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Evidence based practice in traditional & complementary medicine: An agenda for policy, practice, education and research

Matthew J. Leach [a, *], Rachel Canaway [b], Jennifer Hunter [c]

[a] Department of Rural Health, University of South Australia, North Terrace, Adelaide, SA, 5000, Australia
[b] Department of General Practice, The University of Melbourne, 200 Berkeley St, Victoria, 3010, Australia
[c] NICM, Western Sydney University, Campbelltown Campus, Locked Bag 1797, Penrith NSW, 2751, Australia

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ABSTRACT

Objective: To develop a policy, practice, education and research agenda for evidence-based practice (EBP) in traditional and complementary medicine (T&CM).
Methods: The study was a secondary analysis of qualitative data, using the method of roundtable discussion. The sample comprised seventeen experts in EBP and T&CM. The discussion was audio-recorded, and the transcript analysed using thematic analysis.
Results: Four central themes emerged from the data; understanding evidence and EBP, drivers of change, interpersonal interaction, and moving forward. Captured within these themes were fifteen sub-themes. These themes/sub-themes translated into three broad calls to action: (1) defining terminology, (2) defining the EBP approach, and (3) fostering social movement. These calls to action formed the framework of the agenda.
Conclusions: This analysis presents a potential framework for an agenda to improve EBP implementation in T&CM. The fundamental elements of this action plan seek clarification, leadership and unification on the issue of EBP in T&CM.

1. Introduction

The conceptualisation and formalisation of evidence-based medicine (EBM) in the late twentieth century was a significant impetus for change in health care, impacting not only clinical decision-making, but also health policy, education and research [1,2]. The premise of EBM (and that stemming from EBM, including evidence-based practice [EBP] and evidence-based care) was that clinical decisions, informed by the best available evidence in conjunction with clinical expertise and patient preference (i.e. the EBP triad), result in the provision of safer, efficient and more effective clinical care [3–6]. In fact, the rationale provided by the early exponents of EBM was that with the rapid, exponential growth in clinical research, busy clinicians lacked the time and skills to search and critically appraise relevant research, and were therefore placing their patients at risk by practicing out-dated medicine [7]. Indeed, an emerging body of evidence suggests that the provision of evidence-based care is associated with better patient outcomes, cost-savings and shorter lengths of stay when compared with "standard practice" [8–10].

While representatives of many healthcare professions (including medicine, allied health, and traditional and complementary medicine [T&CM]) believe that EBP improves the quality of patient care and facilitates clinical decision making, these attitudes have not necessarily translated into clinical practice, with the level of EBP uptake by most T&CM professions considered low [11–18]. Some literature suggests that this nominal level of EBP uptake may be largely attributed to structural factors, such as a lack of resources, clinical evidence and industry support; although, other factors such as limited time and research skills do appear to play a role also [11–18]. This suggests that improvements in the implementation of EBP may be gained by simply investing in more research, resources and research training; lamentably, the answer may not be that straightforward.

EBP has infiltrated many aspects of health policy, practice and education to date, but its acceptance has not been universal, with critics questioning the methodology, philosophy, process and effectiveness of EBP [19–21], including some commentators from

* Corresponding author.
E-mail addresses: matthew.leach@unisa.edu.au (M.J. Leach), rachel.canaway@unimelb.edu.au (R. Canaway), Jennifer.Hunter@westernsydney.edu.au (J. Hunter).

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within the field of T&CM. These criticisms have largely focussed on a view that EBP is a dogmatic and reductionist approach that devalues traditional knowledge as evidence, dismisses patient-centeredness, is not compatible with the philosophy and epistemology of T&CM practice, and represents a threat by way of 'proven' T&CM therapies being co-opted by biomedicine [22–30]. These largely cultural, political and philosophical issues are not as easily addressed as the structural and training barriers mentioned previously; instead, their redress requires the concerted effort of multiple pertinent stakeholders, including T&CM practitioners, consumers, researchers, educators, regulators and policy makers, to ensure that EBP is conceptualised and understood in a manner that aligns with and strengthens healthcare practices.

Bringing these stakeholders together to establish a multi-dimensional agenda [31] for EBP in T&CM may help to further translate the rhetoric around evidence-based practice in T&CM into action [22]. To this end, a roundtable discussion with thought leaders, on the subject of appropriate evidence for T&CM products, was convened in Australia. This discussion quickly broadened to include evidence in T&CM more generally. This paper presents a thematic analysis of the roundtable discussion with a central focus on how the issues relate to EBP. This served to identify the areas of key concern regarding EBP and to develop a framework through which these concerns may be addressed. In another paper (under review), the broader strategies and actions identified in the roundtable discussion are presented as an agenda-setting framework to strengthen the evidence-base for T&CM more generally. Although related, the focus of this analysis was on the application of EBP, whereas the former was on evidence generation (i.e. the other end of the EBP spectrum).

2. Methods

2.1. Design

Secondary analysis of qualitative data, using the method of roundtable discussion.

2.2. Aims and objectives

The aim of the analysis (not the roundtable discussion) was to explore views relevant to EBP, in order to develop a policy, practice, education and research agenda for evidence-based practice in traditional and complementary medicine. To address this aim, the analysis focussed on meeting the following objectives:

1. Ascertain the challenges to implementing EBP in T&CM.
2. Determine the opportunities for implementing EBP in T&CM.
3. Identify potential strategies to facilitate the implementation of EBP in T&CM.

