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Jennifer Marshall PhD, MPH, CPH
University of South Florida, jm@usf.edu

Vidya Chandran MBA, MPH, CPH, BDS
University of South Florida College of Public Health, vidyac1@usf.edu

Davies Toluhi MBChB, MPH, CPH
University of South Florida College of Public Health, daviestoluhi@usf.edu

Karen D. Liller PhD, MPH, CPH
University of South Florida, kliller@usf.edu

Saloni Mehra MPH, CPH
University of South Florida College of Public Health, mehras@usf.edu
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Authors

Jennifer Marshall PhD, MPH, CPH; Vidya Chandran MBA, MPH, CPH, BDS; Davies Toluhi MBChB, MPH, CPH; Karen D. Liller PhD, MPH, CPH; Saloni Mehra MPH, CPH; and Candace Burns PhD, MS, APRN, FAAOHN

OCCUPATIONAL HEALTH AND SAFETY TRAINEES REFLECT ON THEIR EDUCATION AND FUTURE CAREERS DURING COVID-19

Jennifer Marshall PhD, MPH, CPH
Vidya Chandran MBA, MPH, CPH, BDS
Davies Toluhi MBChB, MPH, CPH
Karen D. Liller PhD, MPH, CPH
Saloni Mehra MPH, CPH

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Background: The National Institute for Occupational Safety and Health (NIOSH) funded Education and Research Centers (ERCs), located at 18 universities, with the mission to train occupational safety and health (OSH) leaders. The Florida Sunshine ERC has trained hundreds of students since its inception in 1997 through seven programs that collaboratively foster interdisciplinary education and applied research and practice. The COVID-19 pandemic has presented practical challenges for educators, students, and trainees, forcing institutions to move to remote learning. The pandemic also magnifies the importance of public health and OSH.

Purpose: This evaluation elicited feedback from ERC trainees early in the pandemic (2020) and again in 2021 on how the pandemic affected their training, professional development, career plans, and wellbeing.

Methods: Open-ended surveys were collected and focus groups were held with currently enrolled trainees from seven Sunshine ERC programs. Descriptive statistics were calculated, and qualitative transcripts were analyzed using MAXQDA software.

Results: Through survey responses (45 respondents) and focus group discussions (9 participants), ERC trainees shared their perspectives on pandemic impacts in their performance and wellbeing, transition to remote learning, their respective OSH fields, and career plans during the pandemic. Programs should consider enhancing OSH curricula to respond to training needs and issues related to occupational stress and well-being, pragmatism and disaster response, and even more interdisciplinary training to prepare for emerging population-wide threats.

Conclusions: OSH training will require shifts in teaching modalities and content to prepare OSH professionals for the future. Evaluation results informed teaching and training modifications to ensure that ERC objectives continue to be met and that trainees are well-prepared and supported.

Background | The Education and Research Centers (ERC),¹ founded in 1977 by the National Institute for Occupational Safety and Health (NIOSH), train qualified personnel to support implementation of the Occupational Safety and Health Act of 1970. Eighteen university-based centers provide state-of-the-art interdisciplinary training and research for the next generation of OSH practitioners and researchers. Since 1997, Florida's Sunshine ERC (SERC) focuses on

interdisciplinary training of OSH professionals in evidence-based practice and research, continuing education and outreach to help meet the needs of government and industry. The SERC, based at the University of South Florida (USF), includes training programs at three universities (USF, Embry Riddle Aeronautical University [ERAU], and the University of Central Florida [UCF]). It is recognized as a regional resource in OSH consultation and continuing

education. SERC offers graduate degrees (MPH, MS, MSN, DNP, PhD) in Occupational Exposure Science (OES), Health, Safety & Environment (HSE), Safety Management (OSM), Occupational Health Nursing (OHN), Occupational Health Psychology (OHP), and an Occupational Medicine Residency (OMR). While some trainees are full-time students, others are working in health care, the military, or OSH fields.

ERCs play a significant role in preparing the future OSH workforce to respond to new challenges posed by the changing nature of work resulting from globalization, new and emerging risks, occupational health disparities, and/or technological advances. A recent and unprecedented example is the 2020 COVID-19 pandemic, which reached Florida on March 1, 2020².

