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Commentary

Implications and limitations of appropriateness studies for chiropractic

James M. Whedon DC[a,*], Matthew A. Davis DC, MPH[a], Reed B. Phillips DC, PhD[b]

[a] *Instructor, The Dartmouth Institute for Health Policy and Clinical Practice, Dartmouth College, Lebanon, NH*
[b] *President Emeritus, Southern California University of Health Sciences, Whittier, CA*

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Abstract

Objective: The appropriate role for chiropractic in US health care has not been established, but third-party payors and public policy makers must make decisions about the appropriate role for chiropractors in health care systems and for the services that chiropractors provide. Appropriateness studies for chiropractic may inform those decisions. The purpose of this article is to discuss the implications and limitations of appropriateness studies for chiropractic.

Discussion: We reviewed the general context for assessment of the appropriateness and the application of appropriateness studies to chiropractic in particular. We evaluated the implications and limitations for chiropractic of methods of small area analysis and the RAND-UCLA Appropriateness Method. The RAND-UCLA Appropriateness Method has been applied to the evaluation of spinal manipulation. Regional variations in chiropractic utilization have yet to be described through small area analysis, but these methods appear to hold some potential for assessing the appropriateness of chiropractic care. Both small area analysis and the RAND-UCLA method offer limited possibilities for the assessment of chiropractic appropriateness.

Conclusion: Future assessment of the appropriate role for chiropractic in US health care will raise issues beyond the scope of previous appropriateness studies. Studying the appropriate role for chiropractic will require consideration of the clinical discipline in its entirety, rather than individual consideration of specific interventions. A fair assessment of chiropractic appropriateness will require new evidence and perhaps new research methodologies.

Introduction

The delivery of health care services in the United States is characterized by geographic variations that cannot be justified scientifically.[1] Consequently, many assumptions about the quality of US health care and the

* Corresponding author. 30 Lafayette St., Lebanon, NH 03766. Tel.: +1 603 653 3247; fax: +1 603 653 3201.
E-mail address: james.m.whedon@dartmouth.edu (J. M. Whedon).

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appropriateness of health care interventions are being challenged.[2] Clinicians and their patients must decide what kind of care is best, whereas health policy decision makers and third-party payors are faced with the considerable challenge of determining the appropriateness of various interventions. The chiropractic profession is the third largest portal-of-entry health profession in the United States (after medicine and dentistry),[3,4] but the appropriate role for chiropractic in the United States has not been established. The role of chiropractic has been explored from both a biomedical and a sociological perspective,[5-7] but the profession has failed to establish a coherent vision of purpose.[6] Amid this context of uncertainty, third-party payors and public policy makers must make decisions about the appropriate role for chiropractors in health care systems and for the clinical services that chiropractors provide. Research on the appropriateness of chiropractic care may help inform their decisions. The purpose of this article is to discuss the implications and limitations of chiropractic-related appropriateness studies.

Discussion

The 1998 editorial in *The New England Journal of Medicine* posed the question, "What role for chiropractic in health care?"[7] Paul Shekelle, author of numerous articles on the appropriateness of health care interventions, considered the question of whether chiropractic should be considered a nonsurgical specialty or an alternative to medicine. Following his review of the evidence, he concluded that chiropractic provides limited benefits for musculoskeletal conditions, but use of chiropractic as a broad-based alternative to medical care is inappropriate. After another decade of chiropractic research activity, that answer may still ring true, but the questions have changed. Nearly 70% of chiropractors reject the characterization of chiropractic as alternative medicine.[8] Spinal manipulation, the intervention most commonly used by chiropractors, is now of proven clinical value for treatment of certain conditions.[9-16] Despite efforts toward integration, however,[17,18] the future role of chiropractic in US health care remains uncertain.[6] Since the RAND Corporation studies on the appropriateness of spinal manipulation were published in the 1990s,[19-23] the appropriateness of chiropractic care has not been rigorously investigated. However, the RAND studies focused on spinal manipulation, not chiropractic as a whole. Sociological studies of chiropractic describe the profession as a whole health system. This is how the profession is viewed by most chiropractors themselves and by many patients.[5,24] If chiropractic is a whole health system, then its appropriateness should be measured not only by the efficacy of a single intervention but by the effectiveness of the entire chiropractic clinical encounter.[25] With increasing interest in the integration of medical and nonmedical health professions, it may prove helpful to rigorously assess the appropriateness of general chiropractic care. Decisions about inclusion in integrative clinics and health plans may be made on the basis of professional identity rather than solely on the services provided. The appropriateness of chiropractic care in general is therefore relevant to decisions regarding inclusion of doctors of chiropractic. However, the double standard inherent in this argument must be acknowledged. Published studies on the appropriateness of medical interventions appear to have been grounded on the tacit premise that inclusion of conventional medicine in health care is appropriate. As a nondominant profession in the health care environment, the chiropractic profession is not always afforded the same presumptive status.

