National Institutes of Health and Osteopathic Medicine: Another call for action and equality in a legal struggle won long ago

Brian P. Peppers, DO, PhD; Janice U. Blumer, DO, FAAO; Robert W. Hostoffer, DO, LhD, FAAP, FACOP, FACOI, FCCP; Michael P. Rowane, DO, MS, FAAFP, FAAO; Kevin A. Thomas, DO, MS; and Thomas R. Byrnes Jr., DO

ORIGINAL RESEARCH

Abstract

Discrimination, whether by conscious or unconscious means, can have significant and often long-lasting negative consequences on the afflicted group or individual. The osteopathic culture and field of medical practice has long fought for equal rights and recognition among their allopathic medical peers. Almost 90 years have passed since Congress, in 1929, declared allopathic and osteopathic medical degrees equivalent. Despite this, key resources and positions within the medical and research profession continue to be inequitable for the osteopathic community. There exists a severe paucity of osteopathic involvement at the National Institutes of Health today and throughout its history. Herein, the historic and current unequal representation of the osteopathic culture from the National Institutes of Health and MEDLINE is investigated.

Introduction

Discrimination, whether by conscious or unconscious means, can have significant and often long-lasting negative consequences on the afflicted group. Many theories have been developed to help explain the driving force of discrimination. The need for self-esteem (positive social status from within a group rather than outside a group), status (hierarchies within society), and self-interest (preserving resources) are among the most common elements.[1] The actions of the offending group need not be carried out in an overt conspiratorial manner to have a coordinated effect on another group or person. Many individuals within the group carrying out the offense need not be involved, unaware of the problem or may even be openly opposed to the actions.

The osteopathic culture and field of medical practice has long fought for equal rights and recognition among their allopathic medical peers.[2] Almost 90 years have passed since Congress, in 1929, declared MD and DO equivalent degrees.[2] As with many examples of discrimination, societal acceptance is not achieved the instant a law is passed. Many battles have been fought and won,

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From the Osteopathic Recognition ACGME Allergy and Immunology Fellowship, University Hospitals Cleveland Medical Center in Ohio (Peppers, Hostoffer); the Western University of Health Sciences College of Osteopathic Medicine–Northwest in Lebanon Oregon (Blumer); Allergy and Immunology Associates Inc., Mayfield Heights, Ohio (Hostoffer); Department of Family Medicine and Osteopathic Manipulative Medicine at the Lake Erie College of Osteopathic Medicine in Erie, Pennsylvania (Rowane); Department of Family Medicine and Osteopathic Manipulative Medicine at the Lake Erie College of Osteopathic Medicine in Seton Hill, Pennsylvania (Thomas); Southern Light Health LLC in Richmond Hill, Georgia (Byrnes).

Corresponding author and principal investigator:
Brian P. Peppers, DO, PhD
11100 Euclid Ave
Cleveland, OH 44106
brian.peppers@uhhospitals.org

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including the right to join the military as a physician, which was withheld until 1966 despite laws granting inclusion many years previously.[2]

In 1938, Congress declared osteopathic physicians to be designated as "physicians" within the provisions of the Federal Compensations Act.[2] In that same year, Congress approved new buildings to be constructed and the National Institutes of Health to be moved to Bethesda, Maryland.[3,4] Despite the movements in equality, key resources and positions within the medical and research professions continued to be withheld from the osteopathic community. There is a severe paucity of osteopathic involvement at the National Institutes of Health today and throughout its history. Herein, the historic and current status of the osteopathic culture in the National Institutes of Health and MEDLINE is explored.

Methods

Public records from 1999 to the present, including congressional powers for the National Institutes of Health (NIH), the National Center for Complementary and Alternative Medicine (NCCAM, now called the National Center for Complementary and Integrative Health or NCCIH), the National Library of Medicine (NLM), and associated advisory committees, were obtained.

Content investigated included board and committee members, meeting minutes, current and historical bylaws or manuals used by the boards or committees, as well as a cross-reference of committee and board members with other influential branches of the NIH. Cross-sectional analysis of the initial 2018 members of all the national advisory committees (NAC) for the individual NIH organizations and centers was conducted. The NAC member degrees were assumed accurate on the NIH website when listed. When they were not listed, a public internet search was conducted. The member composition of the National Cancer Institute's national advisory committee in 1938 and 2018 was compared as it is the only remaining NIH institute from 1938. The Federal Advisory Committee Act database was searched for the total osteopathic physician make-up of all federal advisory committees (FAC) in the entire US Department of Health and Human Services (HHS) agency from 1997 to 2017. Allopathic physician make-up of the FAC in the entire HHS for years 1997 and 2017 was also determined. Funding of the NIH since 1938 was determined. A Freedom of Information Act (FOIA) request was filed for conflicts of interest on the members from 2000 to present day on the NLM program advisory committee called the Literature Selection Technology Review Committee (LSTRC). Additional FOIA requests for a copy of originally signed National Advisory Council for Complementary and Alternative Medicine (NACCAM) first meeting minutes were made. PubMed's inclusion of osteopathic journals actively being cataloged through MEDLINE was determined.

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All names, although public information of unelected officials, are withheld out of professional respect.

Kolmogorov-Smirnov and Kruskal-Wallis tests, with 95% confidence interval were conducted as specified in the results section of the study using GraphPad Prism 7.

Results

National Institutes of Health

The National Institutes of Health can be traced back to 1887 when it was first called the Laboratory of Hygiene and exclusively contained within the Marines Hospital Service (MHS).[4] In 1891, the name was changed to The Hygienic Laboratory which then officially became the NIH in 1930.

The powers granted to the NIH by Congress are included in the Public Health Service Act.[5] The NIH is further divided into institutes and centers totaling 27 as of 2018 *(Table 1)*.[6] Each institute and center has its own federal advisory council(s).

The total funding granted to the NIH since 1938 had reached more than $700 billion as of 2017. Time adjusted for inflation that number increases to over 1 trillion dollars.[7] An additional $34.8 billion has been allocated for 2019.[8] Allocation of funds and creation of individual institutes/centers is directed by Congress and, to a degree, by the director of the NIH. An osteopathic physician has never been director of the NIH.[9] In addition, there has never been an institute/center dedicated to osteopathic medicine, even taking into account those that have changed names over the years.

The NIH has specific residencies and fellowships for various medical disciplines, which osteopathic physicians have filled.[10] An NIH residency or fellowship program, however, has never been created for osteopathic medicine. Some positions in the NIH are appointed, others are open to applications. As with similar entities,

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Table 1. *NIH institutes and centers and their 2018 funding. (Funding provided in thousands.)*[6]

Name	Abbreviation	2018 Funding
NIH Clinical Center	CC	Funding not listed
Center for Information Technology	CIT	Funding not listed
Center for Scientific Review	CSR	Funding not listed
Fogarty International Center	FIC	75,733
National Center for Advancing Translational Sciences	NCATS	742,354
National Center for Complementary and Integrative Health	NCCIH	142,184
National Cancer Institute	NCI	5,964,800
National Eye Institute	NEI	772,317
National Human Genome Research Institute	NHGRI	556,881
National Heart, Lung and Blood Institute	NHLBI	3,383,201
National Institute on Aging	NIA	2,574,091
National Institute on Alcohol Abuse and Alcoholism	NIAAA	509,573
National Institute of Allergy and Infectious Diseases	NIAID	5,260,210
National Institute of Arthritis and Musculoskeletal and Skin Diseases	NIAMS	586,661
National Institute of Biomedical Imaging and Bioengineering	NIBIB	377,871
Eunice Kennedy Shriver National Institute of Child Health and Human Development	NICHD	1,452,006
National Institute on Drug Abuse	NIDA	1,383,603
National Institute on Deafness and Other Communication Disorders	NIDCD	459,974
National Institute of Dental and Craniofacial Research	NIDCR	447,735
National Institute of Diabetes and Digestive and Kidney Diseases	NIDDK	2,120,797
National Institute of Environmental Health Sciences	NIEHS	828,492
National Institute of General Medical Sciences	NIGMS	2,785,400
National Institute of Mental Health	NIMH	1,754,775
National Institute on Minority Health and Health Disparities	NIMHD	303,200
National Institute of Neurological Disorders and Stroke	NINDS	2,188,149
National Institute of Nursing Research	NINR	158,033
National Library of Medicine	NLM	428,553

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applications are processed by those within or associated with the organization.

