

Assessment of Hospital Staff's Knowledge of Osteopathic Manipulative Medicine: A Survey-Based Study

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Context: Research has shown that osteopathic manipulative treatment (OMT) in hospitalized patients can shorten hospital length of stay. However, hospital staff may be unfamiliar with OMT and its use in this setting.

Objective: To assess a hospital staff's knowledge of osteopathic manipulative medicine (OMM) and investigate whether there is a correlation between job category and knowledge of OMM.

Methods: The study used a 13-item survey that was developed using SurveyMonkey. A brief description stating the purpose of the survey with a hyperlink to the survey was sent in an e-mail to the employee LISTSERV at Good Samaritan Regional Medical Center. This LISTSERV included all 1933 employees at the medical center. After 10 days the survey was closed and the responses were collected and interpreted by a statistician and the primary investigator. Incomplete surveys were included.

Results: A total of 474 employees (24.5%) returned the survey. Of these respondents, 267 (66.9%) responded that OMM could be done in the hospital. Only 97 respondents (24.6%) reported seeing OMM performed in the hospital. Physicians had the highest awareness of OMM (53.7%), compared with all other employees (7%).

Conclusion: An overall lack of knowledge exists regarding OMM among hospital staff, especially nonphysician employees, at a medical clinic.

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Annual health care costs and spending continue to rise.¹ Inpatient hospital services, which have the highest level of Medicare spending, contribute to these rising costs.¹ Although it can be difficult to calculate and quantify, hospital length of stay (LOS) is an important component of total hospital costs.²⁻³ Osteopathic manipulative medicine (OMM) could help decrease the cost of hospitalizations, as research has demonstrated that using osteopathic manipulative treatment (OMT) in conjunction with traditional medical treatment can decrease a patient's hospital LOS.⁴⁻⁷ A 1998 study⁴ conducted by Radjeski et al showed that patients with pancreatitis who received OMT spent an average of 3.5 fewer days in the hospital compared with those who did not. More recently, Baltazar et al⁵ demonstrated that patients who received OMT after a major gastrointestinal operation had a decreased hospital LOS by an average of 5.4 days—a significantly shorter hospital LOS than those who did not receive OMT. Noll et al⁶ found that hospitalized patients with pneumonia who received OMT had a 1-day shorter hospital LOS than those

who did not. Additionally, Cerritelli et al⁷ concluded that hospital LOS was an average of 3.9 days shorter for preterm newborns who received OMT than for those who did not receive OMT. However, despite the known benefits of OMT, the frequency of OMT being performed in hospitals is decreasing.^{8,9}

Roughly 25% of all medical school students attend an osteopathic medical school.¹⁰ With the number of osteopathic medical students, residents, and practicing DOs, it is important that hospital staff are aware of OMM and its benefits to hospitalized patients.

It can be postulated that the declining use of OMT in hospitals can be attributed to 2 primary factors. One factor is an inadequate osteopathic curriculum in the clinical setting.¹¹⁻¹⁵ Johnson and Kurtz⁹ found that if physicians in training do not regularly perform OMT during their clinical rotations, there is less likelihood of them using OMT when their training is complete. The second factor is an overall lack of knowledge among hospital staff regarding the specific skills that osteopathic medical students, residents, and physicians possess.

The current study examines the second factor and aims to assess a hospital staff's knowledge and understanding of OMM. We hypothesized that nonphysician hospital staff at Good Samaritan Regional Medical Center (GSRMC) are unfamiliar with the use of OMT on hospitalized patients.

Methods

The participants in this survey-based study were employees at the GSRMC in Corvallis, Oregon. The GSRMC is an all-DO residency site that offers a traditional internship year and family medicine, internal medicine, orthopedic surgery, general surgery, and psychiatry residency programs. The 188-bed hospital had 7348 discharges and 15,087 emergency department visits the year the survey was conducted.¹⁶ The institutional review board for the GSRMC reviewed this study and all procedures involved and found it to be exempt.

The survey was designed with input from a research psychologist. A first draft was developed and sent to 10 people to determine the validity of the questions. Feedback was received from the initial survey regarding the number and clarity of the questions, and questions were tested for positive or negative correlations. The final survey consisted of 13 items, which were split into the following 3 sections: demographics, osteopathic physicians, and OMM.

