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HIGHLIGHTS

- Naturopathy is one of the most common T&CM professions globally and has a practice presence in all WHO Regions.
- Naturopaths/NDs treat patients throughout all stages of life. Naturopathic care focuses on prevention and chronic conditions, but also in the treatment of patients with acute conditions and those in palliative care.
- Naturopathic practice is therapeutically diverse with a consistent holistic and person-centered approach centered on a core philosophical and traditional knowledge framework that focuses on the effective prioritization of non-invasive or non-pharmacological interventions and preventive care.
- Naturopathy/naturopathic medicine treats a wide spectrum of conditions and can decrease the risks of conditions with a high disease burden, especially non-communicable diseases.
- The naturopathic profession is a leader in research supporting T&CM practice and has been active in developing research capacity in other health and medical areas beyond naturopathy/naturopathic medicine.
- The holistic and inter-systems nature of naturopathic practice is being increasingly recognized as being well-suited to complex health problems.
- The current research supports the effectiveness and efficacy of multiple aspects of naturopathic practice.

This Health Technology Assessment (HTA) on Naturopathy was initiated by the World Naturopathic Federation (WNF), the non-profit organization representing the global naturopathic profession, and developed in consultation with international stakeholder groups including the World Health Organization (WHO). The protocol for this HTA was drafted in line with the WHO guidelines for HTAs [1] and adapted to meet the specific requirements and nature of the naturopathic profession, and the specific evidence gaps, and requirements identified by external stakeholders as important for decision-making. The protocol was also informed by HTAs on other Traditional and Complementary Medicine (T&CM) health care professions, systems and therapies that were previously commissioned by governments to inform policy decision-making [2-4]. This report provides a detailed overview of the global naturopathic profession and evaluates the efficacy/effectiveness, appropriateness, and economics of naturopathy/naturopathic medicine through a systematic review of the research written by the naturopathic community.

Although informed by long-standing traditional European medical practices, naturopathy formally developed as a discrete and distinct traditional system of medicine in Germany in the mid-1800s [5]. The system rapidly

spread, and by the early 1900s professional naturopathic communities had been established in every WHO Region [5]. Today naturopathy/naturopathic medicine is a truly global profession, practiced in 108 countries around the world, spanning all WHO Regions [6], with over 110,000 naturopaths/naturopathic doctors in practice [7].

As detailed in Section 1, as a traditional medicine system the foundational basis of naturopathic practice is its philosophical approach to health and disease [5], defined by two philosophies and seven principles [8]. This focus has allowed the profession to adapt assessment, diagnosis, and treatment to evolving environments and develop a therapeutically diverse practice that retains a consistent holistic and person-centred approach to clinical treatment that focuses on the effective prioritization of non-invasive or non-pharmacological interventions and preventive care. This core philosophical and principles-based approach to treatment has also allowed naturopathy/naturopathic medicine to be successfully translated and implemented into a wide variety of geographic and socio-cultural settings and practice environments.

This HTA report covered questions that have been identified by extensive consultation with stakeholders as important for policy and practice decision-making at systems and organizational levels. These are:

- What is the international landscape of the naturopathic profession?
- What is the foundational, educational and regulatory bases of the naturopathic profession?
- What research and scientific publications are available to support naturopathic practice?
- What conditions are commonly treated by naturopaths/naturopathic doctors?
- What is the evidence on the effectiveness and efficacy of naturopathic practice?
- How widespread is the use of naturopathy/naturopathic medicine by the general population?
- What is the access and equity to naturopathic health services?
- What role does the naturopathic workforce currently play in health promotion and community education?
- Which adverse effects or complications can occur or have been observed and what safety precautions are required in naturopathic practice?
- What are the economic considerations when evaluating naturopathic care and what is the cost-effectiveness of naturopathic care?

Literature Search and Selection

The literature informing this HTA was drawn from the extensive bibliometric analysis of naturopathic research – that is research on interventions conducted by the naturopathic research community – which identified 2218 manuscripts published in peer-reviewed indexed journals by naturopathic researchers from 22 countries. Authors selected for each chapter were primarily naturopathic researchers with clinical and research expertise in their assigned areas. In total 52 authors from ten countries in six WHO Regions contributed to the literature review and summary charts in this document. Authors were, with few exceptions, naturopathic researchers or research-active naturopathic practitioners and, in all instances, were affiliated with naturopathic professional or educational institutions, universities or research organizations.

The articles identified were published between 1987 and 2019 with 80.9% published in the last 10 years. The bibliometric analysis showed a substantial increase in the original research undertaken by naturopathic clinicians since 2004, which is also supported by data showing that the naturopathic profession is increasingly becoming one of the most active T&CM professions engaging in competitively-funded government research programs

[9]. Naturopathic researchers engage in a diverse range of research topics, with the main countries contributing to being naturopathic researchers from the USA (37.2%), Australia (27.8%), Canada (15.2%), India (9.2%) and Germany (8.3%). Naturopathic researchers are also involved in diverse methodological approaches to research, with the main study designs being systematic reviews and meta-analysis (23%), clinical trials (19%), surveys and Delphi studies and focus groups (18%). The holistic nature of naturopathic practice is well-suited to complexity systems studies and this form of research is becoming more accepted and promoted [10], it is anticipated that the type of study designs adopted by naturopathic clinician researchers will change over time. Twenty-four percent of the studies identified focused on treatments or naturopathic interventions for specific conditions and 19% focused on the effectiveness of naturopathic treatment modalities.