There are several different types of federal advisory committees: national, program, board of scientific counselors, and initial review groups (each may have subcommittees discussed below). Of the 27 organizations and centers, 25 have national advisory councils. A cross-sectional analysis of all 25 groups at the change of 2017-18 revealed 1 osteopathic physician member out of 214 possible positions filled by physicians *(Table 2)*.[11]

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Table 2. *Selected professional composition of the National Advisory Committees. Because members may hold multiple degrees, totals degree totals may not add up to total positions filled.*

NIH Institute or Center	National Advisory Committee (NAC) 2018[a]	Total Positions	MDs[b]	DOs[b]	PhDs	Other[c]
OD	Councils of Councils (COCS)	26	11		13	6
FIC	Fogarty International Center Advisory Board (FICAB)	15	11	1	2	1
NCATS	National Center for Advancing Translational Sciences Advisory Council (NCATSC)	16	9		7	3
NCCIH	National Advisory Council for Complementary and Integrative Health (NACCIH)	14	4		11	2
NCI	National Cancer Advisory Board (NCAB)	23	13		7	3
NEI	National Advisory Eye Council (NAEC)	16	9		10	1
NGR	National Advisory Council for Human Genome Research (HGRAC)	13	5		10	
NHLB	National Heart, Lung, and Blood Advisory Council (NHLBAC)	17	12		6	1
NIA	National Advisory Council on Aging (NACA)	22	14		10	1
NIAAA	National Advisory Council on Alcohol Abuse and Alcoholism (NCAA)	23	9		13	2
NIAID	National Advisory Allergy and Infectious Diseases Council (NAAIDC)	23	16		10	
NIAMS	National Arthritis and Musculoskeletal and Skin Diseases Advisory Council (NAMSAC)	17	10		7	4
NIBIB	National Advisory Council for Biomedical Imaging and Bioengineering (NACBIB)	15	6		9	1
NICHD	National Advisory Child Health and Human Development Council (NACHD)	13	8		3	2
NIDA	National Advisory Council on Drug Abuse (NACDA)	20	10		7	5
NIDCD	National Deafness and Other Communication Disorders Advisory Council (DCAC)	23	8		16	3
NIDCR	National Advisory Dental and Craniofacial Research Council (NADRC)	13	2		12	2
NIDDK	National Diabetes and Digestive and Kidney Diseases Advisory Council (DKNAC)	19	9		11	2
NIEHS	National Advisory Environmental Health Sciences Council (NAEHSC)	23	7		15	1
NIGMS	National Advisory General Medical Sciences Council (NAGMSC)	18	2		16	2
NIMH	National Advisory Mental Health Council (NAMHC)	23	13		13	2
NIMHD	National Advisory Council on Minority Health and Health Disparities (NACMHD)	15	7		5	3
NINDS	National Advisory Neurological Disorders and Stroke Council (NANDSC)	20	8		10	2
NINR	National Advisory Council for Nursing Research (NACNR)	16	2		14	1
NLM	Board of Regents of the National Library of Medicine (BOR)	19	8		7	3
	Total Positions Filled	**462**	**213**	**1**	**244**	**53**

[a] *The National Clinical Center (CC) and the Center for Scientific Review (CSR) do not list or have National Advisory Committees.*
[b] *In the United States, allopathic physicians (MDs) and osteopathic physicians (DOs) are legally equal degrees.*
[b] *Additional members include lawyers, veterinarians, dentists, chiropractors, naturopaths, dieticians, optometrists, and others.*

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Of note, various positions are filled by the same individual. This was particularly common for the NIH's legal team and instances wherein the director of the NIH was a part of the committees. Among the 244 positions filled by doctors of philosophy as committee members, none were employed by colleges of osteopathic medicine *(Table 2)*.

At the end of 2017, there were nearly 100 additional programs, boards of scientific counselors, and initial review groups. All of these are federal advisory committees. Each committee was made up of a similar number of members as the national committees (average of 18.5 individuals per committee). Only 1 osteopathic physician was found in the remaining advisory committees.[11] The total representation of the osteopathic profession in federal advisory committees was 2 individuals out of an estimated 2,300 possible positions at the end of 2017 to the beginning of 2018 (<<0.5%).

The osteopathic field's presence and representation within the entire HHS FAC in 1997 was 0.67% (26 out of 3,861) of the total positions held by all physicians (allopathic plus osteopathic).[12] In 2017, this percentage decreased to 0.27% (28 of 10,404) with the allopathic field representing virtually 100% of the physicians within the HHS FAC. This includes all the NIH subcommittees, where the majority of the osteopathic representation can be found. Subcommittees or special emphasis panels (SEP) are ad hoc panels for one specific issue or a single meeting. The male-to-female mean and standard deviation of medical doctor positions filled in the HHS FACs by the osteopathic field from 1997 to 2017 is 25.1 +/- 4.5 (males) and 8.2 +/- 2.7 (female).

The National Cancer Institute's first national advisory committee was established in 1938 (one of the oldest advisory committees in the NIH). In that year, there were no osteopathic physicians on the committee of 5 doctors (2 allopathic, 1 allopathic and doctor of science, 1 doctor of philosophy, 1 doctor of science).[13] The percent change or growth from 1938 to 2018 of osteopathic medical physicians on the National Cancer Advisory Board (NCAB) was zero. A program advisory committee in the NCI did include the second osteopathic physician on a federal advisory committee within the NIH at the start of 2018. There have also been prominent osteopathic physicians in the oncology field at the NIH. One in particular has served on numerous FACs over the past 20 years.

National Center for Complementary and Integrative Health

In 1991, Congress instructed the NIH to establish an office to investigate the growing public interest in complementary and alternative medicine.[14] The Office of Alternative Medicine continued until 1998 when Congress elevated this office to a national center to begin actively researching complementary and alternative medicine.

Present-day explicit representation of osteopathic terminology for the purpose of funding and grants resides within the National Center for Complementary and Integrative Health (NCCIH) under the section of manipulations alongside chiropractors *(Table 1)*.[15] However, there is no direct link to the American Osteopathic Association (AOA) or any osteopathic organization, and the section is dominated by chiropractor URLs within the manipulations section. (Although not connected to the NCCIH, direct links to the AOA on the National Institute on Drug Abuse (NIDA) website were found during this investigation.)

An osteopathic physician has never served as director of the NCCIH or in the director's office.[14] Four osteopathic physicians have served on the NCCIH's advisory council (NACCIH).[16,17] The first osteopathic physician on the NACCIH was an ad hoc member in May 2001, a former director of the National Institute of Neurological Disorders and Stroke from 1982 to 1993. Previous to the formal start of the NCCIH in August 1999, 2 osteopathic physicians from outside the NIH served on the transition committee (May 1999).[18]

Since that transition committee in 1999, there have been 4 years when there has not been sustained osteopathic representation (1999-2001 and 2016-present). At times since 1999, the only

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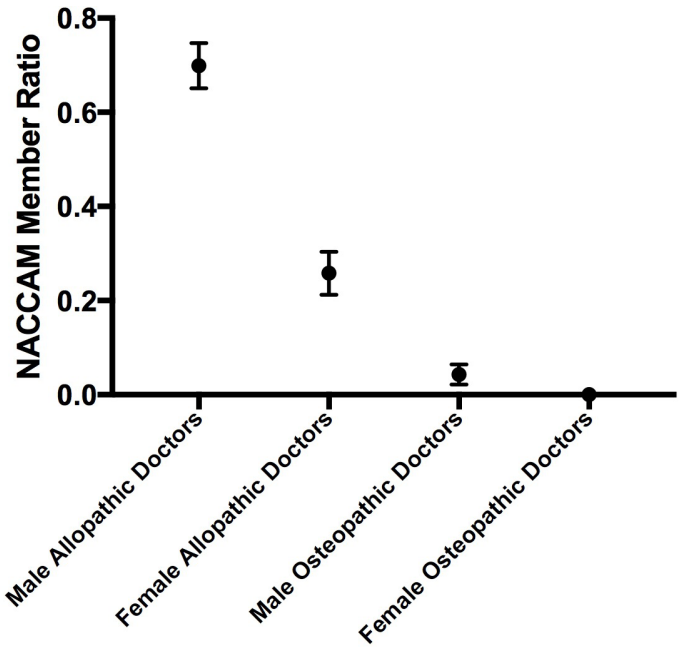
Figure 1. *NACCAM/NACCIH representation by profession and gender, 1999 to 2018. Kruskal-Wallis tests with 95% confidence interval.*



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means of representation was by ad hoc members in SEPs and members of the American Association of Colleges of Osteopathic Medicine (AACOM) attending meetings as part of the general public.[19] The general public cannot participate in closed sessions and has no influence in these closed sessions.

Since 2000, $2 billion has been allocated to the NCCIH. There have been numerous allopathic, naturopathic and chiropractic practitioners that have served on the NACCIH and in the NCCIH's director's office since its first meeting in August 1999. Although the actual numbers of naturopathic and chiropractors each doubled the number of osteopathic physicians, a Kruskal-Wallis test of the 3 professions was statistically insignificant ($P<0.3648$). A Kruskal-Wallis test of all professions was statistically significant, $P<0.0001$. A Kruskal-Wallis test of allopathic and osteopathic gender was also significant, $P<0.0001$ *(Figure 1)*.

Within the first meeting of the National Advisory Council for Complementary and Alternative Medicine (NACCAM), discussions centered around how the NIH organization came to be and the focus of the research grants to be allocated.[20] Searching for the word *osteopath* in the first meeting's minutes of record online revealed 4 results *(Image 1)*. As depicted in *Image 1*, the words were not visible during the initial investigation on January 9, 2018. On April 3, 2018 (10 days after the first public disclosure of the investigation), the website was modified to include osteopathic medicine in the visible text.

