




Ensuring equity in access to online courses: Perspectives from the WHO health emergency learning response

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Abstract

The World Health Organization's (WHO) open-source learning platform, OpenWHO, allows diverse audiences worldwide to access self-paced, asynchronous online courses based on WHO technical expertise and guidance. In addition, the platform emphasizes equitable access to learning by aiming to remove barriers. All OpenWHO courses are therefore provided free of charge and in low-bandwidth friendly, downloadable, and offline formats. This paper explores differences in access to online learning across learner demographics, namely gender, country income status, and preferred language. The evidence presented is derived from surveys and statistical data extracted from the OpenWHO platform. It advocates for the importance of offering courses in non-time-bound formats that address the relevant diseases, outbreaks, and challenges of affected communities. Doing so is vital to ensure the broadest possible and most equitable access to learning, according to learners' availability and preferred media, languages, and health topics.

KEYWORDS

COVID-19 pandemic, equity, online learning, OpenWHO, public health

Key points

- Online learning can provide opportunity for inclusion and equity in education if adequately designed.

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- OpenWHO has contributed to delivering critical learning during the pandemic and bolstering equity in learning. This has been achieved by providing formats that facilitate the attendance of women and all audiences, namely self-paced, low-bandwidth, and free-of-cost learning on topics of particular importance to low-income countries.
- Overall, OpenWHO courses and topics attract different audiences, but vital attempts are made to ensure equity in access to all learning.
- A consistent and effective push for equitable access to evidence-based public health and health emergency knowledge requires several axes: multilingualism, gender sensitivity, and meeting the requirements of low-income countries and communities affected by disease outbreaks.
- Barriers to learning can be bridged through multilingual course production, the inclusion of materials with language simplified for lay audiences and development of formats suited to those with hearing or vision impairments.

INTRODUCTION

Challenges to learning accessibility include gender inequality in education, poor knowledge of available learning in target audiences, infrastructure unavailability (such as with regard to internet, digital devices, workspace) and unaffordability of learning materials; these factors can prevent learners from freely accessing the highest-quality evidence-based, up-to-date courses (Barteit et al., 2020). Therefore, effective and affordable education strategies addressing these critical obstacles are required to ensure the quality and reach of learning courses. Furthermore, equitable access to online learning during an emergency, specifically during a pandemic, is critical to controlling the spread of the disease, particularly in areas with limited health budgets, an insufficient number of qualified health workers, minimal training facilities and a lack of continuing professional development (Al-Shorbaji et al., 2015). Thus, if properly designed and developed, online education can be of significant benefit, bypassing several of the aforementioned challenges. In addition, the forced and rapid shift toward online learning due to the pandemic could provide an opportunity for equity “consideration” in education, a sector in which inequality is persistent.

With this in mind, the OpenWHO platform was established in 2017 to focus on equity, accessibility, reach, flexibility, a “learning with speed” approach, utilizing only evidence-based, reliable information (Utunen, Ndiaye, et al., 2020). It has its beginnings in the lessons learnt from the Ebola Virus Disease outbreak of West Africa (2014), where WHO oversaw the international training response and quickly realized the centrality of real-time training on a massive scale. The platform was set up to provide free, easily accessible learning targeted at frontline workers in health emergencies, particularly those in low and middle-income countries. Other barriers were addressed by offering low-bandwidth and offline versions using the OpenWHO mobile application. Accessibility and uptake were prioritized by providing learning in an ever-growing number of languages (more than 50 languages when writing this article). Quality learning was guaranteed by applying adult learning science to the design and delivery of courses. The accuracy and trustworthiness of materials were spotlighted by the fact that the content of all courses would rely on evidence-based WHO guidance approved by WHO experts. Furthermore, mechanisms were put in place to regularly update course content whenever new or updated scientific evidence became

available. These intrinsic characteristics of OpenWHO courses aimed to ensure an impactful and equitable life-long learning experience in an ever-changing world dynamic.

Learning and education are among the sectors principally disrupted by the COVID-19 pandemic (d'Orville, 2020). Although social distancing measures abruptly and significantly hindered face-to-face learning, online learning has fortunately constituted a panacea to the pandemic's unexpected effect on education (Dhawan, 2020). In January 2020, the Learning and Capacity Development Unit (LCD), which manages OpenWHO, began expediting the publication of courses on COVID-19 as soon as relevant evidence-based science became available. The free, open-source, mobile-friendly and low-bandwidth-adjusted COVID-19 courses have stimulated the platform's growing use by an increasingly geographically, demographically, and linguistically diverse audience. These first-time uses of the platform emerged from every point on the professional spectrum and joined OpenWHO's traditional target audiences: health workers, and frontline responders. OpenWHO's COVID-19 courses supported learners in embarking upon a self-paced, asynchronous learning journey with the ultimate goal of managing the COVID-19 pandemic and its impact on their professional and personal lives (Utunen, Attias, et al., 2020).

