The Osteopathic Approach During the 1918 Influenza Pandemic, Featuring Newly Analyzed Case Reports

Leslie M. Ching, DO; Ashley Watson, DO; Tyler Watson, DO; Philip Ridgway, DO

Abstract

Osteopathic physicians played a pivotal role in treating patients suffering from the H1N1 influenza A virus of the 1918 Influenza Pandemic. This article focuses on case reports and questionnaire answers from the *Journal of the American Osteopathic Association (JAOA)*, now the *Journal of Osteopathic Medicine* (*JOM),* and *Osteopathic Physician* concerning the modalities, techniques, and efficacy of osteopathic treatments of the 1918 pandemic. There are 19,565 patients who are represented in this analysis. The results are compared to the often-cited 110,120 patient cases reported by the *JOM* in 1920. Several different approaches, including lymphatic and visceral techniques, were widely used at the time, and their historic incorporation into patient treatment is explored. There is a discussion of the geographic location and characteristics of the practices. Statistical breakdown of mortality rate, the most commonly used approaches, somatic dysfunctions commonly treated, physician anecdotes, and other common remedies used by osteopathic physicians, are noted additionally. A comparison is done of the literature regarding the osteopathic approach for COVID-19. The newly analyzed case reports in this article demonstrate a similar mortality rate as in the 1920 *JAOA* article and illustrate the geographical distribution, treatment approaches, and personal stories of osteopaths during the pandemic.

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Correspondence address:

Leslie M. Ching, DO
199 17th St
Suite J
Pacific Grove, CA 93950
(540) 818-2801
lmgching@gmail.com

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Introduction

During 1918-1919, the H1N1 influenza A virus was suspected to cause 675,000 deaths in the US and an estimated 50 million deaths globally.[1] The pandemic occurred near the end of World War I and was calculated to be roughly three times as deadly as the war itself.[2] At the time, osteopaths were faced with multiple challenges, including the death of A.T. Still, MD, DO in December of 1917, absence of draft exemptions for osteopathic medical students, and the opposition to allowing osteopaths into the armed forces as physicians.[3] In the winter of 1919, following the initial outbreak of the pandemic, different questionnaires were sent to American and Canadian osteopathic physicians from the American Osteopathic Association (AOA) and *The Osteopathic Physician* (*OP*) journal to better understand the mortality, common somatic dysfunctions, osteopathic treatments, adjunctive treatments, and complications of the disease.[4,5] The AOA questionnaire focused on epidemiology while the *OP* questionnaire focused on treatment approaches (See Appendix 1).[4] Some of these questionnaire replies were published as case reports in the *Journal of Osteopathic Medicine* (*JAOA),* now the *Journal of Osteopathic Medicine* (*JOM),* and *OP* to provide insights into the treatment of influenza and its comorbidities without the medicines used by contemporary allopathic physicians. This dataset is important because it has not been analyzed previously. It can be used as a comparison to the well-known 1920 *JAOA* study by Smith.[6]

The 1920 *JAOA* study was a review of 110,120 patient cases from responses to the AOA questionnaire. From these cases, there were 257 deaths. This was calculated as a mortality rate of 0.25%, or 1/40th that of their allopathic physician counterparts. For the AOA questionnaire, the respondents were asked to only report "definite and well-defined cases," as there were no definitive laboratory tests were available at the time.[7]

There are some notable critiques of the impressive statistics gathered in the *JAOA* study. Dery[8] noted in a letter to the editor that there was diagnostic uncertainty as to whether patients actually had the influenza, pneumonia, or another illness, since laboratory testing or imaging was significantly limited at that point. Possible confounding factors include timing of the cases, since the first wave was less virulent, and age of the patient, as the highest mortality rate was in patients between 20-40 years of age. The fact that the statistics gathered were based

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on retrospective reports by the treating physicians introduces many confounding variables as well. Graham[9] additionally comments that we are uncertain of how many of the osteopathically treated patients were rural, which may have provided benefits such as lower population density, less exposure to the virus, and a stronger immune system. Of note, even with our current technologically advanced laboratory testing and imaging, the diagnosis and prevalence of COVID-19 is still uncertain.[10]

There has been no re-examination of the 110,120 patient cases reported by the *JAOA*. It is uncertain if the original questionnaires still exist.