A JavaScript investigation into the 4 missing/hidden incidences of the word *osteopath* revealed an additional note explaining osteopathic medicine *(Image 2)*. According to *Image 2*, the words *osteopathic medicine* should appear in the empty space between "such as(), naturopathy" depicted in *Image 1*. If coded correctly, the reader(s) would be able to view a description of osteopathic medi-

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Image 1. *Incidence of the word* osteopath *in the first meeting minutes of NCCAM/NCCIH in 1999 (https://nccih.nih.gov/about/naccam/minutes/1999aug.htm). Screen capture using Safari on January 9, 2018. Word search in Internet Explorer and Firefox also finds 4 matches but does not highlight them as below.*

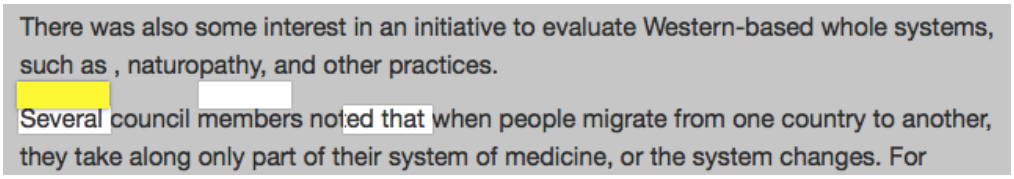


Image 2. *JavaScript investigation into invisible text at https://nccih.nih.gov/about/naccam/minutes/1999aug.htm. Screen capture using the Inspect Element function in Firefox on January 9, 2018.*

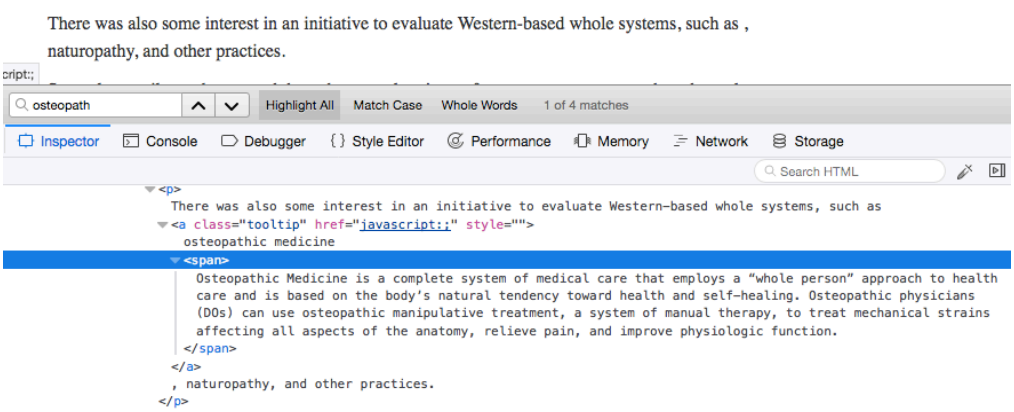
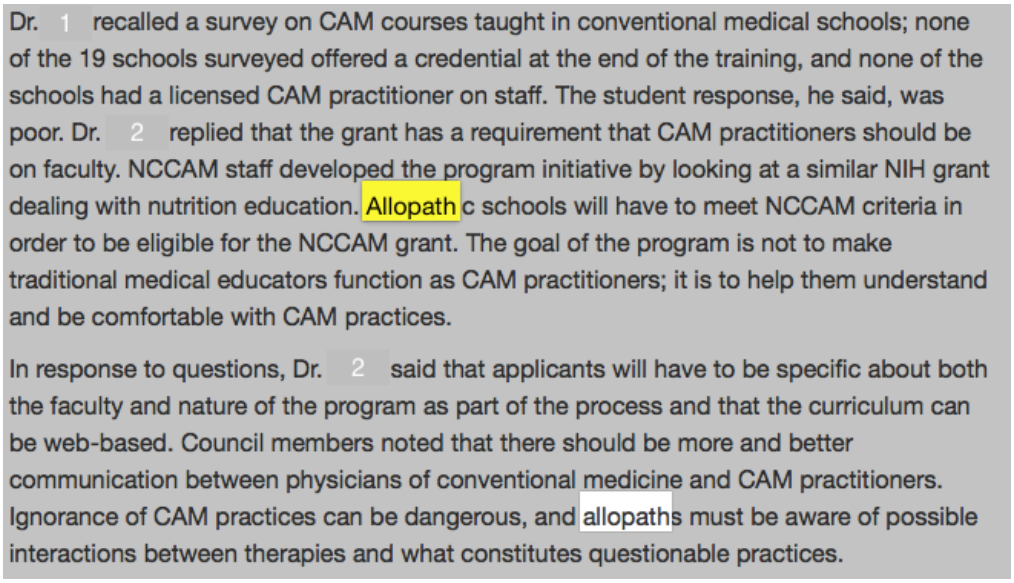


Image 3. *Results of searching for* allopath *in the first meeting minutes of NCCAM/NCCIH in 1999 (https://nccih.nih.gov/about/naccam/minutes/1999aug.htm). Screen capture using Safari on January 11, 2018. Names have been redacted by the author as a professional courtesy.*



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cine in a pop-up or rollover window by simply hovering the cursor over the phrase *osteopathic medicine*. The coding was in such error that neither was possible (see discussion below). The coding for the pop-up option definition was not corrected on April 3, 2018; it was simply removed altogether.

The hidden/removed paragraph text states:

> Osteopathic Medicine is a complete system of medical care that employs a "whole person" approach to health care and is based on the body's natural tendency toward health and self-healing. Osteopathic physicians (DOs) can use osteopathic manipulative treatment, a system of manual therapy, to treat mechanical strains affecting all aspects of the anatomy, relieve pain, and improve physiologic function.

On February 7, 2018, in response to a FOIA request for a copy of the original signed meeting minutes as displayed on the Web page, the NCCIH provided a PDF of the Web page in question as an official response to the request. The PDF, as in *Image 1*, did not mention osteopathic medicine. A second FOIA request insisting on a copy of original signed meeting minutes of record and not a copy of the Web page was made that same day. On May 11, 2018, the NCCIH response through the NIH FOIA office indicated that a signed document could not be found.

Searches for *allopath*, *chiropract* or *naturopath* did not reveal any hidden or missing text for these words. In fact, each was mentioned at least once and *allopath* twice *(Image 3)*. *Allopathic* was used in the context of poor understanding of complementary and alternative medicine in *conventional medical schools* and criteria for *allopathic schools* to meet in order to apply for grants. A needs assessment of or plan for dissemination to osteopathic schools and training programs could not be found.

In the past several years, no grants have been awarded specifically to osteopathic physician principal investigators from the NCCIH.[21] The low amount of NIH funding in osteopathic medicine in general has been cited several times in the literature.[22-26]

National Library of Medicine

The National Library of Medicine (NLM) is one of the 27 organizations within the NIH. However, its origins predate the NIH as it was started in 1836.[27] Similar to the NIH, the NLM was initiated by the military. In 1871, the first librarian of what would become the NLM, John Shaw Billings, envisioned the library to be "as complete as possible in all publications relating to military organization, medicine, and the allied sciences" and would be "an universal library of references."[27] The NLM's objective is outlined in the Public Health Service Act.[28] One of the main roles of the NLM is outlined in *Figure 2*.

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Figure 2. *Partial list of powers granted by Congress to the National Library of Medicine in the Public Health Service Act.*[28]

PURPOSE, ESTABLISHMENT, AND FUNCTIONS OF THE NATIONAL LIBRARY OF MEDICINE

SEC. 465. [286] (a) In order to assist the advancement of medical and related sciences and to aid the dissemination and exchange of scientific and other information important to the progress of medicine and to the public health, there is established the National Library of Medicine (hereafter in this part referred to as the "Library").

(b) The Secretary, through the Library and subject to subsection (d), shall— (1) acquire and preserve books, periodicals, prints, films, recordings, and other library materials pertinent to medicine; (2) organize the materials specified in paragraph (1) by appropriate cataloging, indexing, and bibliographical listings; (3) publish and disseminate the catalogs, indexes, and bibliographies referred to in paragraph (2)…

Figure 3. *Members of the National Library of Medicine's Board of Regents.*[29]

BOARD OF REGENTS

SEC. 466. [286a] (a)(1)(A) The Board of Regents of the National Library of Medicine consists of ex officio members and ten members appointed by the Secretary.

(B) The ex officio members are the Surgeons General of the Public Health Service, the Army, the Navy, and the Air Force, the Chief Medical Director of the Department of Veterans Affairs, the Dean of the Uniformed Services University of the Health Sciences, the Assistant Director for Biological, Behavioral, and Social Sciences of the National Science Foundation, the Director of the National Agricultural Library, and the Librarian of Congress (or their designees).

