

# The Intersecting Paradigms of Naturopathic Medicine and Public Health: Opportunities for Naturopathic Medicine

Jon Wardle, ND, MPH<sup>1,2</sup> and Erica B. Oberg, ND, MPH<sup>3</sup>

## Abstract

Complementary medicine research, including naturopathic medicine research, is plagued with many methodological challenges. Many of these challenges have also been experienced in public health research. Public health research has met these challenges with a long history of multidisciplinary, multimethod, and whole systems approaches to research that may better resonate with the “real world” clinical settings of naturopathic medicine. Additionally, many of the underlying principles of naturopathic medicine are analogous to the underlying principles and activities of public health, specifically in such areas as health promotion, prevention, patient education, and proactive rather than reactive approaches to disease management and treatment. Future research in the field of naturopathic medicine may benefit from adopting public health research models rather than focusing exclusively on biomedical models. A complementary and collaborative relationship between these fields may provide an opportunity to deliver research that more accurately reflects naturopathic medicine practice, as well as providing the opportunity to improve health outcomes more generally.

## Introduction

**N**ATUROPATHIC MEDICINE (NM) defines itself as a system of primary health care: an art, science, philosophy, and practice of diagnosis, treatment, and prevention of illness, practiced by licensed/registered naturopathic physicians. NM is not defined by the substances used but rather by the principles that underlie and determine its practice, which include the following: the healing power of nature, find the cause, do no harm, treat the whole person, prevention, and doctor as teacher.<sup>1,2</sup> The field of public health (PH) is equally broad, being “the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals.”<sup>3</sup> There are substantial areas of intersection between NM and PH, including a focus on health rather than disease; emphasis on health promotion, health education, and patient empowerment; and a preventive and proactive rather than reactive focus on treatment.

The World Health Organization defines health as a “state of complete physical, mental, and social well-being

and not merely the absence of disease or infirmity.”<sup>4</sup> This original and unchanged definition, used by most health agencies, resonates well with the naturopathic approach to health. Moreover, the “new” PH espoused by the Alma-Ata Declaration<sup>5</sup> and the Ottawa Charter<sup>6</sup> further defined health as “a resource for everyday life, not the objective of living...a positive concept emphasizing social and personal resources, as well as physical capacities.” The contemporary PH focus has moved to proactive rather than reactive health care, and prevention, education, and multidisciplinary approaches to health care as tools to improve health outcomes.<sup>7</sup> NM and PH, with their similarities in philosophies, can be viewed as allies in this mission, and in many cases have faced some of the same barriers to advancement. For example, both PH and NM are complex systems that embrace, rather than dissect, the multifactorial contributions to health and seek to impact notoriously difficult-to-measure outcomes such as diseases prevented and well-being. The purpose of this discussion is to illustrate the commonalities between PH and NM, to identify lessons each may learn from the other, and define objectives for future research.

<sup>1</sup>School of Population Health, Public Health Building, University of Queensland, Queensland, Australia.

<sup>2</sup>Network of Researchers in the Public Health of Complementary and Alternative Medicine (NORPHCAM), Australian website at [www.norphcam.org](http://www.norphcam.org)

<sup>3</sup>Bastyr University Research Institute, Bastyr University, Kenmore, WA.

### The Changing Priorities of Public Health and an Emerging Role for Naturopathic Medicine

One of the traditionally defining characteristics of PH has been its focus on population-level rather than individual-level health issues. Historically, improvement in population-level health outcomes came from improvements in general hygiene (sanitation, handwashing), reductions in infectious disease (through vaccination or surveillance programs), and general improvements in environmental health. This focus is still an important aspect of PH, particularly in nations where infrastructure development is still under way.<sup>8</sup> However, modern health challenges of the 21st century—such as chronic disease and obesity—are very different and generally unresponsive to traditional PH interventions. Chronic diseases are now the leading cause of disease burden and morbidity internationally,<sup>9</sup> yet the leading underlying actual causes of death are all modifiable health behaviors: tobacco use, poor diet, and physical inactivity.<sup>10</sup>

