

# The role and influence of traditional and scientific knowledge in naturopathic education: a qualitative study

Running head: Tradition, science and naturopathic education

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## Abstract

**Objectives:** To explore the perceptions, experiences and attitudes towards scientific and traditional knowledge within contemporary naturopathic education.

**Design:** A qualitative focus group and semi-structured individual interview study.

**Settings/Location:** Naturopathic educational organisations and institutions in North America (US/Canada) and Australia.

**Subjects:** Seven focus groups (3 in Australia and 4 in the United States/Canada) involving a total of 29 students and one-on-one interviews with 28 faculty and professional leaders of the naturopathic profession from Australia, Canada and the United States.

**Results:** Four themes have been identified in this study including finding the balance between traditional and scientific knowledge; supporting the balance through critical appraisal in the curriculum; the exception of traditional knowledge in the critical gaze; and focusing on critical thinking in the naturopathic curriculum. Both naturopathic students and leaders highlight the significance of balancing tradition and science in the naturopathic educational context although they hold diverse differing viewpoints. The importance of critical appraisal skills as well as the differentiation between critical thinking and critical appraisal have also been emphasised by participants with regards to the future development of naturopathic curriculum.

**Conclusions:** This is the first study focusing on the interface between traditional and scientific knowledge within the naturopathic education setting. The development of a framework for the critical appraisal of traditional naturopathic knowledge is required in order to help navigate the variety of knowledge sources available to naturopathic students and to help deliver the best outcomes for their future clinical practice.

## Introduction

Naturopathy is a traditional system of medicine with roots in Europe but now practiced in every world region (WHO).<sup>1</sup> Although herbal medicine, nutritional supplements, dietary advice and lifestyle change are common modalities used in naturopathic practice, naturopathy is defined by the principles and philosophies underpinning clinical practice rather than the treatments prescribed by its practitioners.<sup>2</sup> Naturopathic doctors are regulated in 22 US jurisdictions and in five Canadian provinces.<sup>3</sup> In contrast, naturopathic practice in other countries such as Australia remains beyond the scope of health practitioner registration.<sup>4</sup> However, naturopaths in these countries including Australia are increasingly providing primary care services to the community<sup>5</sup> and are becoming more integrated into mainstream health service delivery.<sup>6</sup>

## Challenges of evidence-based healthcare

The evidence-based medicine (EBM) model<sup>7</sup> dominates the policies, practice and education of most contemporary health professionals. However, a number of concerns have been raised regarding the applicability of EBM to support the needs of primary care practitioners, particularly as it relates to the focus on ‘gold-standard’ randomised controlled trials (RCTs) as preferred evidence to inform clinical decision-making.<sup>8</sup> In particular, the historical focus in EBM on single intervention placebo-controlled RCTs have been criticised for oversimplifying the complexity of patient care in real world settings such as community-based primary care.<sup>8</sup> Academics responsible for training primary care practitioners have also faced challenges when preparing their students for future practice in an evidence-based environment.<sup>9,10</sup> In reality, EBM-related changes may not only affect the knowledge taught within health and medical curricula<sup>11</sup> but also impact the

emphasis on skills and processes such as critical appraisal and critical thinking in health professional training programs.<sup>12,13</sup>

## Problem statement

Alongside the growth in EBM movement in the wider health system, complementary medicine - including naturopathy - has been positioned by mainstream medicine as healthcare for which scientific evidence is lacking.<sup>14</sup> In fact, contemporary naturopaths provide healthcare in a complex environment influenced by prevailing ideologies such as EBM and patient-centred care,<sup>15</sup> juxtaposed against the historical and traditional roots of naturopathic practice in an increasingly global profession. Moreover, naturopathy has been proposed by leaders from within the profession to be challenged by EBM, particularly where “traditionally based beliefs and practices are often marginalized and excluded by opponents and fellow practitioners keen to mainstream and/or scientize”.<sup>16</sup> While some preliminary Australian research has examined the interface between traditional and scientific knowledge within the context of naturopathic clinical practice,<sup>17</sup> little is known about this topic within the educational setting for the naturopathic profession. This gap in our knowledge has important implications for educators and professional leaders seeking to prepare current and future naturopathic students for clinical practice within contemporary health systems.

## Methodology

### Aim

This study aimed to explore the perceptions, experiences and attitudes among students, faculty and professional leaders (such as representatives of regulators and associations) of the naturopathic

profession towards the role of scientific and traditional knowledge within contemporary naturopathic education.