Assessment of the appropriateness of health care services

Appropriate care is care that is worth providing and that has a favorable risk-benefit ratio.[26] Assessments of appropriateness can inform public policy and third-party reimbursement as well as provider and patient decision making. Research methodologies relevant to the study of appropriateness include small area analysis and the RAND-UCLA Appropriateness Method. Small area analysis techniques allow researchers to describe and map geographic variations in health care utilization, describe patterns in variation, and identify variables that may in part explain the variation.[27,28] The RAND-UCLA Appropriateness Method is an established means of assessing the appropriateness of a health care intervention.[26] In this method, a literature review is performed to create a list of clinical indications for using a particular procedure. Members of a panel of experts critically review and synthesize the evidence to generate quantitative estimates of the benefits and harms, and independently rate the appropriateness of performing the procedure for each indication. The panel members subsequently meet, discuss areas of disagreement, and again independently rate the indications. A mean appropriateness score for each intervention is then calculated from the collective

results.[29] Criteria resulting from the application of this method can be used to retrospectively rank the appropriateness of interventions. Appropriateness criteria can be used to inform clinical decision making,[30] but are probably more useful for health policy decision making.[31]

The RAND-UCLA Appropriateness Method was developed in part to help answer questions about appropriateness that were originally raised by studies conducted by John Wennberg. In 1973, Wennberg and Gittelsohn[32] published the first in a series of studies that described unexplained geographic variations in medical care. Since then, The Dartmouth Atlas of Health Care Project, using methods of small area analysis that define local health care markets, has examined differences in per capita resource inputs and utilization of various medical and surgical services.[27,33,34] This research has uncovered differences in the distribution and use of health care services in 306 hospital referral regions across the United States—health care spending by Medicare enrollees varies by as much as 2.5-fold among regions.[35] Many such variations are likely to be inappropriate if they cannot be adequately explained on the basis of differences among regions in illness rates or sociodemographic characteristics.[36,37] Geographic variations in medical spending have been found to be due to differences in the number of physician visits (particularly inpatient physician visits), medical procedures, and use of specialty medical services.[35] Interestingly, areas of higher medical spending (often referred to as *high practice intensity areas*) do not appear to have better health care outcomes or higher levels of patient satisfaction.[38,39] To explain the geographic variations in medical spending, The Dartmouth Atlas of Health Care classifies health care services into 3 categories of variation:

- Supply-sensitive care (63% of care)
- Effective care (12% of care)
- Preference-sensitive care (25% of care)[40]

Supply-sensitive care is governed by the local supply of health care services: the greater the supply, the higher the rate of use. Higher rates of use of supply-sensitive care however may not confer better health outcomes.[40] Effective care is appropriate care; it consists of health care services that are proven effective and have a favorable risk-benefit ratio. Failure to treat an eligible patient with effective care represents underuse.[40] An example of effective care is surgical fixation of a severe open comminuted tibia fracture in an otherwise healthy patient. Preference-sensitive care includes services for which the pros and cons are subject to interpretation; in these cases, when the best choice of care is not clear-cut, patients should be given the information and support they require to share in the decision making.[41] Nonspecific low back pain is an example of a condition that may be subject to preference-sensitive care. In such cases, the choice should be based on the patient's own preferences; but all too often, it is the provider who decides.[40]

Implications of appropriateness studies for chiropractic

Both small area analysis and the RAND-UCLA Appropriateness Method have implications relevant to the assessment of chiropractic appropriateness, and the RAND method has been applied to the evaluation of spinal manipulation.[19-23] As the United States struggles with health care reform, the concept of the appropriateness of medical interventions is receiving attention from policy makers. Officials at the highest levels of the federal government recognize that unwarranted variations in medical utilization and spending are well documented[42] and that it may be possible to control ballooning health care costs by correcting the overuse, underuse, and misuse of medical care.[43] Within this context, questions about the appropriateness of chiropractic care may also be raised. Decision makers who know that more health care does not necessarily mean better care may ask, "For which patients is chiropractic care appropriate and for what indications and purpose?"