This PH challenge is an opportunity for NM, as it allows practitioners to apply patient-centered naturopathic principles at a community or population level, and apply PH priorities at an individual level. For example, health promotion is a cornerstone of NM, both philosophically and in care delivery.<sup>11,12</sup> Naturopathic physicians focus on individual behavior change through the clinical delivery of health promotion counseling and by modeling health behaviors themselves.<sup>13</sup> Observational studies of naturopathic practice have found that health promotion counseling on diet, physical activity, and stress management is incorporated into almost every clinical encounter (80%–100%) and is reinforced over successive patient visits.<sup>14,15</sup> This finding diverges substantially from the low rates of health promotion in conventional care (<35%–40%).<sup>16</sup>

Working toward a solution to the chronic disease epidemic requires a paradigm shift in the population perspective. As chronic health problems replace acute health problems as the major contributor to global disease burden, PH focus becomes more on developing *healthier populations through improving individual health* rather than *healthy individuals through improving population-based health*. This individualized approach to PH is becoming increasingly important as burden from diseases of lifestyle continues to escalate.

### Using Public Health Tools to Build a Naturopathic Evidence Base

The exponential growth in the popularity of complementary and alternative medicine (CAM) use and practice has fueled the drive to advance the evidence base for these medicines to allow consumers to make informed choices about their health. An estimated 69% of Australians used CAM in 2005, spending approximately USD\$3.1 billion out of pocket.<sup>17</sup> The estimated 40% of Americans who use CAM spend nearly USD\$34 billion out of pocket.<sup>18,19</sup> The majority (58%) of these users did so for disease *prevention*, as opposed to *treating* disease (42%).<sup>18</sup> With such widespread use, it is essential to develop a more robust evidence base confirming safety and effectiveness. However, traditional research methods, such as randomized controlled trials (RCTs), cannot provide these data alone. It is important that CAM research includes methods and perspectives from disciplines

that help close the gap between clinical research findings and their implementation in real-world practice settings. For this reason, evaluation of NM may be more appropriately aligned with PH research models rather than those focused exclusively on biomedical models.

Developments such as the Patient-Centered Outcomes Research Institute (PCORI)—established by the U.S. Federal government through the Patient Protection and Affordable Care Act 2010—are encouraging the use of diverse research methodologies to compare the clinical effectiveness of treatments. PCORI is also charged with re-evaluating the hierarchy of evidence to give appropriate weight to health services methods such as pragmatic trials and observational methods.<sup>20</sup> These developments are significant for the disciplines of NM and PH alike. A complementary and collaborative relationship between these professions employing shared research models, rather than the current focus on biomedical models of research, may provide an opportunity to conduct research that more accurately reflects NM as it is practiced today.

### Possible Methodological Solutions

#### Health Services research

Health Services research (HSR), within a broader PH model, draws from a range of expertise (clinical practice, economics, epidemiology, biostatistics, sociology, management, and political science) to produce and disseminate research findings that are directly applicable to health policy, practitioners, managers, and administrators involved in community health and health service delivery. Definitions have been developed by a number of agencies (Box).

#### Box 1. International Definitions of Health Services Research (HSR)

HSR examines how people get access to health care, how much care costs, and what happens to patients as a result of this care. The main goals of HSR are to identify the most effective ways to organize, manage, finance, and deliver high-quality care; reduce medical errors; and improve patient safety. (Agency for Healthcare Research and Quality, 2002)

HSR is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations.

(Academy for Health Services Research and Health Policy, 2000)

HSR are multidisciplinary research activities with an implicit objective of improving the health services patients receive. Thus, it is an area of applied rather than “basic” research. It uses theories of human behavior from contributing disciplines, along with evidence from the medical sciences, to generate and test hypotheses about the delivery of health care.

The potential opportunities for NM through HSR have been raised previously.<sup>11</sup> Others have criticized the application of HSR methods to CAM, suggesting that when HSR is taken to mean the implementation of “evidence-based” treatments, it has the potential to limit research inquiry to less-than-whole practice evaluation.<sup>21</sup> However, much of this criticism comes from a narrow definition of HSR and a narrow interpretation of the types of evidence used in HSR. When the HSR approach is one that shifts priority of research from issues of clinical efficacy to clinical effectiveness, and shifts away from reductionist or standardized interventions toward complex and individual treatments as they are delivered in real-world settings, then HSR is a good fit for naturopathic research. This can be observed in the movement in the naturopathic profession towards “whole practice” or “whole systems research” (WSR).<sup>11,22</sup> While the concept of WSR has been enthusiastically heralded as a new opportunity to properly research the complexity of CAM interventions, it is important to note that these concepts have been long present within PH in HSR methods.

