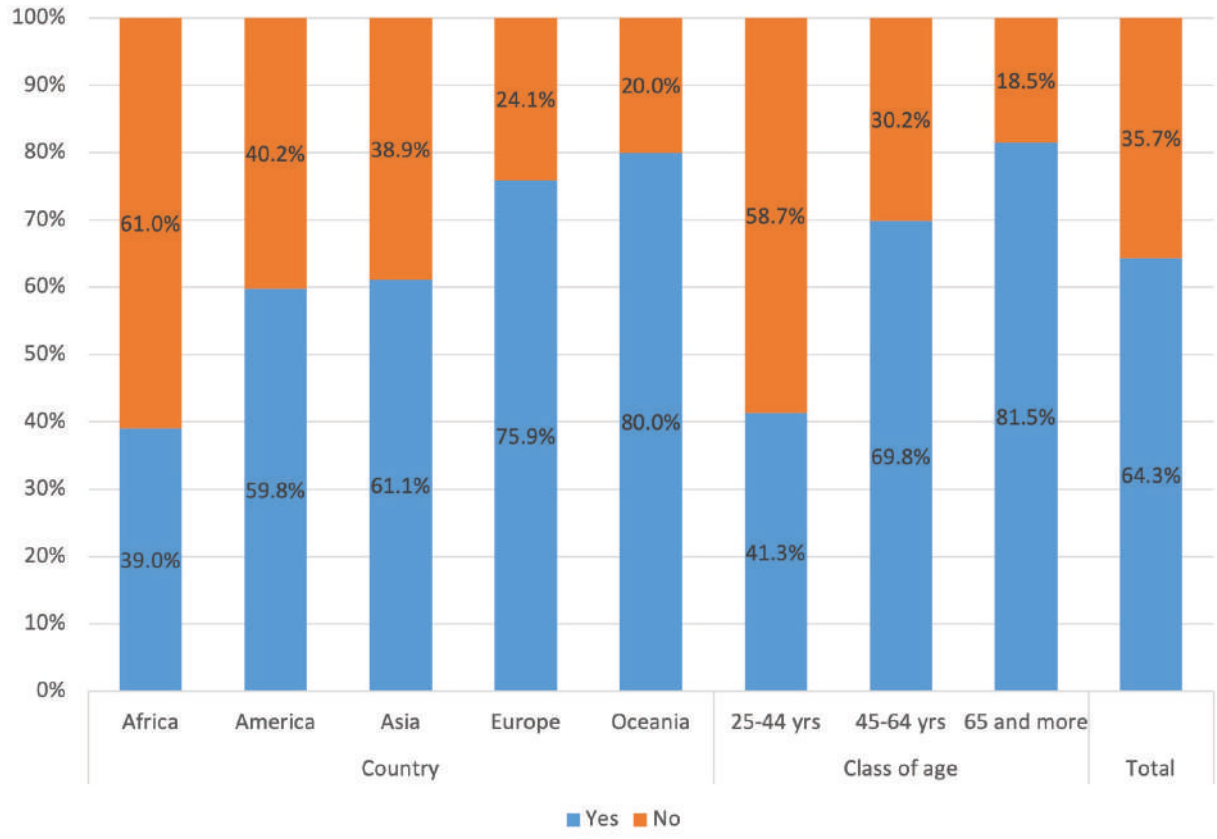
Fig. 16 – Does your National Secretary have an active role within ICOH with respect to various aspects? Distribution by country.



International Congresses

More than half of the sample (64.3%) declare to have attended at least one ICOH International Congress against 35.7% who say the opposite. The attendance at conferences is associated in a statistically significant way with class of age ($p<0.001$) and with country ($p<0.001$) variables. As Fig. 17 shows, the percentage of those who took part in at least one International Congress grows as the age group increases, passing from 41.3% of the younger class (25-44 yrs.) to 81.5% of the older class (65 and more); as for the country, it goes from 39.0% of African respondents to 80.0% of Oceania respondents.

Fig. 17 – Have you ever attended an ICOH International Congresses. Distribution by country and class of age.