An e-mail stating the purpose of the survey and including a hyperlink to the SurveyMonkey online survey was sent to all 1933 GSRMC employees via the GSRMC employee e-mail LISTSERV, which includes all current hospital staff (administrative and professional staff; clerical and trade staff; information services staff; midlevel providers; occupational, physical, and speech therapists; radiology and respiratory technicians; registered nurses [RNs]; and physicians). A reminder e-mail including the hyperlink to the survey was sent out 7 days after the original e-mail. The survey was closed 10 days after the original e-mail was sent, and the data obtained were interpreted.

Statistical Analysis

Descriptive statistics for the study sample were reported as percentages and sample size. Although several questions regarding osteopathic physicians and their medical training were included in the survey, only the questions regarding OMM in the hospital setting were analyzed (ie, "Please rate your level of knowledge about OMM," "[Can] OMM be done in the hospital?" and "Have you ever seen OMM performed on a patient in the hospital?").

Using Microsoft Excel (Microsoft Corporation), frequency tables were developed to show the correlation between job category and survey responses. We used χ^2 tests to compare self-reported knowledge of OMM in correlation with self-reported job categories. A 2-proportion z test was used to analyze the difference in responses between job categories. Statistical analyses were per-

formed using Stata 12.0 statistical software (StataCorp) and all reported *P* values were 2-sided and deemed significant at $\alpha < .05$.

Results

Of the 1933 GSRMC employees who received the survey, 474 (24.5%) returned it. Partially completed surveys were included in the results. The majority of respondents were women (367 [78.4%]) and were employed in the health care field for 6 or more years (345 [73.6%]). The results of the survey questions were calculated and separated based on the respondent's job category (Table 1).

Significantly more physicians (53.7%) reported that they were extremely knowledgeable about OMM compared with all other respondents (<5% each; $P < .01$) (Figure 1). Of 404 respondents, 104 (25.7%) reported that they were not at all knowledgeable about OMM. Respondents in the "other" category and the RNs, certified nursing assistants (CNAs), and midlevel providers reported having the least knowledge of OMM, with 37 (32.5%) and 44 (31.9%), respectively, responding that they were not at all knowledgeable about OMM. This finding was statistically significant when compared with physicians and administrative and professional staff ($P < .05$).

Of 399 respondents, 267 (67.4%) knew that OMM could be performed in the hospital, whereas 132 (33.1%) did not (Figure 2). Compared with all other employee groups, a significantly higher percentage of physicians (63 [94%]) knew that OMM could be performed in the hospital ($P < .001$). Registered nurses, CNAs, and midlevel providers had a similar response rate of knowing that OMM could be performed in hospitals compared with administrative and professional staff (43 [31.4%] and 24 [28.9%], respectively), although the overall difference within the nonphysician respondents was not statistically significant ($P = .695$).

Of 395 respondents, 97 (24.6%) reported seeing OMM performed in the hospital. Aside from physicians, a small percentage of respondents reported that

Table.
Hospital Staff's Knowledge of Osteopathic Manipulative Treatment: Demographic Characteristics of Respondents (N=474)^a

Characteristic	No. (%)
Sex	
Men	101 (21.6)
Women	367 (78.4)
Job Category^b	
Registered nurses, CNAs, and midlevel providers	151 (32.9)
Administrative and professional staff	93 (20.3)
Physicians	74 (16.1)
Other	141 (30.7)
Length of Employment, y	
<1	13 (2.7)
1-2	41 (8.7)
3-5	70 (14.9)
6-10	88 (18.8)
>10	257 (54.8)
Age, y	
18-24	9 (1.9)
25-34	130 (27.7)
35-44	96 (20.5)
45-54	107 (22.8)
55-64	119 (25.4)
≥65	8 (1.7)
Credential of Primary Care Provider	
Medical doctor (MD)	233 (49.4)
Doctor of osteopathic medicine (DO)	100 (21.2)
Physician assistant (PA)	24 (5.1)
Nurse practitioner (NP)	57 (12.1)
Don't have one	42 (9.1)
Don't know	7 (1.4)
Other	9 (1.9)

^a Some respondents did not complete some survey items; thus, numbers do not add up to 474.

^b Midlevel providers included nurse practitioners and physician assistants. "Other" included clerical and trade staff; information services staff; occupational, physical, and speech therapists; and radiology and respiratory care technicians.