2.3. Participants

The organisers of the roundtable discussion drew upon their academic and industry networks to invite participants with different skills, disciplinary backgrounds and experiences, and from different sectors and institutions who had expertise in EBP, T&CM, other clinical disciplines, research, industry, regulation and/or advocacy. For logistical reasons, the invitations were limited to experts residing in or visiting Australia at the time of the roundtable discussion. The meeting was coordinated by staff at NICM (a national research institute at Western Sydney University) and the Australian Self-Medication Industry. As there is no consensus on the recommended sample size for roundtable discussions, the organisers aimed for at least 12 participants, which was based on the average number of subjects reported in a random selection of published health roundtable discussions [32–35]. A total of 22 experts were invited to accommodate for unavailability and non-responders.

2.4. Roundtable discussion

Participants were sent an email outlining the purpose of the discussion. Participants were advised that the discussion would focus on the following areas: 1) the nature and hierarchy of evidence, 2) product specific evidence, 3) evidence for wellness and holistic health, and 4) consumers and healthcare practitioners. The roundtable discussion was convened on 12th November 2015, in Sydney, Australia. The 4-hour forum was facilitated by a professional facilitator, who asked the group a series of questions relating to the challenges, opportunities and potential strategies for generating and applying evidence in T&CM. Each member of the group was afforded an opportunity to respond to these points, ensuring that no individual views were suppressed.

2.5. Data collection

The discussion was audio-recorded and professionally transcribed, with any identifying information (e.g. names, affiliations) removed. To ensure the accuracy of the transcribed data, the de-identified transcript was circulated to all participants for review and validation. All participants confirmed the accuracy and completeness of the transcript.

2.6. Data analysis

Data from the transcripts were entered into NVivo11 (QSR International, Doncaster, Australia) for thematic analysis, using the process prescribed by Braun and Clarke [36]. To enhance the methodological rigour of the study, the analysis was performed by two coders (ML, RC), independently. After immersing themselves in the data, the coders searched for patterns in the data and translated these into preliminary codes. These codes were then collated to form high-level themes and subthemes. The two coders subsequently shared their results to check for alignment of codes/themes, to discuss differences and to reach consensus. The analysis undertaken by ML forms the basis of this paper. Participants were asked to comment on a final draft of the paper to ensure the themes/findings accurately reflected the roundtable discussion and the context of the dialogue. Apart from minor editorial changes, the themes/findings essentially remained unchanged. It is important to note that whilst the themes are supported by pertinent quotes, due to the anonymous, de-identified nature of the transcript, it was not possible to attach identifiers to these quotes.

2.7. Ethics

Ethics approval was not sought for the roundtable meeting. The decision to conduct a thematic analysis of the transcript evolved several months after the roundtable discussion, and the analysis did not commence until after all participants had been notified of this intention. All participants were informed of the purpose of the roundtable discussion and that participation was voluntary; all provided consent to be recorded, and for the transcript to be analysed and reported for publication. The researchers who conducted the analysis were also forum participants.

3. Results

3.1. Description of participants

Twenty-two experts were invited to participate in the roundtable discussion; 17 accepted the invitation and attended the event. Sixteen of the experts attended the roundtable in person, and one participated via telephone. The gender divide of participants was approximately even, and the majority (88%) of participants were aged ≥ 40 years (Table 1). Most had a professional focus/area of expertise in clinical practice (i.e. T&CM, medicine or allied healthcare) (88%), and academic research/education (82%).

Although the aim of the roundtable discussion was to discuss appropriate evidence for T&CM products, the conversation quickly broadened to include EBP and T&CM therapies more generally, which this analysis reflected. Analysis of the roundtable discussion data uncovered four central themes relating to evidence-based practice in T&CM: (1) understanding evidence and EBP, (2) drivers of change, (3) interpersonal interaction, and (4) moving forward (Fig. 1).

3.2. Understanding evidence and EBP

Participants identified a number of challenges to advancing EBP in T&CM; these issues clustered around one of five subthemes. At the most fundamental level was the need to understand evidence, which centred around two points. The first point related to the nature of evidence, with many participants asking "what do we mean by evidence?" – is it about "safety? Quality? Efficacy?", or is the conversation about scientific evidence versus traditional evidence? There was also a need to define the evidence end-user – "is it about the regulator? Is it about the clinician? Is it from the point of view of the citizen who is seeking a solution to their problem?" Identifying the end-user was seen as essential to minimising user confusion and to ensuring the evidence was "meaningful for them [the user]".

The second point focussed on the hierarchy of evidence; in particular, the "tug between totality versus hierarchy". Epistemologically, many believed that the hierarchy of evidence was underpinned by a positivist paradigm, which did not serve T&CM well, as one participant articulated:

> When we talk about hierarchied evidence, that's within a framework. It is within a paradigm. It doesn't tell us how we might look at different standards of evidence, different forms of evidence such as traditional medicine, which might actually come from a very different cultural viewpoint.

One of the main criticisms of the hierarchy of evidence was "the relative ranking of traditional evidence", which typically "sits at the … rock bottom of the hierarchy". The totality of evidence was seen as a way of overcoming this issue as it considered all types of evidence in decision making, including "pre-clinical data, pharmacologic data", "observational data" and "traditional evidence". However, referring back to the previous point about nature of evidence, this approach was also potentially problematic as thought had to be given to

> what level of evidence must you have and what evidence are you comfortable with not having? Where are the touch points where the level of discomfort is so great that you just can't make a decision and others you are actually comfortable with not knowing?

One participant took a more simple view, arguing that we should just "go back to the original definition [of EBP, and look] … at the best available evidence regardless of its hierarchy".