Methods

The distribution and caseload of osteopathic physicians treating the influenza pandemic can be estimated by the case reports in the osteopathic journals. (See Figure 1 for an example of case reports in the *OP*.) During the pandemic, the *JAOA* and *OP* published case reports from 132 osteopathic physician practices, representing 19,565 patients.[4,5] (See Appendix 2a-c online for summary of case reports.) The *OP* published case reports from January 1919 to February 1920; the *JAOA* published them from January to April 1919. Unfortunately, it is not certain how many of these practices and patients were also captured by the *JAOA* questionnaires. However, it could be concluded that these reports are a subset of those questionnaires, representing about 18% of the patients reported in the 1920 *JAOA* review. A few of the *JAOA* and *OP* physician practices overlapped but the overlapping reports were omitted from this analysis, as indicated. The data from the case reports were compiled into spreadsheets and analyzed.

Results

Geographic Distribution and Mortality Rate

The distribution of these practices is assessed by geographical graphing and demographic statistics. Figure 2 shows the physical distribution of reporting osteopathic physicians across the United States, along with their reported influenza case load.

Practices were assessed based on the town's population in 1920.[11] Roughly half of reported practices were in rural communities of less than 10,000 people, highlighting the more rural characteristic of the nation in this time period (see Table 1). Urban and rural physicians reported similar caseloads: practices in towns <10,000 people averaged 217 flu patients each, while practices in towns >10,000 people reported an average of 206 flu patients each.[4,5] This calculation only includes practices that included case numbers.

The mortality rate of influenza patients treated by DOs in towns with a population of less than 1,000 people was slightly higher than the other populations but not significantly so (see Table 1). Not all practices reported their case numbers or mortality numbers, so mortality rates have been adjusted accordingly (see Tables 1 and 2). Reporting of pneumonia cases was sporadic, so this was not included in the analysis.

Each dot represents one reporting practice, and color varies by reported case load as per the legend. Gray dots represent a reporting practice that did not provide the number of flu cases.

Table 1. Breakdown of proportions by town size.

Town Size	<1,000	1k-10k	10k-100k	>100k	Total
Practices	5 (3.8%)	53 (40.2%)	46 (34.9%)	28 (21.2%)	132
Flu Patients (Total)	403 (2.1%)	10,228 (52.3%)	5,328 (27.2%)	3,606 (18.4%)	19,565
Flu Patients (Adjusted)	403	7,566	4,355	2,219	14,543
Mortality Rate (Total)	3 (0.74%)	39 (0.38%)	22 (0.41%)	4 (0.11%)	68 (0.35%)
Mortality Rate (Adjusted)	3 (0.74%)	39 (0.52%)	22 (0.51%)	4 (0.18%)	68 (0.47%)

"Practices" indicates the number of physician practices by town size. "Flu Patients (Total)" indicates the total reported number of osteopathically-treated flu patients by town size. "Flu Patients (Adjusted)" indicates the number of osteopathically-treated flu patients in practices that reported whether there were mortalities or not. "Mortality Rate (Adjusted)" indicates the respective mortality rate for practices which included both mortality and patient caseload.

Each year of the case reports by journal was also analyzed for number of flu patients and mortality rate (see Table 2). This analysis includes duplications of case reports between the *JAOA* and *OP* to accurately reflect what each journal reported. An adjusted mortality rate was calculated to only include practices that reported whether they had patient mortalities or not. Mortality rates were similar between journal years and between journals.

Table 2. Reported Mortality Rate of Patients

Journal	Flu Patients Treated (Total)	Flu Patients Treated (Adjusted)	Total Deaths Reported	Mortality Rate (Total)	Mortality Rate (Adjusted)
OP 1919	11,492	8,647	68	0.592%	0.786%
OP 1920	3,692	1,781	8	0.217%	0.449%
JAOA 1919	6,097	6,097	21	0.344%	0.344%

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Figure 1. Example of Case Reports from the Osteopathic Physician, February 1919.[4] Public domain.

