



RESEARCH



Facilitating equity in global One Health events

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Abstract

Background: Embracing the One Health approach demands not only interdisciplinary and multisectoral collaboration but also the meaningful inclusion of diverse subject-matter expertise. An effective and equitable transdisciplinary approach is essential for tackling the complex challenges that arise at the intersections of human, animal, plant and ecosystem health. Events such as workshops, forums and conferences play a crucial role in disseminating advancements to assist in the widescale operationalisation of the One Health approach; but to be truly effective, these events must champion equitable participation. **Methods:** This study provides evidence-based recommendations for event organisers in One Health and other multidisciplinary areas on measures to enhance participation equity. A large multi-language online survey was administered from January to March 2024, which collected data on individuals' experience of barriers and facilitators to participation in global One Health events. **Results:** Of the 406 respondents, 61% (n=249) indicated that they faced barriers to participation in global One Health events during their careers. However, 78% (n=317) of respondents identified as female, of which 67% (n=212) reported that they had, or may have, experienced barriers. Gender was found to be strongly associated with experiencing barriers to participation ($p < 0.001$). Overall, participation costs (including registration, travel and subsistence) were the most frequently reported barrier across all genders. Female respondents reported significantly more caring responsibilities and visa requirements as barriers, compared to male respondents. Participants identified increased funding support and the option to participate online as the most important facilitators to increased engagement in One Health events. **Conclusion:** Prioritising equity and diversity enhances the integrity and impact of global multidisciplinary events. This international survey highlights gender as a key factor in participation equity, underscoring the need for targeted, gender-responsive solutions. Implementing strategies and metrics for under-represented groups is critical to driving lasting improvements in accessibility and inclusion. These findings call for a collaborative, inclusive One Health approach to event design, embedding equity into existing frameworks for greater inclusivity and sustainable impact.

One Health impact statement

One Health is a framework that promotes equitable collaboration, interdisciplinarity and social inclusion to address complex health challenges across the human, animal, plant and ecosystem health interfaces. Yet, many One Health events fail to uphold these principles, lacking robust strategies to ensure equity across gender, race, socio-economic status and disciplines. Marginalised communities remain under-represented, especially at conferences and workshops. By identifying barriers to participation, this study offers evidence-based recommendations for more inclusive events. Active participation from under-represented groups is the key to promoting diverse, transdisciplinary contributions to scientific and social progress, decision-making and successful, sustained application of the One Health approach. Global One Health leaders should 'walk the talk' and lead by example, turning commitments into action by embedding equity and inclusion at the core of event design.

Keywords: One Health, participation equity, gender equity, One Health events, diversity, representation, barriers, facilitators, multidisciplinary, collaboration

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Introduction

The One Health (OH) approach is an increasingly accepted framework used to holistically address health concerns that takes cognisance of the interconnectedness of the health of humans, animals, plants and ecosystems. The One Health High-Level Expert Panel (OHHLEP), an advisory group to the Quadripartite (a collaboration between the Food and Agricultural Organisation of the United Nations, the United Nations Environment Programme, the World Health Organization, and the World Organisation for Animal Health), defines OH as an integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals, plants and ecosystems. The approach recognises that the health of humans, domestic and wild animals, plants and the wider environment (including ecosystems) are closely linked and interdependent. It mobilises multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for healthy food, water, energy and air, taking action on climate change and contributing to sustainable development (One Health High-Level Expert Panel *et al.*, 2022; Mettenleiter *et al.*, 2023).

Underpinning the definition is a set of principles focused on equity, inclusivity, equal access, sociopolitical and multicultural parity, stewardship and transdisciplinarity (One Health High-Level Expert Panel *et al.*, 2022). Taken into consideration with the OH definition, these principles guide effective OH institutionalisation and operationalisation to address a wide range of multisectoral health concerns at local, regional and global scales, from epidemics and pandemics, endemic and emerging communicable and non-communicable diseases, antimicrobial resistance, food safety and security, biodiversity loss, climate change and disaster risk reduction (Zinsstag *et al.*, 2018; Taştan and Ak Can, 2019; Robbiati *et al.*, 2023; World Health Organization, 2024).

The importance of global events such as workshops, forums and conferences for scientific and evidence-based disciplines is widely recognised (Oester *et al.*, 2017; Hauss, 2020). These events provide important platforms for professionals at all career stages to share and discuss successes, challenges, ideas and insights, as well as providing networking opportunities that support future collaboration and career advancement. In recent years, there has been growing acknowledgement of issues around participation equity across multiple health fields, and as a result rising expectations for change in how these events, particularly conferences, are organised to ensure inclusivity (Larson *et al.*, 2019; Sarabipour *et al.*, 2021; Jack-Scott *et al.*, 2023). Concerns around gender imbalance have been highlighted at global One Health events, notably the World One Health Congress (WOHC), where evidence of significant participation inequity since 2018 has led to concerns being raised and repeated calls for transparency and action to address gender imbalance (Larson *et al.*, 2019; Women for One Health Network, 2022; Zinsstag *et al.*, 2023; Caron *et al.*, 2025).

To collectively, effectively and holistically address the increasingly complex health challenges of our world, ensuring participation inclusivity and equity must be integral to the design and facilitation of OH events (Medin and Lee, 2012; Sulik *et al.*, 2021; Weiszhar *et al.*, 2025). Supported by the Women for One Health (WfOH) Network, established at the 2022 WOHC to advocate for greater diversity in One Health, this study aims to identify the key barriers and facilitators women and other under-represented groups in One Health face in participating in global One Health events. Reflecting on the experiences and discussions in the One Health space, the authors hypothesise women and under-represented groups face barriers to participating in global OH events. Enhancing understanding of these barriers will equip event organisers with the knowledge to develop strategies and programmes that drive participation equity.

Methods

STUDY DESIGN

A semi-qualitative, self-administrated, anonymised online survey was designed in collaboration with the WfOH network and administered using the online survey tool Qualtrics XM platform, March 2024 (Qualtrics, 2024) (Supplementary Material 1). The survey employed a combination of multiple-choice closed- and open-ended questions, as well as free text options, to gather data on experienced or perceived barriers and facilitators to participation in global OH events. For this study, a global OH event was defined as 'any event that brings together One Health experts from different countries and includes conferences, colloquiums, meetings and workshops'.

Data were also collected on the demographics of survey participants, including gender, age and geographical location of origin, where their work operated from, the region to which their work predominantly related and whether respondents self-identified as traditional or Indigenous knowledge holders (TKHs or IKHs).

TKHs or IKHs do not have a single academic definition (Matsui, 2015), and while a definition was not stipulated within the survey, for the purposes of this paper, it is defined as knowledge, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity (Callison *et al.*, 2016; Convention on Biological Diversity, 2021). TKHs and IKHs are key stakeholders when it comes to One Health, with many TKHs and IKHs understanding health holistically and as being intrinsically linked to their environment and non-human beings. Additionally TKHs and IKHs are often on the frontlines of environmental change and zoonotic disease emergence, yet they have been historically marginalised in global health discussions (Kulesa and Brantuo, 2021). Given their critical role and historic exclusion from these discussions, it felt important to identify any facilitators and barriers specific to these groups. Geographically related questions were added to determine if there were regional barriers or facilitators to participate in OH events. For these questions, the UN regional groupings under the Sustainable Development Goals framework were adapted for use (United Nations, n.d.). To identify barriers, respondents were asked to consider 14 barrier categories. Respondents could also add barriers as a free-text response if not already covered in the existing barrier categories. To gain an understanding of what could help improve participation at global OH events, survey respondents were asked to consider 12 potential facilitators. Respondents also had the opportunity to add other facilitators that may not have been already included as a free-text response.