This paper reflects on the factors that impacted equity in access to life-saving knowledge during WHO's learning response to health emergencies, including the COVID-19 pandemic. It proposes necessary elements for ensuring equity during any health emergency.

METHODS, DATA, AND RESULTS

The results presented in this paper were analysed using OpenWHO users' self-reported preferred languages and automatically generated data on course uptake in low-income countries. The data were drawn from OpenWHO's built-in reporting system, which tracks learners' enrolments, completion rates, demographics, and other course-related data. In addition, data on the intersection between gender and learning were collected via a survey distributed in recognition of International Women's Day (IWD) March 2021 on OpenWHO. The survey invited responses detailing the challenges women face concerning learning during an emergency and how web-based learning materials have been used to address gender-related gaps in access to knowledge.

TRANSLATION AND MULTILINGUALISM

OpenWHO learners' language preferences

OpenWHO users have been found to reliably indicate at sign-up their preferred language for accessing learning, highlighting the importance of collecting such data to be utilized in creating production strategies. When OpenWHO users register on the platform for the first time, they are asked to indicate their preferred language. However, they are then free to enroll in courses of any language available on the platform. The platform's course uptake data suggest that the language breakdown of preferred languages at sign-up is similar to the language breakdown of course activity. For instance, 71.82% of users select English as their preferred language; of the COVID-19 courses, 74.20% of total enrolments occur on the English courses. Similar findings have been observed for the other United Nations (UN) languages and Portuguese (Table 1).

Languages spoken in low and middle-income countries

In pursuit of equitable access, LCD made the conscious decision to translate COVID-19 courses into as many languages as possible, with particular attention paid to the languages

TABLE 1 OpenWHO users' indicated UN language preference and the use of COVID-19 courses in UN languages

Language	Rank	Language preference indicated by learners	COVID-19 course language use	Rank
English	1	71.82%	74.20%	1
Spanish	2	21.08%	14.40%	2
Arabic	3	2.76%	1.50%	5
French	4	1.70%	2.40%	3
Portuguese	5	1.49%	1.70%	4
Chinese	6	0.86%	0.40%	7
Russian	7	0.25%	0.60%	6

spoken by vulnerable or underserved populations, such as those in low and middle-income countries. In this way, as many learners as possible would be able to access learning in their preferred languages, which has been proven to enhance learning uptake and retention (A. A. Nwokediuko, 2012; Watkins et al., 2012).

As of May 2021, OpenWHO's COVID-19 courses are offered in 53 languages, including the official languages of every WHO region, the 15 most commonly spoken languages worldwide and the official languages of 42 out of 46 of the United Nations Conference on Trade and Development's (UNCTAD) least-developed countries—with translation underway for 2 out of the four missing languages. OpenWHO's COVID-19 courses are also available in Indian Sign Language and Mongolian Sign Language to accommodate the country-specific needs of people with hearing loss. Languages other than the UN languages and Portuguese account for 6.50% (approximately 300,000) of the total enrolments on the platform. Of these languages, Indian sign language, Hindi, Indonesian and Italian are the most popular.

Gender

OpenWHO's IWD survey (disseminated in March 2021) received 365 responses, 67.00% of which were from women. More than half of respondents were healthcare professionals (35.00%) or students (20.00%). Respondents were most commonly based in India (32.00%), Nigeria (6.00%), Pakistan (6.00%), Bangladesh (3.00%), and Kenya (3.00%).

The survey illustrated that women are more likely than men to find time and cost to be challenges that hinder learning accessibility. For women, time was listed as the main barrier to accessing learning (44.00%), followed by cost (26.00%). Although men also found time to be the greatest hindrance (27.00%), this was followed by access to digital technology (20.00%) and language (17.00%) (Table 2).

TABLE 2 Gender-disaggregated responses to the survey question "What are the challenges that hinder you from accessing knowledge, training or education?"