97 "Flu" and 5 Pneumonia Cases—One Death

By Dr. U. M. Hibbets, Grinnell, Iowa

YOU ask me for report of "flu" cases treated, and as you will recall, I am alone (no partner, I mean), doing a very large office practice for a town of this size, outside or bedside work comes hard, more especially if it is in the country. But I have had ninety-seven cases of "flu" and pneumonia, with but one death, that a woman 33 years of age who had never been strong from childhood, and who had a very weak heart, she died from the "flu." Of the above number, five cases were pneumonia cases, resulting from or following "flu," and I lost none of them, altho one man who was in the country eight miles from me had two relapses due to poor nursing, and when you take into consideration the fact that at times it was almost impossible to get nurses, I think it wonderful that we did not lose more of these cases.

And another fact that enters into the care of cases when a man is going day and night almost, as we had to, and being able to see your cases not more than once a day, with one's own vitality going down each day—can anything show better the value of osteopathy than that we should get such results with such a minimum amount of attention to our cases?

When it was all over, I was "on the blink," and hied away to Excelsior Springs, Mo., for a very much needed rest, and may I add, osteopathy is on the map with a better showing and more friends than ever before here.—Fraternally yours, *U. M. Hibbets, D. O., Grinnell, Iowa.*

202 Cases—No Deaths

By W. B. Linville, D. O., Middletown, Ohio

I HAVE, since October 1, 1918, treated 202 flu cases and 20 pneumonia cases up to the present date, without a death.—Respectfully, *W. B. Linville, D. O., Middletown, Ohio.*

117 Cases—No Deaths

By F. A. Barger, D. O., Sidney, Nebraska

I HANDLED 117 "flu" cases without a loss and not one case developed pneumonia.—*Frank A. Barger, D. O., Sidney, Nebraska, January 28th.*

115 Cases—No Deaths

By W. C. Dawes, D. O., Bozeman, Montana

SINCE my last report I have been busy with more "flu" cases. My cases now total 115, with no deaths. One case only developed pneumonia.—*W. C. Dawes, D. O., Bozeman, Montana.*

87 Cases—No Deaths

By James A. Cozart, D. O., Canonsburg, Pa.

ADD 13 more "flu" cases to my previous reports—making a total of 87 cases to date, *without* a *single* death or case of pneumonia or other complication of any kind. Straight osteopathy in large doses did the work. Am the only doctor in this vicinity with such a record as above. It brings patients for other acute and chronic diseases, too.—*Yours truly, James A. Cozart, D. O., Canonsburg, Pa., Feb. 9th.*

91 Cases—One Death

By R. M. Thomas, D. O., Fort Scott, Kansas

AS per your request I make report on my "flu" work up until present date.

Total cases, 91; total deaths, 1; but this was a T. B. case of 2-3 years' standing and should not be taken into "flu" statistics. Highest fever, 104⅗; general range of fever, 100 to 103; average days fever ran 4 to 6.

One case developed double lobar pneumonia on the 4th day of "flu." Case got very bad. An M. D. was called in to see case when very bad and said patient could not live many hours. No medical treatment whatever was given. I stayed by the case and pulled him through; remained all night with him two consecutive nights. Aborted 12-15 cases of penumonia onset by early treatment. Had only two cases pneumonia where M. D. treatment had preceded "flu" treatment, recovery in both instances by osteopathy. This is not much of a report for details, but can be added to the statistics.—*Yours truly, R. M. Thomas, D. O., Fort Scott, Kansas, Feb. 6th.*