The survey was made available in the six UN languages (Arabic, Chinese, English, French, Russian and Spanish). The survey was also made available in five additional languages (Greek, Serbian, Sinhalese, Kiswahili and Ukrainian) due to translation and interpretation services offered by WfOH members in support of increasing the reach of the survey. The survey was translated initially using machine translation (Google Translate, n.d.) and reviewed, verified and amended as required by bilingual members of the WfOH network for each of the languages. For non-English free-text responses, these were translated into English via Google Translate, with translators from the WfOH network proofing the responses.

The survey was piloted and validated by an additional sub-group of volunteers from the WfOH network, before being administered.

SURVEY DISTRIBUTION AND PARTICIPANT RECRUITMENT

The survey was administered from 17 January 2024 to 3 March 2024. The weblink to the survey was distributed broadly through established global, regional and national OH networks, professional

networks (of authors and participants) and organisations via email. The survey link was also posted on social media platforms and professional networking websites (Supplementary Material 2). Multiple reminders were sent out to encourage completion of the survey.

Survey participation was entirely voluntary, anonymous and all participants were informed of their right to withdraw from the study at any time without penalty. A participant information sheet and a consent form were made available to all participants before they began the survey (Supplementary Materials 3 and 4). All collected data were stored confidentially and held by Queensland University of Technology (QUT) in line with their data policy and will be stored for 5 years post-publication.

DATA CLEANING AND CODING

All collated survey data were exported from Qualtrics to Microsoft Excel® where incomplete responses and duplicate entries were identified and removed from the dataset. Free-text responses to questions on barriers and facilitators were reviewed by three authors (GC, ADJ and AA) and collaboratively coded into pre-defined thematic categories or summarised into unique categories. The categories were defined by the study team, and sub-group was used to pilot the survey.

ANALYSIS OF DATA

Demographic data were summarised following descriptive analysis completed in Microsoft Excel®. All hypothesis testing was carried out using R studio version 1.4.1717 (RStudio Team, 2020) after assessing relevant test assumptions. Non-parametric tests (Chi-square and Fisher's exact test) were used to analyse the data related to barriers and facilitators of participation equity. The level of statistical significance of 0.05 was used, i.e. variables with associations of <0.05 were considered statistically significant.

Results

DESCRIPTIVE ANALYSIS OF PARTICIPANTS' DEMOGRAPHIC DATA

In total, 458 responses were received although 52 (11.4%) responses were deemed unusable due to incomplete or duplicate entries. After cleaning, 406 individual responses to the survey were recorded and analysed. The majority language used by respondents was English (87.7%), followed by French (5%), Spanish (5%), Serbian (1%) and Arabic, Russian and Ukrainian (all 0.25%). The majority of all respondents identified as female ($n=317/406$, 78.1%) and were between 31–40 years ($n=131/406$, 32.3%) and 41–50 years ($n=109/406$, 26.9%) of age. Academic institutions were the most selected affiliation for respondents ($n=197/476$, 41.4%), followed by government ($n=111/476$, 23.3%) and non-governmental organisations ($n=80/476$, 16.8%).

A large proportion of respondents identified as originating either from Europe ($n=114/423$, 27.0%) or Africa ($n=104/423$, 24.6%) (multiple selections were possible). Under the question regarding work remit, a quarter of responses selected Africa as their primary location ($n=149/583$, 25.6%) and over a quarter of responses reported that their work had a predominant focus on Africa ($n=167/639$, 26.1%). Approximately one-third ($n=124/406$, 30.5%) of respondents identified as being TKHs or IKHs. TKHs or IKHs self-identified from a range of regions, e.g. Africa, Middle East, Australasia, South Asia and Europe. They also worked for a range of institutions, e.g. NGOs, academia, government and the private sector. Further details of the survey participants' demographic data are provided in Tables 1 and 2.

BARRIERS TO PARTICIPATION IN GLOBAL ONE HEALTH EVENTS

The majority of survey respondents ($n=249/406$, 61.3%) self-identified as having encountered or possibly encountered barriers

Table 1. Summary of the characteristics of respondent demographics ($n = 406$).

	Number of responses n (%)
Gender	
Female	317 (78.08%)
Male	78 (19.21%)
Non-binary	6 (1.48%)
Prefer not to disclose/blank	5 (1.23%)
Age (years)	
18–25	22 (5.42%)
26–30	66 (16.26%)
31–40	131 (32.27%)
41–50	109 (26.85%)
>50	76 (18.72%)
Prefer not to say/blank	2 (0.49%)
Institution	
Academic/Research Institute	197 (48.52%)
NGO	80 (19.70%)
Multilateral organisation	21 (5.17%)
Private sector	38 (9.36%)
Governmental	111 (27.34%)
Other	28 (6.90%)
Blank	1 (0.25%)
Traditional/Indigenous knowledge holder	
Yes	124 (30.54%)
No	275 (67.73%)
Blank	7 (1.72%)

to participating in global OH events (by responding either 'yes' or 'maybe' when asked).

In total, 249 respondents encountered barriers. Of them, the majority ($n= 212$, 85.1%) identified as female. There was strong evidence of an association between gender and barriers to participation experienced ($p < 0.001$). All other demographic criteria or characteristics were not statistically significant following hypothesis testing (Supplementary Material 5) but are presented here for completeness. Respondents in the 31–40 years age range ($n= 83/131$, 63.4%) and those who worked in academia or research institutes ($n=125/197$, 63.5%) were the other groups to most commonly report having faced barriers. Both of these are higher than expected, given their respective proportions in the sampling: respondents in the 31–40 years age range represented 32.27% of all respondents, and those in academic and research institutions represented 48.52%.

Respondents who faced barriers were further analysed across three categories: the place of origin (of the respondent), the location of the respondent's workplace and the geographical focus of the respondent's work. Central Asia was the most frequent region for all questions, at 80.0, 72.7, and 75.0%, respectively.

The categories of barriers that respondents self-identified as having encountered are shown in Fig. 1. The financial aspects of attending events, such as travel and accommodation, were the

Table 2. Summary of personal and professional geography demographics of respondents.

	Number of responses		
	Origin of participant n (%)	Location of work* n (%)	Predominant location of work focus** n (%)
Africa	104 (24.59%)	149 (25.56%)	167 (26.13%)
Australasia	34 (8.04%)	42 (7.20%)	37 (5.79%)
Central Asia	5 (1.18%)	22 (3.77%)	16 (2.50%)
East Asia and Pacific	19 (4.49%)	50 (8.58%)	52 (8.14%)
Europe	114 (26.95%)	112 (19.21%)	78 (12.21%)
Latin America and the Caribbean	33 (7.80%)	47 (8.06%)	50 (7.82%)
Middle East/West Asia and North Africa	8 (1.89%)	18 (3.09%)	15 (2.35%)
Northern America	72 (17.02%)	80 (13.72%)	67 (10.49%)
South Asia	33 (7.80%)	62 (10.63%)	63 (9.86%)
Global	N/A	N/A	90 (14.08%)
Blank	1 (0.24%)	1 (0.17%)	4 (0.63%)
Total	423	583	639

Note: Respondents were able to select multiple responses for a question. Percentage out of total number responses for each category.

*Location of work – physical location of work/home office(s).