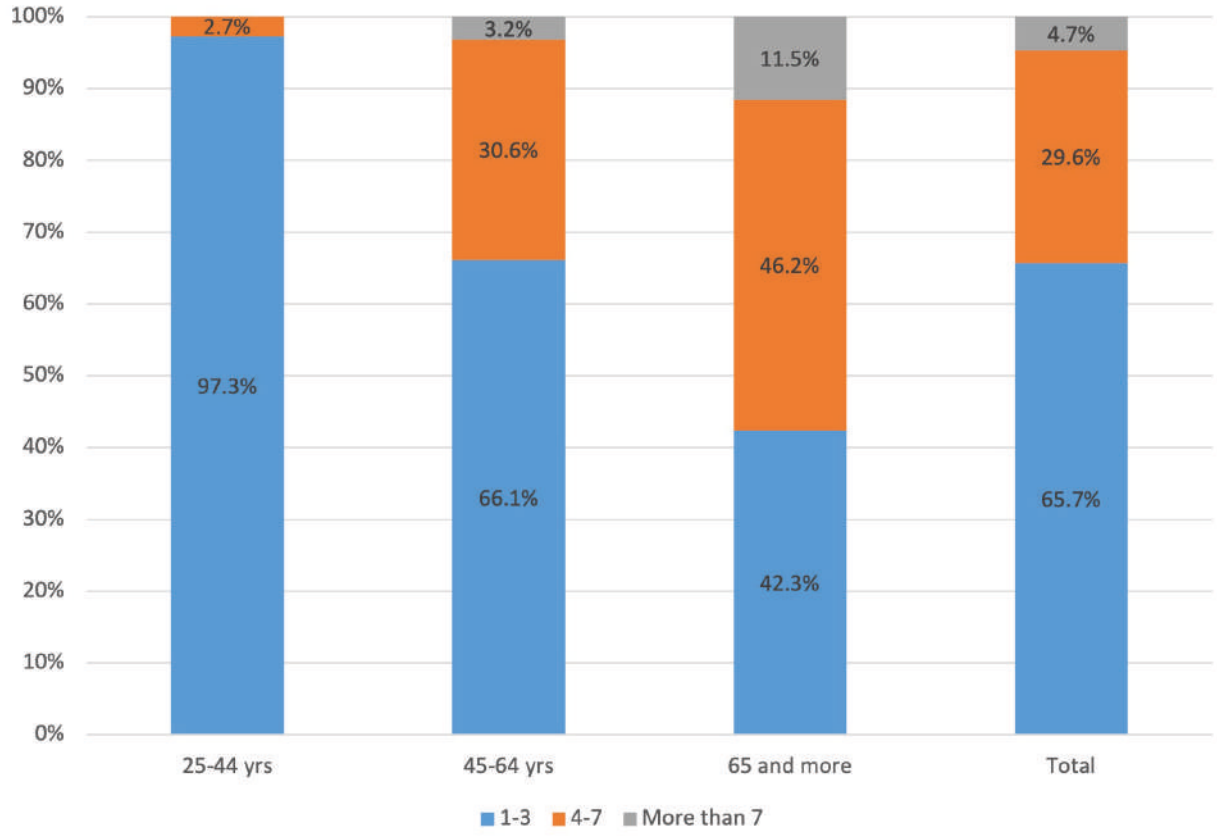


Among those who have never participated, the most frequently reason is the excessive cost (40.0%), followed by the answer "congress venue too far from my country" (26.7%), accessibility (9.2%), and lack of interest (1.7%). Almost a quarter of the sample (22.5%) chose "other".

On the other hand, among those who have participated in at least one International Congress, it is asked to indicate the last congress they attended. More than half (60.6%) attended the Seoul congress in 2015, followed by Cancun 2012 (13.6%), Milan 2006 (10.3%), Cape Town 2009 (5.2%), Iguassu Falls 2003 (2.3%), Singapore 2000 (0.9%), and other (7.0%).

Almost two thirds of the sample (65.7%) participated in 1-3 International Congresses, 29.6% in 4-7 International Congresses, and 4.7% in more than 7 Congresses. As expected, this variable is associated with the age group ($p<0.001$), as shown in Fig. 18.

Fig. 18 – How many ICOH Congresses have you attended so far? Distribution by class of age.



Those who attended at least one International Congress declare that the congress satisfied their expectations as follows: "very much or totally" (65.3%), "fairly" (25.4%) and "not at all and partially" (9.4%). No statistically significant associations with socio-demographic variables emerge.

Fig. 19 shows that 79.3% of those who attended at least one International Congress submitted a scientific contribution on the occasion of an ICOH Congress, 61.5% attended the General Assembly at least once, 72.3% voted at least once in order to select an ICOH congress venue, 84.5% voted at least once to elect the ICOH Officers and Board members.

The question "Have you ever submitted a scientific contribution in the occasion of an ICOH Congress" turns out to be associated with gender ($p=0.034$) and country ($p=0.036$) variables. In relation to gender, the percentage of women who submitted a scientific contribution in the occasion of an ICOH Congress is higher than that one of men (86.0% vs 74.2%). As for the country, it should be noted that the highest percentages of individuals who presented their work at a Congress are registered in Asia (83.7%) and in Europe (87.4%). Oceania has the lowest percentage (62.5%) (Fig. 20).

The class of age is associated with the attendance at the General Assembly ($p=0.010$), with the vote to select ICOH Congress venue ($p=0.015$) and with the vote to elect the ICOH Officers and Board Members ($p<0.001$). In all three cases, the percentage of those who respond in the affirmative grows with increasing age (Fig. 21).

Fig. 19 – Have you ever...

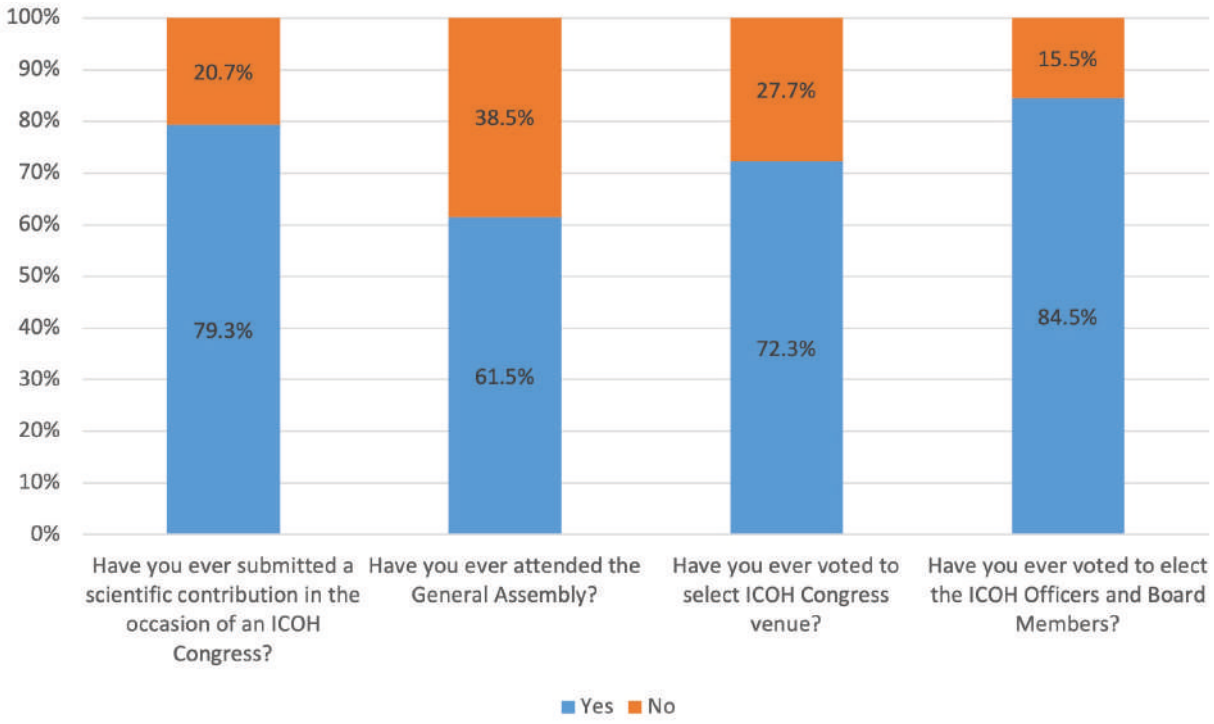


Fig. 20 – Have you ever submitted a scientific contribution in the occasion of an ICOH Congress? Distribution by gender and country.