In response to the COVID-19 pandemic, nearly 1400 U.S. educational institutions transitioned to fully online learning by March, 2020³. The mid-semester transitions were not smooth or timely for faculty and students, particularly for laboratory content, clinical hours, and assessment of performance⁴. USF transitioned all the classes to remote instruction following the Spring Break beginning March 23, and most academic professional development and networking events, such as workshops and conferences, were cancelled, postponed⁵, or later transitioned to a virtual format. Early modifications by multiple universities included moving classes partially or completely online,⁶ and professors nationwide noted low technical knowledge on using online platforms along with difficulties engaging students, gauging knowledge transfer, teaching practical courses, communication and coordination, and challenges in quality of education⁷. Additionally, lack of space and home-office infrastructure for online learning at home may have significantly affected students' learning.

Quality OSH training is crucial to future workforce development as ERC trainees are the future essential workforce for public health emergencies. It is important to realize what modifications are necessary to ensure that the OSH trainees are fully equipped when they graduate and join the workforce to efficiently handle crises where not much is known⁸. The purpose of this project was to elicit trainees' perspectives on the changing learning environment, professional development and educational needs, and their future careers.

Methods | An anonymous survey was distributed in 2020 and again in 2021 to 88 currently enrolled trainees, followed by focus groups to gauge their wellbeing and assess their academic and professional development experiences during the COVID-19 pandemic. Following review and exemption by the

USF Institutional Review Board as an evaluation activity, the Qualtrics survey was administered online. A list of student support resources at the three participating SERC university sites (USF, UCF, ERAU) was provided within the survey and in an email to all trainees. The survey asked trainees: *How are you doing in this situation (enforced physical distancing and virtual training) personally and professionally?; How has COVID-19 impacted your view of occupational safety and health?; In light of COVID-19, what other training do you feel is needed for OSH professionals?; Has this experience impacted your career plans/intentions?; and What would be most helpful to you right now?.* Respondents also were invited to participate in the focus groups to further discuss these topics.

Following survey administration during both years, virtual focus groups were offered at three different days and times to further discuss topics mirroring the survey. These topics included trainees' perception of changes with respect to their work/employment, education, the occupational health and safety field, suggested trainings as part of the SERC program, mental health, and overall performance.

Quantitative analysis consisted of descriptive statistics. Analysis of data from open-ended survey responses and focus group transcripts were conducted using a deductive qualitative analysis approach. Responses and transcripts were first reviewed to create an initial, deductive codebook (Table 1) focusing on five main domains pertinent to the research questions: (1) Work/employment (2) Education (3) Perception of the occupational health and safety field (4) Mental health and (5) Overall performance. Under each broad domain, several sub-codes were identified and the initial deductive codebook was used to code qualitative survey data in Excel and focus group transcripts in MAXQDA. Qualitative results were summarized based on content analysis and frequency in the coded transcript segments and surveys.

Results | In total, there were 45 responses to two surveys and 9 participants in three focus groups. The 2020 Qualtrics survey was completed by 25 participants and nine participants participated in three focus groups. In 2021, 20 participants completed the Qualtrics survey and none joined focus groups (Table 2). No personal identifiers were collected.

The four themes that emerged were broadly classified as: trainee wellbeing during the transition to distance learning; perceptions of OSH during the pandemic; need for additional training (Table 3); and career plans considering the pandemic. Representative quotes for

all themes are presented in italics in Table 4 (anonymized to protect confidentiality).

Trainee wellbeing

When asked how they were doing personally and professionally during enforced physical distancing and virtual training in 2020, about two-thirds (64%) of survey respondents indicated that they were doing “well”, and 76% were either “well” or “okay” during the stay-at-home period. Although participants were seemingly positive about overcoming the current situation, they also mentioned that this period has increased their stress levels due to reasons such as increased workload; balancing working from home with family distractions; concerns regarding perceived changes in the quality of their training and potential extension of their timeline for graduation; and worries related to the pandemic. The 24% of survey respondents who indicated that they were “not doing well” during this situation noted mental health impacts resulting in a lack of productivity and change in sleep schedule (qualitatively described in Table 4). While a higher percentage of 2021 respondents indicated being “well/okay” (80%) than in the previous year, some recounted how difficult the period had been on their personal and professional lives. This included experiencing burnout, struggling with work-life balance, and difficulties finding a dedicated working space (Table 4).