	Challenges							Gender
	Time	Digital access	Cost	Biases against my profession	Language	Material is not suitable for learning	Not knowing where to access new knowledge or training	
Men	27%	20%	19%	2%	17%	7%	6%	1%
Women	44%	6%	26%	2%	6%	1%	9%	3%

Meeting outbreak-specific needs in different locations

OpenWHO data illustrate that disease-specific courses are used most in the locations where these diseases are prevalent. The cholera outbreaks of 2018 are a clear example of this phenomenon. For instance, in one affected country, Zambia, the introduction to cholera course was the most popular course during the outbreak. During this period, the course generated 8.95% of all OpenWHO course enrolments in the country. A similar example can be found in Zimbabwe, another country hard-hit by the outbreak, in which 11.75% of enrolments in the country occurred on the introduction to cholera course.

Similarly, during the 2017 diphtheria outbreak in Yemen, the country accounted for 58.33% of all diphtheria course enrolments from low-income countries. The same applies to a diphtheria outbreak that occurred during the Rohingya refugee crisis; at that time, the diphtheria course was the most popular course in Bangladesh, accounting for 26.35% of all course enrolments. Furthermore, during the 2017–2018 Crimean-Congo hemorrhagic fever outbreak in Uganda, 21.64% of enrolments to the hemorrhagic fever course (from all low-income countries combined) were from Uganda.

The training on detection, prevention, and control of the Middle East respiratory syndrome (MERS) attracts 35.90% of its enrolments from the WHO Mediterranean region. Saudi Arabia, where the outbreak started, accounts for 23.08% of total course enrolments.

During outbreaks of Ebola virus disease in the Democratic Republic of Congo (DRC) and neighboring countries, the Ebola ePROTECT course was the most popular, accounting for 17.20% of all enrolments (regardless of course) from the DRC at the time. The Ebola ePROTECT course was also the most popular in neighboring countries, such as Tanzania (where it accounted for 9.38% of any course enrolments in the country), Uganda (6.17%), Rwanda (28.26%), and South Sudan (53.55%).

The breadth of health-related topics covered by OpenWHO courses critically reflects the burden of specific diseases and outbreaks in different countries.

Differences in courses used in low-, middle-, and high-income countries

OpenWHO data illustrate that online courses are used differently according to a country's income level (based on the World Bank classification). When examining the use of different courses in December 2019 in low-income, middle-income, and high-income countries, the link between country income level and patterns of course use is evident. For example, in low-income countries, the top 15 courses include three Ebola courses and two cholera courses (Figure 1). Conversely, the antimicrobial resistance course is the most popular in middle and high-income countries (Figures 2 and Figure 3), and yet takes 8th place in low-income countries.

The figures illustrate that in low-income countries, courses on epidemic-prone diseases are generally more popular than non-disease-specific emergency intervention courses. Also, unlike low-income countries, middle and high-income countries have witnessed the highest enrolments on several influenza-related courses, though these courses have low enrolments in low-income countries. Interestingly, courses on generic emergency interventions and operational skills are equally popular in all income classification groups. Some of these topics, such as WHO's Incident Management System (IMS), simulation exercise management and operational readiness, place among the top 15 in high, middle, and low-income countries and, overall, are some of the most popular courses on the platform.

