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The effect of the COVID-19 pandemic on osteopathic education in ACGME-OR residencies from February 2020 to February 2021

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Abstract

Context: It remains to be determined exactly how the COVID-19 pandemic has and will continue to impact osteopathic resident education, in particular as it pertains to treatment with osteopathic manipulative medicine (OMM). Although the long-term effects of the pandemic cannot be determined yet, changes in current resident education can be analyzed.

Objectives: Here, we describe how the format, frequency, and environment of OMM training have changed in residency programs from prior to February 2020 to the “lockdown” period of February 2020 to June 2020, and then to the “recovery” period of July 2020 to February 2021.

Methods: A 19-question survey inquiring about the above three categories was emailed via SurveyMonkey to 282 Accreditation Council for Graduate Medical Education (ACGME) residency programs with osteopathic recognition at the end of January 2021.

Results: Of the 282 programs surveyed, 24.5% (69) responded. Osteopathic neuromusculoskeletal medicine (ONMM) programs were excluded from the data analysis, resulting in a modified sample size of n=60. Responses indicated that residency programs dramatically decreased the frequency of OMM didactic education sessions (100.0% [60] reported offering OMM didactic education before the lockdown period; compared to 73.3% [44] during the lockdown period) and shifted their educational programs

from an in-person-only environment (88.3% [53] before lockdown; 8.3% [5] during lockdown) to either a combined in-person/virtual platform (6.7% [4] before lockdown; 31.7% [19] during lockdown) or to a virtual-only platform (0.0% [0] before lockdown; 46.7% [28] during lockdown). During the recovery period, 91.7% (55) programs reported giving some form of OMM didactic education. The percentage of programs reporting in-person-only, combined in-person/virtual platform, and virtual-only didactic education were 3.3% (2), 53.3% (32), and 41.7% (25), respectively, during the recovery period. The preferred method of instruction changed from a combination of resident and attending lectures with a hands-on component (55.0%; 33) before lockdown, to the same but without a hands-on component (28.3%; 17) during lockdown, and back to the same but with a hands-on component (36.7%; 22) during the recovery period. Furthermore, the number of programs offering OMM didactic education [OMM patient care] at least once a month decreased from 70.0% (42) [78.3% (47)] before the lockdown period to 46.7% (28) [48.3% (29)] during the lockdown period. It then increased to 55.0% (33) [73.3% (44)] during the recovery period. Finally, before the lockdown period, programs offered OMM patient care predominantly in a combination of an inpatient/outpatient environment (63.3%; 38). The preferred patient care setting changed to an outpatient-only environment (43.3%; 26) during the lockdown period and then back to a combination of an inpatient/outpatient environment (45.0%; 27) during the recovery period.

Conclusions: This study demonstrates that programs have been dramatically impacted by the COVID-19 pandemic, by the augmentation of the osteopathic learning environment, and by the delivery of OMM to patient care within the training programs. These impacts were still present 1 year after the start of the pandemic. It will be imperative for ACGME Osteopathic Recognition (ACGME-OR) programs to continue an assessment of these impacts on resident physicians' learning and preparedness.

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Over the course of 71 days, the United States reeled from the first World Health Organization (WHO) announcements of a coronavirus-associated pneumonia to widespread statewide-issued stay-at-home orders. The United States declared a public health emergency on February 3, 2020, and President Trump declared COVID-19 a National Emergency on March 13, 2020 [1]. In an unforeseen twist of fate, the COVID-19 pandemic had been superimposed on the summer 2020 conclusion of a 5-year transition period to a single accreditation system for US allopathic and osteopathic Graduate Medical Education (GME) under the accreditation authority of the Accreditation Council for Graduate Medical Education (ACGME) [2, 3]. To formalize the teaching of osteopathic principles and practice in the new single GME environment, programs could apply to the ACGME for the designation of Osteopathic Recognition [4]. The *Glossary of Osteopathic Terminology* defines osteopathic manipulative medicine (OMM) as the application of osteopathic philosophy, structural diagnosis, and use of osteopathic manipulative treatment (OMT) in the diagnosis and management of the patient [5]. In this study, we sought to investigate the effect of COVID-19 on osteopathic education in these ACGME Osteopathic Recognition (ACGME-OR) programs.