The assessment of appropriateness, whether applied to medicine, chiropractic, or any other clinical discipline or intervention, is a subjective determination that should draw upon objective evidence for effectiveness, safety, and cost. The manner in which clinical decision making occurs also bears upon the appropriateness of care. Without the participation of the patient, the very idea of judging one approach to care as being more appropriate than another might be rightly perceived as high-handed. Decisions about the utilization of health care services must take into account the individualized needs and preferences of the patient and should not be driven by the needs, inclinations, or specialized expertise of the doctor. The sharing of clinical decision-making between doctor and patient is thought to help facilitate the delivery of appropriate care.[44,45] Fig 1 illustrates the interplay of 4 principal factors involved in the assessment of appropriateness.

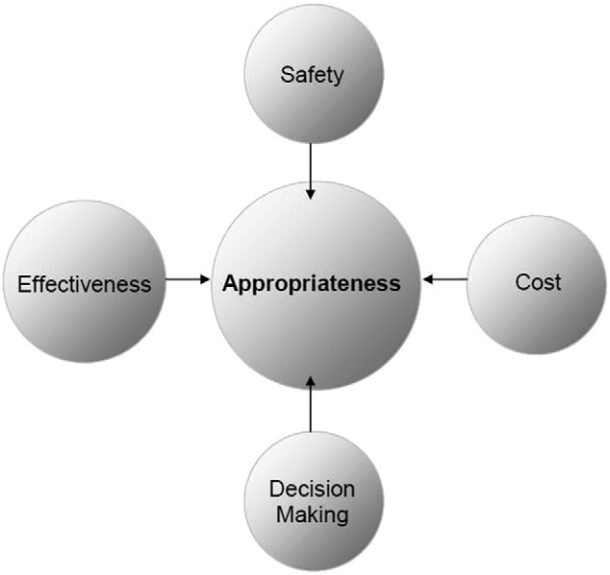

Fig 1. Interplay of the 4 principal factors involved in the assessment of appropriateness.

Implications of the RAND-UCLA Appropriateness Method

In a series of studies in the 1990s, the RAND-UCLA Appropriateness Method was applied to the evaluation of spinal manipulation for neck and low back pain.[19-23] Two different appropriateness studies were conducted on spinal manipulation for low back pain. The first study convened a multidisciplinary panel, including chiropractic physicians, medical doctors, and an osteopathic physician. Of 1550 indications for spinal manipulation, the panel found 60% to be inappropriate, 30% equivocal, and 7% appropriate.[22] The second study convened an all-chiropractic panel, which found that of 1570 indications, 48% were inappropriate, 25% uncertain, and 27% appropriate.[21] The authors noted that, "the large number (48%) of indications felt to be inappropriate probably reflects our attempt to make exhaustive the list of potential indications for performing spinal manipulation."[21] In both panels, the indications deemed appropriate included the more common presentations of back pain, whereas the inappropriate indications contained many uncommon presentations. Ratings varied significantly among panel members; chiropractors were more likely to rate clinical indications as appropriate for manipulation than were nonchiropractors.[19]

A retrospective review of chiropractic office records was subsequently conducted to determine the appropriateness of the use of spinal manipulation for low back pain using the 9-point scale criteria. The study found the use of spinal manipulation to be appropriate in 46% of cases and inappropriate in 29%. The assessment was inconclusive in 25% of cases. For cases in which the patient received chiropractic care but did not receive spinal manipulation, the investigators found that manipulation would have been appropriate in 38%.[23] A similar set of appropriateness ratings was developed for manipulation and mobilization of the cervical spine.[20]

Potential implications of small area analysis

Regional variations in chiropractic utilization have yet to be described through small area analysis. These methods have not been applied to the study of chiropractic appropriateness. However, consideration of the concepts of supply-sensitive care, effective care, and preference-sensitive care may aid the formulation of hypotheses regarding the appropriateness of chiropractic care. Overutilization of supply-sensitive care occurs when care is rendered in proportion to increased availability rather than clinical necessity.[36] A 2008 study found evidence of oversupply of chiropractic services in a market of questionable demand in Ontario, Canada.[46] Another study that examined the national supply and demand of US chiropractors uncovered a 28% decrease in the national supply of new chiropractic college graduates, whereas national expenditures on chiropractic care grew significantly over the same period.[3] Chiropractic care may be supply-sensitive in certain geographic areas.

By contrast, systematic underutilization of effective care occurs when services of proven value for which the benefits outweigh the risks are underused because of lack of support for systematic compliance with treatment guidelines.[36] Spinal manipulation is generally considered to be a safe,[13,47] effective,[10-13,15] and cost-effective[48] treatment of certain spinal pain disorders; and the number of individuals with such spinal pain disorders appears to greatly exceed the current number of chiropractic users.[3,49,50] However, many of the studies that have demonstrated the effectiveness of spinal manipulation for spinal pain disorders have not shown outcomes significantly better than other therapies, although patients do often report high levels of satisfaction.[47,51,52] Spinal manipulation for certain spinal pain disorders therefore may be considered to fall under the category of preference-sensitive care. The category of variation for a given intervention may depend upon the condition being treated, patient-related variables, and other factors; and considerable overlap between categories may occur for any given procedure.