**Predominant location of work focus – geographical region(s) work supports.

most frequently reported barriers (n=198/249, 79.5%) across all survey respondents; and this does not vary according to gender, age, institution and geographical region of origin, occupational location and focus. The least frequently reported barriers were the 'language of events' (n=16/249, 6%) and 'concerns related to personal safety and security' (n=16/249, 6%).

Notably, 96 (n=96/249, 38.6%) respondents provided details on additional perceived barriers in the free-text section of the survey. Issues such as discrimination based on gender, neurodivergence (i.e. where a person diverges from what is considered 'typical' in the way that their brain processes, learns or responds; this can include conditions such as ADHD, autism, dyslexia and Tourette syndrome), race, biases against junior employees and nationality were highlighted.

The results showed that there was a statistically significant difference between the distribution of barriers experienced by respondents by demographic data, i.e., the barriers reported are not evenly distributed among respondents or groups (Chi-square test; $p < 0.001$).

Given that gender was found to be associated with experiencing barriers, the categories of barriers encountered were further explored to determine if there was a gendered difference in the categories of barriers experienced (Fig. 1). Due to the small number of respondents who identified as non-binary (n=3), these individuals were excluded from further analysis but are discussed below.

The barrier category reported most frequently by female respondents was the 'costs associated with attending' events (n=171/212, 80.6%). For male respondents, both the 'cost of the event' (n=21/31, 67.7%) and the 'cost associated with attending' (n=21/31, 67.7%) were the highest encountered. On the other hand, the barrier categories found to be significantly different between females and males were 'caring responsibilities preventing attendance' (with n=44 female respondents (20.1%) and n=1 (3%) male respondent reporting experiencing the barrier, $p=0.023$) and 'visa requirements' (with n=34/212 female respondents (16.0%) and n=10/31 male respondents (32.3%) reporting experiencing the

barrier, $p=0.028$). All other barrier categories experienced were not found to have a statistically significant difference between male and female respondents (Supplementary Material 6).

The 'cost associated with attending' events was the barrier most frequently experienced by respondents who identified as TKHs or IKHs (n=68/124, 54.8%), followed by the 'cost of the event' (n=58/124, 46.8%) and 'visa requirements' (n=38/124, 30.6%) (Fig. 2). The following barriers reported by TKHs or IKHs were found to have a statistically significant difference when compared to non-traditional or Indigenous knowledge holder groups: (i) 'cost of event' ($p<0.001$); (ii) cost associated with attending' ($p<0.001$); (iii) 'work not represented at events' ($p<0.001$); (iv) 'work undervalued by conference organisers' ($p<0.001$); (v) 'geographic location' ($p<0.001$); (vi) 'caring responsibilities' ($p=0.01374$); (vii) 'security and personal safety' ($p<0.001$); (viii) 'lack of online attendance options' ($p<0.001$) and (ix) 'language barriers' ($p=0.03462$). Further details on barriers experienced by TKHs and IKHs can be found in Supplementary Material 7.

FACILITATORS TO PARTICIPATION IN GLOBAL OH EVENTS

The distribution of the categories of facilitators can be seen in Fig. 3. The five most frequently selected facilitator options by all respondents included 'increasing the availability of funding for costs associated with attending' (n=172/406, 69.1%), 'ensuring online attendance options were available' (n=159/406, 63.9%), 'increasing the availability of funding for event fees or having a banded fee structure' (n=157/406, 63.1%), having 'greater diversity of speakers' at events (n=131/406, 52.6%) and 'improving collaboration between event organisers and the wider OH community' (n=117/406, 47.0%). The results showed that there was a statistically significant difference between the distribution of facilitators experienced by respondents by demographic data, i.e., that facilitators reported are not evenly distributed among respondents or groups (Chi-square test; $p<0.001$). In addition, 6/406 (2%) entered facilitators that did not already fit within the existing categories, including funding for family and having recordings of events made available.

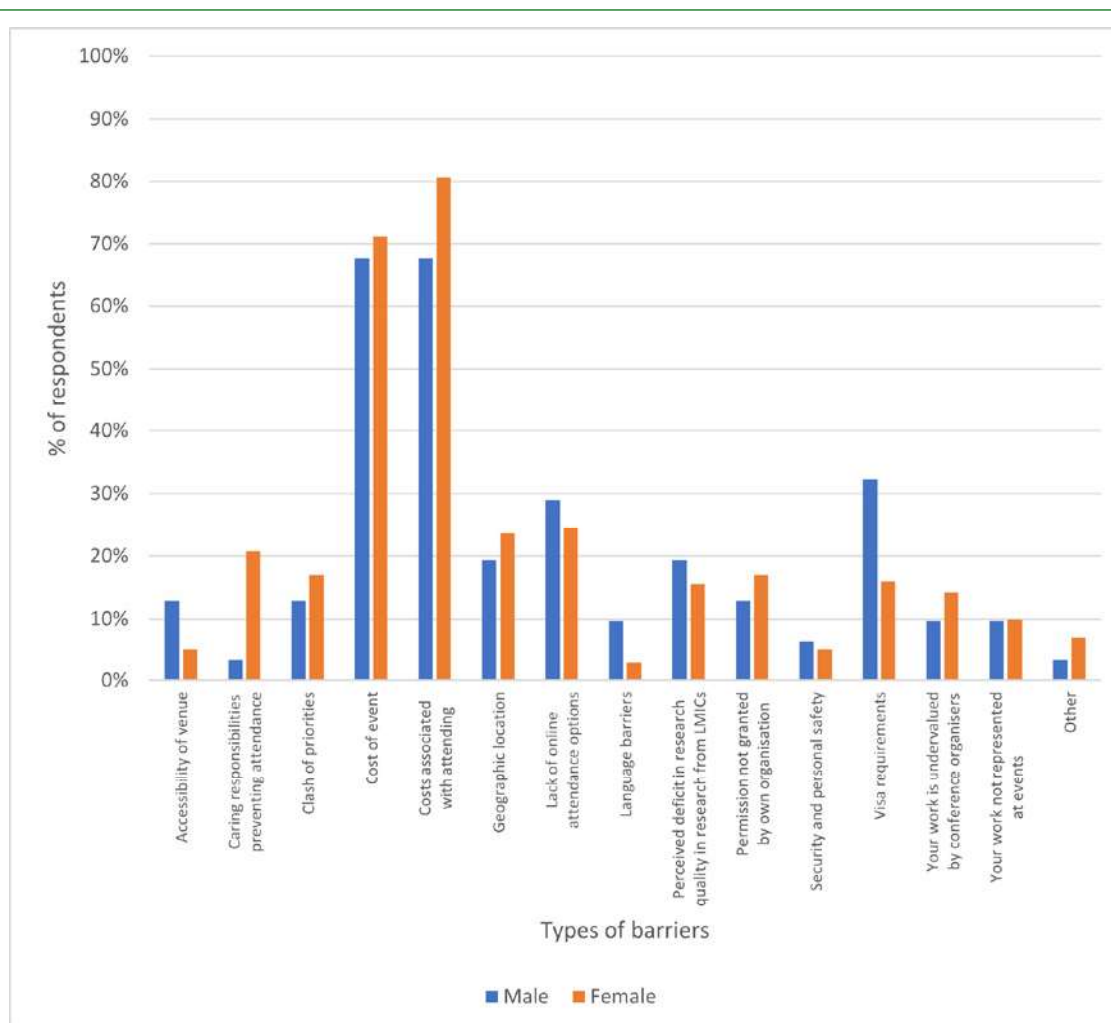


Fig. 1. Distribution of categories of barriers by gender (female and male), showing the percentage of males and females who believe they experienced barriers to event participation. Note that multiple selections of different categories of barriers were possible. Non-binary participants and participants who did not disclose their gender are not represented in graph due to the small sample size.