Methods

Because data were collected through a voluntary survey whose results are anonymized, and no patient data was collected, IRB approval was not sought. No study funding was acquired, no clinical trial registry was utilized, all participants were made aware that the survey was voluntary, and they all consented. No participant compensation was offered. There were no known conflicts of interest.

This is a phenomenological study with an interpretive design, looking at the response of ACGME-OR programs to the COVID-19 global pandemic. Utilizing the ACGME public database of programs with OR and their program contacts, a 19-question survey was emailed via SurveyMonkey (available in the supplemental material) [6]. The survey was sent to 282 program contacts at the end of January 2021. The survey was open for 3 weeks (January 31, 2021 to February 21, 2021) with a reminder email sent out after 2 weeks. All survey responses were included in the analysis except for those from ONMM programs. The survey was not validated by a third party. Questions included demographic information such as specialty and location as well as information on general didactic structure/frequency and osteopathic didactic structure/frequency from prepandemic, during the height of pandemic lockdowns, and “current” (generally post-vaccination) time frames. Frequency and location of resident or fellow physicians integrating OMM into patient care was also assessed. Two of the authors (SB and NB) conceptualized the study

and contributed to the writing and editing. SB also gathered the data. AE contributed to the analysis, writing, reviewing, and editing.

Results

The survey was sent to 282 ACGME-OR residencies with 69 surveys completed, for a response rate of 24.5%. Of the 69 respondents, 55.1% (38) were family medicine, 13.0% (9) were ONMM, 8.7% (6) were internal medicine, 4.3% (3) were pediatrics, 4.3% (3) were surgery, 2.9% (2) were orthopedic surgery, 2.9% (2) were “other,” 1.4% (1) was emergency medicine, 1.4% (1) was transitional year, 1.4% (1) was obstetrics and gynecology, 1.4% (1) was otolaryngology, 1.4% (1) was psychiatry, and 1.4% (1) was internal medicine/pediatrics. Among the responses, 37.7% (26) came from the three states with the most responses: Oklahoma (14.5%; 10), Illinois (11.6%; 8), and Ohio (11.6%; 8). For data analysis, the nine ONMM programs were excluded from data analysis, resulting in 60 respondents utilized for data analysis.

Didactic education

As shown in Table 1, prior to February 2020, 88.3% (53) of ACGME-OR programs responding to the survey reported in-person-only didactics, with only 6.7% (4) reporting a combination of in-person and virtual platform (Zoom or other videoconferencing software) didactic sessions. No programs reported utilizing a virtual platform as their only delivery mechanism for their didactic curriculum. Didactic sessions that covered OMM were reported as occurring monthly in 61.7% (37) of programs, followed by every 3 months in 18.3% (11) of programs, as shown in Table 2. During the height of the pandemic from February 2020 to June 2020, there was a dramatic decrease of in-person-only didactic sessions, with only 8.3% (5) of respondents indicating utilization of this delivery method, as shown in Table 1. There was an increased utilization of combined in-person/virtual didactics to 31.7% (19) of programs and virtual-only didactics utilized at 46.7% (28) of programs, also shown in Table 1. There was additionally a decrease in the number of programs offering monthly didactic sessions with OMM to 40.0% (24) of programs, and 26.7% (16) of programs provided no OMM didactic education during this period (Table 2). During the recovery period of July 2020 to February 2021, programs continued to utilize a hybrid of in-person and virtual didactics or virtual-only didactics at higher rates than before the COVID-19 pandemic, at 53.3% (32) and 41.7% (25) respectively (Table 1). The number of programs offering no OMM didactic education fell to 8.3%

Table 1: The impact of the COVID-19 pandemic on the general didactic education format in ACGME-OR programs.

Session type	Baseline (prior to February 2020) n=60	Lockdown period (Feb 2020–June 2020) n=60	Recovery period (July 2020–Feb 2021) n=60
In-person-only didactic sessions	53 (88.3%)	5 (8.3%)	2 (3.3%)
Combination of in-person and virtual didactics	4 (6.7%)	19 (31.7%)	32 (53.3%)
Virtual-only	0 (0.0%)	28 (46.7%)	25 (41.7%)
No formal didactics	1 (1.7%)	6 (10.0%)	0 (0.0%)
Other	2 (3.3%)	2 (3.3%)	1 (1.7%)

ACGME-OR, Accreditation Council for Graduate Medical Education-Osteopathic Recognition.

Table 2: The impact of the COVID-19 pandemic on the average frequency of OMM didactic education sessions in ACGME-OR programs.