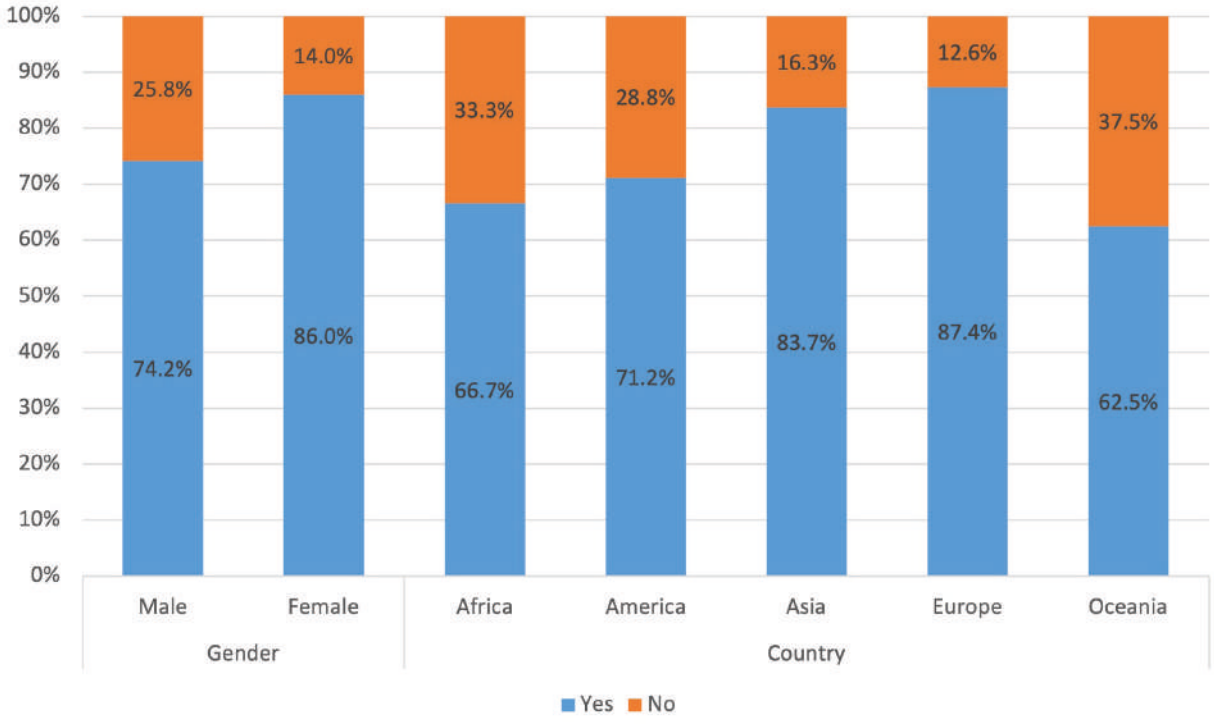
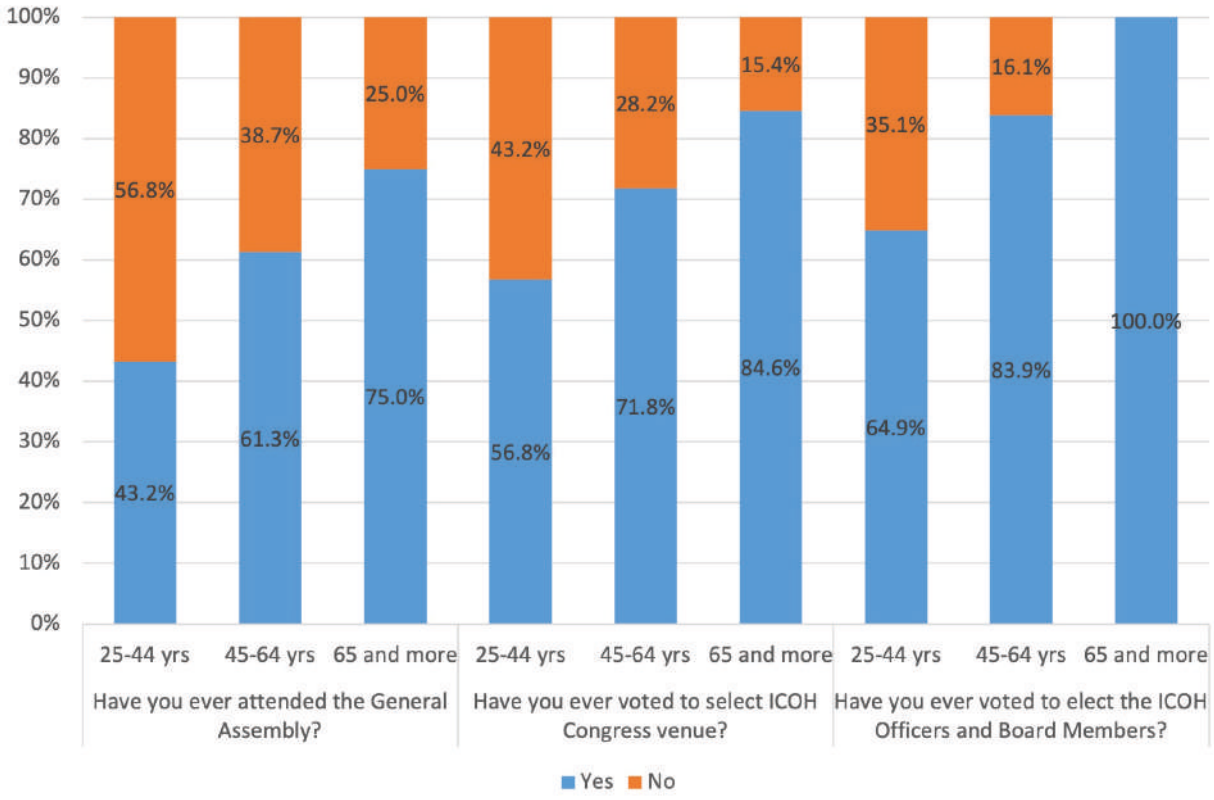


Fig. 21 – Attendance at the General Assembly, vote to select ICOH Congress venue and to elect ICOH Officers and Board members. Distribution by class of age.