The selected facilitators were then analysed against all demographics. Figure 3 displays the distribution of the facilitators by gender and shows that 'funding for the event' and 'its associated costs' were the most commonly reported facilitators among all genders. Other than financial facilitators, ensuring there were online options for attendance and increasing the diversity of speakers were popular with female and male survey respondents. Female respondents more frequently identified 'childcare', 'funding for event fees' and 'a commitment from speakers to not talk on all-male panels' as facilitators, compared to male respondents.

Only gender was significantly associated with reporting of facilitators to equity in participation at events ($p < 0.001$) (Supplementary Material 8). Other demographic factors did not show any statistically significant difference. When looking at the categories of facilitators found to be significantly different between female and male respondents, only 'increasing the availability of funding for event fees' was found to be significant ($p < 0.001$), with $n = 165$ female respondents and $n = 16$ male respondents reporting the facilitator.

Similar trends to gender can be seen among those who identified as TKHs or IKHs (Fig. 4). Funding facilitators, 'increase availability of funding for associated costs' and 'increase availability of funding for event fees', were the most frequently reported ($n = 64/124$, 51.6% and $n = 56/124$, 45.2%, respectively), followed by availability of 'online options' ($n = 46/124$, 37.1%), increasing the 'diversity of

speakers' ($n = 42/124$, 33.9%) and 'improving the collaboration between event organisers and the One Health community' ($n = 42/124$, 33.9%).

Discussion

As emphasised by the underlying principles of the OHHLEP OH definition, the integration of diverse perspectives, priorities and approaches, including traditional knowledge and practices, and different disciplines, such as biomedicine, health sciences and the social sciences, are fundamental to the effective adoption of an OH approach. Effective transdisciplinary communication, coordination and collaboration will enable the development of a holistic understanding and innovative solutions that promote the sustainable health of people, animals, plants and ecosystems in the face of complex health challenges. Additionally, diversity is particularly beneficial for complex, multistage, creative problem-solving, such as the wicked problems that OH seeks to address (Desvars-Larrive and Karimi, 2024). Thus, achieving diverse representation at global OH events, especially among panelists and speakers, is not only a moral imperative but also essential for achieving OH goals, better science and a more healthy, equitable and sustainable world (Nielsen *et al.*, 2017). While singular measures to support greater participation by under-represented groups are welcome and increasingly considered by event organisers, this study was undertaken to provide evidenced-based

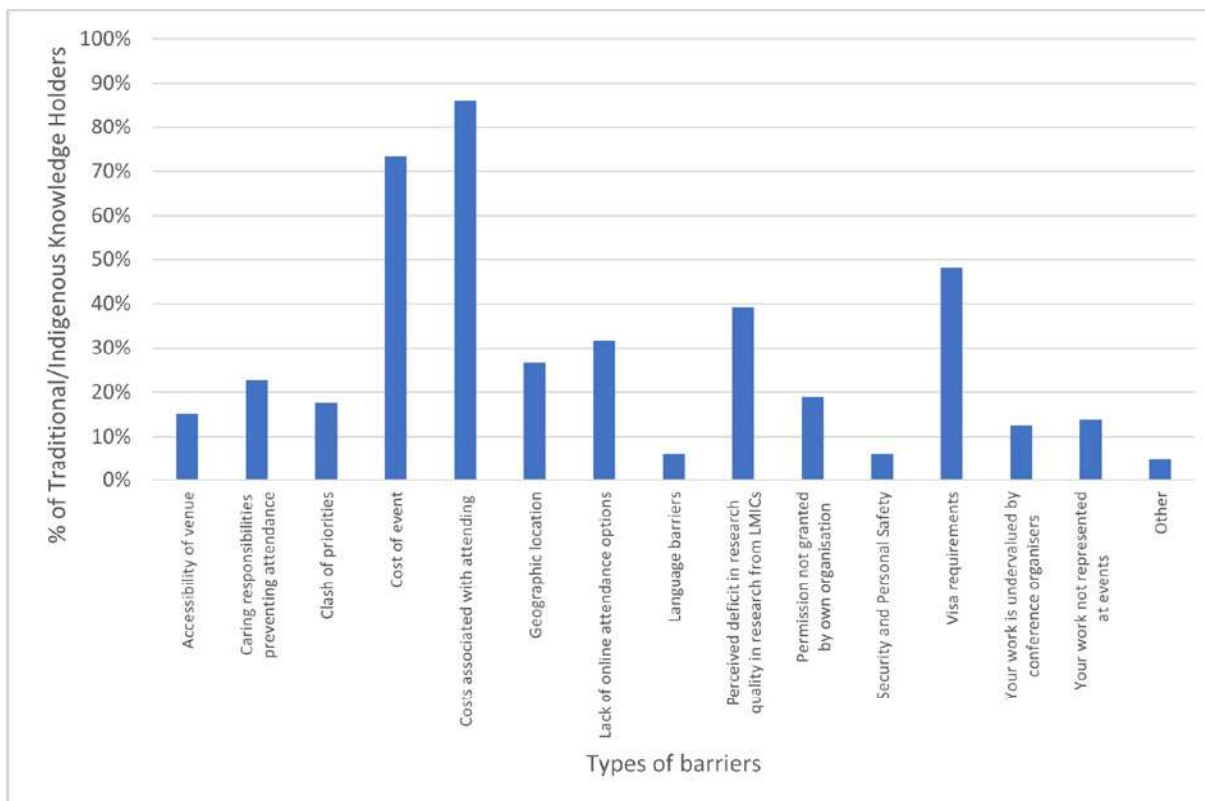


Fig. 2. Categories of barriers reported by TKHs or IKHs. Note that multiple selections of categories of barriers were possible.