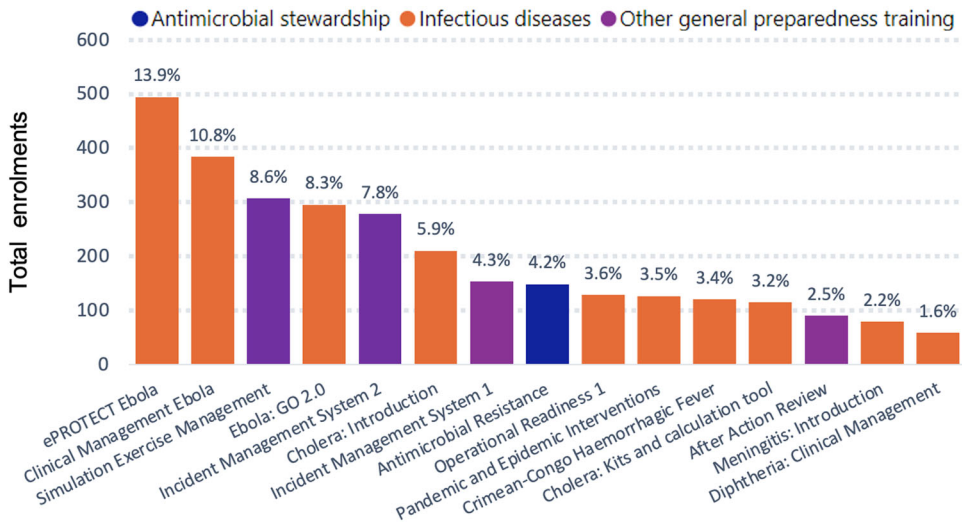


FIGURE 1 Top OpenWHO courses completed by learners in low-income countries

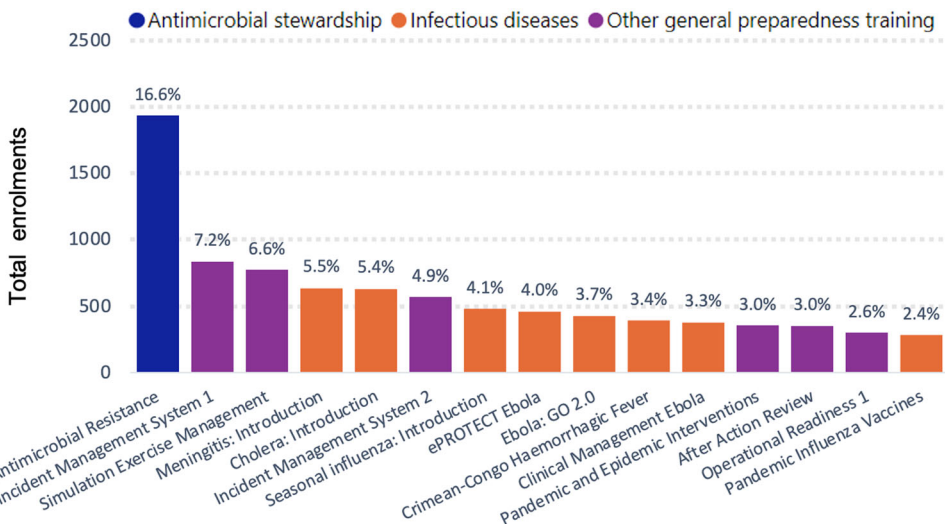


FIGURE 2 Top OpenWHO courses completed by learners in middle-income countries

DISCUSSION AND INSIGHTS

Overall, existing literature widely discusses the need to recognize gender as a determinant of health, but also as a factor that may influence effective receipt of communication, access to information and knowledge amongst healthcare professionals, students, and patients (Boniol et al., 2019; Brown et al., 2020; Bylund & Makoul, 2002; Samuriwo et al., 2020; Sharma et al., 2020; Verdonk et al., 2009; Westerståhl & Björkelund, 2003; Zelek, Phillips, & Lefebvre, 1997). Even though women represent around 70.00% of workers in the health and social sector globally, an average gender pay gap of approximately 28.00% exists in the health workforce (Boniol et al., 2019). This could be attributed to limited time, as women are more likely to be assigned “domestic responsibilities” (e.g., adopting a lighter work schedule to

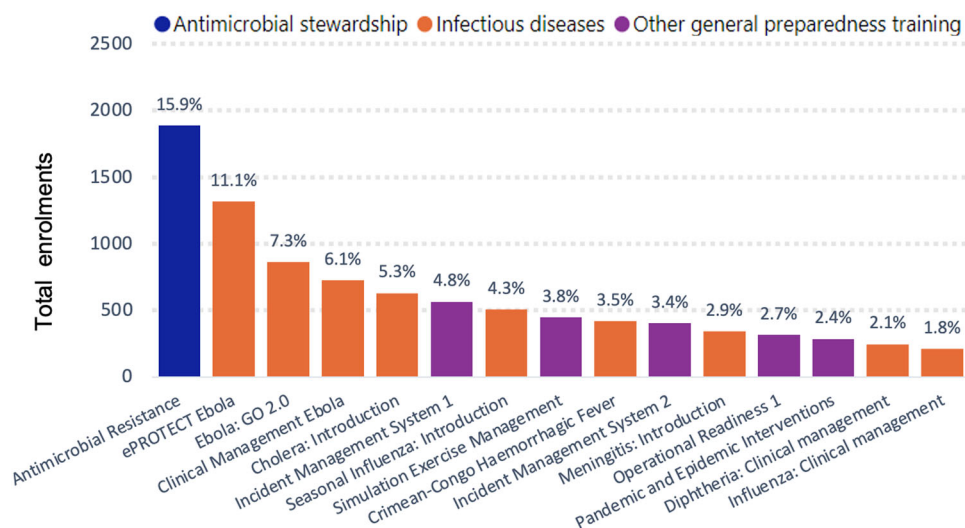


FIGURE 3 Top OpenWHO courses completed by learners from high-income countries

care for young children) (Jena et al., 2016). Women occupy lower status in the health and social sectors, receive lower pay, and constitute fewer than 25.00% of leadership roles. Thus, a phenomenon of maternal bias (which dictates that mothers prioritize responsibilities within the home and work fewer hours—particularly women with children) results in women being routinely pushed to the margins of the professional world. Thus, maternal bias should be considered concerning women's career pathways, progression, and education (Brown et al., 2020; Williams et al., 2014). Further, OpenWHO's IWD survey suggests women lack the time needed to attend online training but indicate that its growth in popularity has made it easier for them to access education.