(C) The appointed members shall be selected from among leaders in the various fields of the fundamental sciences, medicine, dentistry, public health, hospital administration, pharmacology, health communications technology, or scientific or medical library work, or in public affairs. At least six of the appointed members shall be selected from among leaders in the fields of *medical, dental, or public health research or education*. [emphasis added]

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The phrase "pertinent to medicine" in Section b-1 is of particular importance for discussions below. One of the items collected and indexed for dissemination by the NLM is journals. Starting in 1879, the journals were organized into Index Medicus, a bibliographic index. Today, the online version of this index is called MEDLINE. PubMed has several roles, but one is as a search engine of MEDLINE. Congressional powers are directly granted to the national advisory committee called the Board of Regents (BOR) for the tasks listed in *Figure 2*.[29] There are 19 members on the BOR. They are specifically outlined and listed in *Figure 3*.[29]

The only osteopathic physician to ever serve on the BOR (ex officio), Ronald R. Blanck, was the surgeon general of the Army.[30] The appointment was earned 30 years after DOs were allowed to enlist into the military as physicians in 1966.[2]

Literature Selection Technical Review Committee

Although the Congressional powers are granted/tasked to the BOR, the NLM's program advisory committee, called the Literature Selection Technical Review Committee (LSTRC), has chiefly determined which journals are allowed into MEDLINE.[31] At times, consultants are asked to review journals on content that is not the expertise of the committee members. No osteopathic physicians were found on the committee, nor were records found indicating that an osteopathic physician has ever been a guest speaker for or been consulted by this committee.[32]

The LSTRC selection process operates on a closed, single-blinded review process guided by their collection development manual (CDM) for journal selection, and there are no appeals.[33] Issues reoccurring in the LSTRC minutes are in reference to the need for "high quality journals," "quality of evidence," and "peer review process." In 2001, there was a debate seen in the minutes of the committee on these very issues:

> A discussion item that the Committee addressed at several intervals during the meeting was the role of LSTRC in filtering journals. Some members took a more libertarian approach than others in terms of letting users decide what is useful. Others feel this question gets to the heart of LSTRC's responsibility, i.e., that is determining outstanding quality of content, importance, and editorial processes. The bar must be kept high so users retrieve what is truly useful to them. The discussion then migrated to the importance of non-U.S. journals that report on local or regional public health issues. All agreed that some of these journals may not have all the attributes of Western Europe and North American journals, but are valuable additions to MEDLINE. The LSTRC Summary Form will be revised for the next meeting to give this attribute a numerical score. It is now a check-off box. The broad theme of this discussion will resume at the June meeting.[34]

Since 2000, all journals that bear the name *osteopathic* and have applied for indexing in MEDLINE have been denied (2 in total, 1 denied twice). In contrast, *Chiropractic and Manual Therapies* was accepted for indexing in 2017.[35] This same journal included *osteopathic* in its title from 1992 to 2010.[36] There is currently only 1 journal that bears the name *osteopathic* that is indexed in MEDLINE and readily obtaining PubMed ID numbers: *The Journal of the American Osteopathic Association (JAOA)*.[37] The journal *Osteopathic Medicine and Primary Care* was an open access journal indexed in PubMed and PubMed Central (PMC) from 2007 to 2010 by means of BioMed Central (BMC).[38] This method of obtaining PubMed and PMC indexing bypasses MEDLINE and review by the LSTRC.[38] Several papers have been published on the selection process as well as some detailed facts on the NLM website.[33,39,40] Initially, it had been asserted by an NLM LSTRC member that "many new journals *do* get recommended for inclusion."[39] However, per the NLM's own records, less than 50% are approved, with many years ranging from 14% to 30%.[32,41]

Collection Development Manual

The choice of the authors charged with updating the Collection Development Manual (CDM) is not the LSTRC, but rather an internal NLM Collection Development Review Committee. Again, consults are stated to have been done when needed.[42] There have been several versions over the past 50 years; however, there has never been a section on osteopathic medicine specifically.[43] Osteopathy had traditionally been listed under therapeutics in the 1977, 1985, and 1993 versions of the CDM.[44-46] The only explicit reference to osteopathy under medicine rather than under therapeutics was in indicating the decision to exclude osteopathic medicine from the CDM's 1985 and 1993 versions.[45,46(p62)] Medicine is listed in the same fashion along with other medical practices, but allopathic medicine is not explicitly mentioned. The most current CDM, which has 101 subjects listed for collection, was published in 2004 (about 5 years after the first NCCIH meeting from *Images 1* and *2*).[47] Only 1 committee member of the LSTRC from 2004 is listed as an author of the manual.[47] For the first time all direct mention of osteopathic medicine or osteopathy was removed, even under therapeutics or the *Complementary and Alternative* subject section.[47] Osteopathic manipulative medicine (OMM) and osteopathic medicine are also missing from the NLM website on subjects being indexed as of March 26, 2018.[48] This is despite the BOR minutes (Section III) in February 2001 referring to osteopathy as part of NCCAM under manipulations:

> ...Director of NIH's National Center for Complementary and Alternative Medicine (NCCAM), began by defining complementary and alternative medicine as "those modalities that primarily are *consumer-driven, unproven,* and not extensively incorporated into the training or practice of main-stream Ameri-

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> can physicians." These modalities (and there are thousands of them) are increasingly pervasive and used by an estimated 83 million U.S. adults (1997). Approximately $30 billion were spent on them in the last year. The NCCAM Web site gets a half million hits per month. [The director of NCCAM] divided the modalities into *five areas: alternative medical systems ("parallel universes" of health care, such as traditional Chinese medicine), mind-body interventions (biofeedback, hypnosis, art therapy), biologically based treatment (such as herbs), manipulative body-based methods (chiropractic and osteopathic manipulation, massage), and energy therapies (flows of energy through the body).* There is a general lack of scientific tradition in the field, and there are few competent scientific investigators. In 1998 Congress mandated the establishment of a Center at NIH to address these modalities by supporting basic and applied research and research training. Increasing funds have been appropriated to do this ($89 million in FY 2001). *NCCAM has developed a strategic plan that includes emphasis on training investigators, engaging in education* and outreach activities to the public and *facilitate the integration of complementary and alternative medicine best practices with mainstream practices.*[49] [emphasis added]

The 2004 CDM very closely defines complementary and alternative medicine with the words used above and the notable omission of osteopathic manipulation *(see Figure 4)*.[47] On March 26, 2018 (3 days after the first public disclosure of the investigation), both the CDM 2004 and NLM guideline website on subjects being indexed[50] were edited. However, only the website mentions osteopathic manipulation under CAM. This is the only section found out of 101 where the CDM and the NLM subjects guideline website are not identical. Incidentally, the index for NLM subjects guideline website was not updated to include osteopathic manipulation.[48]

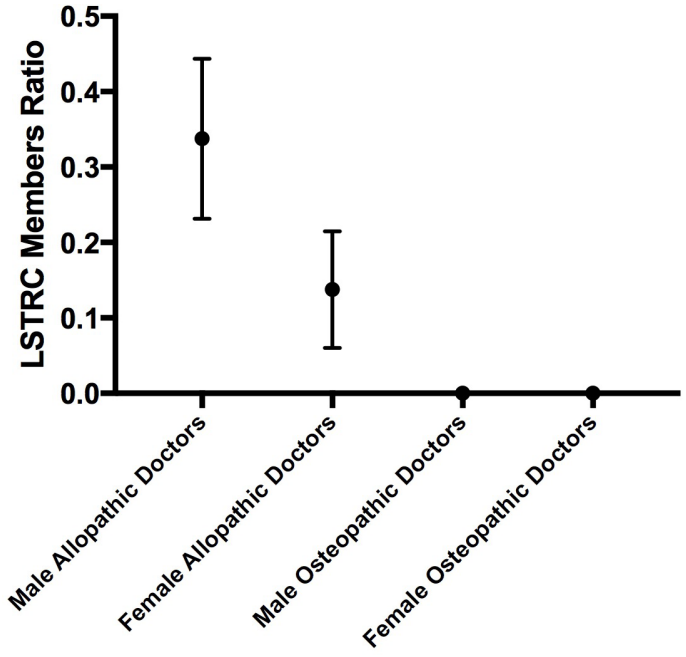
The LSTRC committee members' associations in the conflict of interest (COI) information are not obtainable under the Freedom of Information Act. According to email correspondence with the NIH Freedom of Information Act Office (January 4, 2018), this is because the COI is contained in the US Office of Government Ethics Form 450: Confidential Financial Disclosure Report.[51] Part III of this form has them list their outside positions, but not salaries per se. Even so, no part of the form can be released even if all identifiers and years are removed. Many of the committee members have been, or are, editors of prestigious journals.

A Kolmogorov-Smirnov analysis of allopathic versus osteopathic LSTRC members since 2000 is significant with a $P<0.0001$. A Kruskal-Wallis test of the LSTRC medical degree and gender since 2000 was also statistically significant $P<0.0002$ *(Figure 5)*.

Figure 4. *CDM discussion on complementary and alternative medicine previous to March 26, 2018.*[47(p36)]

> The National Center for Complementary and Alternative Medicine (NCCAM) classifies CAM therapies into five categories or domains: 1) alternative medicine systems, or complete systems of therapy and practice; 2) mind-body interventions, or techniques designed to facilitate the mind's effect on bodily functions and symptoms; 3) biologically-based systems, including herbalism; 4) manipulative and body-based methods, such as chiropractic and massage therapy; and 5) energy therapies.