The nine participants who took part in the 2020 focus groups reported general positivity about attending the program remotely. Most mentioned struggles associated with the transition to working from home and the lack of in-person interactions. Some mentioned that their productivity had increased due to reduced/eliminated time commuting to campus, though others mentioned challenges related to the entire family being present at home, disrupting work-life balance and inhibiting productivity. With closed childcare centers and schools, participants reported having a difficult time juggling between caring for their young children, coursework, and jobs. They also described strategies they used to manage competing demands (Table 4).

Among participants who were working professionals, the organization they were employed by played an important role in how their workload changed during the pandemic. Focus group participants mentioned that the increased workload during the pandemic caused additional stress (Table 4). Participants enlisted in the military noted the possibility of emergency deployment disrupting school.

Transition to remote work, school and training

Remote learning was a major barrier to leadership development and on-site training. Participants expressed concern regarding employment prospects in their trained occupations due to not participating in SERC training or courses only offered in person (Table 4). Some required courses had in-person laboratories, and an unforeseen consequence switching to virtual training meant that trainees must wait to take them which could possibly delay graduation. Thus, participants noted time-sensitive decisions in their career paths and were not sure of the course of action to be taken (Table 4).

Another example was the Applied Practice Experience (APE), a core requirement in the MPH programs to graduate. Since organizations were not accepting interns, trainees were forced to seek out virtual/telework internships. Some jobs were initially not allowable as an APE (a source of worry for participants) but in the following weeks, the college widened the range of options, such as assisting the Florida Department of Health, as APE-eligible.

Perception of the OSH field

When asked about how the COVID-19 pandemic impacted their view of OSH, responses were similar for both years. Most participants (96%) affirmed the importance of OSH during the pandemic and appreciated the efforts taken by various organizations to maintain the health of their employees.

Respondents also described efforts needed to ensure better worker health during the pandemic, with almost 80% of 2020 respondents noting that their interest in OSH had increased. A few (n=4) specifically mentioned that were able to observe and learn from the safety practices of other organizations, to understand efforts taken by the CDC/government for occupational health, and to identify gaps in OSH. Participants discussed specific strategies to ensure worker health and commented on the importance of OSH policies, expressing concerns over the need for clarity on guidance issued by governmental agencies. They felt positive about public dialogue on the importance of OSH due to the pandemic (e.g. PPE, safety practices, etc.) and perceived that more people outside of their specific fields better appreciate the field (Table 4).

Need for additional training

While some respondents felt that their current training is adequate for their respective fields, many identified additional trainings that could prove beneficial during and following the pandemic (Tables 3 and 4). These include proactive and reactive trainings for disasters. Proactive trainings involve development of standard operating procedures (SOPs) and improved research

and development skills. Reactive or mitigation trainings include crisis management at different organizational levels and mental health and resilience trainings.

Another area identified for additional training was improving the health of remote workers. Respondents voiced the need for ensuring home workspaces were functional and comfortable in terms of ergonomics to prevent adverse health consequences such as musculoskeletal disorders.

All OHN participants and half of the OES participants suggested that interdisciplinary trainings during such disasters would help them to better respond. These trainings could improve relevant skills (i.e. epidemiology courses for OES students). In 2020, some respondents also suggested trainings on effective communication, as they felt that there was room for improvement in organizations when conveying public health information and guidance through multiple levels of organizations (Table 3).

Focus group participants were also asked about their views on the need for extra training to hone their skills in view of the pandemic. Some suggested more training on telehealth which was the need of the hour during social distancing. They observed that as more consultations were moving online, it would be beneficial to be trained on the essentials of health and safety management systems and related technical and software applications. Also mentioned was a need for increased or updated trainings on occupational exposures in hospitals and other healthcare environments.

Career plans

When asked about any changes in their career plans or paths, responses were mixed based on training focus area (See Figure 1). While half of the respondents' career intentions had not changed, 48% contemplated a change during the COVID-19 pandemic. This change was unexpected for some, while others were satisfied about the change.