#### *What is evidence in HSR?*

Focusing on classic research designs such as RCTs is not always appropriate for CAM, nor for some conventional disciplines.<sup>23–26</sup> The traditional “evidence-based” movement has been dominated by RCTs that use a reductionist perspective that fails to recognize the complexities of real-world clinical settings by constraining real-world variables, such as largely excluding patients with co-morbid conditions.<sup>27</sup>

However, RCTs are not a homogeneous entity. RCTs can be split between “explanatory” and “pragmatic” RCTs.<sup>28</sup> Explanatory RCTs test for efficacy under highly controlled settings within a highly selected population. These reductionist RCTs are favored by the biomedical model and serve well to answer highly specific questions relating to intervention effects on narrowly focused outcome measures, or uncovering mode of action. Pragmatic trials test effectiveness in “real-world” clinical settings in comparatively flexible conditions and participants. Pragmatic RCTs are usually favored by PH/HSR and are often described by the CAM community as WSR.

#### *Alternative research designs*

Trials of “whole practice” interventions are also increasingly gaining credibility in the broader health research fields. Pragmatic RCTs and comparative effectiveness research can inform decisions about real-world practice (the challenge in most clinical settings is not simply to be better than placebo, but to produce the largest clinical effect) while outcomes studies can investigate routine care delivery in large populations (such as patients of clinics enrolled in practice-based research networks). Uptake of these new methodologies take issue not with the RCT itself, but rather the “real world” validity of the RCT. Essential elements such as randomization can still be included in many other designs (even in a relatively unselected population), and comparative effectiveness studies are becoming increasingly prioritized as an alternative to placebo-controlled trials.<sup>29</sup>

Other reasons for selecting alternative research methodologies include “patient-centeredness”<sup>22</sup> and the need to capture factors central to NM, such as strategies thought to promote health behavior modification.<sup>30</sup> PH/HSR have a

long history of multidisciplinary, multimethod, and whole-systems evaluation approaches to research that may meld well with NM. These methods investigate changes in a number of determinants of health—for example, psychosocial as well as physical improvements—which may be more aligned with the holistic approach of NM. Clinical outcomes research, cost-effectiveness analyses, comparative effectiveness trials, and pragmatic RCTs are examples of HSR methodologies that may all contribute to a clinically meaningful evidence base for NM.

#### *Outcomes studies*

A 2005 Institute of Medicine report identified important gaps in the knowledge of CAM effectiveness and utilization,<sup>31</sup> and the 2011 National Center for Complementary and Alternative Medicine Strategic Plan reflects this prioritization as well. Strategic objective three is to “increase understanding of ‘real world’ patterns and outcomes of CAM use and its integration into health care and health promotion.” One of the recommendations to address these gaps was to conduct outcomes research on routine care delivery. The most efficient strategy to accomplish outcomes research in CAM is to adopt methods from conventional primary care research to collect observational data during routine care delivery.<sup>31,32</sup> Outcomes studies can be conducted as case-control studies matching patients receiving naturopathic care to conventional or usual-care controls. Outcomes studies can also test correlations between exposure to different components of routine naturopathic care and disease outcomes. However, outcomes studies do not need to focus on condition-specific (and often physical) outcome measurements, but can also include broader outcomes that recognize nonphysical determinants of health or broader quality-of-life improvements.

For example, the Quality-Adjusted Life Year (QALY) and Disability-Adjusted Life Year (DALY) extend the “mortality” concept of potential years of life lost due to premature death to include “morbidity” concepts of “healthy” life lost due to being in states of poor health or disability. The QALY and DALY are therefore used in many public evaluations of treatment effectiveness—including most burden of disease studies (such as the World Health Organization’s Global Burden of Disease studies<sup>8</sup>)—as the focus on physical outcomes or mortality alone in previous measures could ignore the significant disease burden of conditions that greatly affected quality of life, but that often had few negative physical symptoms (for example, depression or congenital blindness). The National Institute of Clinical Effectiveness (UK) and the Pharmaceutical Benefits Advisory Committee (Australia) are two examples of national funding agency bodies that specifically utilize the QALY in determining effectiveness of treatments for inclusion in health service delivery.

