

From Face-to-Face to Online Delivery: Training of Professionals in Evidence-Based Prevention

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BACKGROUND: By disseminating the Universal Prevention Curriculums (UPC), the Colombo Plan (CP) seeks to narrow the gap between scientific knowledge on effective prevention of substance use and its application in the field. In 2020 CP adapted these training methods for online delivery. **AIMS:** This implementation study aimed to adapt the UPC Coordinator Series Walkthrough to an online and distance learning medium and develop a process evaluation study focused on course implementation. **METHODS:** A flipped classroom method combined 32 online sessions with offline tasks. Using various online applications, the study team adapted key aspects of face-to-face to an online/distance learning environment. Special attention was paid to providing sufficient technical support and scaffolding strategies to allow tech-savvy participants to engage in the training. Participants completed knowledge pre-post-tests and course assessment surveys. Session-by-session engagement was monitored, and suggestions were collected to monitor quality

and improve the training approach. **PARTICIPANTS:** Twenty-seven academics, government officials, and NGO representatives participated in the pilot test. **RESULTS:** Compared to other online and face-to-face training participants, the pilot group achieved higher than expected completion rates and knowledge acquisition scores. Also, a high level of satisfaction and engagement was observed, especially regarding the peer-supported learning strategies. **CONCLUSIONS:** Although online training may not duplicate the face-to-face experience, interactive strategies supported by different low-cost or free applications successfully mimicked key aspects of the in-person experience. Even though the pilot group was highly skilled in using information technology, participants required constant technical support. From the training effectiveness perspective, careful consideration should be given to characteristics of participants that will be trained using online strategies, particularly if low information technology literacy may be an issue.

Keywords | Online Training – Drugs – Psychoactive Substance Use – Prevention

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1 BACKGROUND

According to the United Nations Office on Drugs and Crime, in 2018, an estimated 275 million people of the global population aged 15–64 had used drugs in the previous year. According to the World Drug Report, a longer-term view reveals that the number of people who use drugs is now 30 percent higher than in 2009. Yet, effective prevention and treatment interventions based on scientific evidence and in line with international human rights obligations are not as available or accessible as they need to be (UNODC, 2021).

A gap exists between the scientific knowledge regarding effective prevention and treatment and its implementation in the field. The limited availability of suitable training opportunities for the substance use prevention and treatment workforce hinders the widespread dissemination of evidence-based practice.

The Drug Advisory Program (DAP) of the Colombo Plan (CP-DAP), with the support of the Drug Demand Reduction Unit from the US State Department, has pioneered developing and implementing an adult-centered training curriculum covering a wide range of topics in substance use disorder treatment and prevention. Three main series have been developed so far: The Universal Treatment Curriculum (UTC), the Universal Prevention Curriculum (UPC), and the Universal Recovery Curriculum (URC). Each series comprises from 9 to 22 courses. Each course is designed to be delivered face-to-face in 24 to 96 hours. The three series represent one of the most comprehensive training series in evidence-based substance use treatment and prevention worldwide. To this date, Universal Curriculum (UC) courses have been disseminated in more than 75 countries around the globe. A complete description of the Universal Curriculum series and courses can be found at <https://www.issup.net/training>.

Depending on the trainees' experience and training needs, training initiatives can have different methodological approaches. *Training of Professionals* or *TOPs* focus on training frontline workers directly. On the other hand, *Training of trainers* or *TOTs* seek to prepare professionals to act as trainers of frontline workers. In addition to usual training activities, TOTs include teach-back assessments, where trainees have to "teach back" curriculum lessons to their peers to demonstrate proficiency in training skills. In certain cases, when prospective trainers have a high level understanding and experience in the subject (e.g., university academics), TOTs use a "walkthrough" approach. Instead of teaching the full course, walkthroughs explain course content structure, demonstrate key activities, and model training methods. Walkthrough content structure has been agreed upon by a group of experienced CPDAP trainers and project managers. As such, while the complete UPC training series for managers and supervisors would require about nine weeks to complete, the courses can be completed in about three weeks of full-time training using a walkthrough approach.