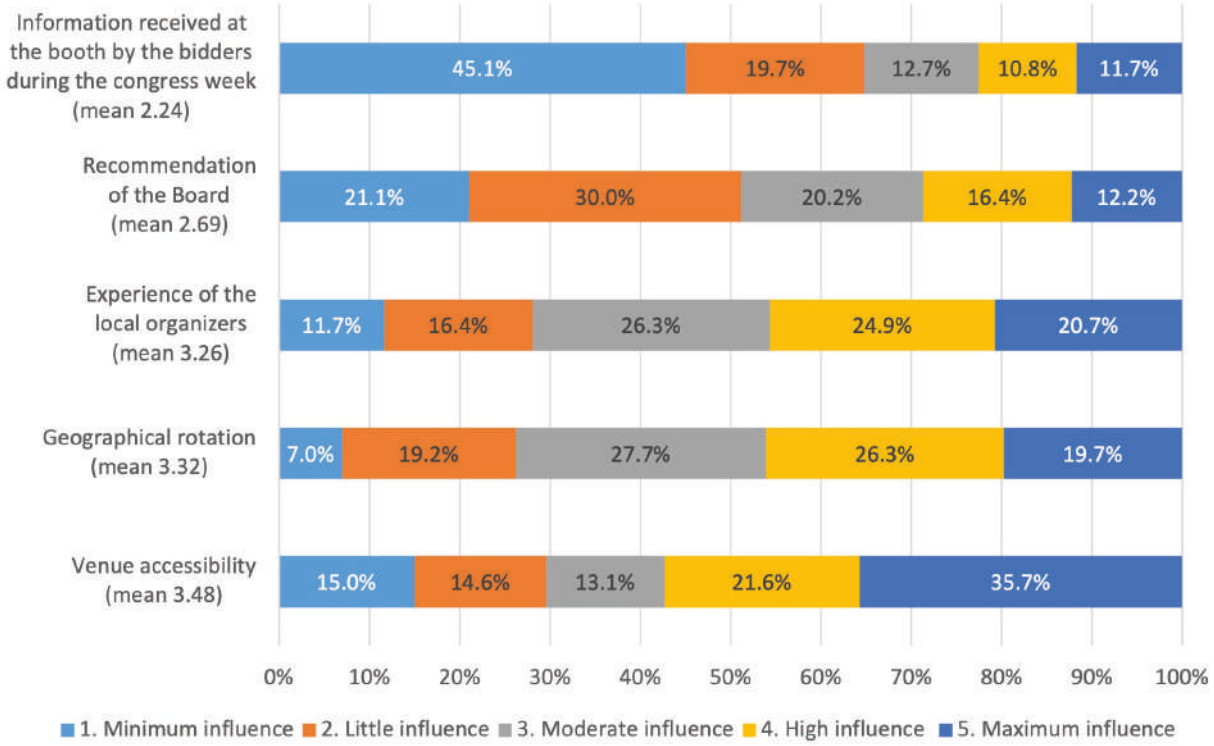


To the question "How much is your vote for ICOH Congress venue influenced by the Board recommendation", 52.6% respond "not at all and partially", 25.8% respond "fair" and 21.6% "much and totally". Statistically significant associations with the socio-demographic variables do not emerge.

Respondents are asked to put in order some aspects that could influence their vote, assigning an influence score from 1=minimum influence to 5=maximum influence. The aspects to be considered are: venue accessibility, geographical rotation, experience of the local organizers, ICOH Board recommendation, and information received from the bidders at the booth during the congress week. In order to establish a ranking, after the calculation of the frequencies for each of the 5 aspects, the score that obtained the highest frequency is considered. As for the accessibility, the highest frequency concerns the maximum influence (35.7%). With regard to the geographical rotation and the experience of the local organizers, the highest frequency is represented by the moderate influence (respectively 27.7% and 26.3%). Lastly, 30.0% of the sample think that the recommendation of the Board has a little influence, while a minimum influence (45.1%) concerns the information received at the booth by the bidders during the congress week. As Fig. 22 shows, these results are also confirmed by the calculation of the average value obtained for each aspect. The respondents to these questions were 213. There are no statistically significant associations with the socio-demographic variables.

The electronic voting system is the preferred one for future elections (75.6%), followed by a mixed method (postal and electronic vote) chosen by 18.3%, and the postal vote (6.1%). As expected, this variable is associated with the age group (p=0.011). The percentage of individuals who choose the electronic vote decreases as the age group increases, passing from 86.5% in the 25-44 age group, to 79.0% for the 45-64 age group and 59.6% for the older class (65 and more). Conversely, the percentages of individuals choosing the postal vote and the mixed mode increase as the age group increases.

Fig. 22 – Level of influence of various aspects on vote.

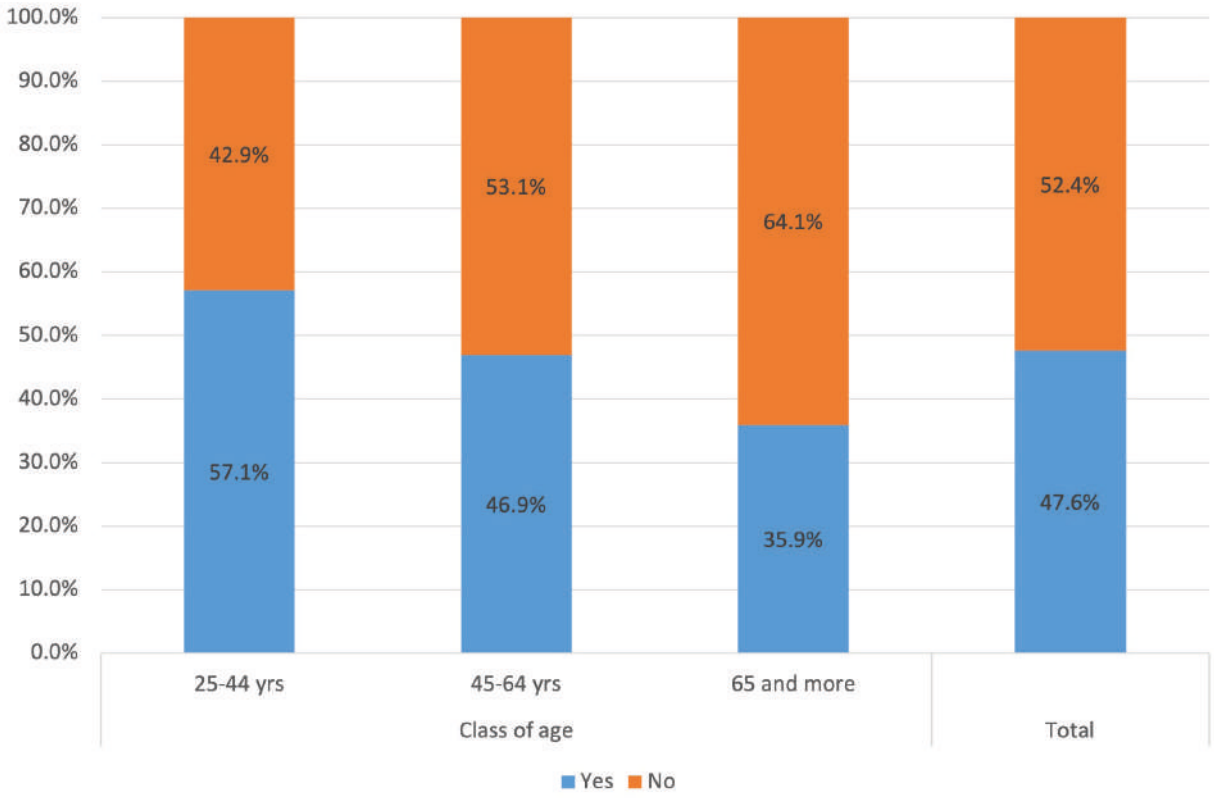


ICOH Communication tools (Website, Newsletter and Social Media)