Frequency	Baseline (prior to February 2020) n=60	Lockdown period (Feb 2020–June 2020) n=60	Recovery period (July 2020–February 2021) n=60
1-2 times per week	1 (1.7%)	1 (1.7%)	2 (3.3%)
Weekly	2 (3.3%)	2 (3.3%)	4 (6.7%)
Biweekly	2 (3.3%)	1 (1.7%)	4 (6.7%)
Monthly	37 (61.7%)	24 (40.0%)	23 (38.3%)
Every 3 months	11 (18.3%)	7 (11.7%)	8 (13.3%)
Every 6 months	2 (3.3%)	4 (6.7%)	8 (13.3%)
Yearly	1 (1.7%)	1 (1.7%)	2 (3.3%)
Never	0 (0.0%)	16 (26.7%)	5 (8.3%)
Other	4 (6.7%)	4 (6.7%)	4 (6.7%)

ACGME-OR, Accreditation Council for Graduate Medical Education-Osteopathic Recognition; OMM, osteopathic manipulative medicine.

(5) (Table 2). Figure 1 summarizes the information in Table 2 by showing the number of programs offering OMM didactic sessions with frequencies of >12, 7–12, 3–6, 1–2, and 0 times per academic year for the three time periods analyzed in this study.

Table 3 demonstrates a dramatic change in the method of instruction of OMM didactic education going into the lockdown period and from the lockdown period into the recovery period. Before the lockdown period, the favored method of instruction was a combination of resident and attending lecture with a hands-on component (55.0%; 33). Resident lectures with a hands-on component (8.3%; 5) were favored over resident lectures without a hands-on component (3.3%; 2). The same held true for attending lectures, with 15.0% (9) reporting a hands-on component and 5.0% (3) reporting no hands-on component. During the lockdown period, the favored method of instruction became a combination of resident and attending lectures without a hands-on component (28.3%; 17). Lectures without hands-on components were preferred over those with a hands-on component for lectures by attendings (20.0%; 12 compared to 1.7%; 1) and by residents (10.0%; 6 compared to 0.0%; 0). After the lockdown period, the preferred method of instruction again became a combination of resident and attending lecture with a

hands-on component (36.7%; 22), as it was before the lockdown period. However, resident lectures without a hands-on component (6.7%; 4) were still preferred over those with a hands-on component (0.0%; 0) and attending lectures without a hands-on component (16.7%; 10) were still preferred over those with a hands-on component (6.7%; 4), as it was during the lockdown period.

OMM direct patient care

The impact of the COVID-19 pandemic on the utilization of OMM in patient care in ACGME-OR programs is demonstrated in Tables 4 and 5. Prior to February 2020, 56.7% (34) of respondents reported residents or fellows utilized OMM in patient care at least weekly, and 21.7% (13) reported utilizing OMM one to three times per month (Table 4). A total of 63.3% (38) of programs reported that residents were utilizing OMM for direct patient care in both an outpatient and inpatient environment, whereas 26.7% (16) reported utilization only in the outpatient care of patients (Table 5). During the height of the pandemic from February 2020 to June 2020, there was a dramatic decrease in the number of designated osteopathic residents and fellows utilizing OMM in patient care. The reported frequency of utilization

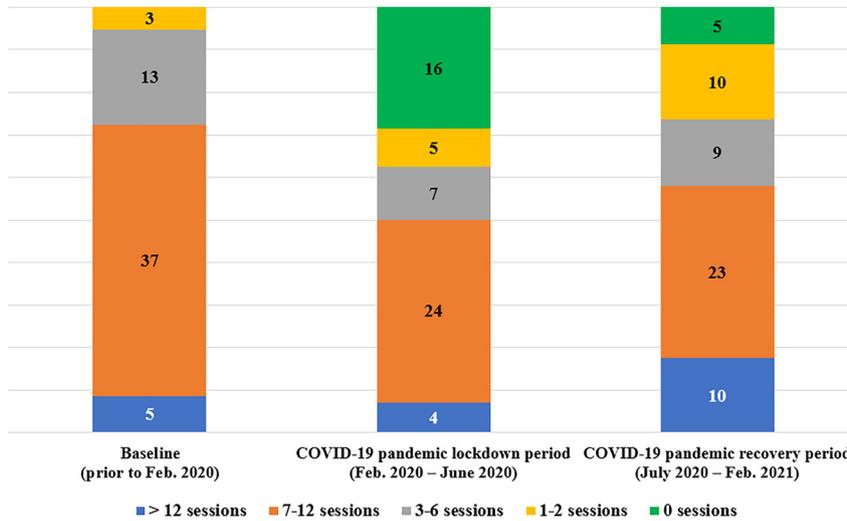


Figure 1: The impact of the COVID-19 pandemic on osteopathic manipulative medicine (OMM) didactic education in Accreditation Council for Graduate Medical Education-Osteopathic Recognition (ACGME-OR) programs as gauged by the number of OMM didactic sessions per academic year.