## Setting

This study was conducted in US, Canada and Australia in 2015. These three countries were chosen as they have been identified through the World Naturopathic Federation as delivering naturopathic training which is closely aligned in terms of curriculum content and graduate attributes.<sup>18</sup>

## Sample and Recruitment

Student participants were recruited from [Redacted for Blinded Review] in Australia and [Redacted for Blinded Review] in the US. Faculty and professional leaders were recruited from academic organisations and institutions within Canada, USA and Australia that met the requirements for membership with the World Naturopathic Federation (<http://worldnaturopathicfederation.org/membership/>). This criteria was applied to ensure the organisations satisfied international recognised standards for professional representation in naturopathy. Students were recruited via an email invitation sent by their faculty administration in which they were notified of the scheduled time and place of the focus group. Relevant faculty and professional leaders were identified by the organisation or institution they represented and referred to the researcher. All participants were provided with a participant information sheet (PIS) prior to meeting with the researcher and were given an oral overview of the project summarising the PIS prior to being invited to sign an informed consent document. Participants retained the PIS for their records.

## Data collection

Seven focus groups in Australia (n=3) and North America (n=4) involving a total of 29 students of naturopathic programs as well as semi-structured interviews with naturopathic faculty and professional leaders (n=28) in North America and Australia were completed. Focus groups were employed for the students to provide a forum for them to discuss the concepts under investigation as a collective and build on individual insights and shared experiences. Individual in-depth interviews were chosen as a method for academic and professional leaders to allow open and confidential discussion of personal opinions and experiences related to this potentially controversial topic. Focus groups and semi-structured interviews were conducted by [redacted for blinded review] using a question/topic guide (see Appendix 1). The PhD-qualified female interviewer had experience in conducting focus groups and semi-structured interviews with health professionals. All interviewees were informed of the interviewer's background and qualifications as it related to this study as well as the interviewer's motivations for undertaking the research project. The time and location of interviews was chosen to suit the participants and varied between individuals. Focus groups were scheduled at the direction of faculty administration to optimise student attendance and were conducted on site at each institution using a semi-structured facilitation guide (see Appendix 2). Domains covered related to this study question were: defining traditional knowledge; importance of tradition and science; balancing tradition and science; strengths and weaknesses of tradition and science. Additional questions related to a second distinct yet connected topic area – educational delivery methods in the training of complementary medicine practitioners – were also covered however this paper focuses solely on the themes arising from the questions pertaining to traditional knowledge and scientific research. Interviews and focus groups were recorded via a digital recorder and then transcribed. Each interview lasted between 45 and

60 minutes and focus groups lasted approximately 90 minutes. Thematic saturation was attained with 15 participants and 4 focus groups. However, all interested practitioners were interviewed to ensure any differences in perspectives across organisations and regions was captured.

## Analysis

Prior to analysis of the transcripts, all interviewees were allocated pseudonyms while focus group participants were only identified by the country where they were located (USA or Australia). Thematic data analysis was undertaken from the interview and focus group transcripts by [redacted for blinded review] after importing into NVIVO qualitative data analysis program. [Redacted for blinded review] undertook immersion in the raw data by listening to recorded interviews and reading transcripts. The data were then charted to themes by clustering related data and then reading through each data cluster to identify concepts consistent within clusters. Clusters were then analysed for intersecting concepts and grouped into metathemes. Quotes were selected based upon the quality of the quote and the representativeness of the theme.

## Results

### Finding the balance between traditional and scientific knowledge

Thematic analysis of the data, combining responses of both student and faculty/staff participants, revealed four main themes: *Finding the balance between traditional and scientific knowledge; Supporting the Balance through Critical Appraisal in the Curriculum; The exclusion of traditional knowledge from the critical gaze; and Focusing on critical thinking in naturopathic curriculum.*

The primary findings of this study, as reported across all three groups of participants, centred on the need for academic institutions to find the balance between traditional and scientific knowledge

within naturopathic curriculum. The students, in particular, expressed clear positions on this topic. One student described individuals within the naturopathic profession as holding opposing positions on a spectrum of attitudes whereby tradition and science were viewed as running counter to one another and this perception was widely voiced by others in the study:

*“Like I feel like there’s the **two extreme ends of the spectrum**, one was just evidence based words. Much more conventional sort of medicine with a few extra sort of natural treatments thrown in. Now the other end of the spectrum there’s people who really frown upon evidence based medicine almost like it’s a bad thing because their intuition tells them something else ... and I’ve heard students and professors say that they actually disregarded research before because they contradicted their tradition and so they sometimes try to hush it out.” – Student, USA*