> As well as understanding evidence, there was a need to work through issues pertaining to T&CM research. The discussion largely focussed on evidence generation in order to address "the lack of research" in T&CM. There was also brief commentary on "incentivising research", determining "the major questions we will need to ask and answer", "translat[ing] evidence to the clinic", communicating evidence, research funding and "put [ting] more resources into research". These points were discussed at a rather superficial level, the implication being that these issues should be examined in more detail in a T&CM research agenda.

At a philosophical level, participants recognised the importance of addressing the epistemological/paradigmatic issues of EBP. This particularly applied to the first pillar of the EBP triad - the best available evidence. According to some participants, "evidence isn't just about objective truth … evidence always refers to a theoretical or philosophical framework", and this "philosophical viewpoint is … coloured by cultural and political issues, [and] questions of power". Realigning this philosophical viewpoint was seen as a means of enabling the evidence in EBP to be more meaningful in T&CM.

Extending from these philosophical issues were the challenges of the EBP approach itself. Many participants expressed a level of "frustration of how evidence-based medicine [EBM] is currently understood and applied", and "EBM as we understand it now needs a bit of a shake-up". Specifically, it was perceived that "evidence-based medicine [had] been hijacked" and "only parts of … [EBM had been] … taken out and applied to informing decisions". These concerns related to the disregarding of two of the three elements of the original EBM paradigm. The solution was considered rather simple however; "we need to restore that model where all three components come together". There were several issues that were not so easy to resolve, which warrant further deliberation; first, what should "we do with mixed results?", and second, what should we do when we do "not have evidence for [a] situation, person, disease, [or] drug?"

Table 1
Characteristics of roundtable participants (n = 17).

Age, *n (%)*	<40 years	2 (12)
	40–55 years	8 (47)
	>55 years	7 (41)
Gender, *n (%)*	Male	9 (53)
	Female	8 (47)
Professional focus/area of expertise[a], *n (%)*	Clinical practice (i.e. Healthcare professional)	15 (88)
	Academic research/education	14 (82)
	Industry (i.e. T&CM/pharmaceutical)	4 (24)
	Consumer/patient advocacy	2 (12)

[a] Participants were able to select more than one option.

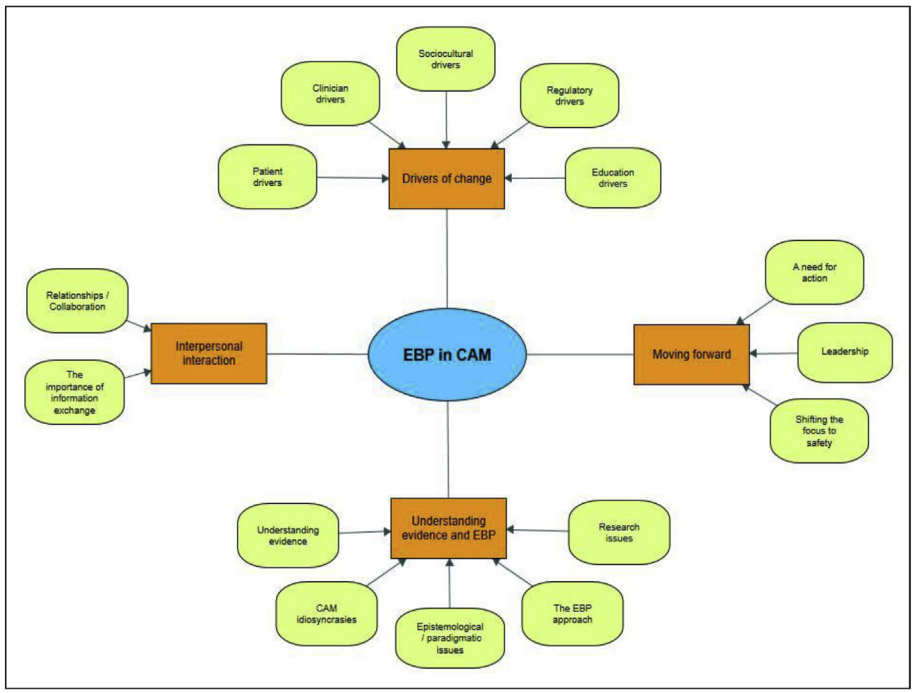

Fig. 1. Themes and subthemes generated from roundtable discussion data.

The idiosyncrasies of T&CM were seen as additional obstacles to be overcome before the field could make considerable gains in the area of EBP. Within this sub-theme were two key issues. The first issue related to the need for T&CM to approach EBP differently, of which the views were polarised. Some participants called for "another way of thinking, another way of conducting the discourse so that we can communicate to people the sort of things that they need to know"; proponents of this approach highlighted the need to "assess … evidence in a realistic and appropriate way" perhaps by using "an integrative framework for efficacy assessment", whereby the evidence can be "put together in different combinations" to generate a desirable decision. The opposing view was that there was already some degree of flexibility in the EBP model and that T&CM could just shape the existing EBP framework around its needs, as one participant articulated:

> One of the things that really strikes me is that we continually always fall into this trap that CAM [complementary and alternative medicine] has to do something different and we have to show why the current model doesn't work, but if you look at what's actually happening, there is an incredibly broad array of work being done.

The second issue relating to the idiosyncrasies of T&CM pertained to the ambiguity of the term complementary medicine. There was general agreement that "complementary medicine is not a useful term … it's a homogeneous term" that "seems to be a definition by exclusion". For T&CM to move forward on the issue of EBP, it was agreed that "basic definitions [of complementary medicine] would be a good place to start".