Outcomes research is also well equipped to explore the complex and often nonspecific benefits of NM (for example, the role of the practitioner on changing health behaviors and reducing chronic disease risk factors [health promotion]). To test this, core clinical outcomes can measure health behaviors, self-efficacy, quality-of-life, well-being, and satisfaction with care as well as specific clinical outcome measures or chronic disease risk factors (such as lipoproteins, glycemic control, body-mass index, etc.).<sup>33–35</sup> The Canadian Interdisciplinary Network for Complementary and Alternative

Medicine has consolidated many of these outcomes measures into a publicly accessible database.<sup>36</sup> Some examples of these outcome measurement tools are listed in Table 1.

Publicly funded health systems such as Australia, Canada, and particularly the United Kingdom are already trending toward the introduction and utilization of patient-centered outcomes (which focus outcomes that are important to patients themselves) in evaluating health care interventions. In the United States, setting they are also becoming increasingly important as exemplified by the methods outlined by the recently formed PCORI.

### Comparative Effectiveness Research

Comparative effectiveness research (CER) is defined as the conduct and synthesis of research directly comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat, and monitor health conditions in “real world” settings,<sup>37</sup> rather than tightly controlled comparisons against placebo. CER aims to improve health outcomes by developing and disseminating evidence-based information about which interventions are most effective for which patients under specific circumstances. To accomplish this, study design must assess comprehensive outcomes (including patient-centered outcomes) that are relevant for diverse patient populations and subgroups. For these reasons, CER is highly relevant to primary care and NM.

#### Cost-effectiveness studies

Because health systems have finite resources to face seemingly infinite demands, economic evaluation is becoming an increasingly important aspect of prioritizing health care resources.<sup>38</sup> These outcomes are important in integrating naturopathic care into the broader health system, as payers consider treatments on factors other than clinical effectiveness alone. For example, a Canadian study investigating the role of NM in low back pain among postal

workers was able to not only demonstrate benefit on clinical outcomes,<sup>39</sup> but also on broader outcomes, such as cost-effectiveness and the improved workplace productivity of patients,<sup>40</sup> which were of interest to the organization providing that care. As the evidence base grows, decision-makers will have the opportunity to impact PH priorities by creating financial incentives aligned with health promotion and prevention, and that value patient-centered models of care such as longer office visits if visit length is shown to be economically effective in developing a therapeutic relationship and stimulating behavioral change.<sup>35</sup>

#### Contextual studies

To fully explore the benefits and potential role of NM contextual studies, studies that research NM within the context of the broader health system are required. In many cases, health care consumers pay considerable out-of-pocket expenses for CAM services, even in the presence of broader national health insurance schemes.<sup>41</sup> Even in nations with some coverage for CAM, or little coverage for conventional medical services, the disparities in reimbursement between CAM and conventional services leads to inequity in access to services. Therefore, it is difficult to ascertain what CAM utilization would look like if patients had equity of access to choose the type of professional who delivered their primary care services.

This leads to PH questions important to NM that can be answered with health care utilization data. For example, why do people with free health care still choose to pay for naturopathic services? In Australia, despite universal health coverage for conventional services, 11% of mid-age women still choose to consult (and pay out of pocket) a naturopath.<sup>42</sup> In some conditions, such as cancer, this can increase to 16%.<sup>43</sup> Exploring and documenting the reasons behind these choices can identify the gaps that NM is filling and, where appropriate, construct substantive arguments for extending

TABLE 1. OUTCOME MEASUREMENT TOOLS APPLICABLE TO PUBLIC HEALTH/HEALTH SERVICES RESEARCH IN NATUROPATHIC MEDICINE

<i>Outcome measure</i>	<i>Description</i>
SF-12 and SF-36	Designed as a generic indicator of health status measuring eight dimensions of quality of life, it is a reputable measure and widely used in conventional medicine, including the Medical Outcomes Study. Developed by the Rand Corporation and freely available.
Arizona Integrative Outcomes Scale	A validated one-item visual analogue scale that assesses self-rated global sense of well-being.
Spitzer's Quality of Life UniScale Adapted measure based on the Picker Patient Satisfaction Survey	Global overall measure of quality of life Adapted from the Picker Institute's Patient Satisfaction Scale
Measure Your Own Medical Outcomes Profile (MYMOP)	A popular validated tool that aims to measure improvements in outcomes that the patient identifies the most important.
Patient Activation Measure	Changes in patient activation provide not only outcomes data but are process measures that can signal future behavioral change toward health even if an actual change in biomarker and risk factors outcome has not yet been observed in the time period in question
Summary of Diabetes Self-Care Activities	Health behavior change can be measured using a subset (5 items) of the Summary of Diabetes Self-Care Activities (SDCCA) that measure nondiabetes domains of healthy eating, physical activity, and tobacco use.