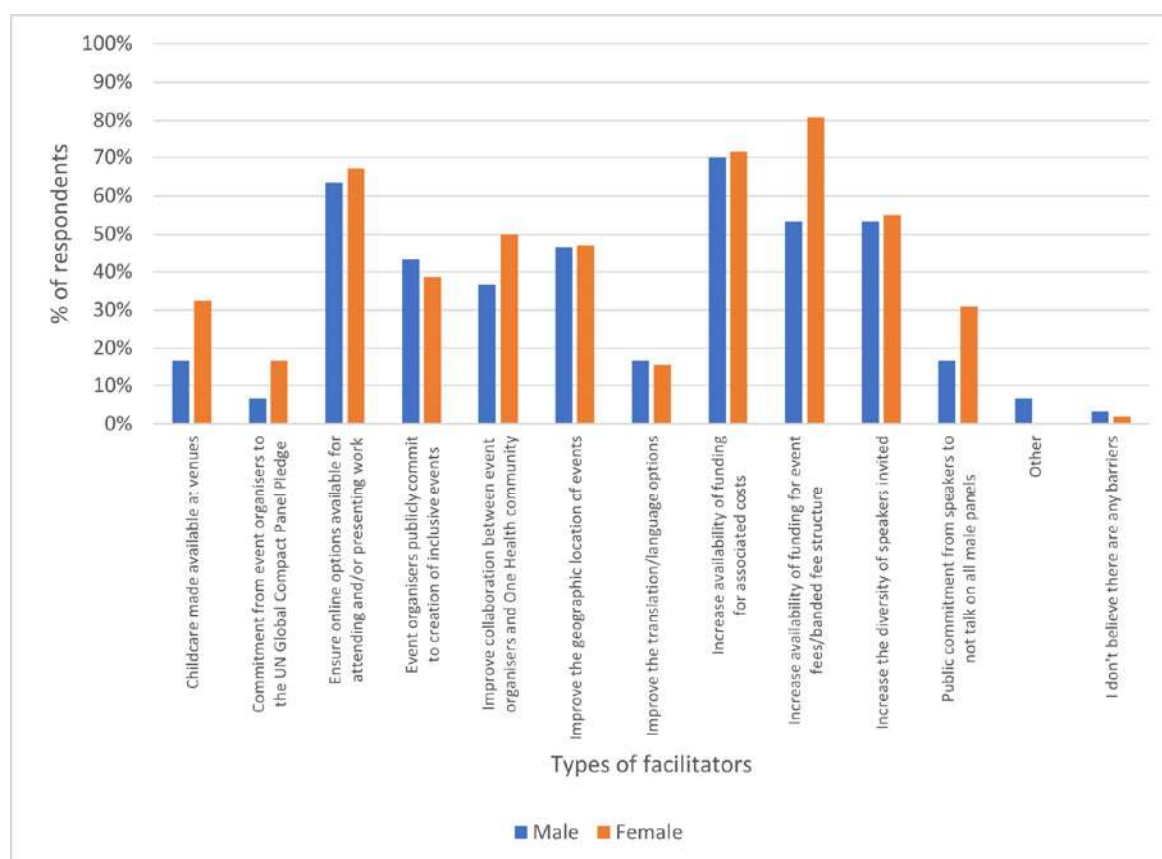


Fig. 3. Distribution of categories of facilitators by gender (female and male), showing percentage of males and females who identified potential facilitators to event participation. Note that multiple selections of different categories of facilitators were possible. Non-binary participants and participants who did not disclose their gender are not represented in the graph due to the small sample size.

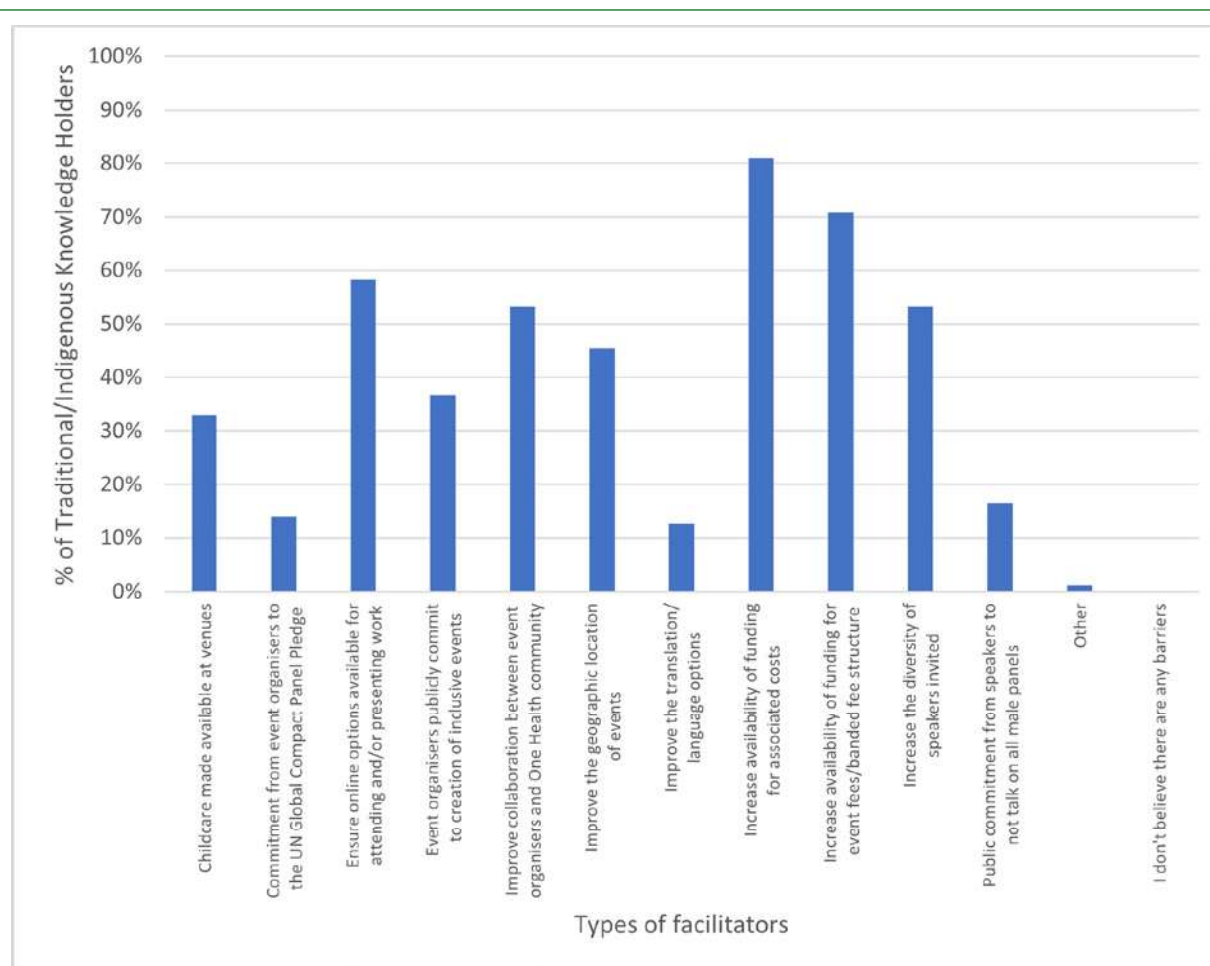


Fig. 4. Categories of facilitators selected by TKHs or IKHs.

recommendations to inform open and transparent action plans for event organisers to make significant improvements to participation equity.

This study provides, for the first time, data on the experiences and perceptions of barriers faced in participation in global OH events by individuals representing a wide range of ages, geographical regions and base organisations to help inform real action on enhancing participation equity. However, it is the statistically significant difference between male and female experiences of barriers to participation at global OH events within our study population, which are the most impactful finding.

Female participants reported or perceived experiencing a higher frequency of barriers to participation in global OH events than male participants. Social role theory that provides a framework as to why men and women behave differently (Eagly and Wood, 2012) may explain why the majority of female respondents self-perceived barriers to participation. However, this theory is heavily based on gender stereotypes. The theory suggests that women and other minority groups may feel less capable or prepared to participate and therefore have less self-confidence and feel like they do not belong in a global OH event setting. This supports the findings by Jarvis *et al.* (2022), who found men disproportionately participated in the question-and-answer sessions at conferences, while women held back their questions due to anxiety (Jarvis *et al.*, 2022). Our findings show that there are more tangible barriers, in particular, costs associated with attending and childcare commitments.

Additionally, when examining facilitators, only 'increasing the availability of funding for event fees' had significantly more female respondents. This disparity could be attributed to several factors.

First, research has shown that financial barriers can significantly impact women's participation in various activities, including professional events. For example, a study by the World Bank highlights the importance of financial inclusion for women and the challenges they face in accessing financial resources (Demirgüç-Kunt *et al.*, 2018). Second, societal expectations and gender roles may influence the perceived importance of financial support, with females potentially perceiving financial support as more important and therefore, irrespective of financial need, the availability of support will influence attendance. Third, the under-representation of women in Science, Technology, Engineering and Mathematics (STEM) fields is well-documented, and financial incentives have been identified as a key factor in encouraging their participation (Eagly and Wood, 2012). A report by the National Science Foundation provides insights into the barriers women face in STEM and the role of financial support in addressing these challenges (National Center for Science and Engineering Statistics, 2021).