1.1 Key strategies used by UC to foster adult engagement and learning

An understanding of the methods and principles that promote adult learning (andragogy) informs UC courses. Andragogy fosters the involvement of adult learners in their own learning process, integrating their experiences in the learning process (Escudero & Escudero, 2020; García-Oberto, 2020). As such, adult learning involves greater interaction between participants (Duarte, 2020). Consequently, UC curriculums intentionally use a wide variety of adult learner-centred strategies to foster participant engagement. Key implemented strategies include:

- Interactive presentations: Trainers avoid "lecture-type" presentations by posing frequent open-ended questions to integrate participants' experience while moving through content.
- Large group discussion: Facilitators promote group discussions to stimulate reflection and critical thinking.
- Small group work: Training groups are frequently divided into small groups (4 to 5 participants) to work on particular tasks (discussions, prepare projects, presentations, and role-plays, among others). Participants interact frequently by preparing materials using newsprint (writing, colouring, gluing, among others).
- Assessment: Includes knowledge pre and post-tests, daily assessments, and end-of-training satisfaction survey. Daily assessments result in an immediate adjustment of next-day training activities to ensure that training responds to participants' characteristics and needs.

1.2 Online training delivery: new demands in the context of the global COVID 19 pandemic

Travel and meeting restrictions introduced in March 2020 brought many international cooperation initiatives, including worldwide training missions, to an abrupt halt. In this context, CPDAP faced the key challenge of adapting available curriculums from a face-to-face to an online delivery.

In the last decade, we have experienced an explosion in the development of online learning resources (Means et al., 2014). An "online learning" course usually allows the students to interact with the instructional content and people through the internet. Online training initiatives can vary according to the way they combine online with face-to-face activities, the way they combine synchronic and (participants converge on the same time) a-synchronic activities, the degree of rich media used, the participant's level of activity, or the degree to which instructors are actively involved in the training. The choice of one approach over another depends on training objectives and the nature of the intended audience.

Evidence suggests that online training can be effective in developing a wide range of complex skills such as parenting skills (Shari et al., 2017), emotional regulation skills (Chelsey, 2018),

pain coping skills (Bennell, 2017), and patient management skills (Wuensch et al., 2017). Other studies show that online training can be at least as effective as face-to-face training in developing clinical skills such as post-traumatic stress management (Uzek, 2014) and Screening, Brief Intervention, and Referral to Treatment (SBIRT; Stiner et al., 2014; CICAD, 2017). Distance training, particularly online training, holds promise for scaling up evidence-based practices (Covell, 2011; Geoffrey et al., 2015). Training effectiveness will ultimately depend on the adequate alignment of participants' characteristics, the online course content configuration, and participants' support structure. In any instructional experience, learning and retention will be related to the students' degree of active engagement with the material (Means et al., 2014).

Although the evidence seems to support the potential effectiveness of online training delivery, concerns have been raised regarding online learning quality, especially for less-prepared students (both adults and children and youth). This is because a certain degree of "digital literacy" (i.e., mastering web browsing, email, and videoconferencing programs, among others) is required to complete an online course successfully. Another concern is related to dropout rates. Online learning tends to show higher dropout rates than face-to-face courses. Dropout is primarily observed in participants with lower academic or digital skills and those facing competing time demands (e.g., work and family; Means et al., 2014).

In this context, the CPDAP initiated several pilot initiatives to explore possibilities and limits of online training delivery of UC courses. A distinctive trait of CPDAP's training initiatives relates to how participants are engaged in training and motivated to apply what they have learned in their work environments. Thus, several key questions were raised apart from the online content delivery. For example, would it be possible to recreate the CP training experience in an online environment? If so, how? And would online training be effective?

To explore these questions, a *Walkthrough to Train Trainers Universal Prevention Curriculum for Coordinators Series* was adapted for delivery in an online environment. This paper reports on the adaptation and evaluation of the pilot online course delivered to a group of Chilean academics, government officials, and NGO representatives during 2020.

2 MATERIALS AND METHODS

2.1 Design of the study

A mixed-methods assessment study was conducted. Measures included pre- and post-tests, surveys, "teach-back" assessments, content analysis of written assignments, and open-ended feedback questions.