Figure 5. *LSTRC members' medical degrees and genders. Kruskal-Wallis tests with 95% confidence interval.*



Information Rx

Another set of discussions in the NLM BOR minutes is seen in 2003-04 involving the NLM launch of a national campaign called Information Rx through MedlinePlus. Its purpose was to spread the importance of educating the public about their illnesses or diseases.[52] Within the BOR minutes from 2004 to 2006, multiple references to joint workshops by the NLM, American College of Physicians and the American Medical Association (AMA) at national conferences were discussed.[53-55] In 2007, several years after the official start of Information Rx, the BOR minutes noted the Information Rx program was incorporating the AOA.[56]

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Discussion

Discrimination has no boundaries, and those afflicted are often at a severe disadvantage to identifying the source, gathering proof and initiating action against it. Among the many forms of discrimination, sabotage by neglect is one of the hardest to detect.[57] The concept of sabotage by neglect centers around providing advantages to the in-group, while not extending the same to the out-group. It avoids detection because withholding support is silent compared to outright attacks.[57] Without an appropriate needs assessment of the out-group, the grants created, infrastructure, training, and information disseminated naturally favor the needs assessment of the in-group.

One of the limitations of this investigation is it is limited to publicly available data, and intent cannot be determined. It is likely that both intentional and unintentional discrimination have occurred. Based on historical perspectives, the probability of intentional acts are higher from those who have long since retired.[58] Regardless, this overt bias has been unchecked for more than 90 years.

A point to be made is that references to the allopathic field in this manuscript are used for brevity. It is not reflective of the individual allopathic physicians, many of whom help train and advocate for osteopathic physicians and their philosophy of treatment. Specifically, the in-group with the NIH has been predominated by research-focused allopathic physicians and the scientists that work closely with them or at associated institutions *(Table 2)*.

Putting It All Together

Financial implications

The NIH is critically important for resources to be utilized towards research, facilities and training. This critical resource exists above the clinical funding from Medicare, Medicaid, commercial insurance and student loans along with educational support from Health Resources and Services Administration (HRSA) for medical education. Another aspect of the NIH is the critical salary support it provides for educators and researchers around the country. Grants awarded by the NIH facilitate enhanced student, resident, and fellow training opportunities regardless of direct attachment to "Academic Centers" and an increased air of prestige.

All the federal advisory committees at the NIH are subject to the Federal Advisory Committee Act (FACA) of 1972, which "requires that membership be fairly balanced in terms of points of view represented and the functions to be performed by the advisory committee. NIH ensures representation of women and minorities, diverse representation in member expertise..."[59] The limited inclusion of osteopathic physicians effectively renders for the past 45 years nearly every advisory committee in the NIH and the entire HHS in violation of the FACA.[60] The inclusion of less than 1% is not fairly balanced and serves nothing more than to check a box by the in-group when osteopathic medical school graduates make up 25% of all medical school graduates in the United States.

Representation

The NIH reports factors they weighed for selection of advisory committee members as seen in *Table 3*.[61] Many of the factors run the risk of selection bias. They depend on the NIH's direct knowledge of you, your publications in MEDLINE/PubMed journals,

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Table 3. *National Institutes of Health specific selection factors for Federal Advisory Committee members.*[61(p2)]

Factor Number	Specific Selection Factors
1	Personal knowledge of both the required discipline and the scientists who are making significant research contributions to the field.
2	Observance of investigators who serve as ad hoc consultants or temporary members at regular scientific and technical peer review committee meetings; participants on project site visit teams; or those who have provided written collateral opinions on request.
3	Solicitation of names of outstanding investigators from former and current committee members and other leaders in the field.
4	Consultation with scientific and professional staff of the various NIH institutes and centers as well as the Office of the Director offices.
5	Review of NIH's enterprise-wide database system and other databases for potential nominees with specific expertise.
6	Review of NIH applicant and grantee files as well as curriculum vitae and publications of investigators.
7	Review of membership rosters of pertinent professional societies.
8	Review of major scientific journals and publications in the field.
9	Attendance at relevant professional meetings. These meetings provide a valuable method of keeping informed of significant new studies in the field and of identifying the investigators who are doing the type of research needed; gaining knowledge of the interests and expertise of possible future members and consulting with eminent investigators who may be potential members.
10	Solicitation of names in the Federal Register.
11	Observation of applications reviewed by other agencies, especially those having review panels in related disciplines.
12	Self-nominations from qualified individuals.

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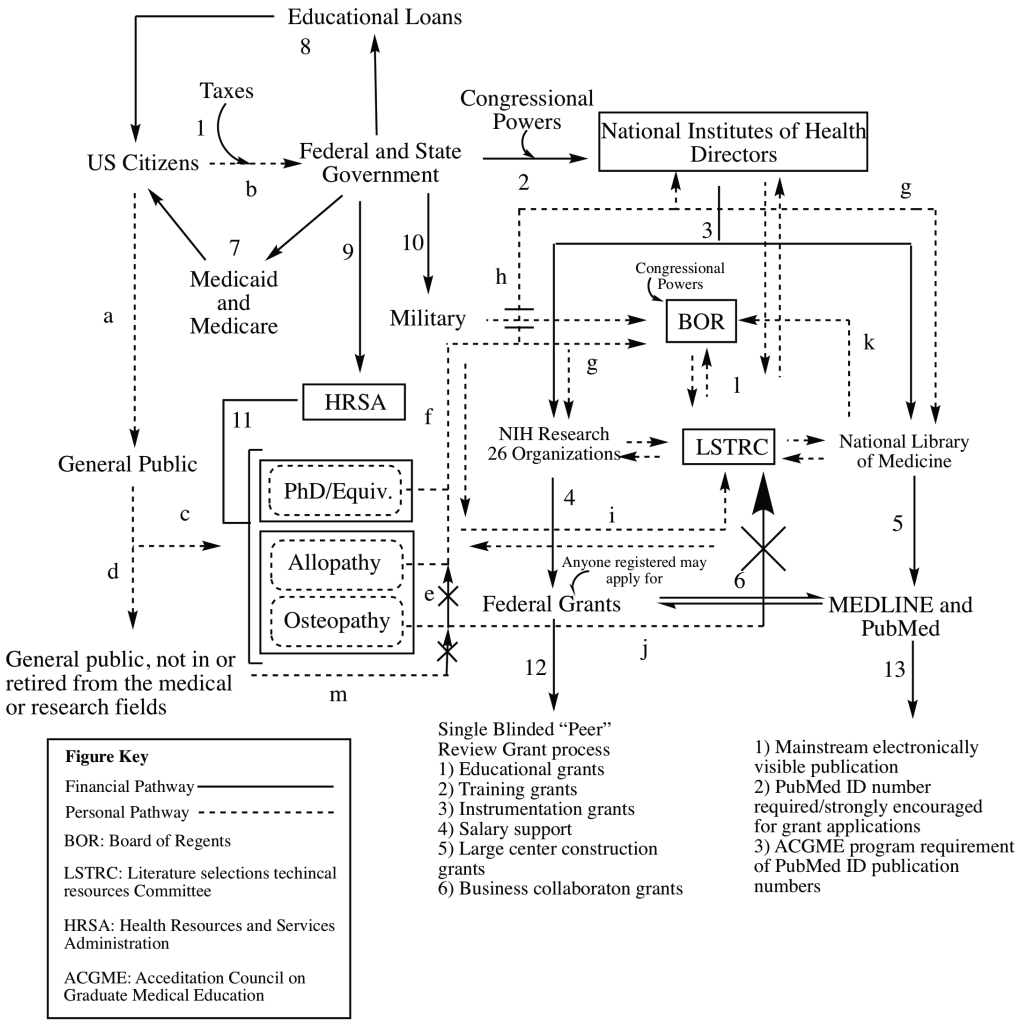
or your attendance at national conferences that members of the in-group would likely attend *(Table 3, Factors 1-11)*. There is, however, the option of self-nomination as 1 of the 12 factors listed.

The comment about qualified individuals in the self-nominated factor, although a natural stipulation, raises the concern of qualified according to whom? Should Factors 1-11 be used to determine who is qualified by the in-group, a vicious and unfair cycle is realized. This is particularly true when some "pertinent" professional societies have a history of not extending membership to AOA-only–trained physicians. To compound the problem, the osteopathic representation has decreased over the past 20 years within the entire HHS in all the FACs (particularly the last 5 years). This minimizes opportunities to be noticed in other committees as many of the factors listed specify as important.