In 2020, although most of the participants mentioned that the pandemic and conditions surrounding the pandemic had strengthened their desire to be an OSH professional, some explained that a lack of employment opportunities due to crashing job markets could force them to take jobs outside of their field. Others expressed anxiety regarding the job market following graduation (Table 4).

The 2021 comments showed that for some participants, COVID-19 had galvanized commitment to their current OSH career path (i.e. “*solidified my interest in my career plans*” and “*made me more sensitive to the importance of occupational health and safety.*”) or increased interest in public health (i.e. “*considering changing career paths into part or full time public health.*”). Living and working through the pandemic amplified the meaningfulness of participants' educational experiences and understanding of public health concepts (Table 4).

Comments in 2021 also alluded to concerns about burnout, while weighing the benefits and challenges of work in clinical, public health, academia, or applied research. One participant noted that the intensity of the clinical experience during COVID-19 overshadowed a focus on academics, while another participant noted the opposite. Others reflected that COVID-19 cemented their plans towards an applied research career, rather than theoretical research (Table 4).

What's needed now?

In 2020, participants called for flexibility with respect to class assignments, due dates, and administrative deadlines. Some recommended rearranging course sequencing and availability across semesters to ensure uniform distribution of courses during their program, such as an additional summer course to meet needs (Table 4). A few others –particularly 2021 survey respondents– mentioned the need for psychological support and networking as the transition to remote learning became emotionally isolating.

Similar to the survey, themes that emerged from the 2020 focus groups included overall performance and wellbeing; transition to remote work; school and training; and perceived changes in the OSH field.

Discussion | Currently, the U.S. census reports that there are 48.4 million Latinos making them the largest ethnic or racial minority. Approximately 8% of the nation's Latino or Hispanic population lives in the state of Florida. Health care coverage and access continues to be a major concern for this growing population. This study shows that despite the changes afforded by the Affordable Care Act to decrease the number of uninsured, Latinos still lag behind other racial and ethnic groups in obtaining health insurance coverage. This inequality is intensified for rural residents as they are less likely to have employer-provided healthcare coverage and, even if they are poor, often are not covered by Medicaid. Lack of access to health care services can lead to further declines in health status.

Table 1. Analysis Codebook

	Code	Description
Work/ employment	Workload	Change in workload – Increase or decrease as a result of the pandemic and/or working from home
	Job loss	Loss of job due to the pandemic
Education	Quality of education	Perception of change in quality of education
	Flexibility	Flexibility (regarding classes, assignments, administrative deadlines, more summer classes)
	Graduation requirements	Concern about graduation requirements – e.g. clinical hours requirement
	Career plan/intentions	Stronger desire to be an OSH professional or changed career plans (e.g. due to crashing markets)
Perception of occupational health and safety field	Awareness	Increased awareness/importance of occupational health
	Appreciation	Appreciate the efforts taken/needed to be taken by employers/CDC/Government for worker health
	Applied experience	Real-time experience to understand worker health
Mental health	Stress	Affected productivity, sleep schedule
	Coping	Coping mechanisms
Overall performance	Well/Okay	Doing fine – not affected/ being positive about the contribution in future
	Not well/Not okay	Not okay – indicates reduced wellbeing
	Work-life balance	Personal difficulties - around caring for young children and managing their education during child care and school closures, restrictions around elderly family members

Table 2. *Participant Response Rates*

Program	2020			2021	
	Trainees enrolled	Survey participants	Focus group participants	Trainees enrolled	Survey participants
Occupational Exposure Science	9	8 (89%)	5 (16%)	6	2 (33%)
Health, Safety & Environment	27	3 (11%)	-	9	6 (67%)
Occupational Health Nursing	27	5 (19%)	3 (11%)	24	4 (17%)
Occupational Medicine Residency	2	1 (50%)	1 (50%)	4	-
Occupational Health Psychology	6	4 (67%)	-	7	4 (57%)
Occupational Safety Management	3	3 (100%)	-	9	2 (22%)
Targeted Research Training	3	1 (33%)	-	7	2 (10%)
	77	25 (32%)	9 (12%)	66	20 (30%)