Table 3: The impact of the COVID-19 pandemic on the method of instruction of OMM didactic education in ACGME-OR programs.

Method of instruction	Baseline (prior to February 2020) n=60	Lockdown period (Feb 2020-June 2020) n=60	Recovery period (July 2020-February 2021) n=60
Resident lecture only	2 (3.3%)	6 (10.0%)	4 (6.7%)
Resident lecture with hands-on component	5 (8.3%)	0 (0.0%)	0 (0.0%)
Attending lecture only	3 (5.0%)	12 (20.0%)	10 (16.7%)
Attending lecture with hands-on component	9 (15.0%)	1 (1.7%)	4 (6.7%)
Combination of resident and attending lectures only	6 (10.0%)	17 (28.3%)	15 (25.0%)
Combination of resident and attending lecture with hands-on component	33 (55.0%)	7 (11.7%)	22 (36.7%)
Never	0 (0.0%)	15 (25.0%)	3 (5.0%)
Other	2 (3.3%)	2 (3.3%)	2 (3.3%)

ACGME-OR, Accreditation Council for Graduate Medical Education-Osteopathic Recognition; OMM, osteopathic manipulative medicine.

of OMM in patient care was 16.7% (10) utilizing OMM at least weekly and 31.7% (19) utilizing OMM one to three times per month. The proportion of programs reporting residents not utilizing OMM in the care of patients rose to 30.0% (18), compared to 0.0% (0) prior to February 2020 (Table 4). From February to June 2020, there was a decrease in utilization in the combined inpatient and outpatient environment to 26.7% (16) and an increase in the outpatient-only environment to 43.3% (26) (Table 5). In July 2020 to February 2021, programs reported residents and fellows increasing the utilization frequency of OMM, but its use was still at a lower frequency than prior to the start of COVID-19 pandemic in February 2020. A total of 40.0% (24) of programs reported utilization of OMM during patient care at least weekly, and 33.3% (20) of programs reported utilization one to three times per month. However, 6.7% (4) of programs continued to report that residents and fellows were not utilizing OMM in patient care (Table 4). Similarly, 41.7% (25) of programs reported that OMM patient care was only occurring in the outpatient environment (Table 5).

Discussion

The COVID-19 pandemic dramatically impacted the operation of ACGME-OR residency programs, affecting both the learning and patient care environment. At the peak of the lockdowns in the United States from February 2020 to June 2020, programs dramatically decreased the frequency of didactic education sessions and shifted their educational programs from a predominately in-person environment to either a combined in-person/virtual platform or to a virtual-only platform such as Zoom. Although a virtual learning environment can provide a sustainable, high-quality education that encourages flexibility in participation and collaboration among learners, it is not a replacement for hands-on, experiential training in a GME environment [7]. An additional concern surrounds the ability to learn skills (i.e., OMM techniques) and their application to patient care in this virtual environment. Fewer opportunities for ACGME-OR osteopathic residents and fellows to provide

Table 4: The impact of the COVID-19 pandemic on the average frequency of utilization of OMM in patient care in ACGME-OR programs.

Utilization of OMM	Baseline (prior to February 2020) n=60	Lockdown period (Feb 2020–June 2020) n=60	Recovery period (July 2020–February 2021) n=60
1–2 sessions per week	34 (56.7%)	10 (16.7%)	24 (40.0%)
1–3 sessions per month	13 (21.7%)	19 (31.7%)	20 (33.3%)
2–4 sessions per year	4 (6.7%)	3 (5.0%)	6 (10.0%)
1 session per year	0 (0.0%)	0 (0.0%)	0 (0.0%)
Other	9 (15.0%)	10 (16.7%)	6 (10.0%)
Never	0 (0.0%)	18 (30.0%)	4 (6.7%)

ACGME-OR, Accreditation Council for Graduate Medical Education-Osteopathic Recognition; OMM, osteopathic manipulative medicine.