Having adequate representation in all advisory committees also allows for committee members to advocate for types of grants needed, bring back to their hospitals, medical colleges and geographic regions personal knowledge of things to come and how/when to apply. For the in-groups the potential for insider information and the "meme" advantage cannot be overlooked (*meme* is a theory about the transmission of ideas or behaviors that spread from person-to-person in a self-replicating manner within a culture or group).[62]

The cross-sectional analysis of all NIH national advisory committees is representative of the fact that osteopathic principles and practice (OPP) and osteopathic tenets encompass all aspects of health, not just osteopathic manipulative medicine.[63] This article's additional focus on the NLM and NCCIH centers around concerns of free speech, free markets, and the discovery of the hidden text. The chronicity uncovered in this investigation depicts connections to critical issues affecting the progressing transition to the Single Accreditation System (SAS) for postgraduate education for all physicians (allopathic and osteopathic) in the US.

Figure 6. *Financial and personal flow chart of the medical field. Legend: 1) Letters specify different pathways for personal (dotted lines). 2) Numbers specify different pathways for finances (solid lines). 3) Pathways f, g, h, i represent PhD or equivalent and allopathic jobs/positions access to and from the NIH. 4) Pathways e and j represent osteopathic jobs/positions access to and from NIH. The arrows with an X indicate negligible or absence of representation. 5) Pathway m represents the remaining general public that is not, nor has ever been, in the medical/research field, and their access to and from the NIH with an X indicates negligible or absence of representation.*



Sabotage by neglect

The results of this investigation indicate that needs assessment, resources and positions have been intentionally or unintentionally made harder to obtain, delayed or withheld from the osteopathic community, while simultaneously being extended to the allopathic field *(Figure 6)*.

Concealing discussions about osteopathic medicine in the NCCAM's first meeting minutes on a government website is of extreme concern *(Images 1* and *2)*. This alone warrants further investigation. Another limitation of this investigation is knowledge of when the section on

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osteopathy was coded to be invisible in the JavaScript. Prior to the most recent update on April 3, 2018, the Web page had not been updated since December 15, 2011. When this Web page was first published and what it said is unknown. On April 2, 2018, the NCCIH responded to a Congressman's inquiry about this very issue on behalf of the corresponding author and independent of this investigation. They affirmed that the Web page did contain text that was not visible due to a coding error. They went on to state that the coding previously worked, that they found a second example of this same error affecting osteopathic medicine (which this investigation did not find), and they stated 19 other incidences where this same problem was found. Of the 19, only 1 was disclosed and it did not involve osteopathic medicine.

Although parts of this explanation are plausible, other parts are not. The coding was grossly in error; it would have never worked. The errors are not a simple issue of a link going bad because a website changed its content or name. The question of why the coding was not simply fixed should be answered. The NCCIH response noted that they obtained the definitions that were to pop-up from the AOA. This, however, did not translate into proper care and follow through to ensure a working code. The NIH websites are filled with working rollover and pop-up coding examples; they are common codes for Web pages. Regardless, its occurrence is the main issue of importance. Under the most innocent circumstances, it suggests that either no one was looking or no one cared. Either explanation is unacceptable for organizations that wield such influential power. This, however, is not the only troubling trend noted. The negligible osteopathic presence in key positions of the NIH director(s), individual NIH institutes, and their respective federal advisory committees *(Figure 6, pathways e and j)* can be appreciated.

Omission of the osteopathic profession from involvement in NACCAM in 1999 until 2001 demonstrates subversion of the expressed congressional directives and is in violation of FACA. The resulting actions and undertones by the NIH depicted in *Image 1, 2* and *3* indicate elements of intentional discrimination against the osteopathic profession by means of neglect. It also supports premeditated special interest favoring the allopathic field. The poor inclusion and dissemination of information to the osteopathic community by the NIH is evident in purely clinical matters such as the Information Rx campaign. A repeated benchmark lag time of 2-4 years on research and purely clinical matters presents a clear opportunity for improvement.

The announcement that osteopathic manipulations are "unproven" in front of the BOR, NIH directors, NLM, and available to the general public is questionable defamation of the osteopathic community. A possible honest mistake, that with a more balanced osteopathic inclusion could have been prevented. At a fundamental level, it is not appropriate for one organization to define what another organization is and be the sole determinant of what is or is not proven. This is an extreme conflict of interest and is out of the realm of content expertise for the allopathic field and research scientists at the NIH. This is evidenced in the NIH's own recollection of surveys that indicated the allopathic field had a critical lack of knowledge and experience on the subject matter.

The needs assessed or indication to train researchers was never disseminated into the colleges of osteopathic medicine (COMs) or postgraduate training programs in a good faith effort. The possible consequence of primarily supporting the in-group is that within 19 years, allopathic physicians led the non-manipulation side of the complementary, alternative and integrative health field.[64] As noted above, in the BOR meeting in February 2001, CAM was a $30 billion dollar industry in 2000 alone.

The allopathic field has only addressed a few aspects of NCCIH in their medical schools and postgraduate training programs, particularly the ones that deal with chemicals from natural products rather than traditional pharmaceuticals. This is not an advancement since natural product research was already underway in other NIH organizations before 1999. At the core of the issue, a chemical is a chemical and still represents *materia medica* practices; its source in the end is meaningless (many medications already stem from or are natural products). Allopathic medical schools and training programs have not universally addressed the manual medicine aspect of their training. At a minimum, the best way to prevent future occurrences of discrimination is through education and exposure. In the past, education and exposure helped to rescind the "cultist" label that the American Medical Association placed on the osteopathic profession until the 1960s.[58]

Moving to Pathway *j* in *Figure 6*, the absence of osteopathic representation of the LSTRC for MEDLINE inclusion either as a committee member, guest speaker or consultant since 2000 has likely resulted in no growth in the number of PubMed visible journals on osteopathic medicine. The tandem neglect of proper osteopathic inclusion in the NCCIH (or any inclusion until May 2001 after the BOR February 2001 meeting above) and the omission of osteopathy from the CDM in 2004 (after 40 years of inclusion in previous CDMs) is difficult to be assumed as mere coincidence. This is particularly true when authors of the CDM 2004 were present in the BOR's February 2001 meeting and almost identical wording was used in the meeting by the then-director of NCCAM. The potential of inexperienced authors of the CDM 2004 cannot account for the omission as several of the authors helped write the previous CDMs starting in 1977. One of the authors had worked

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at the NLM since 1968. Any removal of osteopathic terminology should have been balanced with its relocation into another area of the CDM (preferably as its own specific section). The possible interdepartmental collusion to make invisible and omit the osteopathic community should be investigated. This investigation, however, did not reveal any specific connections, rather only a pattern of omissions and delays on or suboptimal inclusion in the NIH FACs. As depicted in *Figure 6* by the multiple *l* pathways, many (but not all) NIH personnel tandemly or in concert have other roles/jobs at the NIH. This has effectively awarded the in-group easier access to a $700 billion tool ($527 billion since 1999) kept to their advantage over the out-group, ie, the osteopathic community.[7] This is not representative of a free and open market for practitioners, medical schools, hospitals, health-related businesses, medical organizations or their respective journals, nor is it in the best interest of scientific discovery.

The recent update of the CDM 2004 CAM section on March 26, 2018, was also commented on by the NLM in response to the Congressman's April 2, 2018, inquiry. They specifically noted that they had "coincidently" updated the guidelines just a few days previous. After 14 years of no representation of osteopathy in the CDM 2004, it is difficult to believe that this is mere coincidence. Either way, more corrective action is needed.

The updated CAM guidelines' Web page and the CDM were strikingly similar on March 26, 2018, except for small grammar alterations and the exclusion of various disciplines including chiropractic and osteopathic manipulation in the CDM 2004 specifically.

> ***From the CDM Web page for complementary and alternative medicine:***
> The National Center for Complementary and Integrative Health (NCCIH) classifies most complementary health approaches into one of two subgroups: 1) natural products, including herbs, vitamins, minerals, and probiotics, often sold to consumers as dietary supplements; or 2) mind and body practices, including a large and diverse group of procedures or techniques administered or taught by a trained practitioner or teacher. These include but are not limited to yoga, chiropractic and osteopathic manipulation, meditation, massage therapy, acupuncture, relaxation techniques, tai chi, qi gong, healing touch, hypnotherapy and movement therapies. Other complementary health approaches include traditional healers, Ayurvedic medicine, traditional Chinese medicine, homeopathy and naturopathy. For additional information see the NCCIH Web site.[65]
>
> ***From the CDM 2004:***
> The National Center for Complementary and Integrative Health (NCCIH) classifies most complementary health approaches into one of two subgroups: 1) natural products, including herbs, vitamins, minerals, and probiotics, often sold to consumers as dietary supplements; or 2) mind and body practices, including a large and diverse group of procedures or techniques such as yoga, meditation, and acupuncture, administered or taught by a trained practitioner or teacher. Other complementary health approaches include traditional healers, Ayurvedic medicine, traditional Chinese medicine, homeopathy and naturopathy. For additional information see the NCCIH Web site.[47(p36)]

The out-groups at the NIH need not be limited to osteopathic organizations. However, osteopathic physicians are the only legal equivalent to allopathic physicians in the US. This is the only example found of the 101 specific subjects indexed where the guidelines per subject on the NLM guideline website and the CDM 2004 specific section's text are not the same.[47,50]

Within 10 days of the first public disclosure of this report, the NCCIH recoded their first meeting minutes to include osteopathic medicine, and the NLM added *osteopathic manipulation* under CAM in their guidelines website. The problem is, as every osteopathic physician knows, osteopathic medicine is broader than osteopathic manipulative medicine. This is more evidence of the need to explicitly list osteopathic medicine as its own specific subject in the CDM in addition to *osteopathic manipulative medicine* in CAM. This also supports why a drastic increase in osteopathic physician presence in all the HHS FAC are needed. The less than 1% status quo courts continued errors and misrepresentation.