2.2 Study sample and data collection

Twenty-seven participants enrolled in the course. The group comprised 56% males, 44% females; 63% worked as

university-level teachers, and 52% were full-time academics. Of the total, 11% of participants combined teaching with work at local government health services, 22% worked at central government positions (local drug prevention authority and ministry of health), and 11% worked at NGOs. Eighteen trainers (two for each course) conducted synchronous sessions and overviewed offline tasks.

2.3 Data collection

To ensure course implementation quality and to gather the information that would allow answering research questions, the following data was collected and assessed:

a) Pre-training needs assessment: A survey addressed weekly time availability, preferred days and time of the week for synchronous sessions, and availability of technical means to engage in online activities (computer, broadband internet connection supporting video conference calls, mobile with data plan, WhatsApp account). The survey also screened students' confidence in key information technology (IT) skills (e.g., internet browsing, video calls, etc.).

b) Pre-post-tests: Participants had to answer 20 to 25 multiple choice knowledge questions before and after each of the nine courses. These are the same pre- and post-tests used globally in every implemented training.

c) Session engagement and suggestions: After each session, participants answered a short survey addressing session engagement ("From 1 to 5, how engaged did you feel in this session?") and one open-ended question asking for session comments and suggestions.

d) Course assessment survey: After each course, participants had to answer a survey requesting an assessment of the course implementation and trainer, along with one open-ended question for comments and suggestions.

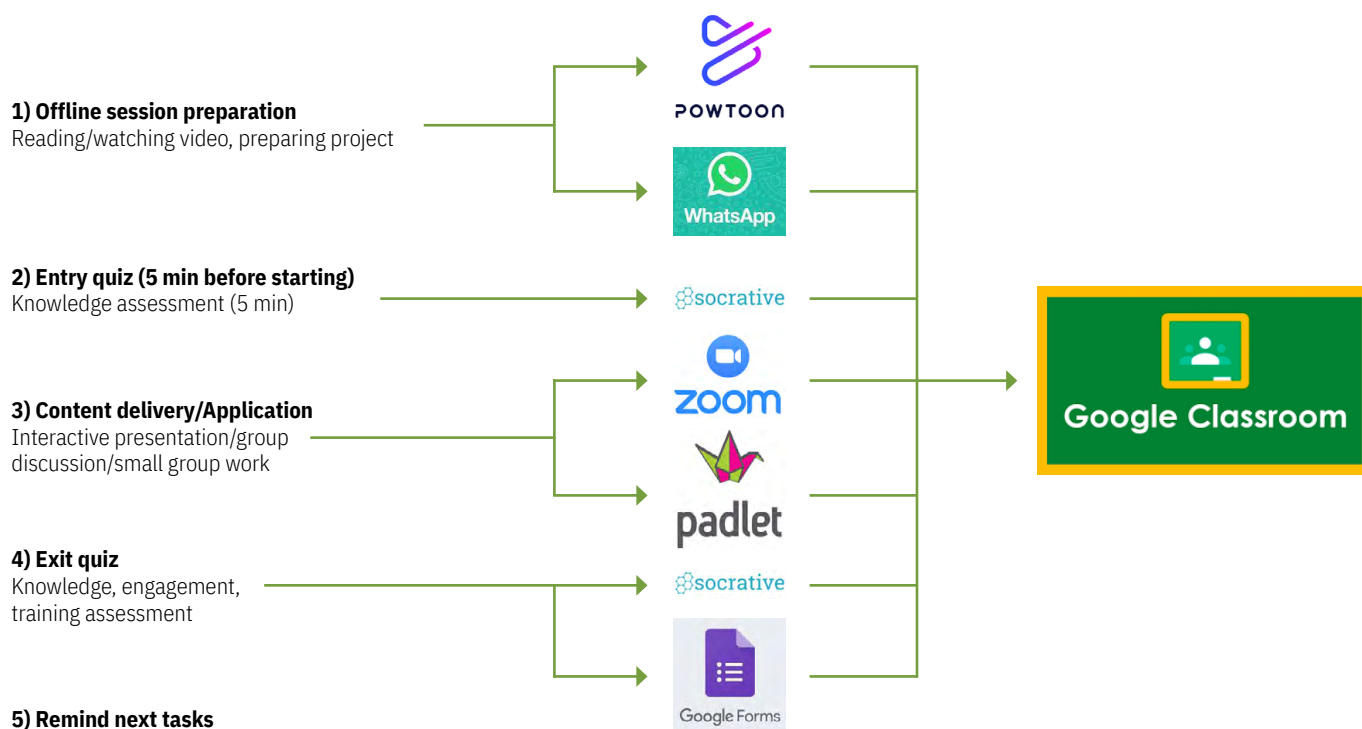
e) Teach-back assessment: Since this was a Training of Trainers, participants provided two 20-to-30-minute video recordings delivering a course presentation. Videos were assessed by one course trainer using a structured rubric. In addition, the trainer provided written and oral feedback to trainees.