3.3. Drivers of change

Throughout the roundtable discussion, there was a view that no single factor alone would improve EBP uptake in T&CM; instead, there was recognition that such a shift in practice would need to focus on multiple enablers of change, of which five drivers were identified. At the very heart of the discussion was healthcare consumers, with this group considered to be the "most important in this conversation". Participants drew attention to the need to empower consumers and to "get consumers better informed … interested and activated." This not only aligned with the principles of consumer-centred care and "the consumer's right for self-medication" and "information around complementary medicine", it also goes "back to the original definition … [of EBP, which takes into account] … the patient's experience, the patient's preferences, the patient's needs" and the patient's "culture" and "health literacy". A consumer-centred focus was also considered a strength of T&CM that should be embraced, and in some ways, was seen as a way of honouring those that have "driven the use of complementary medicine, the rise of integrative medicine, the demand to integrate it and the need to integrate it."

The second driver of change was the clinician, who was seen to exert influence on multiple stakeholder groups. As knowledge users, clinicians were perceived as playing an important role in:

> assembling the evidence … translat[ing] that and communicat[ing] that into forms and language that is appropriate to the [different target] audiences … [such as] … the consumer, … others within academia, others within clinical professions and others within Government.

As providers of health care, clinicians also undertook a fundamental role in evidence-based decision making; this aligned with the "original definition [of EBP, which] take[s] into account the clinician's experience." As one participant stated, "there's the clinician and what they do with their patient, [and] there's the clinician who is an educator … [for] … other clinicians."

Sociocultural factors were also understood to play a key role in bringing about change in T&CM practice. These factors, which

included “systems of culture” and “institutions of power” were primarily viewed as barriers to progress; they were also considered highly resistant to change, which the following quotes highlight:

> This is the culture wars, so your assumption that we put the consumer first … comes naturally to us, [but] that's not the way medicine has worked and doctors are fighting tooth and nail to hang on to their power

> It is not about evidence. It's social. The work that we've done with GPs … showed … half of them wouldn't use a herbal medicine even if it is known to be effective. They are more attuned to using conventional medicines because it is more in line with their paradigm.

However, these ‘systems’ and ‘institutions’ were not considered impervious to change and there was much that people in the T&CM sector could do to mitigate these sociocultural barriers to progress. The view of many at the roundtable was that if T&CM coveted to overcome the challenges to evidence generation and evidence-based decision making, it needed to penetrate the medical establishment. This included funding academic chairs, such as “chair[s] of integrated medicine”, and fostering genuine interest amongst medical students. One participant described the latter as cultivating a “generational shift” in medical attitudes toward T&CM and reforming medical school education:

> The Australian Medical Student Association, which … [represents] … 17,000 medical students [have indicated that one of] their top three focuses include learning about evidence-based complementary medicine from complementary medicine experts. So they have realised they need to override the education system and stop waiting for the Deans of Medicine to make these choices for them.

Overcoming these barriers to EBP implementation also required T&CM to exercise greater “societal pressure” and to galvanise “social debate” and action — a strategy that has been helpful in redressing the tribulations of many minority groups to date:

> There has been a shift [in the institutions of power], but the shift … didn't come inherently or indigenously from medicine. It came from the great social movements … that … imposed new demands on medicine. These are the social debates that we [T&CM] have to become engaged in.

Participants also highlighted the role of regulatory authorities in driving changes in practice. There was a mutual view that all regulators, whether they be indemnity insurers, therapeutic goods administrators, research councils, ethics committees, professional associations or medico-legal representatives, share a common goal — “to ensure that the consumer is protected”. Accordingly, most of these authorities were perceived to give greater weighting to evidence of safety than evidence of effectiveness:

> From a universal health coverage point view … [the] … concern isn't so much about the efficacy but rather safety and strengthening safety and quality and proper use [of T&CM]

> [the regulator's] primary focus is on questions of safety

> the regulator wants to know that it [the product/service] is safe and it works

There was additional concern that regulatory authorities' needs for evidence of safety would only increase over time, as “the greater the public use of complementary medicines, the more likely it is that we are going to have safety issues associated with them”. Thus, failing to build an evidence-base in T&CM was seen to be deleterious to the industry and to consumers, as one participant stated:

> [we don't] … want to lose sight of the conversations and the thinking and the evidence considerations that occur upstream [with the regulators] because that determines what we as citizens have access to and clinicians have access to.

The final driver of change was education. This included educating those within and outside of the industry about EBP in T&CM. From within, the panel believed the T&CM industry had a

> responsibility to ensure that the members of the … profession [we]re appropriately educated or trained about where the evidence is, and where the evidence gaps are, …[and] … to have … responsibility for it.

There was also a view that EBP-trained providers would offer additional benefits to the community:

> Those that have gone through training where this [EBP] is part of their training will be able to meet the needs of the community. They will be practitioners that can deal with this.

Greater awareness of the evidence base for T&CM amongst parties outside of the industry was also considered necessary “in order to convince the sceptics, the scientists out there who are saying ‘really what you've got is nonsense, it's not good enough, it's inadequate’.” This included:

> educating medical practitioners who don't know anything about complementary medicine evidence

> translating that … [evidence for] … the regulator as one of the parties that needs to be educated

> mak[ing] sure that the community [and] the physicians are aware of what research there is

3.4. Interpersonal interaction

Improving the level of interaction between stakeholders was seen as an opportunity to facilitate the implementation of EBP in T&CM. One such opportunity was building relationships/collaborations. Whilst collaborations between T&CM providers and regulatory authorities and other health professions was valued by participants, much of the discourse relating to this theme focussed on the interaction between the T&CM provider and the consumer. Most participants believed that evidence-based decision making was a shared responsibility, which required the formation of a partnership between provider and consumer in order to be successful:

> It still comes back to that relational aspect of a clinician being able to judge that and being able to respond to the person and their particular expectation as well

> They [patients] want a relationship with someone that they can trust and they … can converse with who is knowledgeable and reasonable and takes all these facets that contribute to their health into consideration.