Abbreviation: CNA, certified nursing assistant.

they had observed OMM being performed in the hospital (Figure 3). A statistically significant percentage of physicians reported observing OMM being performed in the hospital (51 [76.1%]) compared with the percentage of RNs, CNAs, and midlevel providers who reported that they had observed OMM performed in the hospital (29 [21.5%]).

Discussion

This study provides evidence of an overall lack of knowledge regarding OMM in the hospital setting. Physicians had the highest self-reported knowledge of OMM in the hospital compared with all other job categories. Physicians have more direct exposure to patient treatment and care, so it is not surprising that this group, especially if they were osteopathic physicians, had the highest knowledge of OMM in the hospital. The administrative and professional staff had a higher self-reported knowledge of OMM and its use in the hospital than the RNs, CNAs, and midlevel providers. Although this finding was not statistically significant, it is thought-provoking because the RNs, CNAs, and midlevel providers spend more time in direct contact with patients than the administrative and professional staff. The low percentage of respondents who had never observed OMM being performed was likely because all hospital employees are exposed to direct patient care.

The overall response rate to the survey was low, with 24.5% of GSRMC employees returning the survey. It is possible that the results may have been different if the response rate was higher. Various factors could have contributed to the low response rate. For example, many individuals receive a large amount of e-mails on a daily basis and are thus less likely to participate in a survey linked through e-mail. Also, many people check their work e-mail only at work and they may not have worked during the time that this survey was open. Furthermore, if individuals check their work e-mails only while at work, they may not have had time to take the survey because it was not work related.

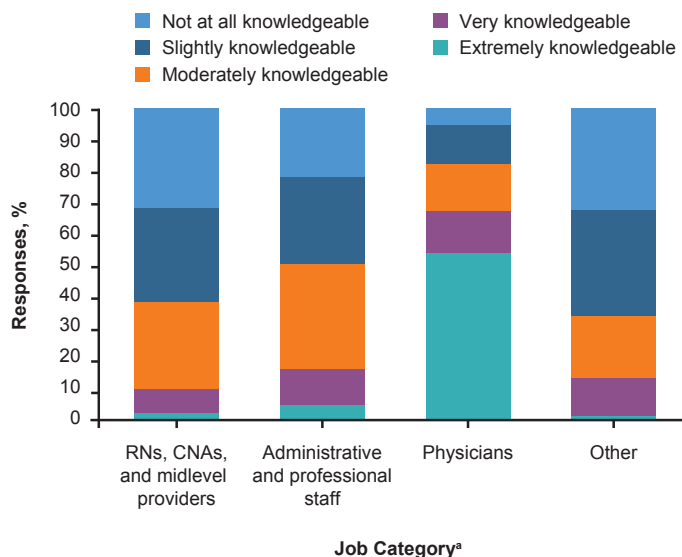


Figure 1. Self-reported knowledge of osteopathic manipulative medicine (OMM) by job category. A significantly higher percentage of physicians reported being extremely knowledgeable about OMM than all other job categories ($P < .01$). *Midlevel providers included nurse practitioners and physician assistants. "Other" included clerical and trade staff; information services staff; occupational, physical, and speech therapists; and radiology and respiratory care technicians.

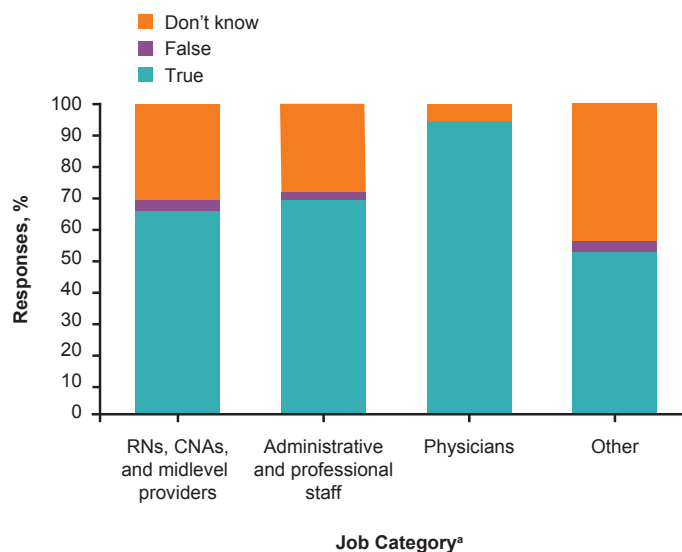


Figure 2. Response to the statement "Osteopathic manipulative medicine (OMM) can be done in the hospital." A significantly higher proportion of physicians replied true to this statement than all other job categories ($P < .001$). *Midlevel providers included nurse practitioners and physician assistants. "Other" included clerical and trade staff; information services staff; occupational, physical, and speech therapists; and radiology and respiratory care technicians.