Nine Cases—No Deaths

By R. M. Packard, D. O., Oakland, Nebraska

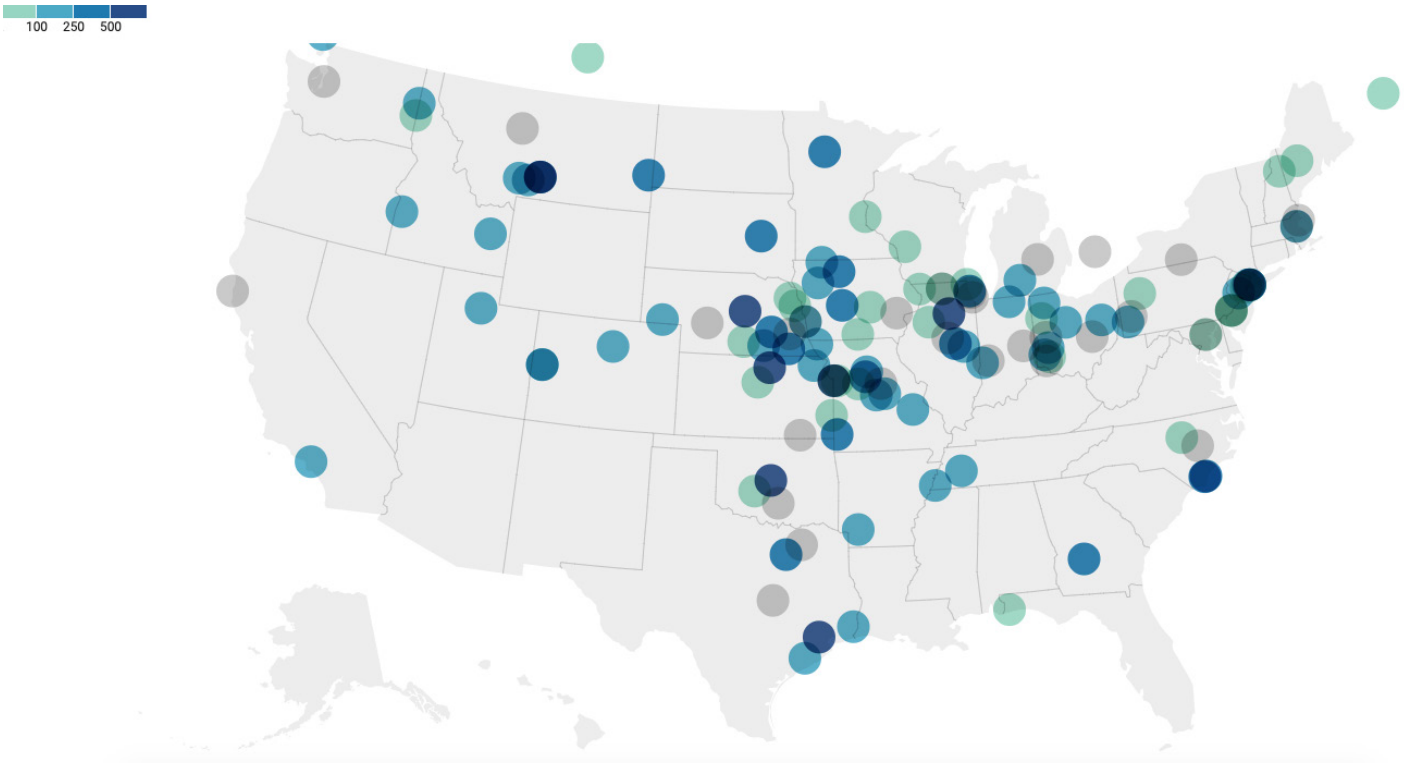
I HAVE had but nine cases of influenza to treat. Temperature went as high as 106, followed by sub-normal temperature. No deaths, no pneumonia. Treatment—rest in bed, enemas containing bi-carbonate of soda, lemonade, hot; light diet, little or no treatment otherwise. Where chest symptoms appeared, gave light treatment to lower cervical and upper dorsal area.

During the illness of one of the local M. D.'s, by request I took over his work and made his calls. I made no change in his treatment for I figure that if the patient had wanted my treatment he would have called me. Two of these cases died, but it is only fair to say that one had diabetes mellitus of two years' standing, and the other was a weak-minded half-wit with a weak heart. I doubt if they could have been saved under any treatment.

One interesting case I ran into was a youngster of four years; saw him on a Monday night and my thermometer said 107°. I was shocked, used the one they had at the house with same result. Ordered baths, enemas, cooling drinks and fever went down 3° in two hours. The M. D. saw him the next day and temperature was 102, next day 100.5° and on the next developed pneumonia, but recovered. I never before had a temperature get that high and the patient live.

In my opinion, I do not believe the "flu" germ can live in an alkaline medium, hence the bicarbonate douche to the nose and throat is very beneficial.—*R. M. Packard, D. O., Oakland, Neb., February 1st.*

Figure 2. Locations and Caseload of Osteopathic Physicians



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This table reflects reported cases and mortality in the respective journal years. Duplicate physician reports between the *JAOA* and *OP* have been retained. "Mortality Rate (Total)" includes all patients. "Mortality Rate (Adjusted)" does not include the patients for which the practices did not report whether there were mortalities or not.