Participants also placed great importance on information

exchange. However, because of the many stakeholders involved, and that each party required information to be presented in a different way, the view was that the industry needed "to think of a communication strategy, not just a series of formal scholarly articles. 'We've got to think about what we want to say to whom'." Further, "all of this has to come into play before we can even get [to] the sociological, philosophical discussions about tradition."

There was a shared view that there was increasing demand for the exchange of information on evidence-based T&CM, where participants were witnessing "a real movement where people are starting to say 'we need to know more'", including genuine interest from medical and pharmacy students. Many participants were of the opinion that the T&CM industry needed to embrace this movement by "engaging with … organisations to try and get them to put out position statements" and to "say that teaching practitioners about complementary medicine and understanding the intricacies of the evidence [in T&CM] is really of value."

3.5. Moving forward

Participants explored a number of strategies for moving forward the issue of EBP in T&CM; however, three observations were most prominent. First was the need for action, with some participants frustrated by the lack of progress with EBP in T&CM, as the following statements exemplify:

> In complementary medicine [there] is a lot of rhetoric around what evidence-based practice is and how we should move forward but I actually note very little action in terms of moving forward.

> The debate has become formulaic, predictable and tedious, unoriginal and extremely frustrating.

> We've not been sufficiently proactive around the debate around evidence … we have been very reactive in the last 10 years

There was a view that action was necessary as there were potential harms of inaction in "that what we are not doing or not saying or not allowing can be as much a harm as active doing". Potential solutions for moving forward largely focussed on harnessing a "more politicised discourse"; in particular, "using the consumer voice more" to elevate the "patient-centred approach" and leveraging from "National Medicines Policy, …Quality Use of Medicines Policy, …Charter of Rights" and "universal healthcare principles of WHO [World Health Organization]" to create "a people movement" to educate and lobby regulators, ministers and Government. As one participant stated, it "is about changing behaviour … [by] … starting a new conversation, resetting the conversation, [and using a] different language with a different focus."

The second observation related to the need for leadership. The view shared by the group was that T&CM lacked sufficient leadership in EBP, and for the field to advance in this area, there was a need to "build … thought leader capacity". An important first step to achieving this was to "bring the intellectual grunt together to form … [a] … leadership group, to guide it [EBP], to give it [EBP] focus, to keep it [the agenda] on track". In terms of operationalisation, participants believed the leadership group should comprise experts in EBP and T&CM (such as those involved in the roundtable discussion), and that the group should convene "on a reasonably regular basis, maybe every three months to tease out the biggest threads of this work and to start having it undertaken".

Finally, there was a shared view among participants to shift the focus of EBP. This included the need to re-focus priorities – to move away from efficacy (and RCTs), and toward safety and other forms of evidence that are clinically relevant to providers and users of T&CM. For instance;

> It [safety] is the first thing we have to be certain about and we are never going to get that from a randomised controlled trial.If we're talking about safety we must include other forms of evidence because the RCT cannot meet that need. It cannot. It will not and it never will.

However, operationalising this shift away from efficacy and towards safety was seen to be somewhat challenging. In order to make such a shift, it was necessary to first understand "what is an acceptable level of safety to whom and when?" (e.g. the regulator, clinician, patient); and second, there was a need to establish a "hierarchy of safety evidence". Despite these challenges, it was generally agreed that "evidence around interactions is probably a pretty necessary item on the agenda".

4. Discussion

Health professions across the globe are under increasing pressure to deliver evidence-based care. In the field of T&CM, there has been some opposition to this movement toward EBP (19,22,26]. Perceived lack of philosophical congruency, differential views on hierarchies of evidence and a lack of practitioner and industry support have to some extent contributed to the low level of EBP uptake by many T&CM disciplines [26]. To further our understanding of this issue, we performed a secondary analysis of data from a roundtable discussion of experts in evidence-based practice and traditional and complementary medicine. Emerging from the data were four central themes and fifteen sub-themes related to EBP for T&CM (Fig. 1); these translated into three broad calls to action: (1) defining terminology; (2) establishing the rationale for an EBP approach, and (3) fostering social movement. These calls to action form a potential framework of a policy, practice, education and research agenda for EBP in T&CM, and are discussed below in further detail.

An important first step to further establishing EBP in T&CM is adopting clear and consistent terminology *(call to action #1)*. Our analysis identified three terms warranting clarification: T&CM, evidence, and the evidence end-user. The former has been debated for some time [37], and yet, multiple terms continue to exist (e.g. natural medicine, complementary medicine, alternative medicine, T&CM); further, the industry is still no closer to reaching consensus on a suitable definition [38]. If the T&CM industry covets to create a mutual understanding of the term and to reduce ambiguity (both for those within and outside the field), understand the parameters of practice, and facilitate communication with pertinent stakeholders, then the development of a clear, shared definition of T&CM is paramount.

At the very heart of EBP is the 'evidence' itself. Accordingly, the successful implementation of EBP demands that evidence be defined. Indeed, the uncertainty surrounding the term evidence has been raised in earlier research and debate on EBP in T&CM [12,21]. Part of this uncertainty relates to whether traditional knowledge is a suitable form of evidence [39], and part of it relates to the nature of the evidence; that is, whether evidence refers to efficacy, safety, cost or quality [40]. If T&CM were to adopt the original definition of EBM, this would moderate this uncertainty to some extent as traditional knowledge (i.e. the "best available external evidence") would be considered acceptable, and evidence of both "efficacy and safety" would be included [41]. Of course, the question asked and the end-user of the information (e.g. consumer, student, clinician, regulator) should still direct the form and nature of the evidence required [4,41].