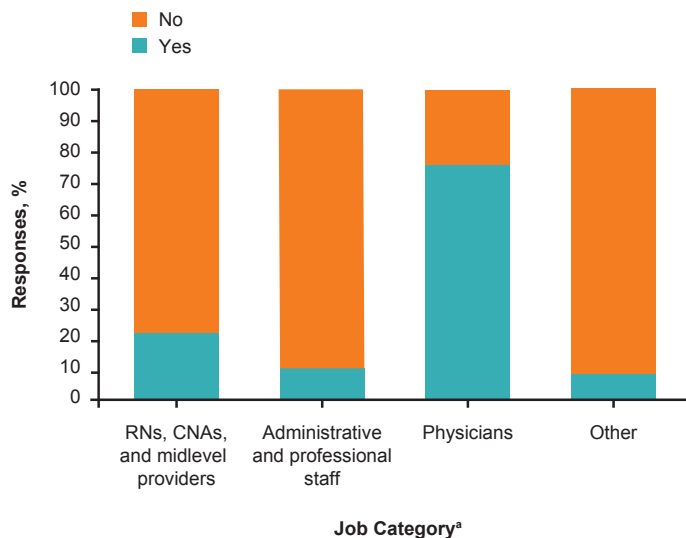


Figure 3.

Response to the question, “Have you ever seen osteopathic manipulative medicine (OMM) performed on a patient in the hospital?” There was a significantly higher percentage of registered nurses (RNs), certified nursing assistants (CNAs), and midlevel providers who reported seeing OMM performed in the hospital than the percentage of administrative and professional staff ($P=.031$). A significantly higher percentage of physicians reported seeing OMM performed in the hospital than did RNs, CNAs, and midlevel providers ($P<.001$).

*Midlevel providers included nurse practitioners and physician assistants. “Other” included clerical and trade staff; information services staff; occupational, physical, and speech therapists; and radiology and respiratory care technicians.

Any research project that involves a questionnaire relies on self-reported data for the results. One can never be certain how honest respondents are when answering the questions, especially when it involves assessing their own knowledge on a topic. Additionally, uncertainty can arise regarding the clarity of the survey questions and respondent comprehension. For example, this survey used the term OMM, which may or may not have been broadly understood to mean or include OMT.

Other limitations to this study are related to items not addressed in the survey. For example, the survey identified the job demographics of the respondents, but the demographic breakdown of the 1933 employees was not available. Thus, there was no way to determine the level of participation between different job categories. Additionally, determining whether the physician respondents held an MD or DO degree would have

been helpful. An osteopathic physician would be knowledgeable about OMM, which could skew the final results. Also, the question regarding a respondent’s observation of OMM in the hospital lacks a time reference, so it may not accurately assess current trends.

The findings of this study are important, as they pertain to the upcoming changes in postgraduate residency training with the approved transition to the single accreditation system.^{17,18} After this transition, all graduate medical education programs will be accredited by the Accreditation Council for Graduate Medical Education. With this transition, some have expressed concern that an even larger gap will occur in recognizing the specific skill sets that osteopathic physicians possess.^{9,17,18} We believe that it is crucial for current residency programs accredited by the American Osteopathic Association to obtain osteopathic recognition and thus help mitigate this potential problem.

Conclusion

This survey-based study demonstrated a knowledge deficit among hospital staff regarding osteopathic manipulation in hospitalized patients, most notably among nonphysician employees. It is unclear as to why this knowledge deficit remains and if this deficit is contributing to the declining use of OMT in hospitalized patients. Future studies involving multiple dually accredited hospitals should be conducted to establish whether this knowledge deficit is a national trend or is hospital specific. If a national trend exists, additional studies should be performed to assess whether educating ancillary staff in OMM can increase their knowledge of OMM and whether that knowledge has any effect on the amount of OMT used in the hospital setting.