Osteopathic Approach to Treatment of Influenza and Pneumonia in 1918-1920

The *JAOA* and *OP* both differentiate between pneumonia and influenza diagnoses in the provided questionnaires. This differentiation was based on clinical practice standards of the time. Pneumonia was viewed as a complication of influenza and few other cases were considered to be independent of an influenza patient during the pandemic. In a paper from 1937 that characterized the osteopathic response to influenza, Ward[12] commented: "The diagnosis of pneumonia is largely clinical, and, during epidemics, it is relatively easy. The onset is sudden, with generalized aching, fever, mild chills and marked prostration. Usually the symptoms may be accompanied by mild inflammation of the nasopharynx, larynx, and trachea."

In *Osteopathy: Research and Practice*,[13] Still reviews the clinical signs of pneumonia based on Dunligson's text, *A Dictionary of Medical Science*.[14] These signs include fremitus, rales, marked dullness on percussion, bronchial breathing, and bronchophony. However, Still was more concerned with the mechanism of how pneumonia occurred: "The engineer sees pneumonia as an effect, the cause being a tightening of all parts of the entire system" and how this affected the nervous system and circulation.[13]

What kind of osteopathic treatment was done at this time? From written reports by Still's students and early osteopaths, the emphasis was not so much on a "technique," but on the analysis of the anatomic and physiologic dysfunctions that led to the presenting complaints and normalization of the anatomy to restore normal physiology. Arthur G. Hildreth, DO, a prominent early osteopath who was in the first class of the American School of Osteopathy, stated:

> Dr. Still oft-times explained that setting a bone, whether it was a rib, a vertebra, a shoulder or a hip, was not secured by the exertion of strength or force which we applied, but was always accomplished by putting the tissue in normal condition and using manipulation that would give the normal functioning of the muscles the opportunity to re-adjust itself.[15]

Osteopathic techniques were far less standardized in their application and documentation during this early period of osteopathy, making retrospective analysis of specific techniques used by the physicians reporting to the *OP* and *JAOA* difficult. Techniques such as soft tissue and articulation were commonly used. Other approaches included the viscera, viscerosomatics, and lymphatics. However, no physicians specifically employed techniques to open key lymphatic diaphragms and encourage lymphatic flow, as compared to a modern understanding of a lymphatic treatment. See Table 3 for a complete listing of techniques reported.

Table 3. OMT Techniques Reported

Issue/Technique	Soft Tissue	Articulation/HVLA	Visceral
OP 1919	46	35	20
OP 1920	17	18	6
JAOA 1919	19	20	4

Carl P. McConnell, DO, another distinguished and well-published early osteopath, describes his approach for patients with influenza:

> The osteopathic manipulative therapy is of great value, but care has to be taken that it is correctly and carefully performed. Rough and prolonged treatment is strictly contraindicated…A certain amount of the usual muscular relaxation, if carefully given, is indicated. But I find what really counts therapeutically, so far as soft tissue work is concerned, is relaxation of the deep and extensive contractions of the spinal musculature.[16]

He describes his approach for the deep spinal contractures as follows:

> The work of the fingers and hands is to assist in stretching the spinal tissues longitudinally…This method should be given twice daily. Then the ribs should be released. With fingers over the angles and a straight pull parallel with the shaft until the musculature relaxes will suffice.[16]

Regarding the body regions that should be addressed for pneumonia, Still includes the ribs, clavicle, possibly for the effects on the scalenes as accessory muscles of respiration, 11th and 12th thoracic vertebrae, cervical vertebrae for the impact on the vagus, and axillary restrictions, possibly for the myofascial restrictions that can limit lymphatic flow.[13] Treatment of the lumbar region is included for its effects on the kidneys and potentially also the effects on the diaphragmatic attachments.[13]

Other contemporary physicians discussed their treatments of influenza patients. McConnell notes that the deep spinal musculature, ribs, nasal, pharyngeal, cervical, clavicular, and axillary structures should be treated.[16] In his presentation in 1937, Ward[12] discussed addressing the cervicals, thoracics, and rib cage, and using the lymphatic pump.