Table 3. *Additional Trainings Recommended by Participants*

Formal course on emergency management
Evaluating/developing Standard Operating Procedures (SOPs)
Essential workers – who is and who is not
Pre-planning of events to be prepared for such scenarios/how to be proactive
Communication during emergency – including multiple levels of organizations
Workplace change management for crisis situations where work must continue
Work clearance/return to work/pre-employment and on boarding in emergency situations
Crisis management training
Stress management, coping, mental health, and resilience

Trainings to prepare as a researcher overall and as an OH professional

Basic course on data management, e.g. use of Python or R to develop data analysis skills

Familiarity with epidemiology and respiratory disease spread may be helpful for designing hazard control plans and methods

Easy access to in-depth training on respiratory protection, broader training on bloodborne pathogens (including new types of viruses)

Alternatives to traditional medical respirators and efficacy

Pandemics and infectious diseases

Infection risk assessment and control

Biosafety in a lab and how it translates to everyday living

Figure 1. Impact of the COVID-19 Pandemic on OSH Career Plans

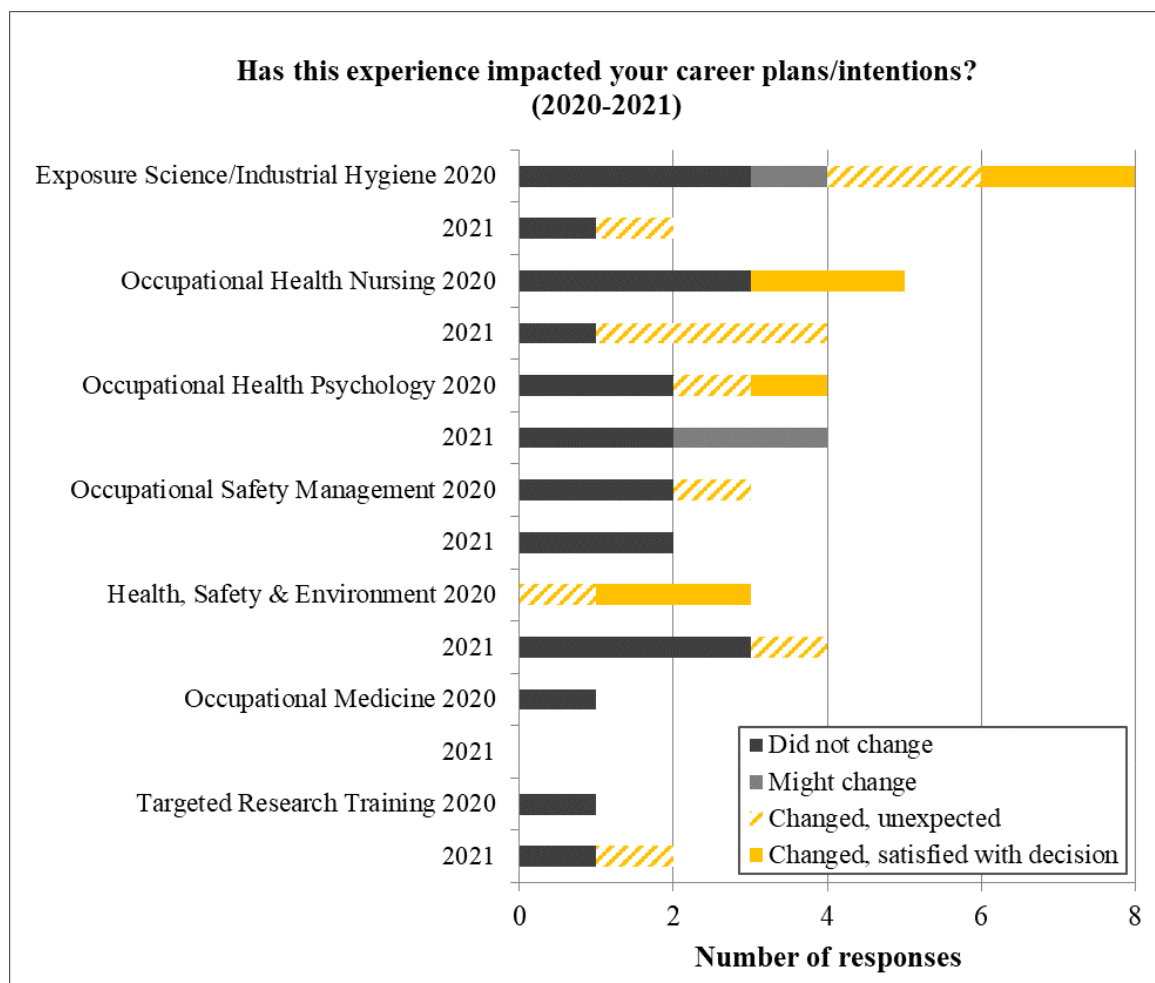


Table 4. *Illustrative Quotes from Open-Ended Survey Responses and Trainee Focus Groups*

3.1.1 Trainee wellbeing
<p>“The social distancing is totally fine, but the increased workload is not. Attempting to complete tasks for work, complete course assignments and tests, and provide distance learning support for my elementary level child is a bit overwhelming.” (2020)</p>
<p>“Very frustrated and disappointed in the effects on my education and professional growth. Incredibly limited and short-changed in the quality of learning and experience. Personally, feeling overwhelmed and powerless.” (2020)</p>
<p>“I'm doing okay. I haven't been as productive and I'm sure my mental health is a bit worse given the doom all around us, but I'm healthy and those around me are healthy and I've been mostly productive.” (2020)</p>
<p>“The situation of the enforced social distancing has been tough both personally and professionally. Working from home has taken a toll on me, as I don't have enough space in my apartment to have a dedicated working space.” (2021)</p>
<p>“I have been working much more frequently, and directly with COVID-positive patients as a hospital worker. I have also struggled with work/life/school balance, as everything seems to be in flux. Personally, I miss being around friends, and going to public places. Professionally, I feel burnt out. The standards of care and PPE recommendations are always changing.” (2021)</p>