Almost all of the respondents (94.3%) say to use the Internet daily. PC/laptop is the most used tool to connect (73.5%), followed by smartphone (20.8%) and tablet (5.7%). Then, the frequency of consultation of the ICOH website was investigated: it emerges that 31.6% consult it monthly, 28.6% only in case of specific need for information and 21.7% rarely.

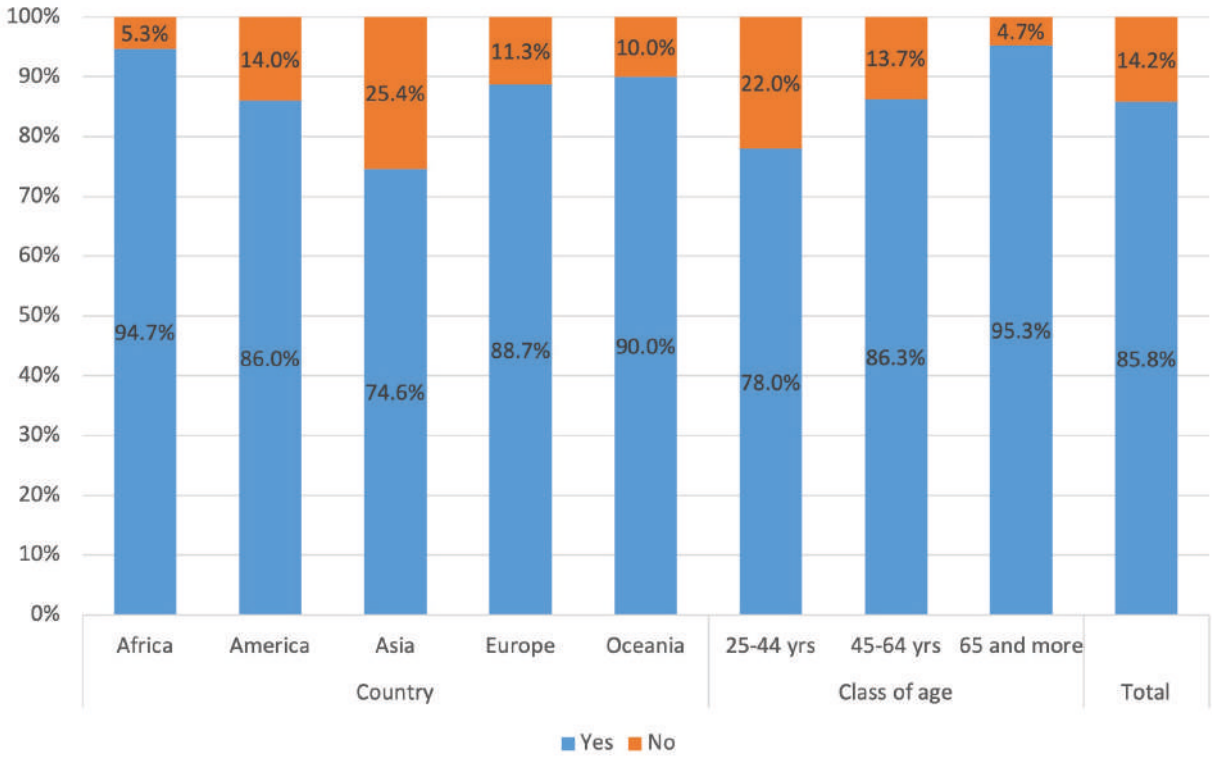
A significantly majority (79.2%) has checked the "Events" section of the ICOH website at least once, and 47.6% use the Private Area available on the ICOH website, compared to 52.4% who claim not to use it. The use of the Private Area is associated with the age group (p=0.033): the lower the age group, the greater the frequency of those who consult it. As the age group increases, the percentage of those who consult it decreases (Fig. 23), while the percentage of individuals who do not consult it increases.

Fig. 23 – Consultation of Private Area of the ICOH website. Distribution by class of age.