At the beginning of osteopathic medicine, lymphatics was recognized as being important to health. Still was emphatic about the importance of the lymphatic system in treating infectious disease: "...we strike at the source of life and death when we go to the lymphatics."[17] He was described as performing a version of a lymphatic pump by a student,

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Parker.[18] Earl C. Miller, DO, published a description of the "Miller thoracic pump technique" in 1920, which is still widely taught in osteopathic medical schools.[18] Frederic P. Millard, DO, published his book on lymphatic drainage in 1922.[18] Although we cannot be sure what type of lymphatic treatment osteopathic physicians were doing at the time of the 1918 influenza pandemic, certainly there was an understanding that lymphatics were crucial. It is also interesting to note that these techniques were published immediately after the influenza pandemic so they may have been developed at the time.

Visceral work was also part of the treatment of influenza, as noted by McConnell and other physicians who submitted case reports. However, rather than focusing on the lungs, the liver, kidneys, and intestines were emphasized. McConnell states that the middle lobe of the liver is likely to be congested, for which he recommends "spinal work" to release the deep muscle contractures, drinking fluids, and "very careful abdominal work."[16] Additionally, the kidneys should be treated through the back by placing the hands inferiorly to the kidneys and moving the kidneys "upward and outward."[16] Maintaining bowel movement regularity was something that was emphasized with manipulation and enemas and laxatives.[4]

Another cornerstone of the osteopathic approach is its consideration of viscerosomatic reflexes. In his *Theory of Osteopathy*, published in 1900, Riggs[19] discusses the sympathetic nervous system anatomy in depth and also notes, "The osteopath uses the vaso-motor nerves perhaps more often than any other nerves in the body."[19] He states:

> This muscular contraction is in many cases a reflex effect of stimulation of branches of afferent nerves, other branches of which are distributed to the muscles of the spine. According to Head's law these contractions are the result of changed conditions in the viscus. To remove these will restore the normal circulation to the organ through vaso-motor effects and tend to restore the organ to health. This contraction is reduced by steady pressure applied to the muscles of the back, usually the deeper layers.[19]

Other osteopathic physicians documented treating the viscerosomatics to the heart, lungs, kidneys, and intestines.[4]

In addition to the anatomic and physiologic considerations outlined above, McConnell also used his column in the *JAOA* to discuss environmental and social concerns regarding the spread of influenza:

> Pandemics like the present bring to the fore the many phases of immunity, the importance of the various features of daily life, such as habits, over-crowding, contact, poor ventilation, insufficient food, over-fatigue, overwork, mental states that lower resistance, etc. Even with a reasonably sound body one should never forget that specially virulent strains may find lodgement and cause considerable havoc…[16]

The appropriate duration of treatment was stressed by McConnell and others. McConnell felt that 10-15 minutes was "ample." His assessment of adequate treatment time was in contrast to case reports from the *JAOA* and *OP* which varied in treatment lengths ranging from 2-45 minutes with 20-30 minute treatments being most common (Table 4).[16]

Table 4. Duration of OMT Treatment in Minutes

Journal	Avg Duration	Most Common Duration	Min Duration	Max Duration
OP 1919	15.24	15	2.5	22.5
OP 1920	17.4	20	3.5	30
JAOA 1919	10	-	2.5	20

McConnell adds that the degree of tissue response to treatment correlates to the likely outcome:

> Cases that respond reasonably quick, that is, when the tissues tend to normalize osteopathically, represent a mild involvement, or the organism was previously fairly healthy and is reacting well to the infecting organism. But when the body was previously run down or the infecting organism is of special virulence, to obtain the desired reaction may strain every resource to the utmost.[16]

Osteopathic Physician Experiences and Personal Anecdotes

Physicians responded from a variety of geographical locations including large metropolitan areas and small towns.[5] They noted that "practically none" of the patients who received regular osteopathic treatments contracted influenza or pneumonia.[5] They commonly provided personal anecdotes in addition to strictly answering the questions, providing insights into vastly differing clinical scenarios, harsh conditions, and the grueling hours involved with rural house calls. Burrell Russel, DO, reporting to the *OP* from an Ohio mining town noted that patients were found in rooms with open windows and snow covering part of the bed.[20] Another physician, Roberta Ford, DO, from Seattle reported to the *OP* that she was working 18 hours some days and "… it was really worth while, to work so hard" after not having a single mortality.[21] R.M. Wolf, DO, and C.W. Starr, DO, from Big Timber, MT, noted that a patient lived 40 miles outside of town and a local farm laborer had to help with nursing. Wolf was later involved in a serious car accident attributed to exhaustion from caring for influenza patients.[22] A.D. Finch, DO, of Sweet Springs, MO, made house-calls on an 8-member family, "the most poverty-stricken family I had ever seen," all of whom had influenza. He gave them 82 treatments within 2 weeks and all of them survived.[23]