<p>“For us, it's been busier than usual because, at work, there's such a drastic change in work practices. We are spending a lot of time not only doing the work we usually do, but then also learning a new process, writing new processes, and sometimes responding to media. Half my job lately has been responding to media inquiries related to COVID. So, it's been more work to do which means that sometimes the balance with classes, the time gets crunched in that way. So, there's been that effect on work-life balance.” (2021)</p>
3.1.2 Transition to remote work, school and training
<p>“It's just having a self-discipline to do that. I can see where if folks are having to balance childcare needs and having the entire family running around the house. It's going to be a little bit more difficult for them to find that insulated time that's cool. Going into class used to offer them [that time]. As we move forward and we see what a different path the academics is going to take...” (2020)</p>
<p>“It was kind of rough initially, but I won't say for all courses because some of them were online...so I was kind of used to that, but some of our other courses required laboratory sessions. We had a hard time trying to play around those ones.... It started rough but it ended well...” (2020)</p>
<p>“... the conferences and some of the other platforms that are currently not going on. Hopefully some of that spins back up in the next year. We're trying to figure out how to work that in now that everything's gone virtual. Again, some of the networking opportunities for employment post-program. How do we manage those opportunities for our – for us as a group? How do we get the face time in order to be able to get employed as programmed? That's always something that's everybody's mind in addition to – hopefully clinical opportunities and some of these on the job training opportunities. How do we manage that kind of exposure moving forward and put those opportunities back into the program?” (2020)</p>

“I’m almost graduating. My biggest concern is what’s the job market going to be like on August. I know that our program is pretty great about sending – enabling us to go to symposium and conferences and stuff like that. That all came to a halt as of March or April. Some of the biggest ones... in my program just the job search process was a conference coming up in June which is now being hosted virtually.” (2020)

3.1.3 Perception of the occupational safety and health field

“I think it’s just basically just totally illustrated just how important our field is and how important it is to have occupational health nurses...PPE [personal protective equipment]and safety parameters. I think it’s definitely just showed me just how important it was for me to go into this field of nursing for sure.” (2020)