Language is a well-documented barrier for patients accessing healthcare services or seeking health-related information. This is particularly true for those accessing knowledge in a language other than their native tongue or for people with limited language proficiency, such as migrants, refugees, people with hearing or visual impairments, as well as people with limited literacy, including digital literacy (Abraham et al., 2005; Burkardt et al., 2019; Fernández-Díaz et al., 2020; Rocio Garcia-Retamero & Dhimi; Garcia-Retamero & Dhimi, 2011; Jaeger et al., 2019; Kefalides, 1999; Martins et al., 2015; Nwokediuko, 2012; Sadoughi et al., 2020; Schlemmer & Mash, 2006; Schyve, 2007; Watkins et al., 2012). In light of this, Nwokediuko et al. called for global recognition of native languages in e-learning to enhance knowledge transfer across various communities (Nwokediuko, 2012).

LCD has consistently pursued equitable access to evidence-based public health and health emergency knowledge. This has occurred along several axes: multilingualism, gender sensitivity, and meeting the requirements of low-income countries and communities affected by disease outbreaks. As a result, the [OpenWHO.org](https://openwho.org) platform is ever-expanding and evolving, conceived with a dynamic and adaptable structure in mind that is necessary to accommodate global needs and changes. This has been evidenced during the pandemic, as OpenWHO witnessed an exponential increase in enrolments to the platform, from less than 200,000 in December 2019 to 5.3 million by mid-2021. The increase in enrolments has been abetted by the addition of 33 COVID-19 related courses. However, like any other online learning platform, some limitations and challenges arose.

Online learning can provide an opportunity for inclusion and equity in education if adequately designed. Concerning gender-based inequity, women, who often lack access to



education (UNESCO, institute for statistics, 2021) and constitute up to 70.00% of the global health and social care workforce, are commonly unpaid or underpaid (Brown et al., 2020). Fortunately, however, they have been able to benefit from courses placed on the OpenWHO platform. In fact, before the COVID19 pandemic, only 40.30% of OpenWHO's users were female. During the pandemic, this increased to 50.30%. In addition, because women and men show little to no difference in terms of their preferences or behaviors concerning utilizing web-based education (Cuadrado-García et al., 2010; Ramírez-Correa et al., 2015), gender inequity in access to online education can be instead attributed to factors such as time and cost, as illustrated by OpenWHO's IWD survey. As such, gender inequality cannot simply be explained due to the innate characteristics of e-learning. These findings confirm the validity of WHO's efforts to design the OpenWHO platform such that it is freely available, consisting of self-paced, asynchronous courses that are convenient and malleable to the varying needs and priorities of women and men.

Low-income populations are most affected by risk factors known to directly impact health, such as poverty, unsafe water, poor sanitation, and hygiene, among other traditional health risks (Stronks et al., 1998). As a result, low-income countries bear a more significant share of the global burden of disease, with immunization levels still falling short of the targets needed to prevent the endemic prevalence of many infectious diseases (Binagwaho et al., 2021; Nhamo et al., 2021). In addition to modern risks, including lack of physical activity, obesity and other dietary factors, and tobacco and alcohol risks, middle-income countries also bear the burden of infectious diseases, not having overcome the battle with other health risk factors. (Ref: [WHO Global Health Risks report: Introduction](#)). However, on a positive note, studies showed that effective and well-designed e-learning interventions have significant potential benefits for low and middle-income countries (LMICs) (Barteit et al., 2020), which in turn will help alleviate the management of diseases through knowledge transfer and education. Studies examining observed differences in the course topics used across LMIC and HIC are needed.