This study also revealed that, despite the small sample size for non-binary respondents ($n=3$), which limits the ability to draw definitive conclusions, it is important to highlight that the cost of attendance, security and personal safety, and geographic location were the most significant barriers for all three non-binary respondents, with 100% (all three relevant participants) reporting these challenges. This may be due to varied legal and social acceptance of non-binary gender identification globally, with some countries presenting an increased risk and hostile environment to those who do not conform to binary gender identities.

This study found a statistically significant difference between TKHs or IKHs and non-traditional or Indigenous knowledge holders in relation to perceptions that their work was not being represented

at events ($p < 0.001$). This is certainly consistent with decolonial theories and their application to OH. For example, Baquero and others argue that mainstream OH and the similar framework of Planetary Health repackaged longstanding Global South knowledge under a Northern, colonial frame that keeps epistemic and political power at the centre (Baquero *et al.*, 2021). They trace how philanthropic capitalism (exemplified by the Rockefeller Foundation) has historically shaped health agendas to stabilise the capitalist order, instrumentalising nature and animals for human ends (Moreira, 1999). Similarly, others argue that OH is in itself a colonial adaptation of longstanding Indigenous culture and practice (Pollowitz *et al.*, 2024; Seery and Gilbert, 2025).

Our findings provide support for recommendations consistently made in decolonial theories. For example, Baquero and others recommend increasing the 'ecology of knowledge' by elevating Indigenous and traditional knowledge alongside counter-hegemonic science (Baquero *et al.*, 2021). Event organisers should consider whether certain forms of knowledge are inherently being prioritised and the implications of this. For example, decisions around participation in events based on the concept of 'scientific merit' may overlook traditional and Indigenous forms of knowledge that do not fit within the framework of Western science (Mazzocchi *et al.*, 2006). This knowledge exchange is often described and passed on through storytelling, song, and dance within communities (Silver, 2001; Bunn *et al.*, 2020). For instance, in many rural communities in Africa, the interconnectedness of human, animal and ecosystem health is a lived reality, and using an OH approach can help address many human health issues (Otu *et al.*, 2021).

Use of Indigenous knowledge can help address how to better use or adapt the OH approach for various socio-cultural contexts. Currently, there are limited avenues for harnessing and presenting these data and knowledge in OH events. The justification for exclusion based on 'scientific merit' also discounts the many inherent biases that are often behind opinions on what constitutes merit in this regard, and scientists often do not understand what constitutes merit in disciplines outside of their own (Bourdieu, 2004; Lamont, 2009).

Other findings of note for event organisers from this study concern promotion, language and justification or clarity on return of investment for attendance. The promotion of events often fails to reach all stakeholders, particularly marginalised groups. This ineffective communication can result in lower attendance from these groups, who may not feel welcomed or adequately informed about the opportunities available. Interestingly, language barriers were not perceived as a significant challenge during international events, which aligns with the low number of respondents who identified improved translation services as a facilitator. However, it should be highlighted that survey distribution may have contributed to this finding, with the survey predominately reaching highly educated OH practitioners and ambassadors who often have a good command of English. Without support from organisational leadership, employees may struggle to justify the time and expense associated with attending events. This lack of backing can be a considerable barrier, especially for junior staff, which may be addressed by enhanced clarity on benefits of attendance at events to allow staff to present justification for return on investment in, often, high-event attendance costs.

Previous research has shown that encouraging greater diversity throughout the event organisation process has a snowball effect. Sardelis and Drew (2016) found that with each additional female event organiser, this led to an average increase of 70–95% in female speakers (Sardelis and Drew, 2016). Panel sessions with greater gender and ethnic diversity had more questions asked by the audience (Howe *et al.*, 2024). In addition, gender-heterogeneous working groups produced higher-quality science publications and therefore had higher citation rates when compared to gender-homogeneous groups (Campbell *et al.*, 2013).

STRENGTHS AND LIMITATIONS

This study acknowledges the limitation of not conducting individual face-to-face interviews or focus group discussions, which could provide deeper, more nuanced insights into perceived barriers and facilitators discussed and could provide a greater understanding of the experiences of under-represented groups at international OH events. Other limitations included self-reporting and general constraints of survey studies, for instance, despite consulting with an external group on the survey design, some respondents may have understood certain questions differently. The survey was also designed with skip logic, so any respondents who selected that they did not face any barriers were automatically taken to the end of the survey. This study also did not include questions around specific gender identity or sexual orientation, but it is important to consider the specific security risks that individuals may face as a result of gender identity or sexual orientation and how this impacts the ability of these groups to participate (Tulloch, 2020). Additionally, questions around disabilities were not asked that again can significantly impact participation ability unless specific accessibility considerations are integrated by event organisers.

The survey was distributed via the authors' own professional OH connections, the WfOH network and from the OH networks listed in Mwatondo *et al.* (2023) (Mwatondo *et al.*, 2023). While this approach ensured relevance to the topic and access to engaged professionals, it is important to acknowledge the sampling bias. The respondents were predominantly well-educated and already embedded in OH discourse; the findings may reflect the perspectives of a relatively homogeneous group and not fully capture the diversity of the OH community, such as those from Indigenous backgrounds.

Nevertheless, the findings from the study do provide evidence and insight into barriers under-represented groups face and can be used to help inform event organisers to make evidence-based decisions to create greater inclusive and accessible environments, encouraging broader participation and enriching the overall experience for all attendees in global OH events.

RECOMMENDATIONS AND CONCLUSION

We are in a pivotal era of OH advancement, driven by investments in institutionalising and operationalising this approach through formalised theories, structured processes and data collected to assess efficacy and returns on multisectoral and multidisciplinary strategies. As OHLEP emphasises, the success of the OH approach depends on sustained integration, monitoring, and adherence to its core principles: equity, inclusivity, parity, socio-ecological balance, stewardship and transdisciplinarity (One Health High-Level Expert Panel *et al.*, 2022).

This study highlights a gap in OH implementation. There are persistent inequities in global OH event participation, and this underscores the need for organisers to actively use the OH approach in designing events to address gender disparities and biases in knowledge system representation. They can do this by developing, implementing and openly reporting on participation equity strategies, codes of conduct or policies based on the OHLEP principles of OH. Many such policies already exist in the scientific community, specifically on gender equity in events (Sardelis *et al.*, 2017; Jack-Scott *et al.*, 2023); but for OH events, efforts should also focus on integrating traditional and Indigenous knowledge systems into One Health events by reviewing selection criteria to avoid excluding these forms of knowledge and incorporating disciplinary and culturally appropriate methods, such as storytelling (Winkler *et al.*, 2025). In terms of financial support for marginalised and under-represented groups, inclusive funding that covers not only event fees but also additional costs associated with participation, such as support for caring for family members, should be considered. To further enhance accessibility for those for whom physical travel is not feasible, events should include

robust virtual platforms, not just session streaming, which enable remote participation in sessions, facilitate virtual networking and support delegate interactions, replicating the benefits of in-person engagement. Diversity within organising committees should be prioritised to amplify representation and inclusivity.