f) Course attendance: Attendance was monitored by counting attendance at the end of a given session.

g) Final reflections: Each participant was asked to turn in a final written reflection on their learning and plans for future UPC dissemination within their respective educational institutions.

2.4 Course Structure and delivery

a) Course adaptation: First, to guide course adaptation, pre-training needs were assessed (survey). *Table 1* displays survey results. Following Campello et al.'s 2014 recommendations for intervention adaptation, course design focused on ad-

Figure 1 | Synchronic session components and corresponding applications

justing course structure (session structure, organization) and delivery methods (e.g., zoom, google classroom, WhatsApp, Padlet, among others), but not contents. As such, we sought to find novel ways to deliver the same content in a way that would be appropriate in an online environment. Based on pre-training assessment results, the study team decided to deliver the course in 32 biweekly 90-minute synchronic sessions (video conference). Each course was delivered in 270 to 360 minutes. Participants were asked to invest approximately the equivalent time in pre-session preparations. During sessions, participants discussed contents and participated in practical activities. Before each session, participants were asked to prepare materials or activities. This approach is known as “flipped classroom” (Tucker, 2012).

Table 1 | Pre-training needs assessment results

Student preferences, resources, and IT skills	%
Weekly availability of online sessions: Two or three 90-minute sessions (vs. one session)	74.6
Weekly availability of offline sessions: Under 60 to 90-minutes (vs. under 60 minutes)	51.6
Time preference: 16:30 or later	78.8
Has access to a PC, internet, mobile device with a data plan	100
Feel very confident using PC, email, WhatsApp, sending files through email or messaging system	100
Feel very confident in browsing internet, making video calls, participating in forums	92.5

b) Online delivery strategy: Techniques and applications were identified that could mimic key face-to-face training strategies (e.g., small group work, newsprint projects, among others.) to an online environment. Please refer to *Figure 1* for a summary. **Video conferencing** was used for online sessions. Zoom was chosen because the “breakout rooms” feature allowed small group work. On the other hand, **Padlet** was used to replace newsprint-based collaborative work. Trainers used **PowToon** to record summary videos for participants to prepare the materials that would be addressed in synchronic activities. Also, **Socrative** was used to facilitate in-session question asking and **Google Forms** to collect pre-training and assessment information (tests and course evaluation assessments). A **WhatsApp** group including all participants and trainers was created to build group identity and facilitate communication and group interaction. Course materials were organized using **Google Classroom**, providing access to relevant dates (sessions and assignment turn-in), tasks to prepare before sessions, links to Zoom sessions, in-session tasks and links to those tasks (e.g., Padlet), links to course assessments (post-test and satisfaction) and other relevant resources (course manual, slides, other documents).

To allow participants to build a routine, each session followed the same structure. Participants had to prepare the material beforehand, either by reading training manuals, watching an instructional video, or working on a group project. Fifteen minutes before the start of a given session, participants answered a content-related three-question pre-test. The pre-test was intended to stimulate participants to actually prepare the materials.

2.5 Data analysis

a) Quantitative data analysis: Collected data was downloaded to Excel spreadsheets and descriptive statistics were calculated. Also, t-tests for dependent samples, effect size (Cohen's d), and correlation analysis were conducted using STATA 16.

b) Qualitative data analysis: Final reflections and open-ended survey questions were analyzed using content analysis. Two authors (AH, RG) conducted the analysis and discussed the findings in research meetings with the full team.