Adapted from Canadian Interdisciplinary Network for Complementary and Alternative Medicine Outcomes Database at: [www.outcomesdatabase.org](http://www.outcomesdatabase.org)



NM to fill those gaps. Research may uncover new or differing regional roles in naturopathic practice.<sup>44</sup> PH/HSR is critical to identifying ways in which appropriate naturopathic care can be made accessible and most effectively delivered to underserved communities. It can also inform policymakers on related topics, such as in licensure and regulatory efforts in various jurisdictions.

#### *Critical research into naturopathic practice*

As NM evolves, professionalizes, and becomes further integrated into the health care system, it will need to focus research attention internally into practitioner and professional issues as much as on external or clinical questions. Exploratory methodologies commonly employed by PH/HSR can be particularly effective at uncovering issues at the core of naturopathic practice.<sup>45</sup> For example, qualitative or mixed methods (integrating both quantitative and qualitative) research methodologies can help identify impacts of impending policy changes<sup>46</sup>; identify obstacles, barriers, or solutions to developing naturopathic-relevant research<sup>47</sup>; identify current naturopathic practices<sup>48</sup>; barriers to performing best naturopathic practice<sup>49</sup>; or identify specialist naturopathic roles and knowledge relevant to particular treatments<sup>50</sup> or specific populations.<sup>51</sup>

#### **Opportunities for the Profession**

There is significant alignment between the goals of the Naturopathic Medicine Research Agenda (NMRA) and PH/HSR. The NMRA focuses on three fundamental hypotheses: that NM is safe and effective for health promotion and for the prevention and management of a broad range of common conditions; that the increased availability of naturopathic physicians will improve patient health in a cost-effective manner; and that the scientific exploration of naturopathic medical practices and principles will yield important insights into the nature of health and biology of healing.<sup>52</sup> All three of these hypotheses fall within the broad remit of PH/HSR. However, PH/HSR also uncovers new unrealized opportunities for NM research.

The increasing burden of obesity, chronic disease, and other conditions associated with unhealthy lifestyles demand identification of novel approaches. If NM approaches to these PH challenges are found to be effective, PH could identify strategies to increase the delivery of naturopathic approaches to improve health impact. This could include increasing public access to licensed/registered naturopathic physicians in community clinics, increasing formal collaboration or co-management between naturopathic and other health professionals, or increasing the numbers of integrative medicine providers who are trained in both CAM and conventional medicine. Only by quantifying the impact NM has in meeting many of the health challenges of the 21st century will evidence-based health policy decisions be made regarding expanded inclusion of NM. If, through the use of PH/HSR methods, researchers continue to find benefit in NM, then expanded access is warranted. However, if by utilizing PH/HSR methods gaps in quality are detected, then the naturopathic profession can swiftly initiate quality improvement programs and advocate for solutions that protect the public's health and safety (for example, the importance of appropriate licensure and regulatory provisions).

#### **Conclusions**

By exploring research opportunities in a philosophically similar field such as PH, NM can not only address many of its research methodology challenges but also continue its growth and evolution. Moreover, NM can also offer its own valuable experience and insights to the field of PH. The convergence of these already similar fields can be of benefit not just to each discipline, but has the potential to improve health care delivery and the health and well-being of the population.

#### **Disclosure Statement**

No competing financial interests exist.