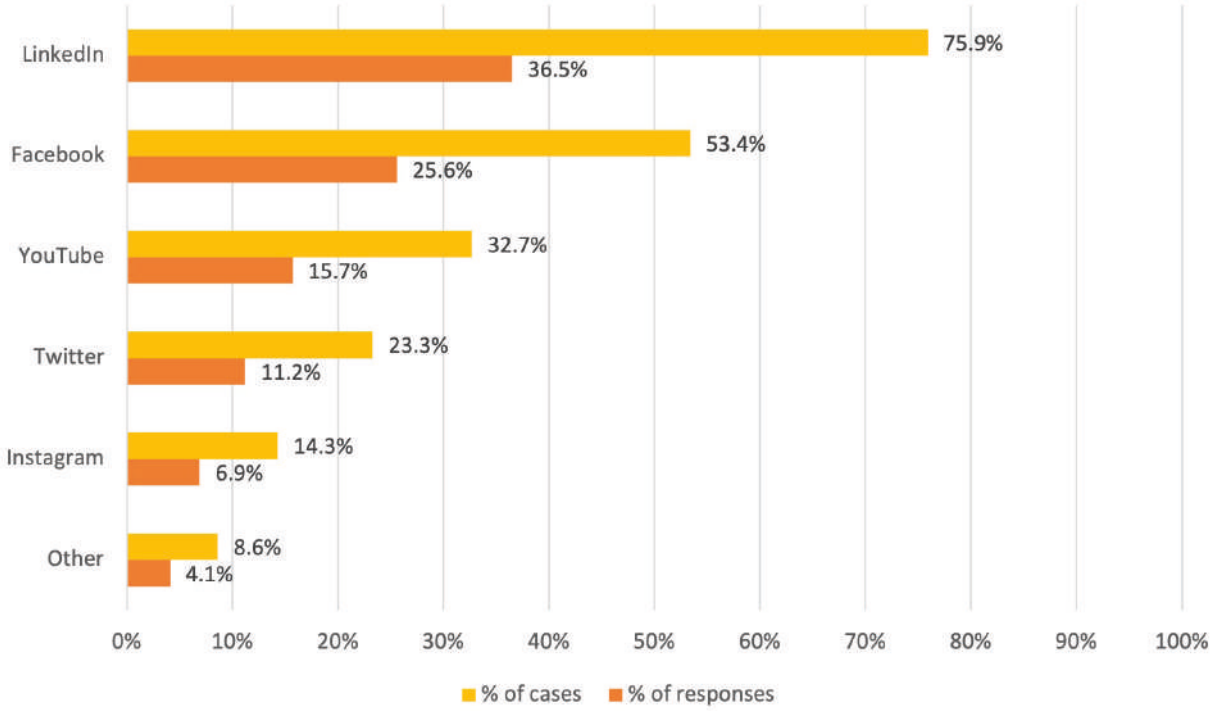
Among those who use the Private Area, 53.2% declare to be "fairly satisfied", 38.0% are "much or very much satisfied", and 8.9% are "not at all or not much satisfied". On the other hand, among those who do not use it, the main reasons are "lack of time" (38.5%), followed by "not useful" (19.5%), "lack of interest" (12.6%), and "other" (29.3%).
With respect to the Virtual Office, 69.4% say they do not know it is available on the ICOH website against 30.6% who say otherwise. There is no association with socio-demographic variables.
Furthermore, to the question on how much ICOH website is a useful tool to facilitate interaction among ICOH members, 39.7% answer with "fair", 35.4% with "much or very much useful", and 24.8% answer with "not at all or not much useful".
ICOH Newsletter is consulted by 85.8%. In particular, 48.4% prefer a print/paper format and 51.6% a digital/online format. As for the interest shown in the contents of the Newsletter, it emerges that 49.5% consider it "much or very much interesting", 44.2% "fair interesting" and 6.4% "not at all or not much interesting". The Newsletter consultation is significantly associated with the age group ($p=0.10$) and with the country ($p=0.029$) variables (Fig. 24). With respect to the age group, the frequency of those who consult the Newsletter increases with increasing age, passing from 78.0% in the 25-44 age group to 95.3% in the over 65 age group. As regards the country and the Newsletter consultation, Asia records the lowest percentage (74.6%), while Africa records the highest one (94.7%).

Fig. 24 – Consultation of ICOH Newsletter. Distribution by country and class of age.



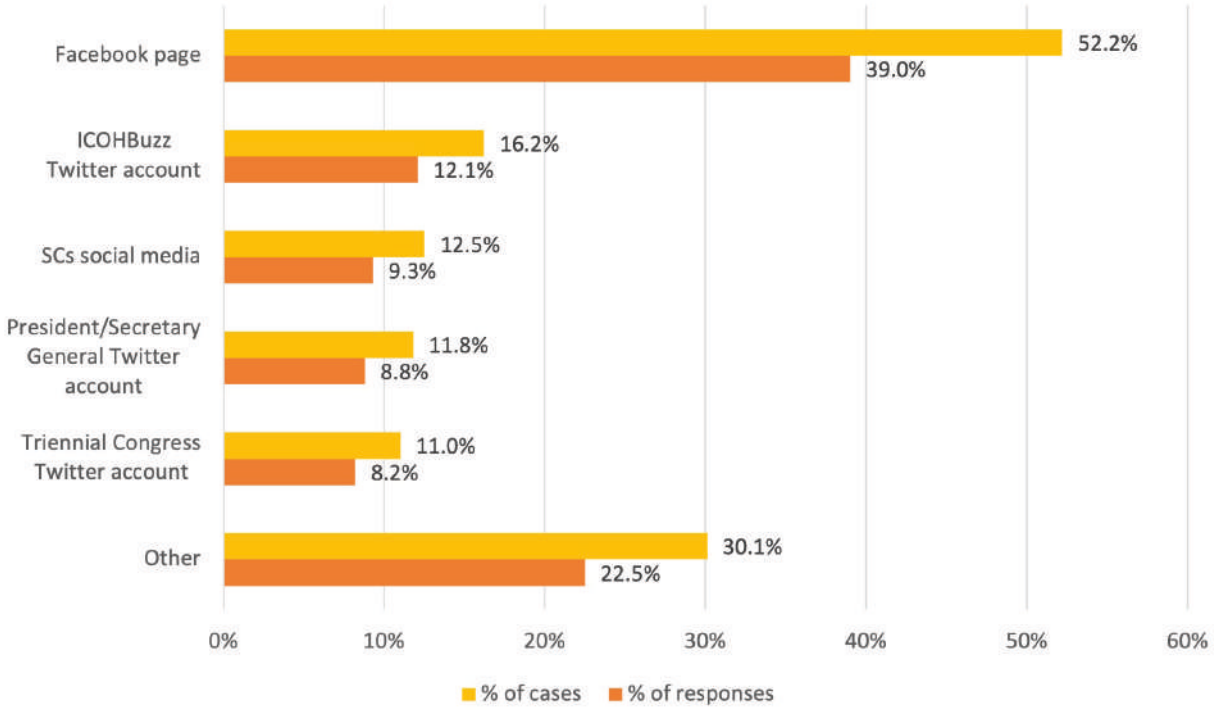
Then, the use of social media was investigated, firstly asking which social media is used for professional life (Fig. 25). On the other hand, Fig. 26 shows the social media used to follow the activities of ICOH and, subsequently, Fig. 27 indicates the social media that should need to be implemented by the ICOH.

Fig. 25 – Social media used also for professional life. Multiple choice question*.