To align with the widely accepted vision and definition of OH, OH practitioners and supporters are entrusted with the responsibility of upholding OH principles and fostering collaboration, diversity and inclusion in all their endeavours. Decisions of exclusion based on 'scientific merit', the absence of clear diversity policies and participation equity commitments or action plans, the exclusion of Indigenous keynote speakers, or assigning gender and social science panels to smaller or offsite venues are all examples of practices that inadvertently overlook equity and undermine OH values. These issues of under-representation are not unique to OH or global events; however, the evidence presented in this paper underscores the importance of reevaluating our current practices. By taking collective and accountable action, we can better ensure that we fully embody the principles at the heart of OH.

Finally, further research avenues to grow the evidence base and improve recommendations for enhancing participation equity include conducting longitudinal studies or ethnographic research to monitor and evaluate the impact of inclusivity initiatives over time and examining the lived experiences of under-represented groups to ensure their voices are amplified and integrated into policy and planning. As a next step, co-constructing evaluation and monitoring criteria between organisers and event participants, such as through Utilisation-Focused and Development Evaluation approach, could help foster more inclusive ways of working.

NOTE

1. "Maybe" responses were included in the analysis of barriers experienced, as the authors determined that respondents may not have been confident, or believed they had sufficient evidence to select 'yes' in response to having ever experienced barriers over the duration of their career. The authors believed that both 'yes' and 'maybe' responses provided valuable insight to participation barriers and are incorporated collectively in analysis. Disaggregated data by response are available on request.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ETHICS STATEMENT

This research was conducted following ethical standards set forth by the Queensland University of Technology (Approval number: 7883, Approval version: LR 2023-7883-16743). The ethics application was reviewed and approved by the University Human Research Ethics Committee or delegated review body as meeting the requirements of the Australian National Statement on Ethical Conduct in Human Research (2007, updated 2018).

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AUTHOR CONTRIBUTIONS

GC – project administration; methodology; data curation; formal analysis; validation; visualisation; paper writing – original draft and survey translation. ADJ – methodology; data curation, formal analysis, validation; visualisation; paper writing – original draft and survey translation. AA – methodology; data curation, formal analysis; validation, visualisation and paper writing – original draft. LLF – survey validation; survey translation and paper writing – review and editing. LWW – survey validation; survey translation and paper writing – review and editing. KLW – conceptualisation; survey validation and paper writing – review and editing. ASW – conceptualisation; survey validation and paper writing – review and editing. KW – conceptualisation; funding acquisition; ethics lead; methodology; survey validation; data validation; paper writing – original draft and supervision (project co-lead). CMcG – conceptualisation; methodology; survey validation; data validation; paper writing – original draft and supervision (project co-lead). RM – conceptualisation; methodology; survey validation; data validation; paper writing – original draft and supervision (project co-lead).

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DATA AVAILABILITY

Non-identifiable data is available from the corresponding author upon reasonable request.

SUPPLEMENTARY MATERIAL

The supplementary material is available in the online version of this article.

References

- Baquero, O.S., Benavidez Fernández, M.N. and Acero Aguilar, M. (2021) From modern planetary health to decolonial promotion of One Health of peripheries. *Frontiers in Public Health*. 9. DOI: 10.3389/fpubh.2021.637897.
- Bourdieu, P. (2004) *Science of Science and Reflexivity*. Polity Press, Cambridge, UK, pp. 34–38. ISBN (Paperback): 9780745630601.
- Bunn, C., Kalinga, C., Mtema, O., Abdulla, S., Dillip, A. *et al.* (2020) Arts-based approaches to promoting health in sub-Saharan Africa: A scoping review. *Wellcome Open Research* 5, 79. DOI: 10.12688/wellcomeopenres.15812.2.
- Callison, C., Roy, L. and LeCheminant, G.A. (eds.) (2016) *Indigenous Notions of Ownership and Libraries, Archives and Museums*. De Gruyter, Berlin, Germany. DOI: 10.1515/9783110363234.
- Campbell, L.G., Mehtani, S., Dozier, M.E. and Rinehart, J. (2013) Gender-heterogeneous working groups produce higher quality science. *PLoS One* 8(10), e79147. DOI: 10.1371/journal.pone.0079147.
- Caron, A., Garine-Wichatitsky, M.D., Figuié, M., Meunier, J., Mugabe, P. *et al.* (2025) Bridging gaps and leveraging opportunities for one health: Feedback from the 8th world one health congress. *CABI One Health* 4(1), 0003. DOI: 10.1079/cabionehealth.2025.0003.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S. and Hess, J. (2018) *The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. World Bank Publications, Washington, DC. DOI: 10.1596/978-1-4648-1259-0.
- Desvars-Larrive, A. and Karimi, F. (2024) Beyond silos: Integrating diversity for a stronger one health. *The Lancet Planetary Health* 8(10), e719. DOI: 10.1016/S2542-5196(24)00236-5.
- Eagly, A.H. and Wood, W. (2012) Social role theory. *Handbook of Theories of Social Psychology* 2, 458–476.
- Google Translate (n.d.) Available at: <http://translate.google.com> (accessed 24 January 2024).