Participants' data was collected using survey applications that stored results in password-protected electronic spreadsheets. Pre-post test data, attendance data, teach-back recordings and final reflections were linked to participants' identification (for course certification purposes). However, end-of-course assessment surveys collected anonymous data. Only AH, JR and RG had access to identified data. An electronic copy was stored in AH's personal computer (also password-protected) for data processing. Data was analyzed and presented in an aggregated format making it impossible to identify individual participants. Course trainers had access to "teach-back" recordings for assessment and to provide feedback to participants. Trainers had access through an online drive and only were granted access to watch. After the assessment, all video recordings were deleted.

2.6 Ethical statement

All participants consented to participate and allowed data gathering for course assessment purposes.

3 RESULTS

Data analysis and results are structured across three main subjects: course quality assurance strategy, participants' experience and engagement, and course results.

3.1 Course quality assurance strategy

Two regional trainers were selected to deliver each course. Eighteen different regional trainers engaged in course delivery, introducing variability in training styles and strategies to avoid training monotony. Two trainers were present in any given session to take control in case of internet stability issues. Both trainers and participants were trained in using online tools and received constant support from CPDAP program officers (JR). To ensure that the training met participants' needs and transmitted learned lessons to each new pair of trainers, AH met virtually with each trainer team before each course and then as needed depending on participant feedback. These sessions ensured quality and transmitted learned lessons to the next trainer team.

3.2 Participant experience and engagement

a) Course satisfaction: Participants' experience with the course turned out to be very positive. Overall participant satisfaction score was positive, with average scores over 3.5 (out of 4) in all assessed dimensions. It is noteworthy that average course assessments tended to improve over time. The correlation between course assessment and course order is positive and moderate in size ($r = 0.33$), suggesting that quality assurance strategy may have been effective in improving participants' experience over time. Even though many participants were academics in the field, they agreed that the course allowed them to organize their previous knowledge about prevention systematically. They particularly appreciated the way the courses connected practice and research.

b) Engagement, attendance, and course completion: Participants failing to complete online courses is a clear issue that must be addressed to ensure course success. *Figure 2* shows attendance rates by course session. As in many remote courses, a tendency to decline in participation by session was observed. However, this was mainly related to participants dropping out during training due to work/ and health-related issues. *Figure 2* shows a slight decline in participation after session 17 (week 8), suggesting possible course fatigue. Future courses could consider chunking online delivery into no more than 8-week periods, followed by a resting period before starting the next chunk.

Figure 3 shows average participant engagement (scale from 1 to 5) by session. The plotted regression line shows a slight increase. This may suggest that quality monitoring effectively refined and promoted good online training practice.

In addition, 81% of the participants completed all requirements to graduate as UPC trainers. Other participants had to interrupt their participation due to work or health issues. Those participants received an attendance certificate acknowledging the courses they managed to finalize.

Some participants mentioned something that could be called "method fatigue." Because of their initial effectiveness, some strategies (e.g., group work, Padlet, Projects) may have been overused, thus tiring participants. Also, the amount of information addressed was perceived at times as "overwhelming" for the time frame set for the present training.

The most valued aspects of the course were related to group work and the opportunity to interact with peers and trainers in discussions and projects. Also, course participants highly valued playful and interactive learning tasks. In this context, the WhatsApp group played a significant role in fostering group cohesion and building a sense of community by channelling group discussions and mediating the interaction between participants and trainers. Many high-level academic discussions and paper exchanges occurred through the use of WhatsApp. Similar conversations would otherwise occur in face-to-face circumstances such as a coffee break.