CONCLUSIONS AND POLICY IMPLICATIONS

OpenWHO has been able to produce evidence-based learning in real-time, at scale and in multiple languages. These actions are an intervention against the COVID-19 pandemic and seek to lift barriers to learning; they have led to a significant increase in the platform's popularity for accessing life-saving knowledge and know-how during the pandemic. OpenWHO has thus contributed to delivering critical learning during the pandemic while defending equity in learning. This has in part been achieved by increasing and facilitating the attendance of women and other underserved audiences by providing self-paced, low-bandwidth, and free-of-cost learning on topics relevant, for example, in low-income countries. Overall, OpenWHO courses attract a variety of audiences, with vital attempts made to ensure equitable access across each.

Relevance to medical and health policy

Particularly at the beginning of the pandemic, when the prime objective was to expedite the production and transfer of life-saving knowledge to the masses, self-paced learning on its own was deemed sufficient to meet WHO's aims. However, the much-anticipated return to normalcy remains some what distant. Therefore, adding to the self-paced course provision on OpenWHO, the LCD unit has begun transforming its typical face-to-face training program into virtual classes, learning labs, online simulation exercises, and skill drills. This will allow for more in-depth learning and the transfer of skills and attitudes, in addition to knowledge

sharing. Thus, while online learning is sufficient for immediate knowledge transfer and often acts as the first step in a learning pathway, additional methods and tools can engender improved learning outcomes.

Medical and health policymakers must acknowledge the need for equity in access to learning, no matter the audience. This must be planned for at the onset of designing any learning resources. There is undeniably a link between access to health-related learning and a relevant, rewarding and impactful lifelong learning journey for the global health workforce, in pursuit of the common goals of universal access to health and health for all.

Policy implication

These findings shed light on the actions needed to provide impactful and equitable health-related learning interventions for global audiences, including concerning course content, format, media, and language. This scientifically-based knowledge transfer needs to be established by organizations mandated to respond to any public health threat in a fast and scalable way. As such, equitable learning in health must be seen as a global public good.

As public health agencies, it is critical to push beyond knowledge transfer to measure learners' skills and competencies gained from online courses. In addition, it is imperative to have some level of certainty that learners who complete online, self-paced courses can apply that knowledge in real-life situations.

Finally, evaluating the reach, efficacy, and impact of e-learning will continue to grow in importance as the pandemic persists, particularly for public health professionals working on health emergency learning response in the UN system.

Future research

Future research should address and expand on questions such as:

1. What effect does the “multiplier effect” (whereby local actors disseminate OpenWHO course materials in offline formats in hard-to-reach areas) have on equitable access to learning? How are these materials adapted to suit local and national contexts?
2. How are disease-specific learning materials utilized in different contexts, according to local disease burden? What are the learning needs of communities in outbreak-affected areas?
3. How can the impact of self-paced, online learning on equity be more accurately and comprehensively measured? How can online learning become more interactive, to facilitate competency-based, virtual learning that targets the equitable acquisition of knowledge, skills, and attitudes?
4. What are the steps required for public health organizations and other learning providers to implement improved equity in access to learning?

Limitations and bias

This paper is subject to some limitations. First, the results presented by the article should be considered in light of the descriptive nature of the analysis conducted. Apart from location-related data, the paper relies on self-reported data, which may be subject to participation bias.

Finally, the authors of the paper are affiliated with WHO's Learning and Capacity Development Unit. However, the margin for bias was mitigated by the pivotal role of



automatically generated data on OpenWHO's learners to drive this study's results. As such, the authors aim to lean not only on subjective judgements alone.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

ETHICS STATEMENT

OpenWHO data referred to were collected in line with the OpenWHO Terms of Use, which every enrolled user accepts. All OpenWHO users agree to the following statement which was provided by the WHO Legal Department "Records of your participation in OpenWHO courses may be used for education research. In the interest of this study, you may be exposed to variations in the course content. Research findings will typically be reported at the aggregate level. Your personal identity will not be publicly disclosed in any research findings without your express consent." The nature of this study is non-invasive.

AUTHOR BIOGRAPHIES

Richelle George is a Learning Officer in the Learning and Capacity Development Unit (LCD) of WHO's Health Emergencies Programme, and has worked for LCD since 2018. She is the thematic area lead for learning-related innovation and online tools, collaborating with WHO partners and stakeholders to discover, develop and deploy tools and initiate strategic partnerships to improve equity, uptake, and engagement among LCD's millions of learners. During the COVID-19 pandemic, Richelle also project managed the production and translation of hundreds of online courses for OpenWHO's COVID-19 response, working with dozens of experts, learning producers and national focal points in every WHO region around the world. Miss George was born and raised on the island of Saint Lucia. She completed an undergraduate degree at Trinity College, University of Cambridge, reading Human, Social and Political Sciences, with a focus on social and medical anthropology. She later returned to Trinity College Cambridge to complete a master's degree in Epidemiology; her thesis used statistical methods and nationally representative datasets to quantify inequalities in access to health services among older people in England during the COVID-19 pandemic. Prior to joining WHO, Miss George has worked on public health community engagement programmes for low-income women in New Delhi, intergovernmental fundraising and resource mobilization in the Eastern Caribbean, and public health consulting for a firm with projects in Mozambique, the Democratic Republic of the Congo and Pakistan. Richelle's interests include the social determinants of health, health equity in emergency response and the use of innovative approaches and tools for problem-solving.