A necessary second step to the implementation of evidence-based practice in T&CM is establishing a rationale for the application of EBP through a clearly defined framework that has utility for educationalists, researchers, clinicians, consumers and policy makers *(call to action #2)*. The findings from this analysis reinforced the idea that the triad of evidence-based practice (i.e. best available evidence, clinical expertise and patient preference) can be applicable to T&CM, and that it will serve the needs of clinicians, consumers, researchers and educators [4,42]. The inclusion of safety within this triad also suggests the framework would have utility for regulatory authorities and policy makers. In other words, adopting this triad as a framework for EBP implementation in T&CM would appear to support the five main drivers of change identified in this work, as well as accommodate the shift toward an increased focus on evidence of safety.

An aspect of this work that cannot be easily resolved using the EBP triad is prioritising the hierarchy of evidence or the totality of evidence to derive a decision regarding the best available evidence. Opponents of the former argue that the hierarchy of evidence devalues traditional and observational knowledge [25,30], and given that T&CM typically holds traditional knowledge in high regard [4,28], the sentiment is that a hierarchy of evidence does not support the interests of T&CM. Although, it is acknowledged that traditional evidence is ranked in a lowly position in the evidence hierarchy because of its inherent risk of bias [43]. Having said that, there is also a view that the hierarchy of evidence is informed by a "medical epistemology based on a narrow positivist interpretation of scientific knowledge" [30], which is not compatible with the holistic paradigm of T&CM [30,44].

In contrast to the hierarchy of evidence is the totality of evidence approach, which takes into account all physicochemical, functional, preclinical, observational and clinical data to formulate a decision about the safety and/or efficacy of a therapeutic good or service [45,46]. For this reason, a totality approach is not driven by a particular paradigm; furthermore, the approach may be more helpful in answering questions where there is no clinical evidence for an intervention, or when clinical findings are heterogenous [47]. The challenge for T&CM in moving forward on this issue will be to determine how the totality of evidence approach can be operationalised and integrated into the EBP triad in a way that is acceptable to all stakeholder groups.

The third and final step to implementing EBP in T&CM is fostering social movement *(call to action #3)*. The findings of this research pointed to the need to drive change by exerting societal pressure, encouraging social debate and abetting a peoples' movement. Alike the Berlin Agreement, which advocates a global movement in support of practising integrative medicine (i.e. recognising the importance of bringing together different types of T&CM and biomedical practitioners in the provision of healthcare), and a commitment to evidence-informed practice [48], a plan for social action will be necessary to expedite the implementation of EBP in T&CM. The evidence-informed approach, advocated in the Berlin Agreement (and embraced by policy-makers [49]), is arguably likened to the EBP 'triad'. The 'triad' provides an avenue for clinicians to practice the *art* of healthcare (drawing on their critical and reflective thinking skills) alongside the *science*, ensuring that varied kinds of knowledge and 'ways of knowing' are accommodated, and that people remain at the centre of healthcare interactions [20].

Using political process theory as a lens through which to interpret the outcomes from the roundtable discussion, the plan for social action would need to comprise three key elements. The first, insurgent consciousness, requires members of the movement to feel a collective sense of injustice [50,51]. This involves developing a clear communication strategy through which to galvanise social debate on EBP in T&CM, and to educate those within and outside the field about the issue. The second element, organizational strength, demands that strong leadership (such as the formation of an EBP in T&CM leadership group) and sufficient resources be present to channel the perceived injustice into social action [50,51]. The latter would comprise building relationships with key stakeholders/drivers of change (e.g. consumers, regulators, industry, other health professions, education providers), investing in research and research capacity building (to facilitate the generation of evidence), and penetrating the medical establishment (e.g. funding academic chairs, fostering interest amongst medical students). The last element, political opportunity, refers to the receptivity of the political system to change. Increasing the vulnerability of the system to change would involve increasing the presence of T&CM industry in political processes, and intensifying political discourse in the field (by linking the EBP in T&CM movement to patient-centred care, national/international policies, charters, principles and legislation) in order to foster political pluralism [50,51].

While the findings of this research offer some direction to improving the discourse and implementation of EBP in T&CM, there are some limitations that are worth noting. First, the attendees of the roundtable discussion were purposefully selected and as such, the opinions of some T&CM stakeholders may not have been adequately represented. Second, as the attendees were largely residents of Australia, it is unclear to what extent the findings of this analysis would be applicable to other countries; having said that, most of the actions outlined in the agenda were of international relevance. Finally, the thematic analysis of the transcript was conducted by forum participants and is therefore prone to some potential biases in its interpretation. Notwithstanding, this type of analysis is not dissimilar to participatory action research where "communities of inquiry and action evolve and address questions and issues that are significant for those who participate as co-researchers" [52]. Further, the results were reviewed by all forum participants to ensure the findings were an accurate representation of the roundtable discussion and had been interpreted appropriately.

5. Conclusions

This work describes a potential framework for an agenda to progress EBP implementation in the field of T&CM. Underpinning the operationalisation of the agenda are three broad calls to action: (1) defining terminology, (2) defining the EBP approach, and (3) fostering social movement. These calls to action also form the blueprint of the agenda. Fundamentally, these elements seek clarification, leadership and unification on the issue of EBP in T&CM. A logical next step of this work will be to establish international consensus on the agenda, and to translate these calls to action into tangible results.