Figure 2 | Attendance rate by session (based on the initial number of participants)

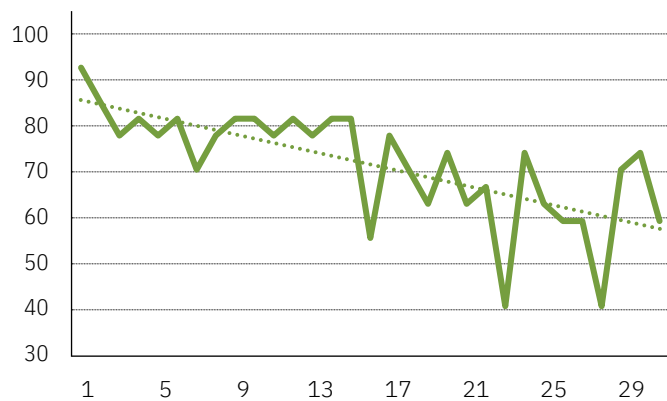
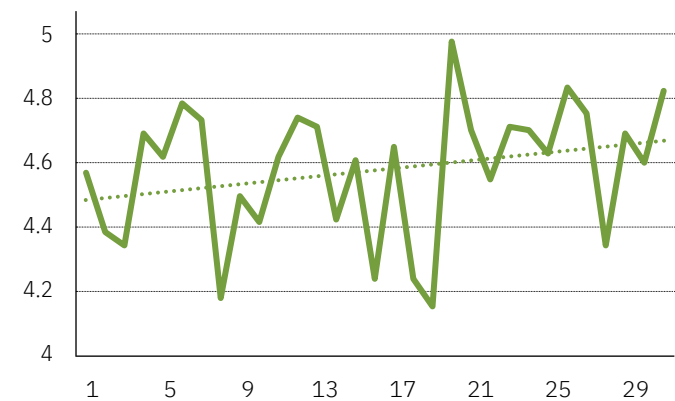


Figure 3 | Average participant engagement (1 to 5) by session



3.3 Course results

a) Pre- and post-test scores: The UPC tests show a statistically significant increase in knowledge between pre-test and post-test for all nine courses (paired t-test, $p < .05$, two-tailed). In addition, Cohen's d calculations show high effect sizes ranging from 0.4 to 3.7 (results not shown). In any Colombo Plan training, participants tend to show average increases of about 10% to 20% between the pre and post-test. Walkthroughs tend to show smaller increases because training does not concentrate on content as much as training skills. Participants achieved remarkable increases in all post-tests in this context, as shown in *Figure 4*.

b) Teach-back assessment: Scores for teach-back assessments showed small average changes from the first (35.4) to the second teach-back (36.5). A paired t-test showed no significant differences from the first to the second teach-back assessment. ($p > .05$, two-tailed). Using video recorded teach-backs for assessment of content delivery only, in which most of the participants already were proficient given their academic backgrounds. It was not possible to train or assess face-to-face training skills, which seem to be the most difficult skills to master. This because the video recordings presented a task that was prepared and delivered by each participant alone. As such it was not possible to observe, for example how they would manage participants in a face-to-face training.

4 DISCUSSION

This project was the first online adaptation of the UPC Coordinator series to be delivered to Spanish-speaking audiences in Latin America. In the context of the widespread lack of trained addiction professionals worldwide (Kirtadze, 2011; Pasche et al., 2015), it seems common that untrained people tend to believe that "they know everything about prevention" (Henriques et al., 2019). Therefore, it is crucial to develop new ways to disseminate critical knowledge on prevention in general and to professionalize the workforce. Training program availability seems to be increasing in different countries (Miovsky et al., 2016; Adams et al., 2017), and key features related to the suc-

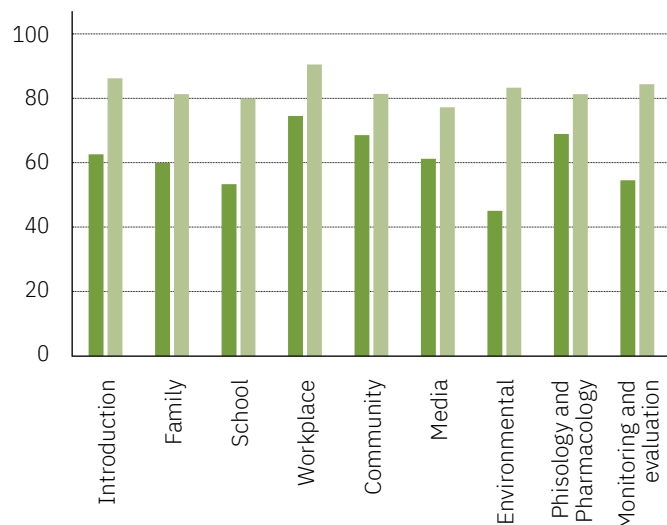
cess of these programs include a focus on specialized learning overlaying generic undergraduate professional training and practice-oriented teaching, among others (Adams et al., 2017).