- Hauss, K. (2020) What are the social and scientific benefits of participating at academic conferences? Insights from a survey among doctoral students and postdocs in Germany. *Research Evaluation* 30(1), 1–12. DOI: 10.1093/reseval/rvaa018.
- Howe, A., Wan, Y.I., Gilleece, Y., Aebi-Popp, K., Dhairyawan, R. *et al.* (2024) Gender and ethnicity intersect to reduce participation at a large European hybrid HIV conference. *BMJ Leader* 8(3), 227. DOI: 10.1136/leader-2023-000848.
- Jack-Scott, E., Aponte, K. L., Bhatia, R., Behl, M., Burke, J., *et al.* (2023) Inclusive Scientific Meetings. Zenodo (CERN), Geneva, Switzerland. Available at: <https://static1.squarespace.com/static/582cce42beba9fbc47a82b04/t/63b5bfe84d90036456a062aa/1672855534277/Inclusive+Scientific+Meeting+Guide+2023.pdf> (accessed 17 November 2025).
- Jarvis, S.N., Ebersole, C.R., Nguyen, C.Q., Zhu, M. and Kray, L.J. (2022) Stepping up to the Mic: Gender gaps in participation in live question-and-answer sessions at academic conferences. *Psychological Science* 33(11), 1882–1893. DOI: 10.1177/09567976221094036.
- Kulesa, J. and Brantuo, N.A. (2021) Barriers to decolonising educational partnerships in global health. *BMJ Global Health* 6(11), e006964. DOI: 10.1136/bmjgh-2021-006964.
- Lamont, M. (2009) *How Professors Think: Inside the Curious World of Academic Judgment*. Harvard University Press, Cambridge, MA. pp. 64–92. DOI: 10.4159/9780674054158.
- Larson, A.R., Sharkey, K.M., Poorman, J.A., Kan, C.K., Moeschler, S.M. *et al.* (2019) Representation of women among invited speakers at medical specialty conferences. *Journal of Women's Health* 29(4), 550–560. DOI: 10.1089/jwh.2019.7723.
- Matsui, K. (2015) Problems of defining and validating traditional knowledge: A historical approach. *The International Indigenous Policy Journal* 6(2), 1–25. DOI: 10.18584/ijp.2015.6.2.2.
- Mazzocchi, F. (2006) Western science and traditional knowledge: Despite their variations, different forms of knowledge can learn from each other. *EMBO Reports* 7(5), 463–466. DOI: 10.1038/sj.embor.7400693.
- Medin, D. L., and Lee, C. D. (2012) Diversity Makes Better Science. APS Observer. Association for Psychological Science, Washington, DC. Available at: <https://www.psychologicalscience.org/observer/diversity-makes-better-science> (accessed 17 November 2025).
- Mettenleiter, T.C., Markotter, W., Charron, D.F., Adisasmito, W.B., Almuhairi, S. *et al.* (2023) The one health high-level expert panel (OHHLEP). *One Health Outlook* 5(1), 18. DOI: 10.1186/s42522-023-00085-2.
- Moreira, M. C. N. (1999) The Rockefeller Foundation and the Construction of a Professional Identity in Nursing during Brazil's First Republic. DOI: 10.1590/S0104-59701999000100005. Available at: <https://www.scielo.br/j/hcsm/a/X4GQft8dhcKTbyM8sZcFSbr/?lang=pt>.
- Mwatondo, A., Rahman-Shepherd, A., Hollmann, L., Chiossi, S., Maina, J. *et al.* (2023) A global analysis of one health networks and the proliferation of One Health collaborations. *The Lancet* 401(10376), 605–616. DOI: 10.1016/S0140-6736(22)01596-3.
- National Center for Science and Engineering Statistics. (2021) Women, Minorities, and Persons with Disabilities in Science and Engineering: 2021 (NSF 21-321). National Science Foundation, Alexandria, VA. Available at: <https://ncses.nsf.gov/pubs/nsf21321>.
- Nielsen, M.W., Alegria, S., Börjeson, L., Etzkowitz, H., Falk-Krzesinski, H.J. *et al.* (2017) Gender diversity leads to better science. *Proceedings of the National Academy of Sciences* 114(8), 1740–1742. DOI: 10.1073/pnas.1700616114.
- Oester, S., Cigliano, J.A., Hind-Ozan, E.J. and Parsons, E.C.M. (2017) Why conferences matter—An illustration from the International Marine Conservation Congress. *Frontiers in Marine Science* 4, Article 257. DOI: 10.3389/fmars.2017.00257.
- One Health High-Level Expert Panel, Adisasmito, W.B., Almuhairi, S., Behraves, C.B., Bilivogui, P. *et al.* (2022) One health: A new definition for a sustainable and healthy future. *PLoS Pathogens* 18(6), e1010537. DOI: 10.1371/journal.ppat.1010537.
- Otu, A., Effa, E., Meseko, C., Cadmus, S., Ochu, C. *et al.* (2021) Africa needs to prioritize One Health approaches that focus on the environment, animal health and human health. *Nature Medicine* 27(6), 943–946. DOI: 10.1038/s41591-021-01375-w.
- Pollowitz, M., Allick, C., Campbell, K.B., Ellison, N.L.K., Perez-Aguilar, G. *et al.* (2024) One health, many perspectives: Exploring indigenous and Western epistemologies. *CABI One Health* 3, 1. DOI: 10.1079/cabionehealth.2024.0015.
- Qualtrics (2024) *Qualtrics (Version January 2024)*. Provo, Utah, USA. Available at: <https://www.qualtrics.com>.
- Robbiati, C., Milano, A., Declich, S., Di Domenico, K., Mancini, L. *et al.* (2023) One health adoption within prevention, preparedness and response to health threats: Highlights from a scoping review. *One Health* 17, 100613. DOI: 10.1016/j.onehlt.2023.100613.
- RStudio Team (2020) *Integrated Development for R*, Boston, MA. Available at: <http://www.rstudio.com/>.
- Sarabipour, S., Khan, A., Seah, Y.F.S., Mwakilili, A.D., Mumoki, F.N. *et al.* (2021) Changing scientific meetings for the better. *Nature Human Behaviour* 5(3), 296–300. DOI: 10.1038/s41562-021-01067-y.
- Sardelis, S. and Drew, J.A. (2016) Not “pulling up the ladder”: Women who organize conference symposia provide greater opportunities for women to speak at conservation conferences. *PLoS One* 11(7), e0160015. DOI: 10.1371/journal.pone.0160015.
- Sardelis, S., Oester, S. and Liboiron, M. (2017) Ten strategies to reduce gender inequality at scientific conferences [perspective]. *Frontiers in Marine Science* 4. DOI: 10.3389/fmars.2017.00231, 231.
- Seery, C. and Gilbert, J. (2025) Reorienting one health governance towards indigenous understanding. In: Woolaston, K. and Kotzmann, J. (eds) *The Cambridge Handbook on One Health and the Law*. Cambridge University Press, Cambridge, UK, p. 182. DOI: 10.1017/9781009653732.016.
- Silver, D. (2001) Songs and storytelling: Bringing health messages to life in Uganda. *Education for Health (Abingdon, England)* 14, 51–60. DOI: 10.1080/13576280010015362.
- Sulik, J., Bahrami, B. and Deroy, O. (2021) The diversity gap: When diversity matters for knowledge. *Perspectives on Psychological Science* 17(3), 752–767. DOI: 10.1177/17456916211006070.
- Taştan, R. and Ak Can, A. (2019) One health approach to decreasing biodiversity and the problem of emerging zoonotic diseases [Biyçeşitliliğin azalması ve yeni çıkan zoonotik hastalıklar sorununa tek sağlık yaklaşımı]. *Biological Diversity and Conservation* 12(3), 95–102. Dergipark, Ankara, Turkey. DOI: 10.5505/biodicon.2019.52824.
- Tulloch, A.I.T. (2020) Improving sex and gender identity equity and inclusion at conservation and ecology conferences. *Nature Ecology & Evolution* 4(10), 1311–1320. DOI: 10.1038/s41559-020-1255-x.
- United Nations (n.d.) SDG Indicators - Regional groupings used in Report and Statistical Annex. Available at: <https://unstats.un.org/sdgs/indicators/regional-groups> (accessed 17 November 2025).
- Weiszhar, K.L., Henley, P., Vezeau, N. and Auerswald, H. (2025) One health for all: Why gender inclusion matters. *The Lancet* 406(10502), 424–426. Elsevier, London, UK. DOI: 10.1016/S0140-6736(25)01453-9.
- Winkler, A.S., Brux, C.M., Carabin, H., das Neves, C.G., Häslér, B. *et al.* (2025) The lancet one health commission: Harnessing our interconnectedness for equitable, sustainable, and healthy socioecological systems. *The Lancet* 406(10502), 501–570. Elsevier, London, UK. DOI: 10.1016/S0140-6736(25)00627-0.
- Women for One Health Network (2022) Letter to the Scientific Programme Committee of the 2024 World One Health Congress. Available at: https://wfoh.org/wp-content/uploads/2024/08/WfOH-letter-to-WOHC_Jul6.pdf (accessed 17 November 2025).
- World Health Organization (2024) Pandemic Prevention, Preparedness and Response Accord. Available at: <https://www.who.int/news-room/questions-and-answers/item/pandemic-prevention--preparedness-and-response-accord> (accessed 17 November 2025).
- Zinsstag, J., Crump, L., Schelling, E., Hattendorf, J., Maidane, Y.O. *et al.* (2018) Climate change and One Health. *FEMS Microbiology Letters* 365(11), fny085. DOI: 10.1093/femsle/fny085.
- Zinsstag, J., Muhummed, A., Nuvey, F., Keita, Z., Pelikan, K. *et al.* (2023). Impressions from the 7th World One Health Congress in Singapore. *CABI One Health*, 2023, ohcs20230004. DOI: 10.1079/cabionehealth.2023.0004.