Medical literature

Back in 2001, the LSTRC debated filtering journals for MEDLINE. The decision to start more aggressive filtering practices is one of significant importance: in-group members empowered themselves. "Pertinent to medicine" was (per the opinion of some of those on the LSTRC back in 2001 and shared by these authors) to mean "was it about or influential to medicine." As opposed to the practice of: "Do I think it's important *enough* within or to medicine?" The omission of osteopathic medicine creates potential first amendment violations.

The literature in the osteopathic community is in many ways electronically invisible or silenced. PubMed is also designed to be of use for the general public and a trusted source of information for all. This creates the illusion of a greater absence of osteopathic literature to the patients for whom we advocate. Moreover, this absence of osteopathic medicine in the PubMed literature creates a sense of lack of credibility in the public eye—for if it isn't in the literature search, it must not be "credible." As alluded to in the NCCAM's first meeting, the allopathic field and, by extension the NIH, lacked experience and training in osteopathic medicine. Thus, without at a minimum consultations with osteopathic physicians, the LSTRC cannot act as peer reviewers. This makes the LSTRC, in this instance, one of the lowest quality peer-review methods in

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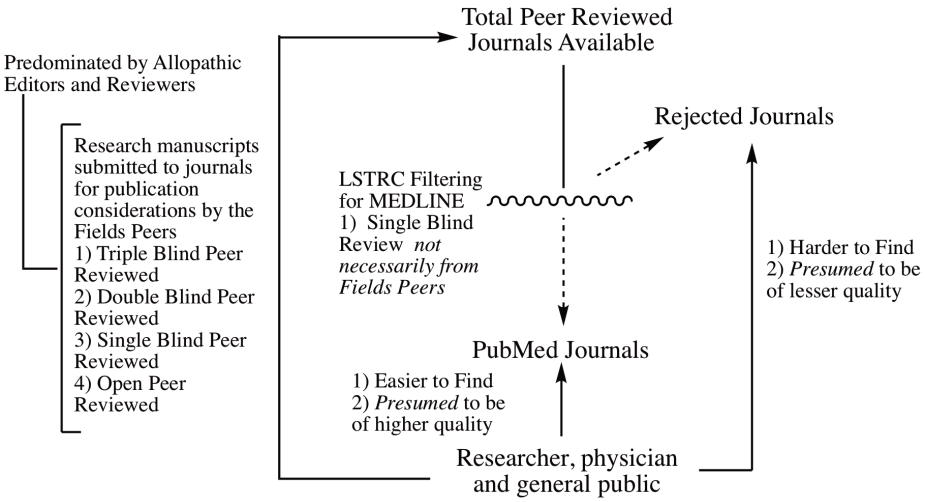
Figure 7. *LSTRC review sequence, general outline of the types and order of the peer review process in the research and medical field.*



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the medical literature realm.[66-68] As shown in *Figure 7*, this closed review process occurs after the journals *true* peer review process has taken place and filters information back to professionals doing the actual research and the general public.

What the in-group would call filtering, others may call censorship. In these authors' opinions, it is not appropriate for a federal organization to utilize a policy of censorship to determine what US citizens' tax-funded databases contain.

Within the CDM 2004 under the general medicine section, the scope of collection includes *thought*.[47(p60)] As a result, the continued inclusion of the journal *Medical Hypotheses* may have been upheld in closed sessions after open discussions in the LSTRC indicated concerns about the journal.[69] This essentially establishes the minimum threshold level for evidence required for collection. Any mandated level of evidence above thought or hypotheses in a peer reviewed journal on osteopathic medicine can be construed as a double standard. To the osteopathic community, osteopathic medicine *is* general medicine; it is not the combination of general medicine and manipulative medicine.

In support of a more selective process, the issue brought up in the LSTRC 2001 meeting of the user being able to "retrieve what is truly useful to them," is ironically redundant. A decade prior, the NLM aided in the initiative of publishing practice parameters and guidelines to aid clinicians in "retrieving what is truly useful to them."[70] The wish to only include "high quality" journals has not effectively decreased the number of article retractions. In fact, since mainstream online publications started, the number of retractions have increased.[71,72]

Revisiting *Figures 6 (pathway 6)* and *8*, another dampening and vicious cycle can be seen. In the process of earning grants, publishing in journals that have PubMed ID numbers is rather important. This is particularly true when renewing or applying for subsequent grants. For an osteopathic physician and/or a PhD researcher at a college of osteopathic medicine, the concern for bias[66] in the peer review journal process in *Figure 8* cannot be ignored (the review process for grants has the same problem). Even in a triple-blind peer review process the language used in the osteopathic culture is quite distinct and is not used often outside of the osteopathic community. There then exists an uphill battle for osteopathic researchers significantly greater than that of allopathic researchers. This can lead to failure in renewing or obtaining additional grants secondary to the appearance of decreased or failed "high quality publications." This issue is compounded with the LSTRC process. The consequences of this insidious cycle have been gleaned in the osteopathic literature before and a call for investigation was voiced.[25] This initial investigation points to simple discrimination (regardless of intent) that has been and continues to be a major force taxing the will of the osteopathic community for many years. Until those in power correct the discrimination, their inaction and neglect allows the suppressive force from the past to continue.

Pattern of regulatory capture

The critical lack of osteopathic representation in the NIH has placed the osteopathic culture and community at a chronically severe disadvantage. When we return to the driving forces behind discrimination and look at the whole picture from the evidence of this investigation, a pattern supportive of intentional actions years ago can be theorized:

1. The need for self-esteem (positive social status from within a group rather than outside a group): the NIH and their FAC has been predominated by allopathic physicians for over 100 years. The development of an NIH organization that had the opportunity to include osteopathic physicians in an initial position of advantage in 1999 was prevented/delayed. The 2-year representation gap/delay occurred during a critical junction in time when the NCCIH organization was first being established (1999-2001, *Figure 8*). It should be appreciated that it took multiple fields to do *almost* all of what the osteopathic field has been doing and advocating for since its inception.

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2. Status (hierarchies within society): The public started to show interest in osteopathy and other fields besides allopathic medicine. With the potential rise in social status (and even economical) of the osteopathic field came another motivational force for sabotage by neglect. Although legally equal degrees, osteopathic physicians are taught a philosophy and potential practice range that encompasses that of allopathic physicians.

3. Self-interest (preserving resources): $700 billion since 1938 and approximately $30-$40 billion per year is a great deal of resources. The allopathic field is, to a greater degree than the osteopathic field, dependent on salary and indirect cost support in academic training sites. The NIH grants provide this source of support.

The AOA-only programs and colleges of osteopathic medicine have had to develop without or with negligible NIH salary support for more than 125 years. This makes the osteopathic field the most fiscally responsible and lean model for physician training, a fact that needs to be considered given the rising health care costs in general. The dependence on NIH funding to the degree that resource hoarding practices are being displayed by elements of the allopathic field suggests they are in a state of regulatory capture.[73-75] In brief, regulatory capture is an economic theory that explains the process by which a government regulatory agency created to act in the public's interest in return promotes the special interests of groups that dominate the industry that it was charged with regulating.

A seemingly perplexing conundrum is that since 1990, the osteopathic field has grown tremendously. The number of COMs and branch campuses, as shown in *Figure 8*, have increased by over 200% (19 built, now totaling 34 with 35 teaching locations added now totaling 49).[76] The number of allopathic medical schools and branch campuses has only increased by 19% (24 built, now totaling 151).