Table 5: Impact of the COVID-19 pandemic on patient care environment for OMM patient care in ACGME-OR programs.

Care environment	Baseline (prior to February 2020) n=60	Lockdown period (Feb 2020–June 2020) n=60	Recovery period (July 2020–February 2021) n=60
Outpatient-only	16 (26.7%)	26 (43.3%)	25 (41.7%)
Inpatient-only	4 (6.7%)	5 (8.3%)	5 (8.3%)
Combination outpatient and inpatient	38 (63.3%)	16 (26.7%)	27 (45.0%)
Other	2 (3.3%)	13 (21.7%)	3 (5.0%)

ACGME-OR, Accreditation Council for Graduate Medical Education-Osteopathic Recognition; OMM, osteopathic manipulative medicine.

OMM to patients and the shift during the active COVID-19 period to a predominately outpatient care environment for OMM has the potential to have a long-term impact on practice patterns for these providers.

Even when OMM exposure was offered to residents, of particular concern is the striking decrease in the amount of hands-on OMM exposure that occurred during and after the lockdown period. Prior to the lockdown period, 78.3% (47) of programs included a hands-on OMM component in their didactics. During the lockdown period, the percentage fell to 13.3% (8). During the recovery period, still fewer than half of the programs (43.3%; 26) offered a hands-on component. Program directors need to carefully consider how to compensate for these lost opportunities in practicing hands-on OMM techniques, because OMM techniques, along with the osteopathic philosophy, are the hallmarks of the osteopathic profession. One potential mitigating strategy could be to increase the number of hands-on OMM CME courses offered in the future. This would allow early-career osteopathic physicians to better fine-tune their OMT skills during and even after they have completed residency. Additionally, even in cases where OMM patient care must be put on hold, benefit could come from hands-on OMM didactic training on fellow residents, attending physicians, and volunteer patients.

Study strengths and limitations

The strengths of this study include presenting responses from a wide variety of specialties and a wide regional distribution of ACGME-OR programs. This study examines utilization practices of OMM in the didactic and patient care environment before the pandemic and then in the active lockdown and postlockdown environments, and this could benefit researchers looking at the osteopathic learning environment in the future. The limitations of this study include its response rate of only 24.5% (69 out of 282). Although this may be considered a reasonable response rate for a survey-based research project, it is difficult to know with certainty whether programs responding are representative of the larger group. The study data are also limited by recall bias, particularly in the assessment of prepandemic baselines and early pandemic events. Finally, this study only covers a relatively short amount of time in the postlockdown period and does not take into account future lockdown periods or spikes in COVID-19 cases beyond February 2021. Ideally, further studies will shed light on whether or not osteopathic residency education returns to, for example, incorporating the same level of hands-on training as it did before the pandemic.

Data exclusions

ONMM programs were excluded from the data analysis. These programs are governed by the ACGME program requirements in ONMM [8]. These program requirements define the amount and frequency of learning and patient care required in OMM and would have skewed the results to a higher frequency of OMM didactic education and patient care experiences.

Conclusions

ACGME-OR programs are continuing to grow and develop. The development of best practices related to the establishment of osteopathic learning environments and the applications of hands-on OMM patient care in different specialties will continue to evolve over time. This study demonstrated that programs have been dramatically impacted by the COVID-19 pandemic, by the augmentation of the osteopathic learning environment, and by the delivery of OMM to patient care within the training programs. These impacts presented one year after the start of the pandemic. It will be imperative for ACGME-OR programs to continue an assessment of these impacts on resident physicians' learning and to ensure that they are prepared to enter clinical practice and apply osteopathic integrated care without direct supervision. One such strategy to ensure greater preparedness could be to increase the number of hands-on OMM Continuing Medical Education (CME) courses that are offered. Another could be to encourage hands-on didactic education on fellow residents, attending physicians, or volunteer patients when OMM patient care has been put on hold. Regardless, vigilance is required on the part of Directors of Osteopathic Education in ACGME-OR programs to ensure that the import contribution of osteopathic principles and practices to patient care do not become another casualty of the COVID-19 pandemic.

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or analysis and interpretation of data; all authors drafted the article or revised it critically for important intellectual content; all authors gave final approval of the version of the article to be published; and all authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Competing interests: None reported.

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