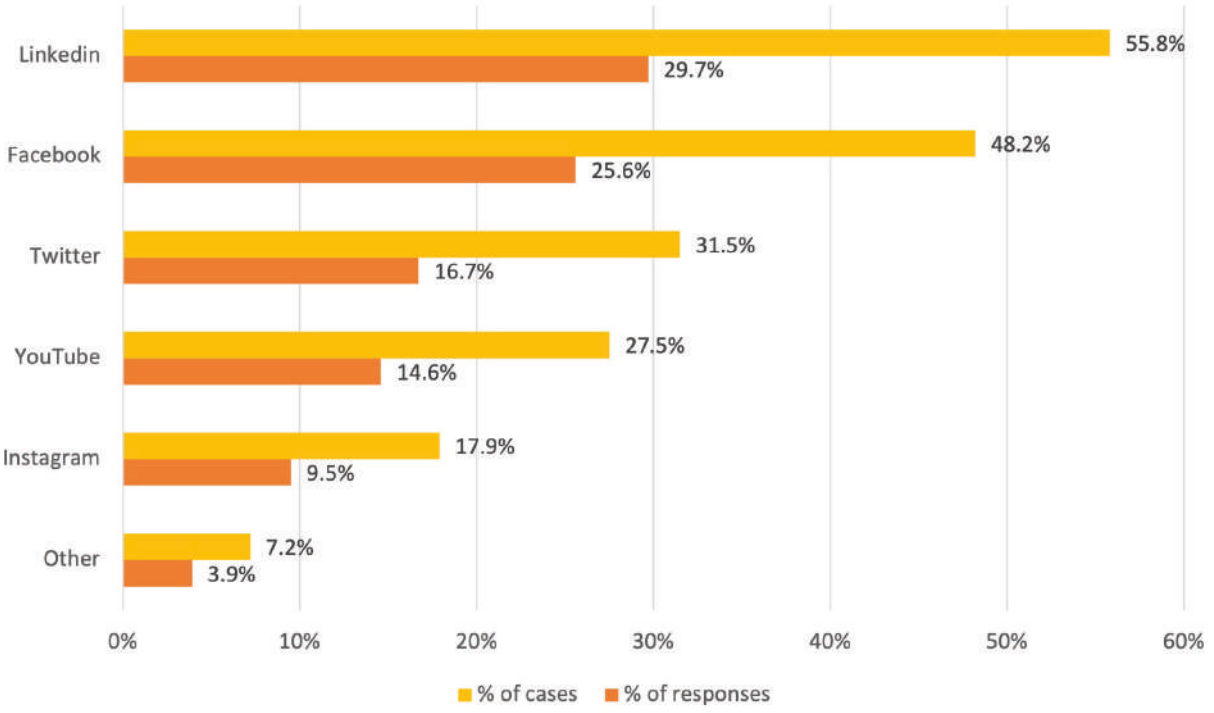
*266 cases, 554 responses
41 individuals do not use any of the social media listed

Fig. 26 –Social media used to follow the ICOH activities. Multiple choice question*.



*136 cases, 182 responses
197 individuals do not use any of the social media listed

Fig. 27 – Which of these social media do you think ICOH should implement or develop? Multiple choice question*



*251 cases, 472 responses
63 individuals answer none of the above

Almost half of the respondents (48.5%) believe that ICOH should have an institutional Twitter account as other organizations (WHO, ILO, ISSA) have, while 37.9% answer "I don't know" and 13.6% answer "no".

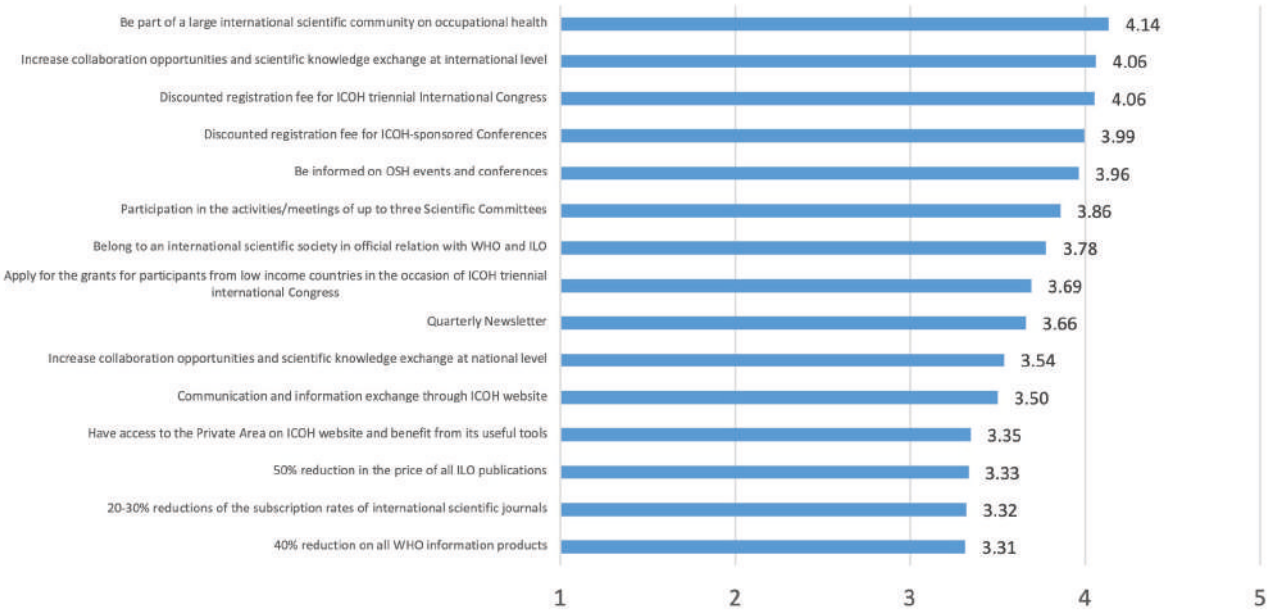
Considering the ICOH App, only 14.2% say to have downloaded it on their mobile phone, compared to 85.8% who have not. Among those having the app on their mobile phone (47 individuals), 29.8% use it rarely, 27.7% on a weekly basis, 23.4% on a monthly basis, 12.8% only in case of need, 4.3% daily, and 2.1% never use it.

Secretariat General management and operating activities

With respect to the Secretariat General, members are asked to express their level of satisfaction: it turns out that 46.9% are "much or very much satisfied", 39.7% "fair satisfied", and 13.3% "not at all or not much satisfied". Among the payment methods, credit card is the preferred one, followed by direct bank transfer (20.9%), PayPal (14.2%), and check (1.2%). Finally, taking into account the new fee system approved by the General Assembly at ICOH 2015 Congress, 67.4% consider it fair reporting that the fee system is well balanced and increases accessibility for developing countries. 14.8% believe that the GDP parameter should not be the only factor to be considered to classify members. Finally, 3.6% believe that the system is unfair and that all members should pay the same amount.

Regarding the benefits that ICOH members can enjoy, about half of the sample (49.8%) is aware of their availability, compared to 50.2% who are not. Among those being aware of them, it is asked to indicate a utility score between 1=minimum utility to 5=maximum utility in relation to several aspects. For each of these aspects, the average value is calculated in order to draw up a list of importance, from the most useful aspect (with the highest average score) to the least useful (with the lowest average score).