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Author Contributions

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

References

1. Medicare Payment Advisory Commission. *A Databook: Healthcare Spending and the Medicare Program*. Washington, DC: Medicare Payment Advisory Commission; 2016 <http://www.medicare.gov/docs/default-source/data-book/june-2016-data-book-health-care-spending-and-the-medicare-program.pdf?sfvrsn=0>. Accessed October 24, 2016.
2. Taheri PA, Butz DA, Greenfield LJ. Length of stay has minimal impact on the cost of hospital admission. *J Am Coll Surg*. 2000;191(2):123-130.
3. Gamber R, Holland S, Russo DP, Cruser DA, Hilsenrath PE. Cost-effective osteopathic manipulative medicine: a literature review of cost-effectiveness analysis for osteopathic manipulative treatment. *J Am Osteopath Assoc*. 2005;105(8):357-367.
4. Radjeski JM, Lumley MA, Cantieri MS. Effect of osteopathic manipulative treatment of length of stay for pancreatitis: a randomized pilot study. *J Am Osteopath Assoc*. 1998;98(5):264-272.
5. Baltazar GA, Betler MP, Akella K, Khatri R, Asaro R, Chendrasekhar A. Effect of osteopathic manipulative treatment on incidence of postoperative ileus and hospital length of stay in general surgical patients. *J Am Osteopath Assoc*. 2013;113(3):204-209.
6. Noll DR, Degenhardt BF, Morley TF, et al. Efficacy of osteopathic manipulation as an adjunctive treatment for hospitalized patients with pneumonia: a randomized controlled trial. *Osteopath Med Prim Care*. 2010;4:2. doi:10.1186/1750-4732-4-2
7. Cerritelli F, Pizzolorusso G, Renzetti C, et al. A multicenter, randomized, controlled trial of osteopathic manipulative treatment on preterms. *PLoS ONE*. 2015;10(5):e0127370. doi:10.1371/journal.pone.0127370
8. Richardson ME. Tracing the decline of OMT in patient care. *J Am Osteopath Assoc*. 2006;106(7):378-379.
9. Johnson SM, Kurtz ME. Diminished use of osteopathic manipulative treatment and its effect on the uniqueness of the osteopathic profession. *Acad Med*. 2001;76(8):821-828.
10. *2015 Osteopathic Medical Profession Report*. Chicago, IL: American Osteopathic Association; 2015. <http://www.osteopathic.org/inside-aoa/about/aoa-annual-statistics/Documents/2015-OMP-report.pdf>. Accessed October 25, 2016.
11. Snider KT, Snider EJ, DeGooyer BR, Bukowski AM, Fleming RK, Johnson JC. Retrospective medical record review of an osteopathic manipulative medicine hospital consultation service. *J Am Osteopath Assoc*. 2013;113(10):754-767. doi:10.7556/jaoa.2013.045
12. Teng AY, Terry RR, Blue RJ. Incorporating a mandatory osteopathic manipulative medicine (OMM) curriculum in clinical clerkships: impact on student attitudes towards using OMM. *J Am Osteopath Assoc*. 2011;111(4):219-224.
13. Allee BA, Pollak MH, Malnar KF. Survey of osteopathic and allopathic residents' attitudes toward osteopathic manipulative treatment. *J Am Osteopath Assoc*. 2005;105(12):551-561.
14. Shubrook JH, Dooley J. Effects of a structured curriculum in osteopathic manipulative treatment (OMT) on osteopathic structural examinations and use of OMT for hospitalized patients. *J Am Osteopath Assoc*. 2000;100(9):554-558.
15. Spaeth DG, Pheley AM. Use of osteopathic manipulative treatment by Ohio osteopathic physicians in various specialties. *J Am Osteopath Assoc*. 2003;103(1):16-26.
16. Oregon Health Authority Office of Health Analytics. *Oregon Acute Care Hospitals Financial and Utilization Trends, 3rd Quarter 2015*. Salem: Oregon Health Authority; 2015.
17. Gevitz N. The transformation of osteopathic medical education. *Acad Med*. 2009;84(6):701-706. doi:10.1097/ACM.0b013e3181a4049e
18. Connnett, DA. Effect of the single accreditation system. *J Am Osteopath Assoc*. 2014;114(7):524-526. doi:10.7556/jaoa.2014.101

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