While still presenting tradition and science as existing in opposition, another student in Australia emphasised the equal value of traditional and scientific knowledge in contemporary naturopathic curriculum:

*“I’d like to **see and value traditional knowledge just as much as scientific** in the assessments and all that because...we value it just as much as so I suppose that’s where I’d like, that’s the main change.” – Student, Australia*

The views presented by these students were also expressed by academic and professional leaders. While the importance of finding the balance between tradition and science was consistently presented by participants, they were less consistent in their views on the emphasis that is or should



be placed on the different forms of knowledge within the curriculum. One student presented a view that engaging in a process of integrating both traditional and scientific knowledge is a unique point of difference for contemporary naturopathic medicine compared to other health professions and is one of the ways naturopaths add value to healthcare:

*“I think what gives us the advantage is that we're towards the things that allopathic doctors are toward, but we also have what nature has provided and what there is naturally.”* – Student, USA

However, some participants voiced the significant importance of scientific knowledge to explain and justify treatments to patients, as described this student:

*“I think that the education that we get is really great. I think that they do definitely try and balance, because I mean like when you go and you are trying to use these things you have to know, how they're being used, **you need the mechanism you need to understand what to use them for and you can't just go out and say the Law of Signatures looks like these so it's going to do that.** It doesn't really fly with me either just because I want to know like exactly how these are going to work”* – Student, USA

Alternative views were also shared by some participants, such as this student who felt that scientific knowledge provided an incomplete understanding of the complexities of health and healthcare and as such traditional naturopathic knowledge should not be overshadowed by science in the curriculum:

205           *“I think for me the **scientific knowledge is less important**, but I know that*  
206           *it's important to be taken seriously, as a healthcare professional. I know that*  
207           *it's important to know that, but I just think science knows so little. **I'm pretty***  
208           ***interested in all of the knowledge outside of that.** We haven't disproven, we*  
209           *just haven't worked out scientifically yet.” – Student, Australia*

#### 210   Supporting the Balance through Critical Appraisal in the Curriculum

211   Our study showed critical appraisal – a process through which information is assessed for validity  
212   and rigour - was considered by faculty and professional leaders to provide a vehicle for them to  
213   strike the balance between traditional and scientific knowledge in the naturopathic curriculum, and  
214   best prepare students to navigate these forms of knowledge in their practice. Academic faculty and  
215   professional leaders described a growing awareness of the importance of critical appraisal and  
216   their discourse focused on developing critical appraisal skills in students enrolled in naturopathic  
217   education programs.

218           *“I think **the appreciation and the ability of our students to critically appraise***  
219           ***an article**, for example, and distinguish good research trial from one that has*  
220           *many, many flaws, from all of the, even non-scientific stuff that are all around*  
221           *the internet these days, I think **their ability to critically think through and***  
222           ***appraise those kinds of things** has improved quite a bit, hence, its really is*  
223           *important that it has because there's so much information out there now that*  
224           *it's impossible for us to just give them context.*  
225           *It's really helping them understand how to find the resources and sift through*  
226           *what's quality and what's not. I think we have evolved and improved in that*  
227           *regard.” (Karen)*

228

229 Critical appraisal was positioned by academic and professional leaders as an important skill for  
230 naturopathic graduates to draw on the diverse information, both scientific and traditional  
231 knowledge, available to them to make the best clinical decision for their patients. The discussion  
232 of critical appraisal by participants largely focused on its value in assisting students to better  
233 understand research and scientific knowledge:

234 *“It may sound like a broken record but I think what students need to*  
235 *understand is when they are choosing a therapy, understanding what the*  
236 *research is behind it and being able to speak to it” (David)*

237

238 In some cases, faculty and professional leaders suggested that identifying research  
239 limitations (via critical appraisal) provided opportunity for continued inclusion of  
240 traditional knowledge in the curriculum in the face of criticism:

241 *“Recognizing that study and its flaws and criticisms is important. It doesn't mean*  
242 *that you can't still teach about that therapy but you're aware of the existing*  
243 *evidence behind it and that if you're choosing to use this it is not been shown in*  
244 *the way to do this sort of things, it may still be doing other things or it may be*  
245 *doing this in a different way or this is maybe not the way that that therapy is*  
246 *being implemented or its close to it or its not but at least you know a piece of*  
247 *information.” (Robyn)*