#### **References**

1. Pizzorno J, Murray M. *Textbook of Natural Medicine*. St. Louis: Elsevier, 2005.
2. Sarris J, Wardle J, eds. *Clinical Naturopathy: An Evidence Based Guide to Practice*. Sydney: Elsevier, 2010.
3. Winslow C. *The Evolution and Significance of the Modern Public Health*. New York: Yale University Press, 1923.
4. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19–22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.
5. World Health Organization. *Declaration of Alma Ata*. Geneva: World Health Organization, 1978.
6. World Health Organization. *Ottawa Charter for Health Promotion*. Geneva: World Health Organization, 1836.
7. Baum F. *The New Public Health*. Melbourne: Oxford University Press, 2008.
8. World Health Organization. *The Global Burden of Disease: 2004 Update*. Geneva: World Health Organization, 2008.
9. Nugent R. Chronic diseases in developing countries: Health and economic burdens. *Ann N Y Acad Sci* 2008;1136:70–79.
10. Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA* 2004; 291:1238–1245.
11. Herman PM, Sherman KJ, Erro JH, et al. A method for describing and evaluating naturopathic whole practice. *Altern Ther Health Med* 2006;12:20–28.
12. Nahin RL, Dahlhamer JM, Taylor BL, et al. Health behaviors and risk factors in those who use complementary and alternative medicine. *BMC Public Health* 2007;7:217.
13. Frank E, Breyan J, Elon L. Physician disclosure of healthy personal behaviors improves credibility and ability to motivate. *Arch Fam Med* 2000;9:287–290.
14. Bradley R, Kozura E, Buckle H, et al. Description of clinical risk factor changes during naturopathic care for type 2 diabetes. *J Altern Complement Med* 2009;15:633–638.
15. Bradley R, Oberg EB. Naturopathic medicine and type 2 diabetes: A retrospective analysis from an academic clinic. *Altern Med Rev* 2006;11:30–39.
16. Ma J, Urizar GG Jr, Alehegn T, Stafford RS. Diet and physical activity counseling during ambulatory care visits in the United States. *Prev Med* 2004;39:815–822.
17. Xue CC, Zhang AL, Lin V, et al. Complementary and alternative medicine use in Australia: A national population-based survey. *J Altern Complement Med* 2007;13:643–650.
18. Barnes P, Bloom B, Nahin R. Complementary and alternative medicine use among adults and children: United States, 2007. *Natl Health Stat Rep* 2008;12:1–23.