This paper contributes to testing new ways to scale up urgently needed training availability. As such, it addresses the key questions of whether recreating the CPDAP training experience in an online environment is possible and how, and if this training could be effective.

Recreating face-to-face training experience

Participant engagement is a critical issue to address in any learning experience. In this project, course completion rate (81%) was fairly high compared to the average finalization rates of other types of online courses. For example, typical completion rates for unsupervised free MOOCs (Massive Open Online Courses) are about 15% (Jordan, 2020), while other remote courses in substance use in Latin America have shown an estimated completion rate of 30% (CICAD, 2017). Participants reported an overall high level of average engagement, suggesting that selected strategies effectively promoted engagement and resulted in high completion rates. Results are consistent with previous literature suggesting that high levels of engagement are a significant predictor of course retention (Paton et al., 2018). Literature also suggests that critical factors that promote engagement include instructor commitment, the quality of instructor interactions with students (Gregory et al., 2018), and developing a sense of community (Rasheed, 2020). Those factors also predict participant retention (Paton et al., 2018; Blane, 2019). Qualitative assessments of participant feedback suggest these were precisely the most valued aspects of course, particularly peer interactions. Previous research also indicates that peer-mediated learning is highly effective, especially in online training directed to less prepared adults (Means, 2014; Weidlich et al., 2019). In this context, the WhatsApp group may have played a major role in fostering group cohesion and building a sense of community.

Figure 4 | Percentage of correct answers by pre- and post-test



Course results

Participants significantly increased their factual knowledge. This result is consistent with previous research suggesting that blended approaches are at least (possibly more) effective than face-to-face training alone (Means et al., 2013). Studies have also shown that compared to other blended approaches, Flipped Classroom (FC) has been related to higher learning performance (Thai et al., 2017). Findings of other studies have also demonstrated that learner-learner interaction can significantly affect students' achievement in an online course. For example, Kurucay et al. (2017) found that students working collaboratively achieved significantly higher results than those working individually.

However, these encouraging results were not found when assessing participants' teaching skills through video-based content delivery assessment. This was not unexpected since the course focused heavily on content and not on skill development. Usually, a training of trainers includes several teach-back opportunities that take place in front of a real group. In these situations, trainees receive structured feedback focused on improving training skills. The use of video-recorded teach-backs had limited usefulness in developing facilitation skills. Developing these skills would probably require structured activities focusing on these training skills. Future initiatives should address this key component of training of trainers.

5 CONCLUSIONS AND LIMITATIONS

In general terms, the training strategies mimicked key features of a face-to-face training approach. As such, remote training may provide a potentially cost-effective alternative to keep training the substance use workforce during the pandemic and to further expand training initiatives beyond what was conceived as possible before COVID 19. However, the literature also warns that its usefulness may depend on the type of audience. Participants with higher autonomy, goal orientation, and tech skills will be more likely to benefit from online courses. Even participants skilled in IT will most likely need constant support. The group in this pilot, highly skilled in using IT, required constant support to make this a successful training. Using this approach with less prepared participants should be carefully considered. The present trained group was highly skilled and had a high educational level. Thus, results might be limited to this type of group.

It is imperative to design new cost-effective ways to scale up training initiatives to reach wider audiences, including university academics and government officials. In this context, online training dissemination holds the promise to facilitate widespread dissemination. However, some critical factors come into play to allow online types of courses to succeed in their purpose. Implementing remote training may provide a useful delivery alternative to face-to-face dissemination for UPC courses.

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Authors' contributions:

AH and JR designed the course and proposed the study design. AH and RG performed the statistical analysis and participated in data interpretation and manuscript preparation. AH and RG designed the initial form of the manuscript. AH and RG conducted a literature review and summary of related work. MM supervised the statistical analysis and participated in the preparation of the manuscript. All authors contributed to the emergence article and approved the final version of the manuscript.

Declaration of interest:

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