248

249 Some faculty and professional leaders also indicated critical appraisal may be useful to students  
250 who need to critically reflect on their own practice:

251 *“..where you know we have a little bit of clinical evidence that supports our*  
252 *mechanisms but yet we don't have definitive clinical trials...how do you*  
253 *objectively evaluate your response clinically and what labs do you need to put*  
254 *into place and evaluate on which timeline to make sure it's actually doing what's*  
255 *it supposed to be doing and so that self-critical evaluation of one's practice”*

256 (Gae)

#### 258 The exclusion of traditional knowledge from the critical gaze

259 Traditional knowledge was commonly positioned by students, faculty and professional leaders as  
260 addressing gaps in scientific evidence and provided a useful input to inform naturopathic clinical  
261 decision-making. One professional leader described traditional knowledge as an integral aspect of  
262 evidence-based naturopathic practice, particularly where there are gaps in the available scientific  
263 knowledge resulting in traditional knowledge sources providing the best available evidence to  
264 clinicians. However, this participant also acknowledged that her view was not reflected in the  
265 understanding of EBM within the wider health and research community. In particular, the  
266 participant emphasised the importance of the connection between best available evidence, clinician  
267 experience and patient preference needs to be more clearly depicted within the model and also at  
268 an operational level:

269 *“Truthfully evidence based medicine is meant to be mixing the best evidence*  
270 *with the current state and your clinical experience and coming up to a*  
271 *decision that's best to your patient and that **implies traditional knowledge***  
272 *or experiential knowledge and trying to match it with scientific evidence*

273 *that is known the fact of the matter is they rarely come together unless there*  
274 *is a triangle in the middle of the diagram.” (Robyn)*  
275

276 As seen in the above comment, when critical appraisal was discussed by participants it was  
277 primarily as an instrument to be directed towards evaluation of the strengths and limitations of  
278 scientific knowledge. Critical appraisal of traditional knowledge was rarely considered and was  
279 commonly presented by leaders as holding authority over science. A minority of participants  
280 identified this trend as prevalent throughout the profession in arenas of both education and clinical  
281 practice:

282 *“I feel like the tendency is often when if research sort of contradicts the*  
283 *historical use, the **tendency is usually to try to pick apart the research,***  
284 ***integrate or criticize the research rather than to re-evaluate the traditional***  
285 ***practice....and it’s waved from the flag pole if it supports traditional practice***  
286 *you know despite it perhaps [having] methodologically weaknesses.” (Gae)*  
287

#### 288 [Focusing on critical thinking in naturopathic curriculum](#)

289 According to the faculty and professional leaders, the overwhelming solution to the need for  
290 improved critical appraisal skills among naturopathic students and practitioners is to ensure  
291 students are taught critical thinking in a way that encompasses all types of knowledge clinicians  
292 are exposed to in contemporary naturopathic practice:

293 *“In my view **critical thinking is the most important thing to teach** so that*  
294 *nothing that you read in a book and nothing that anybody says to you is taken*  
295 *at face value and it’s taken me a while to cultivate that and it’s probably*

296 *something that comes with maturity and so some of our school leaver type*  
297 *students [note: high school graduates enrolling directly into the naturopathic*  
298 *program] may not come directly into that [skill]. That capability to look at*  
299 *things that way but I think really imparting to them the importance of always*  
300 *questioning everything and not taking anything at face value” (Tamara)*

301  
302 *“You know we're talking about evidence based medicine, scientific medicine*  
303 *and traditional medicine like they're different things and they require different*  
304 *approaches and they don't, they just require critical thinking and I think if*  
305 *you're critical about the traditional knowledge forms you're using and you're*  
306 *equally critically about the scientific knowledge you're using then you going*  
307 *to end up with good reflective critical practice regardless.” (Zeus)*

308  
309 The importance of critical thinking to assist naturopathic students to engage meaningfully with the  
310 diverse information available to them emerged from the data and was described as needing focused  
311 attention in the curriculum. It is also notable that these insights came from both academic and  
312 professional leaders who identified the need and desire to support students to develop critical  
313 thinking skills. However, it is also worth noting that none of the academic or professional leaders  
314 described any attempts – either successful or unsuccessful – to build critical thinking skill  
315 development into the current naturopathic curriculum.