Author contributions

ML conceptualised and drafted the paper with input from RC and JH. ML and RC performed the data analysis. All authors reviewed and revised the manuscript.

Conflicts of interest

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References

[1] Evidence-Based Medicine Working Group, Evidence-based medicine. A new approach to teaching the practice of medicine, J. Am. Med. Assoc. 268 (17) (1992) 2420–2425.
[2] J. Glanville, Evidence-based practice: the role of the NHS centre for reviews and dissemination, Health Libr. Rev. 11 (4) (1994) 243–251.
[3] P.H. Bridges, L.L. Bierema, T. Valentine, The propensity to adopt evidence-based practice among physical therapists, BMC Health Serv. Res. 7 (1) (2017) 1.
[4] M.J. Leach, Evidence-based practice: a framework for clinical practice and research design, Int. J. Nurs. Pract. 12 (5) (2006) 248–251.
[5] L.L. Leape, D.M. Berwick, D.W. Bates, What practices will most improve safety? Evidence-based medicine meets patient safety, J. Am. Med. Assoc. 288 (4) (2002) 501–507.
[6] S.E. Straus, D.L. Sackett, Using research findings in clinical practice, BMJ 317 (7154) (1998) 339–342.
[7] F. Davidoff, B. Haynes, D. Sackett, R. Smith, Evidence based medicine, BMJ 310 (6987) (1995) 1085–1086.
[8] J.I. Emparanza, J.B. Cabello, A.J.E. Burls, Does evidence-based practice improve patient outcomes? An analysis of a natural experiment in a Spanish hospital, J. Eval. Clin. Pract. 21 (6) (2015) 1059–1065.
[9] S.M. Fakhry, A.L. Trask, M.A. Waller, D.D. Watts, Management of brain-injured patients by an evidence-based medicine protocol improves outcomes and decreases hospital charges, J. Trauma Inj. Infect. Crit. Care 56 (3) (2004) 492–500.
[10] A.F. Shorr, S.T. Micek, W.L. Jackson, M.H. Kollef, Economic implications of an evidence-based sepsis protocol: can we improve outcomes and lower costs? Crit. Care Med. 35 (5) (2007) 1257–1262.
[11] A.E. Bussieres, L. Terhorst, M.J. Leach, K.J. Stuber, R. Evans, M.J. Schneider, Self-reported attitudes, skills and use of evidence-based practice among Canadian doctors of chiropractic: a national survey, J. Can. Chiropr. Assoc. 59 (4) (2015) 332–348.
[12] M.J. Leach, D. Gillham, Are complementary medicine practitioners implementing evidence based practice? Compl. Ther. Med. 19 (2011) 128–136.
[13] T. Mota da Silva, L. da Cunha Menezes Costa, A.N. Garcia, L.O. Costa, What do physical therapists think about evidence-based practice? A systematic review, Man. Ther. 20 (2015) 388–401.
[14] A.E. Patelarou, E. Patelarou, H. Brokalaki, V. Dafermos, L. Thiel, H. Melas, E. Koukia, Current evidence on the attitudes, knowledge and perceptions of nurses regarding evidence-based practice implementation in European community settings: a systematic review, J. Community Health Nurs. 30 (2013) 230–244.
[15] M.J. Schneider, R. Evans, M. Haas, M. Leach, C. Hawk, C. Long, G.D. Cramer, O. Walters, C. Vihstadt, L. Terhorst, US chiropractors' attitudes, skills and use of evidence-based practice: a cross-sectional national survey, Chiropr. Man. Ther. 23 (2015) 16.
[16] J. Snow, M.J. Leach, B. Clare, Attitudes, skill and use of evidence-based practice among US Western herbal medicine providers: a national survey, J. Compl. Integr. Med. (1) (2017) 14 (np).
[17] M. Sullivan, M.J. Leach, J. Snow, S. Moonaz, Understanding north American Yoga Therapist's attitudes, skills and use of evidence-based practice: a cross-national survey, Compl. Ther. Med. 32 (2017) 11–18.
[18] D. Upton, D. Stephens, B. Williams, L. Scurlock-Evans, Occupational therapists' attitudes, knowledge, and implementation of evidence-based practice: a systematic review of published research, Br. J. Occup. Ther. 77 (1) (2014) 24–38.
[19] J.Z. Goldenberg, E.B. Oberg, J. Guiltinan, R.L. McCarty, The role of evidence-based medicine in naturopathy, Adv Integrat Med 4 (2) (2017) 47–48.
[20] T. Greenhalgh, R. Snow, S. Ryan, S. Rees, H. Salisbury, Six 'biases' against patients and carers in evidence-based medicine, BMC Med. 13 (2015) 200.
[21] A. Miles, M. Loughlin, A. Polychronis, Evidence-based healthcare, clinical knowledge and the rise of personalised medicine, J. Eval. Clin. Pract. 14 (2008) 621–649.
[22] M. Bode, U. Payyappallimana, Evidence based traditional medicine: for whom and to what end? J Indian Med 6 (2013) 1–20.
[23] C. Brosnan, Epistemic cultures in complementary medicine: knowledge-making in university departments of osteopathy and Chinese medicine, Health Sociol. Rev. 25 (2016) 171–186.
[24] J.Z. Goldenberg, B.S. Burlingham, J. Guiltinan, E.B. Oberg, Shifting attitudes towards research and evidence-based medicine within the naturopathic medical community: the power of people, money and acceptance, Adv Integrat Med 4 (2) (2017) 49–55.
[25] A. Hunter, A. Grant, Complementary medicine and evidence-based practice: power and control in healthcare - questions about an arranged marriage, Evid. Base Integr. Med. 2 (2005) 189–194.
[26] T. Jagtenberg, S. Evans, A. Grant, I. Howden, M. Lewis, J. Singer, Evidence-based medicine and naturopathy, J Altern Complement Med 12 (3) (2006) 323–328.
[27] M.J. Leach, B. Tucker, Current understandings of the research–practice gap from the viewpoint of complementary medicine academics: a mixed-method investigation, Explore 13 (2017) 53–61.
[28] Y. Veziari, M.J. Leach, S. Kumar, Barriers to the conduct and application of research in Complementary and Alternative medicine: a systematic review, BMC Complement Altern Med 17 (2017) 166.
[29] J. Wardle, J. Adams, C.W. Lui, A.E. Steel, Current challenges and future directions for naturopathic medicine in Australia: a qualitative examination of perceptions and experiences from grassroots practice, BMC Complement Altern Med 13 (2013) 15.
[30] M. Wiese, Does 'traditional' evidence have a place in contemporary complementary and alternative medicine practice? A case for the value of such evidence, Focus Altern. Compl. Ther. 21 (3–4) (2016) 143–146.
[31] A. Kitson, G. Harvey, B. McCormack, Enabling the implementation of evidence based practice: a conceptual framework, Qual. Health Care 7 (1998) 149–158.
[32] Australian Commission on Safety and Quality in Health Care (ACSQHC), Improving the Safety and Quality of Pharmacy Dispensing Labels: National Round Table Report, ACSQHC, Sydney, Australia, 2013.
[33] Department of Health, Communique - rural and remote health stakeholder roundtable, 16 November 2016, http://www.health.gov.au/internet/main/publishing.nsf/Content/rural-roundtable-comm-16nov16. Accessed 2nd August, 2017.
[34] Sapere Research Group, Developing a National Approach to the Measurement and Reporting of Pressure Injuries, Health Quality & Safety Commission, Wellington, New Zealand, 2016.
[35] K.H. Schmitz, K.S. Courneya, C. Matthews, W. Demark-Wahnefried, D.A. Galvão, B.M. Pinto, M.L. Irwin, K.Y. Wolin, R.J. Segal, A. Lucia, C.M. Schneider, V.E. von Gruenigen, A.L. Schwartz, American College of sports medicine. American College of sports medicine roundtable on exercise guidelines for cancer survivors, Med. Sci. Sports Exerc. 42 (7) (2010) 1409–1426.
[36] V. Braun, V. Clarke, Using thematic analysis in psychology, Qual. Res. Psychol. 3 (2016) 77–101.
[37] M.J. Leach, Natural, complementary, alternative. Which term to use? Aust. J. Holist. Nurs. 10 (1) (2003) 46–49.
[38] J.Y. Ng, H.S. Boon, A.K. Thompson, C.R. Whitehead, Making sense of "alternative", "complementary", "unconventional" and "integrative" medicine: exploring the terms and meanings through a textual analysis, BMC Compl. Alternative Med. 16 (2016) 134.
[39] J. Hunter, Applying evidence-based-medicine when prescribing herbal products, OA Altern. Med. 1 (2013) 21–25.
[40] M. Cohen, J. Hunter, Complementary medicine products: interpreting the evidence base, Intern. Med. J. 47 (2017) 992–998.
[41] D.L. Sackett, W.M.C. Rosenberg, J.A. Muir Gray, R.B. Haynes, W.S. Richardson, Evidence based medicine: what it is and what it isn't, BMJ 312 (7023) (1996) 71–72.
[42] G. Rangamani, P. Coppens, M. Greenwald, C. Keintz, Collaborative methods for training evidence-based practice: the triad model, Contemp Iss Comm Sci Dis