Examining *Figure 6* can help to explain how the osteopathic community continues to grow with negligible funding from the NIH. Education loans and HRSA grants in pathways *8* and *9* help support medical schools. Laws have already been passed to explicitly direct the inclusion of the osteopathic field in these venues. This was done to stop the in-group favoritism that had been occurring until the mid- to late-1900s.[58(p143-161)]

Prior to the implementation of the Accreditation Council for Graduate Medical Education's (ACGME) Single Accreditation System (SAS) transition, the AOA's residency and fellowship opportunities

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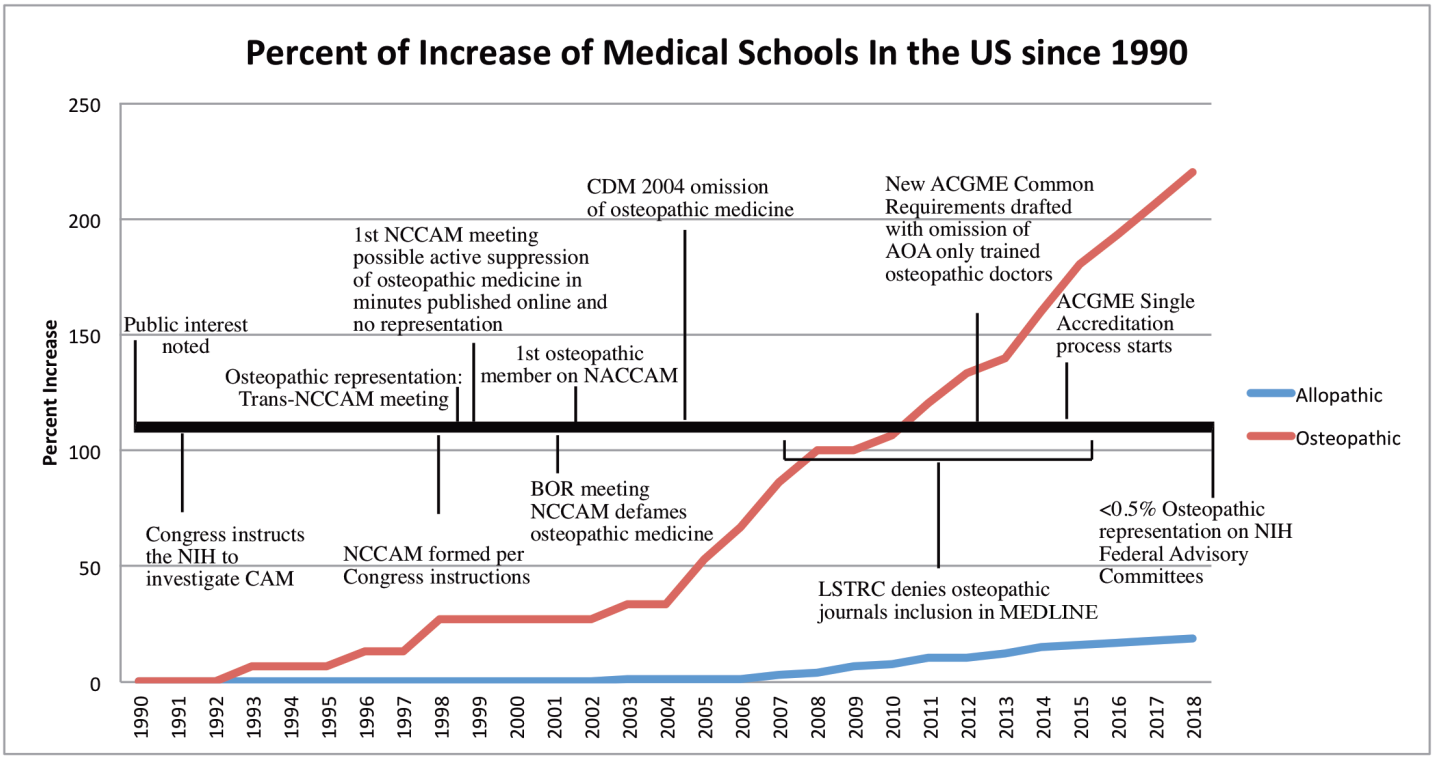
Figure 8. *The growth of osteopathic and allopathic medical schools and a timeline of events. Black bar: timeline of significant events involving osteopathic culture and community since 1990. Red bar: percent change in total osteopathic medical schools and branch campuses. Blue bar: percent change in total allopathic medical schools and branch campuses.*



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had been increasing.[77] As indicated in *Figure 6, pathway 7*, Medicare—and to a lesser extent Medicaid—is what helps to fund postgraduate medical education. NIH support at osteopathic predominant training sites (AOA-only) is negligible compared to the support provided to allopathic predominant training sites (ACGME). This fact is cited to be an important and attractive feature for prospective residents and fellows when applying to postgraduate training programs.[78] The lack of funding has compounded damages to the general public in suburban, rural and underserved areas where a considerable number of osteopathic training sites are located.[79] This service to the most vulnerable members of our American society is connected to the issues discussed in this paper, but lies beyond the scope of this article.[58]

The emergence of the SAS came after the ACGME omitted in their common program requirements the AOA-only trained doctors. The omission of AOA-only trained interns and residents effectively made them virtually unable to apply to the federally funded ACGME residency or fellowship programs.[80,81] One of the requirements to meet ACGME standards for initial and continued accreditation is scholarly activity and *PubMed-specific* journal publications.

A concern that must be addressed is that the PhD researchers at osteopathic institutions are at potential risk of discrimination by proxy of their association with the field. Only a few PhD researchers at osteopathic medical schools have earned a grant through NCCIH in the past 5 years. PhD researchers at COMs are also absent from all of the 2018 NIH NACs. In general, the NIH grants have been increasing slowly in the past 5 years, but still remain critically low compared to allopathic school counterparts.

Reflection on the past 90 years and the practices that the NIH has displayed through their existence brings about another problem not yet considered. Given that there has been negligible osteopathic representation at the NIH, this makes women and women of minority status in the osteopathic field at the most risk of being disadvantaged in the medical research field. Women in the allopathic field as well seem to be statistically significantly lower than the men of the same field in the NIH branches investigated, but still better represented than males or females in the osteopathic field.

Roadmap to Recovery: It's Always Darkest Before the Dawn

One of our challenges as a community is to accept that these violations occurred and osteopathic physicians and leadership are not to blame. Working together and making the choice to remedy this injustice will prevent culpability from this point on. In the past, members of the osteopathic community have had to fight for their rights against visible movements from a specific group(s). Sabotage by neglect is different, and invisible omissions without awareness of who, what, when, or where are harder to identify. What would seem like a light-hearted joke in daily life, "it would take an act of Congress to get something done," is a reoccurring theme throughout osteopathic medicine's history.[2,58]

1. A thorough investigation must be conducted. This is the responsibility of the federal government (possibly the Office of the Inspector General and the Federal Trade Commission). They must have the opportunity to act and correct the issue.

2. The osteopathic community needs legal help and guidance to address these issues and to formulate a plan to prevent further violations.

3. The creation of an NIH institute or center for osteopathic medicine with a proper needs assessment is overdue. Additional members of Congress will have to be informed of these concerns and asked to act accordingly. The only way to ensure osteopathic equal opportunity and allow for sustainable contributions to medical research is to form an organization dedicated to the unique recovery needs of the field that actions of the last 125+ years has created. Osteopathic representation must be allowed to reach a critical mass in order to have a sustainable voice and continued contributions in all areas of medical research.

4. Reparations pending investigations are likely to be warranted. The form of which could be an endowment(s) for the NIH institution of osteopathic medicine and other osteopathic organizations that can be used for salary support and critical resources as they appear. The AOA and several osteopathic organizations have given a good faith effort towards investing membership funds to jump-start research and training initiatives in an environment that was seemingly designed to dampen and mitigate those actions.

5. Osteopathic physicians and PhD researchers at colleges of osteopathic medicine need to be protected in the same way that women and minorities are protected for all NIH grant applications regardless of the specific NIH organization.

6. The NLM must back log osteopathic journals and articles into MEDLINE. The inclusion of osteopathic medicine as its own specific subject to be collected comprehensively in the CDM is a must and overdue. If "filtering" is still deemed appropriate, only osteopathic physicians along with non-physician mem-

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bers of the LSTRC should determine the collection criteria and which journals get into MEDLINE.

7. Consistent applications to all the FACs in the NIH by the osteopathic community (mere interest is enough to apply, one need not be conducting research or applying for grants). One can apply or nominate others by simply emailing your curriculum vitae or resumes as described online at https://ofacp.od.nih.gov/committees/pdf/SelectionCriteria.pdf.

8. The formation of osteopathic think-tanks for public- and government-related issues is warranted. Sitting on Uncle Sam's left and right shoulders are the same groups that predominate with the allopathic field centered in large institutions.[82] Regulatory capture occurs in environments when there is no opposition.

9. The need for reflection, healing and sustained unity of the osteopathic field is important. How has this affected us as a group and as individuals?[83] The lack of identifiable sources of the obstacles thwarting good faith efforts for systemic improvements may have caused us to blame ourselves and our leadership. The AOA and numerous osteopathic organizations have always been the osteopathic community's strongest advocates and deserving of our membership and reciprocated support.

The osteopathic community has implemented every measure and method of hard work to earn respect and slowly open doors. To this end, we have come a long way in the public's favor as well as in the clinical medical community in general. This lasting barrier of exclusion will need a unified osteopathic force to dispel it permanently.

Conclusion

New evidence supportive of chronic discrimination through sabotage by neglect of the osteopathic culture and community has been uncovered. A thorough investigation is warranted to verify concerns noted in this preliminary investigation of public records. Although intent cannot be determined, until those in power correct the discrimination, their inaction and neglect allows the suppressive forces from the past to continue. Extreme corrective actions are likely needed with damages accessed.

Progress in the SAS process may need to be suspended/extended until critical access to resources are created and a plan moving forward is formed. The osteopathic community has displayed amazing resilience and resourcefulness in the face of a $700 billion disadvantage and unsupportive federal scholarly and academic environment; imagine what it can do in a supportive one.

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