Heini Utunen is Acting Head of Unit of the Learning and Capacity Development Unit of the World Health Organization's Health Emergencies Programme, a unit that was established in 2018 and in which she has worked since the beginning establishing the area of knowledge transfer for infectious diseases and health emergencies. Her functions and experience cover workforce capacity building, learning solutions and simulation exercise management. During the COVID-19 pandemic she has led the COVID-19 online learning response delivering massive scale learning interventions on [OpenWHO.org](https://openwho.org) based on WHO's technical

evidence-based guidance, learning resources now reaching 6 million enrolments. Ms. Utunen joined the WHO during the Ebola West Africa outbreak in 2014 and led the pre-deployment trainings, and provided to the cascade training curriculum development, face-to-face trainings, and e-learnings. During 2016–2018 her functions covered country capacity building and simulation exercises for the novel area of risk communications in the Pandemic Influenza Preparedness. During 2009–2013 Ms. Utunen worked in the United Nations country team in Vietnam, in natural disaster preparedness and response and the humanitarian cluster system, where she functioned as the Food Security Cluster Coordinator. Ms. Utunen has prior experience in the government of Finland where she served as Communication Officer of the Minister of Health in Finland. She functioned also a Training Officer at the Crisis Management Centre, mainly involved in the capacity building of the European Union, African Union, and United Nations in several post-conflict missions. Ms. Utunen has Master's degree in Information Studies and Bachelor in Political Science and she is writing her PhD dissertation in the Information and Communication Technologies. She has the Principal's qualification in Finland.

Ngouille Ndiaye is a public health professional currently working as a consultant for the Learning and Capacity Development Unit (LCD) of the WHO Health Emergencies Programme. She previously worked for LCD as an intern in 2019 to study the topic of community-based learning in the context of emergencies and to characterize the scope and use case of the OpenWHO learning platform presented to management. Ngouille re-joined LCD to support the digital learning response to the new coronavirus outbreak. She has continued to strengthen the data analysis area of OpenWHO's massive work, also contributing to the documentation of WHO's online response to the pandemic via the OpenWHO learning platform through numerous research projects and publications that characterize the ever-growing global audience. Ms. Ngouille has a strong background in biomedical sciences and research, with a Bachelor's degree from the University of Montreal. She also holds a Master's degree in Public Health, specialized in global health, from the School of Public Health at the same university, hence her strong interest in evidence-based science that contributes to reducing health inequalities and ensuring equal access to health. Prior to working at WHO, she led a process evaluation study on diabetes mellitus in low socioeconomic settings in South Africa. She has also worked on the issue of malnutrition in Senegal and on access to health for migrants in Canada. Ngouille is passionate about equity and equal access to health, art, travel, and cultural discovery.

Anna Tokar was born in Poltava, Ukraine, where she completed secondary school. In 2008 year, Anna obtained a Bachelor's degree in Biology, from the National University of "Kyiv-Mohyla Academy," Kyiv, Ukraine. Then, she continued her studies, and in 2010 year, Anna received a Joint Master's degree in Public Health and Health Care Management, from Maastricht University, Maastricht, The Netherlands and School of Public Health, the National University of "Kyiv-Mohyla Academy," Kyiv, Ukraine. For almost six years Anna worked at the International Charitable Foundation "International HIV/AIDS Alliance in Ukraine," where she gained experience in development and implementation of the interventions targeting sex workers, drug users, and men who have sex with men. In 2013 year, Anna started her academic carrier as a senior lecturer at the School of Public Health, the National University of "Kyiv-Mohyla Academy," Kyiv, Ukraine. In 2015, Anna was awarded the TransGlobal PhD fellowship, funded by the European Commission and launched her own research focusing on access to health care services among migrant female sex workers (FSWs) from Eastern European (EE), non-European Union (non-EU) countries in Amsterdam. In 2020, she was awarded PhD



degree, Cum Laude. In 2020 Anna has joined as a consultant the OpenWHO, Learning & Capacity Development Unit, WHO Health Emergencies Programme. Anna continues to work as an independent consultant in close collaboration with different organizations. In this capacity, she has assembled a portfolio of implementation work in Azerbaijan, Georgia, the Netherlands, Mozambique, the Russian Federation, Spain, Ukraine, and Uzbekistan.