Fig. 28 – Usefulness of the ICOH benefits from the most useful to the least useful*



*1=minimum utility, 5=maximum utility

The questionnaire ends with two open-ended questions: one focusing on further possible benefits, which ICOH could offer to its members for attracting young generations and one asking about aspects ICOH should improve more generally. The answers received were 135 and 115 respectively. Fig. 29 shows that one of the most frequently requested benefits is "discounted membership end events fees", suggested by 37.8% of the respondents. On the other hand, Fig. 30 indicates the aspects ICOH should improve according to its members. Among the aspects that most of the respondents identified, "communication to members" comes first (27.0%) followed by "Scientific publication and knowledge sharing, training, e-learning and scholarship" (13.0%). It is also reported a high percentage of answers categorized as "other" (18.3%), as they included various distinct issues not corresponding to any of the main identified aspects.

Fig. 29 – Can you suggest further possible benefits, which could help in attracting young generations? Open-ended question

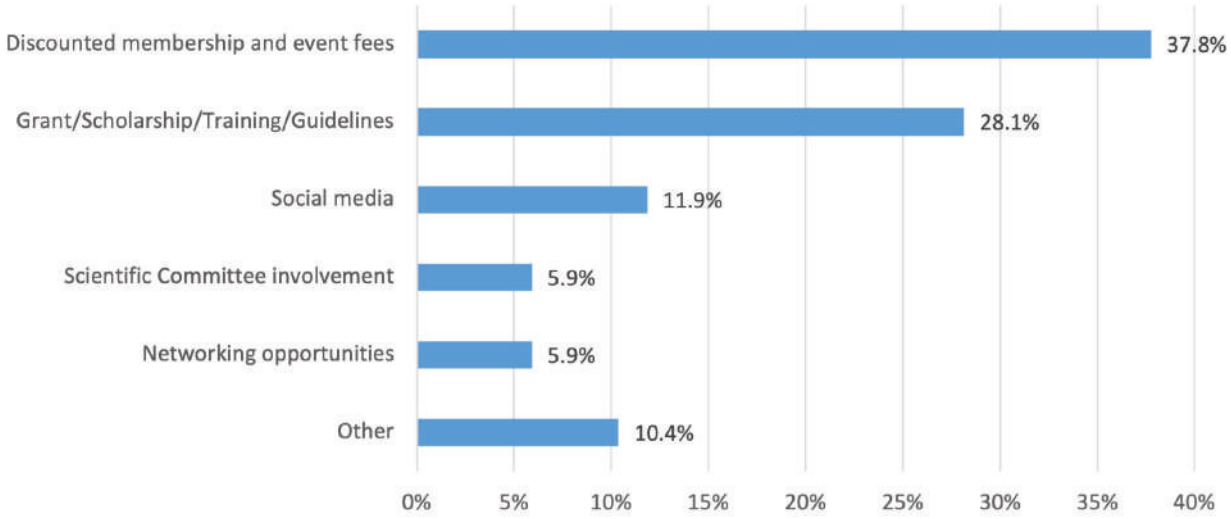
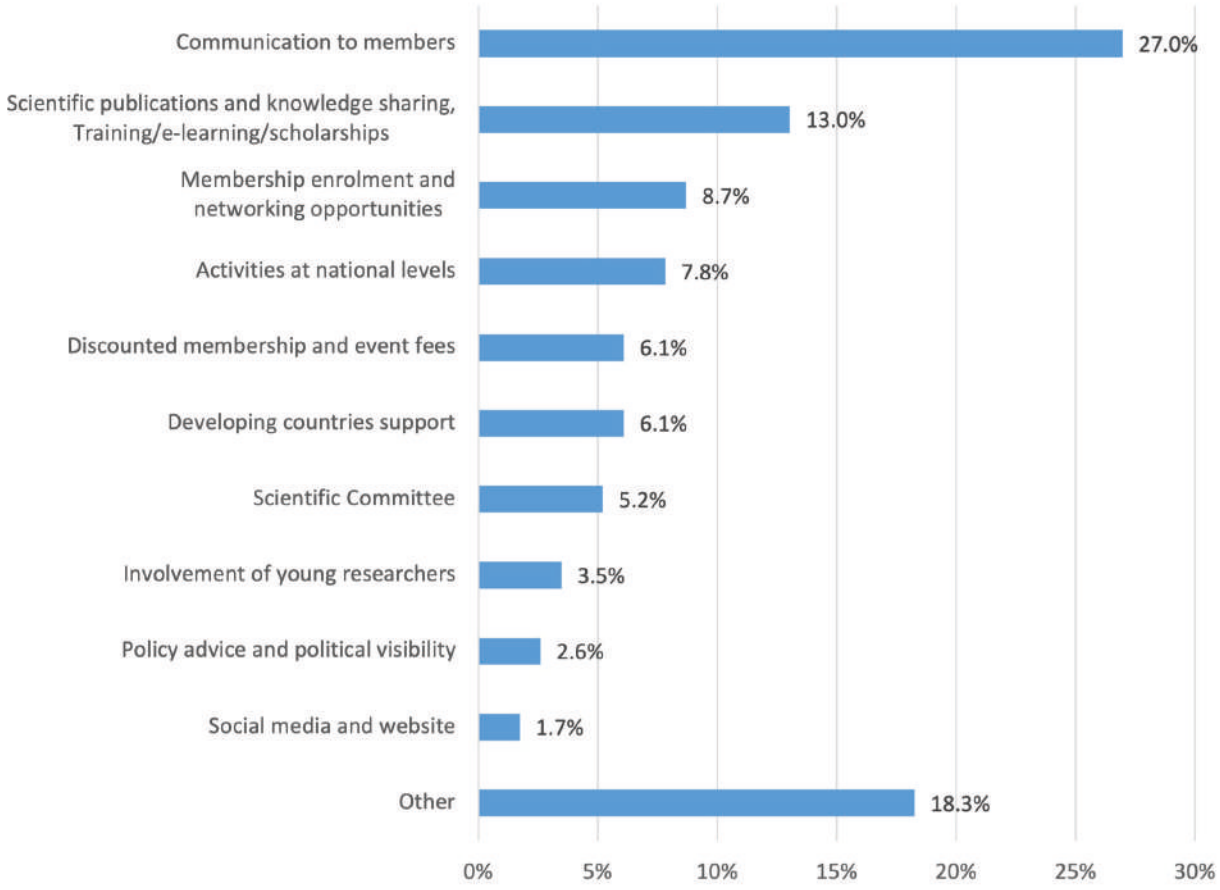


Fig. 30 – Which are the aspects ICOH should improve? Open-ended question



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ICOH – International Commission on Occupational Health