## Discussion

This study presents the first international data to explore the interface between traditional and scientific knowledge as viewed by the contemporary naturopathic community within the education setting. The findings of this study underline the importance placed on balancing tradition and science in naturopathic clinical practice as identified in previous preliminary research,<sup>17</sup> and extends this need for balance between scientific and traditional knowledge to the educational context. Specifically, the previous work described a tension between tradition and science with factors that influenced the interface between these two sources of knowledge in the clinical setting, while our study provided a closer examination of how to find a balance between the two which serves the naturopathic profession as a valuable contributor to contemporary healthcare. The differing viewpoints among students regarding the balance between naturopathic scientific and traditional knowledge, as presented in this study, is an illustration of the effects of wider trends such as push towards EBM within the broader health system or the Revitalisation movement within the naturopathic profession in the US. In particular, the diversity of viewpoints presented by students in our study suggests they are navigating competing perspectives and world views regarding the value and importance of scientific and traditional knowledge. The resulting spectrum of attitudes towards this topic among students poses substantial challenges to naturopathic educational institutions such as meeting the expectations of prospective and current students when those expectations run counter to the prevailing views of academic and professional leaders.

This study highlights the importance of critical appraisal skills within naturopathic curriculum as perceived by all related stakeholders. Critical appraisal is defined as “the process of carefully and systematically examining research to judge its trustworthiness, and its value and relevance in a

particular context.”<sup>19</sup> In the era of EBM, critical appraisal skills have received increased attention by medical education researchers.<sup>20</sup> Evidence-based healthcare competencies have been developed in recent years which describe the skills required for medical graduates to effectively apply EBM in clinical practice and these competencies centre on research-based information sources, methods and approaches to evaluation<sup>11,21</sup> However, in the context of naturopathic medicine, these competences provide no direction on appraisal of traditional source of knowledge and information. As a foundational step, further guidance is needed for naturopaths to maintain a clear and consistent definition of traditional knowledge. Once the boundaries surrounding traditional knowledge are agreed, researchers can engage more deeply with the scholarship of other uncharted aspects of traditional knowledge such as developing guidelines for appraising the veracity of a source of traditional knowledge, the application and value of oratory knowledge, the limitations of contemporised versions and translations of traditional knowledge sources, and the demarcation between novel treatments with naturopathic roots and traditional knowledge and practice. Essentially, a framework is needed which provides guidance to naturopaths on the transferability, appropriateness and relevance of traditional knowledge within contemporary clinical practice.

This study also highlighted the importance for naturopathic educators to differentiate between critical thinking and critical appraisal. While critical appraisal comprises a set of skills and processes needed to evaluate available information, critical thinking is a broader cognitive approach. An individual’s development of critical thinking is posited to draw upon three pillars: meta-cognition, motivation and creativity.<sup>22</sup> While naturopathic programs may develop these attributes in their students through their training, the focus of health practitioner education has not



historically emphasised them as outcomes for their graduates. As there has been no study focusing on critical thinking within naturopathic education, the degree to which critical thinking practices are encouraged through the curriculum is unknown. In addition, specific characteristics of individuals also impact on the adoption of critical thinking practices. These included open-mindedness, fair-mindedness, a propensity to seek reason, inquisitiveness, a desire to be well-informed, flexibility, and respect for, and willingness to entertain others' viewpoint.<sup>12</sup> In contrast, pattern-seeking, sense-making, a preference to personal experience as evidence, and an emphasis on knowledge rather than thinking in education all acts as barriers to the effective development of an individual's critical thinking.<sup>12</sup> The degree to which these behaviours are actively addressed within naturopathic curriculum and coursework delivery requires a closer examination by researchers and educators alike.

Our study has some limitations. This study was limited to three countries and as such may not have captured the nuances of perspectives for the naturopathic profession in other jurisdictions. The qualitative nature of the study can also be seen as a limitation for those seeking to generalise the findings across the international naturopathic workforce. However, qualitative research has been recognised as a good study design when exploring perceptions and attitudes in health.<sup>23</sup> More research is necessary to provide additional context and a broader understanding of our findings. Despite these limitations, this study offers unique insights into an important topic within the international naturopathic landscape.

## Conclusions

This is the first study examining the interface between traditional and scientific knowledge within the naturopathic education setting via international data. The findings of this study suggest students, faculty and professional leaders of the naturopathic profession in these jurisdictions are conflicted about the balance between these two forms of knowledge and may feel that the two components are balanced improperly. However, the study also suggests there is no current consensus on exact balance required. There does appear to be some consistency in the perceived potential value of developing or enhancing critical appraisal and critical thinking skills among naturopaths in achieving this balance.

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