Lama Mattar is a consultant in the Learning and Capacity Development Unit (LCD) in WHO's Health Emergencies Programme. Lama pursued her BSc and MSc in nutritional sciences at the American University of Beirut. She also completed a PhD specialized in eating disorders and behaviors at University of Pierre & Marie-Curie in Paris, France. Lama is currently an associate professor of nutrition. She believes that nutrition is the cornerstone of prevention and therapy of many diseases. She practised clinical dietetics in various specialized units in the USA, Switzerland, Lebanon, and France. She further broadened her experience by completing a post-doctoral project on cancer and malnutrition in hospitals. Lama has been actively engaged and strongly committed to teaching and mentoring at all levels in the university. She taught graduate and undergraduate nutrition courses at the American University of Beirut and since her appointment at LAU, she has taught 6 different courses of which she developed 4 and coordinated many. She got awarded from the French Ministry of Foreign and European Affairs an Excellence scholarship, and from King's College in London, a research Excellence fellowship. Alongside her academic and research career, Lama is a passionate photographer and has been immersed in the world of arts as she has been painting since a very young age. Lama developed a growing interest in photography a few years ago and has been honing her skills through a mix of self-teaching, seminars, and workshops in Paris, Monaco, and Beirut.

Corentin Piroux is a junior staff in Learning & Capacity Development. With a managerial background gained through his studies at IESEG School of Management. He has worked with the World Health Organization for more than 2 years all combined. Corentin started his journey in the Learning & Capacity Development (LCD) back in 2018 as an intern. He then kept collaborating with the team as a consultant and wrote his final thesis with WHO. At the very beginning of the COVID-19 pandemic, Corentin came back to work with the team to support the course production on OpenWHO. From the early stages of the development of a course to its actual publication on OpenWHO, Corentin has been able to follow each and every step of the course production process by assisting WHO technical teams develop their learning materials. He also coordinated the translation of those OpenWHO resources in UN and national languages, in partnership with volunteers, WHO country offices, and translation agencies. After completing his Master's Degree in Management, Corentin worked for a few months as a Financial Auditor at KPMG in Paris. In April 2021, Corentin became a WHO staff in the LCD unit and started leading the course production pipeline for OpenWHO. Thanks to his previous experience within the team, he has taken over a coordination role in the team. While having regular meetings with WHO technical colleagues developing courses, Corentin has also had a managerial role by assigning tasks to his colleagues working on course construction on the platform. Corentin has then strengthened his knowledge in adult learning and in public health beyond his academic background in management.

Dr. Gaya Gamhewage is a medical doctor and public health expert with three decades of experience in the health sector. She has worked with the World Health Organization for nearly 20 years, mostly leading institutional capacity-building initiatives for health emergencies, including for COVID19 trainings. Since July 2021, she is the Director a.i. for Prevention and Response to Sexual Exploitation, Abuse, and Harassment. Prior to this, Dr. Gamhewage was Head of Learning & Capacity Development for WHO's Health Emergencies Programme and worked in the Executive Director's Office where she introduced social learning for a diverse, equitable, and inclusive workplace. She led the capacity-building pillar of the WHE working group on PSEA. Previously she has led new areas of work for WHO including in health communications & behavioral change; risk communications & community engagement; and most recently, lifelong learning for health which included the development of the first-ever WHO Global Learning strategy for Public Health. Dr. Gamhewage has worked for national and international NGOs including the Save the Children UK and Norway, and was at the beginning of her career the Director of Community Health for Sarvodaya, a Sri Lankan NGO working in more than 15,000 villages. Dr. Gamhewage also holds two Master's Degrees in addition to her medical degree - in International Health and in International Policy-Making and Negotiation. She is skilled in supporting countries to build up their own institutional and human resource capacity to protect the health of their populations. She is a passionate advocate for and creating fair and sustainable environments and ecosystems where women and men grow and thrive in the service of others. Her areas of expertise include education & learning for health; public health programming; negotiation & advocacy; knowledge networks & ecosystems management; child rights and protection; psychosocial health programming; and community engagement and risk communications. She is also an experienced trainer, facilitator, and certified professional coach.

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