19. Nahin RL, Barnes PM, Stussman BJ, Bloom B. Costs of complementary and alternative medicine (CAM) and frequency of visits to CAM practitioners: United States, 2007. *Natl Health Stat Rep* 2009;18:1–14.
20. Fleurence RL, Naci H, Jansen JP. The critical role of observational evidence in comparative effectiveness research. *Health Aff (Millwood)* 2010;29:1826–1833.
21. Coulter I, Khorsan R. Is health services research the holy grail of complementary and alternative medicine research? *Altern Ther Health Med* 2006;14:40–45.
22. Ritenbaugh C, Aickin M, Bradley R, et al. Whole systems research becomes real: New results and next steps. *J Altern Complement Med* 2010;16:131–137.
23. Aickin M. Comparative effectiveness research and CAM. *J Altern Complement Med* 2010;16:1–2.
24. Verhoef MJ, Mulkins A, Kania A, et al. Identifying the barriers to conducting outcomes research in integrative health care clinic settings: A qualitative study. *BMC Health Serv Res* 2010;10:14.
25. Ritenbaugh C, Aickin M, Bradley R, et al. Whole systems research becomes real: New results and next steps. *J Altern Complement Med* 2010;16:131–137.
26. Khorsan R, York A, Coulter ID, et al. Patient-based outcome assessment instruments in acupuncture research. *J Altern Complement Med* 2010;16:27–35.
27. Fortin M, Soubhi H, Hudon C, et al. Multi-morbidity's many challenges. *BMJ* 2007;334:1016–1017.
28. Thorpe KE, Zwarenstein M, Oxman AD, et al. A pragmatic-explanatory continuum indicator summary (PRECIS): A tool to help trial designers. *Can Med Assoc J* 2009;180:E47–E57.
29. Aickin M. Comparative effectiveness research and CAM. *J Altern Complement Med* 2010;16:1–2.
30. Schuster TL, Dobson M, Jauregui M, Blanks RH. Wellness lifestyles I: A theoretical framework linking wellness, health lifestyles, and complementary and alternative medicine. *J Altern Complement Med* 2004;10:349–356.
31. Institute of Medicine. *Complementary and Alternative Medicine in the United States*. Washington, DC: National Academies Press, 2005.
32. Tarlov AR, Ware JE Jr, Greenfield S, et al. The Medical Outcomes Study: An application of methods for monitoring the results of medical care. *JAMA* 1989;262:925–930.
33. Verhoef MJ, Mulkins A, Kania A, et al. Identifying the barriers to conducting outcomes research in integrative health care clinic settings: A qualitative study. *BMC Health Serv Res* 2010;10:14.
34. Bell IR, Caspi O, Schwartz GE, et al. Integrative medicine and systemic outcomes research: Issues in the emergence of a new model for primary health care. *Arch Intern Med* 2002;162:133–140.
35. Maizes V, Rakel D, Niemiec C. Integrative medicine and patient-centered care. *Explore (NY)* 2009;5:277–289.
36. Canadian Interdisciplinary Network for Complementary and Alternative Medicine. *IN-CAM Outcomes Database*. 2008. Online document at: [www.outcomesdatabase.org/](http://www.outcomesdatabase.org/) Accessed April 27, 2010.
37. Kuehn BM. Institute of Medicine outlines priorities for comparative effectiveness research. *JAMA* 2009;302:936–937.
38. Drummond M, Sculpher M, Torrance G, et al. *Methods for the Economic Evaluation of Health Care Programmes*, 3rd ed. Oxford: Oxford University Press, 2005.
39. Szczurko O, Cooley K, Busse JW, et al. Naturopathic care for chronic low back pain: A randomized trial. *PLoS One* 2007;2:e919.
40. Herman PM, Szczurko O, Cooley K, Mills EJ. Cost-effectiveness of naturopathic care for chronic low back pain. *Altern Ther Health Med* 2008;14:32–39.
41. Bodeker G, Burford G, eds. *Traditional, Complementary and Alternative Medicine: Policy and Public Health Perspectives*. London: Imperial College Press, 2006.
42. Adams J, Sibbritt D, Young A. Consultations with a naturopath or herbalist: The prevalence of use and profile of users amongst mid-aged women in Australia. *Public Health* 2007;121:954–957.
43. Adams J, Sibbritt D, Young A. Naturopathy/herbalism consultations by mid-aged Australian women who have cancer. *Eur J Cancer Care* 2005;14:443–447.
44. Boon HS, Cherkin DC, Erro J, et al. Practice patterns of naturopathic physicians: Results from a random survey of licensed practitioners in two US States. *BMC Complement Altern Med* 2004;4:14.
45. Verhoef MJ, Lewith G, Ritenbaugh C, et al. Complementary and alternative medicine whole systems research: Beyond identification of inadequacies of the RCT. *Complement Ther Med* 2005;13:206–212.
46. Moss K, Boon H, Ballantyne P, Kachan N. New Canadian natural health product regulations: A qualitative study of how CAM practitioners perceive they will be impacted. *BMC Complement Altern Med* 2006;10:18.
47. Kelner M, Wellman B, Boon H, Welsh S. Responses of established healthcare to the professionalization of complementary and alternative medicine in Ontario. *Soc Sci Med* 2004;59:915–930.
48. Boon H, Stewart M, Kennard MA, Guimond J. Visiting family physicians and naturopathic practitioners: Comparing patient-practitioner interactions. *Can Fam Physician* 2003;49:1481–1487.
49. Smith C, Martin K, Hotham E, et al. Naturopaths practice behaviour: Provision and access to information on complementary and alternative medicines. *BMC Complement Altern Med* 2005;5:15.
50. Novak KL, Chapman GE. Oncologists' and naturopaths' nutrition beliefs and practices. *Cancer Pract* 2001;9:141–146.
51. Wardle J, Adams J, Lui C-W. A qualitative study of naturopathy in rural practice: A focus upon naturopaths' experiences and perceptions of rural patients and demands for their services. *BMC Health Serv Res* 2010;10:185.
52. Standish LJ, Calabrese C, Snider P. The naturopathic medical research agenda: The future and foundation of naturopathic medical science. *J Altern Complement Med* 2006;12:341–345.

Address correspondence to:

Jon Wardle, ND, MPH  
 Public Health Building  
 Room 324 Edith Cavell Building  
 School of Population Health  
 University of Queensland  
 Herston Qld 4006  
 Australia

E-mail: [j.wardle@sph.uq.edu.au](mailto:j.wardle@sph.uq.edu.au)

Copyright of Journal of Alternative & Complementary Medicine is the property of Mary Ann Liebert, Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.