Other Approaches

Osteopathic physicians included contemporary popular therapies in addition to the standard manipulative therapies. Maintaining bowel

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function through the widespread use of enemas and laxatives was a recurring theme in the questionnaire answers: including enemas of hot water, bicarbonate of soda, and orangeade given with laxatives of either lemon juice, molasses, or olive oil.[4] Importance was given to adequate ventilation of rooms for patients. Sweating was a commonly reported practice to assist in breaking a high fever. Remedies including dionol, and the still commercially available antiphlogistine, were used with varying degrees of support or enthusiasm by some practitioners. Desires to avoid any resemblance of pharmaceuticals was noted by some osteopathic physicians in contrast to notable eagerness to use homeopathy by other osteopathic physicians. Camphorated oil, Vick's Vaporub, mustard plasters, and other liniments were used topically to improve congestion and cough symptoms with varying degrees of reported success. Most reported therapies were praised as being superior to the calomel, alcohol, morphine, quinine, strychnine, and heroin prescribed by allopathic physicians at the time.[4]

Osteopathic Approaches to COVID-19

Since SARS-CoV-2, or COVID-19, spread to the United States in the spring of 2020, there have been several publications and presentations examining the potential effects of OMT in treatment. Generally, OMT in response to the current COVID-19 pandemic has emphasized lymphatics, rib cage mechanics, and viscerosomatics. Hugh Ettlinger, DO, FAAO, who has treated many hospitalized COVID-19 patients at St. Barnabas Hospital in the Bronx, NY, notes that the tissue changes in this disease are best described as dense and inert, feeling like "tar." He has found that the worst restrictions are from T8-L3.[24] He advocates mobilizing the spine with a translatory slide approach and rib raising, sternum and diaphragm myofascial restrictions, treating the membranes, including in the cranium, and ends with the pedal pump. He prefers the pedal pump to the thoracic pump in this population to limit exposure of the physician. Ettlinger also discusses the psychosocial implications of treating otherwise isolated patients.

Richard Chmielewski, DO, wrote a "viral influenza protocol" that incorporated elements based on descriptions of treatments from the 1918 pandemic.[25] This includes rib raising, thoracic pump, liver pump, splenic pump, and pedal pump. Other publications discuss osteopathic self-treatment for health promotion,[26] emphasis on treatment to emphasize lymphatics and balance autonomics,[27] considerations of OMT for pregnant women with COVID-19,[28] and the potential of OMT reducing the need for mechanical ventilation in COVID-19 patients.[29]

Online continuing medical education (CME) videos for OMT to treat COVID-19 have been published. One that was published by the American Academy of Osteopathy and American Osteopathic Association included using thoracic inlet release, rib raising, suboccipital release, thoracic diaphragm release, lymphatic pumps, and the liver pump.[30] Another set of videos published by the American College of Osteopathic Family Physicians highlighted cervical muscle energy, abdominal diaphragm myofascial release, thoracic inlet release, thoracic pump, and rib raising.[31]

Discussion

The CDC reports a 10% mortality rate globally for the 1918 pandemic, although various estimates vary widely based on region, timeframe, and reporting methods.[1] The 1920 *JAOA* study reported a 5%-6% mortality rate in 1918 pandemic patients treated by allopathic physicians.[6] These numbers may be compared with a mortality rate of 0.25% for osteopathic patients as reported by the 1920 *JAOA* article.[1,6] The case reports newly analyzed in this article provide a similar mortality rate of 0.47%. The calculation of this number only includes patient cases from practices that reported whether there were mortalities or not. If all patients are included, the mortality rate decreases to 0.35%.

This data helps to support the hypothesis that osteopathic management was superior to contemporary allopathic management in the particular context of the 1918 pandemic.[4,5] The consistency of the reports in the *JAOA* and *OP* from individual physicians across the nation adds to the credibility of the final analysis of mortality rates.