A conspicuous geographic variation in the delivery of chiropractic care was recently revealed by analysis of the Medicare Chiropractic Services Demonstration, which was intended to evaluate the effects of expanded coverage for chiropractic services.[53] Despite reduced costs in 4 of 5 demonstration areas, a budget neutrality analysis found a net increase in overall Medicare payments in demonstration areas as compared with control areas. The increase in payments was due to increased utilization in the Chicago area. This finding suggests the possibility that care delivered in the Chicago demonstration site may have been supply sensitive.

Limitations of appropriateness studies for chiropractic

The RAND-UCLA method addresses the appropriateness of initiating treatment, but not of frequency or duration of treatment, issues of particular relevance to chiropractic care, which is characterized by serial treatments.[54] Furthermore, the RAND-UCLA method is intervention and condition based; and therefore, although applicable to the evaluation of an intervention (ie, spinal manipulation) for the care of a disorder (ie, low back pain), it is not designed to evaluate a complex clinical encounter. Therefore, the RAND-UCLA method may be unsuited to evaluate the appropriateness of chiropractic care in general. Chiropractic care includes but is not limited to spinal manipulation, so it would be erroneous to equate the appropriateness of the common domain procedure of spinal manipulation with the appropriateness of chiropractic health care. A typical chiropractic clinical encounter may include (in addition to or instead of spinal manipulation) physical therapy modalities and patient counseling on diet, nutritional supplementation, exercise, and lifestyle modification.[55]

Methods of small area analysis used to investigate geographic variations in medical care could be applied to the study of chiropractic care. Any analysis of Medicare claims for chiropractic, however, must be interpreted in light of Medicare's restrictive reimbursement policies. Medicare dictates that the primary diagnosis must be a "vertebral subluxation" and the secondary diagnosis must be a related neuromusculoskeletal condition, and the only reimbursable treatment procedure is spinal manipulation. Medicare claims data thus effectively equate chiropractic care with spinal manipulation for neuromusculoskeletal conditions related to spinal dysfunction, and inferences regarding the appropriateness of spinal manipulation may not be generalized to chiropractic in general.

In and of themselves, both small area analysis and the RAND-UCLA method offer limited possibilities for the assessment of chiropractic appropriateness. Small area analysis of Medicare claims offers great potential for descriptive studies and may also be used to help explain variations in chiropractic utilization. For example, geographic variations in the provision of services may be related to variations in state scope of practice laws or patient demographics. However, any attempt to analyze the appropriateness of chiropractic care in general would be limited by Medicare's restrictive inclusion and reimbursement policies. If applied to a less restrictive source of data, techniques of small area analysis might have greater potential; but Medicare claims are currently the single most comprehensive source of clinical data available in the United States. The RAND-UCLA method is similarly limited because it was designed to evaluate interventions, but not a clinical encounter in its entirety. Furthermore, the expert opinion generated by the RAND-UCLA method is probably more applicable to the evaluation of interventions for which there is little evidence, and may be regarded as superfluous if applied to interventions for which systematic reviews and clinical practice guidelines are already available.

Finally, scant evidence is available for assessing the appropriate role for chiropractic care in general as a complex clinical encounter.[24] The personalized, patient-centered paradigm of chiropractic care and the wide variation in chiropractic techniques and practice styles present challenges for appropriateness research.[54,56,57] It may be necessary to use new methods to evaluate the appropriateness of chiropractic as a whole health system.[24,58]

Conclusion

The appropriate role for chiropractic in US health care has yet to be determined. This article discussed the relevance of appropriateness studies, methodologies used to assess appropriateness, and identified implications and limitations of those approaches for the evaluation of chiropractic care. The future assessment of the appropriate role for chiropractic in US health care will raise issues beyond the scope of previous appropriateness studies. Studying the appropriate role for chiropractic will require consideration of the clinical discipline in its entirety, rather than individual consideration of specific interventions. A fair assessment will require new evidence, and perhaps new

research methodologies, both for generating evidence on quality and for assessing appropriateness based upon that evidence. Future assessments of the role of chiropractic in US health care will inevitably involve political considerations as well as scientific evidence. Whereas chiropractic physicians may have limited control over the former, the profession can exert some control over the latter by guiding the research agenda toward a comprehensive assessment of the benefits of chiropractic care.

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