“I was able to use my experience there to answer questions and give guidance for my customers who continue to work on-site. I have seen coworkers struggle to explain why one should wear a mask and disinfection of surfaces.” (2020)

“I believe it has promoted the profession to those who may not have known what OH/EHS [occupational health/environmental health specialist] professionals did. It has shown the ambiguous nature of being an EHS professional and the adaptability of core EHS [environmental health and safety] concepts to a wide array of hazard control techniques and mitigation efforts.” (2020)

3.1.4 Need for additional training

“Careful thought must be given to pre-planning for events of this nature, so organizations have a pre-set series of steps to follow when faced with this type of event. The correct response is really a function of a strong plan beforehand.” (2020)

“Safe practices for workplace etiquette with respect to minimizing the spread. Also, with the increase of working from home I think there will be a need for making our home workspaces more ergonomic to minimize MSDs [musculoskeletal disorders].” (2021)

“OHS professionals must play a leadership role in their organization to recognize and respond to changing risks in the face of uncertainty. This does not just apply to their immediate team, but they should reach out to other departments proactively to ensure they have the proper considerations and resources in place. Training on how to quickly communicate through multiple levels of organizations to implement change management for external emergency situations, such as environmental and weather-related hazards, contagious diseases, etc.” (2020)

“Even in my job, which is incredibly health and safety minded, there was a lot of confusion at the beginning of the crisis as to appropriate safety precautions and proper use of PPE [personal protective equipment]. My office took longer than I expected to practice social distancing properly... and some managers still exhibit lack of understanding of modeling behavior according to guidelines. However, it has been a learning process and demonstrated the importance of establishing, training, monitoring and evaluating health and safety systems that are adaptable to changing conditions, and I hope to improve my agency’s efforts to prepare for and respond to similar events in the future.” (2020)

3.1.5 Career plans

“It [COVID] hasn’t impacted it [career plans]. It has shown, of course, the whole of public health, how important it is.” (2020)

“It has not impacted my career plans, however, it has helped me to better understand many public health concepts, as I am able to observe examples in the news, at work and in social circles.” (2021)

“This experience has heightened my desires and aspirations to work in the field of occupational health and safety. I look forward to all this program contributes to my educational path. I am very grateful for this opportunity to dive deeper in public health.” (2021)

“It’s made me a little nervous because I do not know what the job market will be like upon graduation.” (2020)

“This experience has heightened my desires and aspirations to work in the field of occupational health and safety. I look forward to all this program contributes to my educational path. I am very grateful for this opportunity to dive deeper in public health.” (2021)

“This experience has contributed to burnout for me... seeing the daily impact of COVID on patients, the long term disabilities they will endure, it can be difficult to see the significance of some of the content in the papers I’m writing for school. Mentally I just feel very tired, and unsure if I can/want to continue academically.” (2021)

“[The pandemic] has solidified that bedside nursing is not where I would like to be long term. I would like to see OH nurses play a larger role in preventing COVID amongst workers.” (2021)

“[COVID-19 has] cemented my plans to not go into an applied [research] career” (2021)

“[I] can do more good doing applied research outside of an academic context.” (2021)

3.2.1 *What’s needed now?*

“I would say it could be understanding [that is needed]. It’s not that maybe students don’t want - not even that the community partners don’t want to help students - it’s just the situation that we are in right now. I wish they could increase their flexibility as long as it’s producing the same results. Hey, it’s what it is. Nobody planned for this.” (2020)

“Being remote has been emotionally isolating, and sometimes I feel like I am missing out on the opportunity to connect with other graduate students who are also trying to figure out what they want to do in the future. It would be helpful to have peer support, but I am etc. not sure what that would look like in a remote setting.” (2021)

Discussion | The limitations of this project include a relatively small number of participants, with under-representation from some of the SERC programs, and less than a 30% overall response rate in 2021 (Table 2). Participants were considerably busier in 2021 compared to the 2020 lockdown which may have prevented them from participating in optional activities. Also, participant feedback could be subject to confirmation or social desirability biases. Despite these limitations, the results provide insights into the training needs for emerging OSH leaders. Strengths of the study included collection of feedback from participants across multiple OSH fields and the inclusion of focus groups which provided context and

detail to enrich survey findings. To reduce potential for bias, the survey was anonymous and focus groups were conducted by an independent evaluation team (not by faculty who supervise or teach the participants).