43 (2016) 139–153.
[43] M.J. Leach, Does 'traditional' evidence have a place in contemporary complementary and alternative medicine practice? A case against the value of such evidence, Focus Alternative Compl. Ther. 21 (3–4) (2016) 147–149.
[44] J. Hunter, M. Leach, L. Braun, A. Bensoussan, An interpretive review of consensus statements on clinical guideline development and their application in the field of traditional and complementary medicine, BMC Compl. Alternative Med. 17 (2017) 116.
[45] V. Strand, G. Girolomoni, M. Schiestl, R.E. Mayer, H. Friccius-Quecke, M. McCamish, The totality-of-the-evidence approach to the development and assessment of GP2015, a proposed etanercept biosimilar, Curr. Med. Res. Opin. 22 (6) (2017) 993–1003.
[46] H. Walach, T. Falkenberg, V. Fønnebø, G. Lewith, W.B. Jonas, Circular instead of hierarchical: methodological principles for the evaluation of complex interventions, BMC Med. Res. Meth. 6 (2006) 29.
[47] J. Lenzer, Why we can't trust clinical guidelines, BMJ 346 (2013) f3830.
[48] J. Weeks, Researchers as advocates: what does the global "Berlin agreement" imply? J Altern Complement Med 23 (5) (2017) 317–319.
[49] J. Lomas, A.D. Brown, Research and advice giving: a functional view of evidence-informed policy advice in a Canadian ministry of health, Milbank Q. 87 (2009) 903–926.
[50] G.L. Anderson, K.G. Herr (Eds.), Encyclopedia of Activism and Social Justice, Sage Publications, Thousand Oaks, USA, 2007.
[51] R.T. Cragun, D. Cragun, P. Konieczny, Introduction to Sociology, Wikibooks, San Francisco, California, 2012.
[52] P. Reason, H. Bradbury, The Sage Handbook of Action Research: Participative Inquiry and Practice. California, USA, Sage, 2008.