In the current COVID-19 pandemic, the latest data suggests that on October 5, 2020, out of the 35 million confirmed COVID-19 cases worldwide, there is a mortality rate of 0.29% (taken from data including countries reporting zero deaths). As of October 5, 2020, a mortality rate of 2.9% in the US currently persists.[32] Care should be taken when interpreting these statistics to consider changes in mortality rates over time due to testing availability variations, extensive changes in legislative approaches, differing data collection methods, and treatment protocol drift, as understanding of the virus has evolved.

The representation of rural medicine is of particular note in the case reports. The country's demographic has changed significantly since 1918, when >50% of working age people lived in nonmetropolitan areas, compared to 19% in 2017.[33] In our study, there was a similar per capita case load of flu cases and mortality rate between rural and urban medicine practices. In contrast, for allopathic patients, total urban mortality rates were higher, such as the reported 27% mortality rate of Boston in the 1920 *JAOA* study (which included osteopathic and allopathic patients). Rural America reportedly had lower than average mortality rates. Wisconsin was a primarily rural state at the time and reports indicate a 0.33% (3.3 deaths/1000) mortality rate.[6,34] Despite these differences based on geographic location, the struggles faced by physicians in both settings were significant.[6]

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Conclusions

Questions regarding the reported discrepancies between MD and DO patient outcomes can derive answers from several possibilities. The use of OMT stands as a significant differing approach to treatment and its specific use has been described above in detail. DOs were additionally opposed to the use of heroin, aspirin, morphine, or other medications of the time in treating their patients. They discussed the damage control they commonly needed to provide for patients suffering from "poisons of the heart depressing type."[4] While unproven topical treatments and homeopathic remedies were frequently employed, as McCole emphasized, there was significant dedication to avoiding "poisoning an already poisoned system."[35]

Osteopathic medicine differed from allopathic medicine in its approach to treating the 1918 influenza pandemic and provided a sound and successful structural foundation for approaching respiratory illness with a manual medicine approach. The usage of such techniques serves as an example for the development of treatment protocols in current and future respiratory illness pandemics. Outcome studies of OMT with the management of COVID-19 will hopefully be forthcoming. The personal insights into the lives of osteopathic physicians at the time also serve as an inspiration to all those pursuing medicine.

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Editor's note: additional appendices are available to view online. Please visit http://files.academyofosteopathy.org/AAOJ/2021/AAOJ_June2021_Ching_Appendices.pdf.

Appendix 1. Questionnaire from *Osteopathic Physician*

The OP's Follow-Up Questionnaire is designed to supplement the invaluable statistical data of epidemic results now being collected by the AOA. This Questionnaire deals with methods. It is to disclose how our patients were treated. Please answer as many of these questions as you can and send your data to The OP for prompt printing and compilation into general articles in order that the whole profession and mankind may profit.	
1. What kind of lesions were found?	11. Did you use any substances like antiphlogistine, Dionol, or other local applications? If so, what?
2. Where were they?	12. What methods were used to keep bowels active: If enema, what kind, how much, how often? If manipulation, what kind and how? If laxative, what kind and how much?
3. How were they corrected?	13. What method used to keep kidneys active?
4. What general manipulations were given for bedside treatment?	14. Did you sweat the patient? If so, how and at what stage of disease?
5. What was the average time used per patient for osteopathic treatment?	15. Did you use a cotton jacket for pulmonary complications?
6. How frequently were patients treated?	16. What about ventilation, that is, much or little?
7. Did you find it easy to over-treat your cases?	17. What was the average temperature of the room?
8. How many days were patients under treatment?	18. Were any means used to reduce temperature of patients: if manipulation, where, what kind, and how applied? If baths, what kind, how often?
9. Did patients who had been drugged respond as well as others to osteopathic treatment?	19. Were any means used to overcome cough: If so, what? If manipulations, what kind and how applied?
10. What regulation of diet was prescribed for: Influenza alone? Pulmonary complications? Bowel and stomach complications? Nervous complications?	20. Were any means used to stimulate the heart: If drugs were used, mention them and quantity used? If not used, state so definitely.
Blanks of the above will be furnished gladly upon application. Please be prompt in your response. Henry Stanhope Bunting, Editor The OP. 9 South Clinton St Chicago	