This activity brought several aspects of OSH education needs from the trainees’ perspectives to light. Participants expressed a desire to take on emerging issues in the field and suggested several trainings that could help them in their current and future careers. Suggestions included topics such as emergency management, evaluation and development of standard operating procedures, workplace change

management, mental health and resiliency, and infection risk assessment and control. In a dynamic environment like the pandemic, ERCs may also want to further incorporate systems thinking towards safety management, as observed by Saurin⁹, as pandemic-like conditions impact all sectors and industries and the systems that cross them (e.g. supply chains, communication, etc.).

A follow-up with SERC program directors on the impacts of COVID 19 on curriculum enhancements, program modifications, and graduation found that while no formal changes were made to academic programs or required courses, all classes, meetings and events were quickly shifted to online formats. Additionally, COVID-19 research and techniques for prevention and response to pandemic-related issues were added to course content. For example, the OHN program developed COVID-19 modules to enhance didactic content for students prior to their clinical experiences, which were expanded to include telehealth services, COVID-19 testing clinics, contact tracing, and immunization clinics. Fortunately, graduation timelines were not impacted due to COVID-19, with the exception of one student who required a brief extension.

As stressors resulting from telework and virtual learning have become increasingly clear¹⁰⁻¹², participants spoke about the importance of mental health and coping with uncertainty and adaptation to new procedures and conditions. A similar study¹³ found that 71% of college students affirmed increased stress and anxiety due to the pandemic and social isolation, mostly attributed to stressors such as fear and worry about their own health and that of their loved ones. With reports of increased anxiety and depression in students,¹⁴ there is a need to promote resiliency and sensitize institutions to the risk of burnout by offering supports for students and employees such as counseling, interactive course activities, and virtual social events. Participants were enrolled in and offered a variety of resources including COVID-19 resources and updates webpages; academic resources and student toolkits; counseling center resources such as online appointments, online tools, daily virtual workshops; health and wellness services; emergency relief; and food pantries.

Results were disseminated to SERC leadership and faculty, who were encouraged to take steps towards filling the gaps noted by participants. Course sequencing was modified, interdisciplinary experiences adapted, flexibility in the availability of courses by semester was built in, and further enhancement of courses and trainings were made (Table 3). Despite all these measures, delivering the training remotely has limitations, particularly in

hands-on laboratory and clinical experiences, and national certification courses such as spirometry and hearing conservation that require live practice sessions. Hilburg, et al. identified¹⁵ strengths and limitations of using technologies to facilitate distance learning of medical students, such as video-conferencing, social media, and online learning platforms, and offered suggestions for fulfilling graduate medical education requirements. These rapid and widespread changes across disciplines impact educators and learners alike¹⁵.

To overcome the shift from in-person to virtual networking and leadership development, programs must find new ways to highlight trainees and connect them with professional contacts and networks in formal and informal ways. Breakout sessions, virtual mentoring sessions, online presentations, symposia or podcasts are proactive ways to engage and spotlight trainees' research.

Implications for Public Health Practice | The ERC trainees are important to the future of OSH, and their preparations foster a unique skillset within and across disciplines. These findings will help the SERC to modify teaching and training methodologies to ensure that program objectives are met, and that trainees are well-prepared as future leaders. Given the changing conditions associated with COVID-19 and future pandemics, SERC training will continuously evolve to prepare graduates for the increasing complexity of OSH policy, practice, and research. Considering the adverse mental health effects of circumstances surrounding the pandemic on the entire population, it is also pertinent that adequate attention is given to creating policies and practices that address the overall wellbeing of trainees, ensuring that this is not neglected while in pursuit of professional acme.

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Corresponding Author: Jennifer Marshall, PhD, CPH, Associate Professor, Director of Planning and Evaluation, Director of Outreach, Sunshine Education and Research Center, University of South Florida College of Public Health, 13201 Bruce B. Downs Blvd., Tampa, FL 33612, (813) 396-2672, jm@usf.edu, ORCiD ID 0000-0003-3907-7729
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