Effectiveness and Efficacy of Naturopathy/Naturopathic Medicine

One hundred and two of the 237 studies (81.1%) indicated a positive clinically relevant outcome in either the primary or secondary measurements of studies included in this review. Five studies also included cost-effectiveness measures, all of which reported cost-effectiveness of naturopathic interventions. In most cases these studies also showed naturopathic intervention to be safe and tolerable, with only seven of the 237 studies reporting adverse events, most of which were categorized as mild (these are reported in more detail in Chapter 7 and appendices). In total 53% of original research studies were RCTs with the majority of those being either double-blind or placebo-controlled, primarily on standardized treatment interventions or individual therapies. However, as discussed in Chapter 2, as a traditional system of medicine, naturopathy/naturopathic medicine is defined by the application of its overarching philosophical frameworks in all aspects of naturopathic care, rather than its specific use of natural treatments and therapies. The results from studies identified in this review process demonstrate that naturopathic researchers have undertaken a significant body of research on specific and complex interventions which demonstrate effectiveness and efficacy of naturopathic treatment across a wide variety of conditions and clinical settings. Additionally, naturopaths/naturopathic doctors appear to have been active in the development and growth of emerging clinically key areas and disciplinary fields. Topics such as the impact of the gut microbiome on health, nutritional psychiatry and advancements in integrative approaches to oncology have long been cornerstones of naturopathic practice – informed by philosophical and principles-based naturopathic theories and are now being increasingly recognized and adopted

across wider health and research disciplines [11-13]. As the naturopathic research community develops, there are increasing opportunities for naturopathic theories of practice to inform optimal approaches to health care.

However, it should be noted that many interventions in the studies identified in this HTA were modified or controlled to adhere to methodological norms and relatively few studies have explored the intervention of individualized whole naturopathic care as it is practiced in real-world settings. This is particularly important given that the international practice survey highlighted in this HTA noted that naturopathic practitioners typically use four or more treatment interventions per visit, and that many studies in this review that reported results from complex interventions often had better outcomes than those that assessed more limited treatments. Whilst the results of these studies do offer insights into naturopathic interventions applied in naturopathic settings by naturopaths, such limitations may omit the therapeutic impact of important foundational aspects of naturopathic care that are difficult to account for in conventional research methodologies, such as inter-systems approaches to co-morbidities, individualization of treatment and patient-centeredness, all of which may be more amenable to modified RCT designs such as whole practice studies or research designs other than RCTs [14, 15]. Accounting for such factors is not likely to reduce the positive impact of naturopathic intervention, as where whole practice studies have been undertaken using pragmatic research designs reflective of real-world context and practice, they have also shown the clinical effectiveness and efficacy of naturopathic treatment across a wide variety of conditions and clinical settings [16]. Observational studies may also offer insights into the impact of naturopathic treatment but are hampered by the lack of integration of naturopathic practitioners into health care delivery at a systems level. One of the few areas where such evaluation has occurred has been on the impact of inclusion of naturopathic care in third party insurance plans, which has shown economic benefit from reduced costs and improved health outcomes (see Chapter 8 for more details), further supporting the value of whole practice naturopathic care.

Results from the studies identified in this HTA noted several important implications around the potential integration of the naturopathic workforce with other health care interventions. An important finding was the potential for naturopathy/naturopathic medicine to work collaboratively and effectively as part of multi-disciplinary teams. Results demonstrated that the integration of naturopathic care supported usual care, often through increasing or adding to the therapeutic effect of conventional treatments as part of an integrative approach to treatment, with many studies highlighting the significant effectiveness of naturopathic treatment compared to usual care alone. Moreover, naturopathy/naturopathic

medicine was also able to reduce or assist in the management of adverse side effects of effective, but otherwise unpleasant, treatments in areas such as oncology where such side-effects have been associated with poor treatment compliance. Another important finding was the effective role that naturopathy/naturopathic medicine appears to have in addressing the modifiable risk factors associated with non-communicable diseases. Consultation with naturopathic practitioners is known to be associated with positive health behaviours, consistently show a positive role for naturopathy/naturopathic medicine as an effective intervention in a wide variety of non-communicable diseases. In many cases, the naturopathic philosophical focus on non-pharmacological approaches and a therapeutic hierarchy of healing has meant that it has often been able to achieve such results even in the absence of conventional drug treatment [17]. The naturopathic focus on clinical nutrition, herbal medicine, physical therapies and dietary and lifestyle counselling offers novel, innovative and potentially effective strategies to improve health outcomes while reducing pharmaceutical reliance and invasive interventions.

A striking feature of naturopathic research is the diversity in conditions and modalities that are included in naturopathic research. This diversity is analogous to results obtained in the international practice survey and indicates that naturopaths/naturopathic doctors treat a wide range of conditions ranging from acute to chronic, spanning all ages including preventive health and palliative care. Of particular importance to policy and practice decision-makers is that while naturopathy/naturopathic medicine treats a wide spectrum of conditions, it is particularly focused on those areas of increasing disease burden, particularly non-communicable diseases. One challenge with the wide range of conditions and treatments in the naturopathic clinical studies is that there was often an inability to pool results across different naturopathic studies in meta-analyses, providing a more definitive confirmation of effectiveness and efficacy. This absence should be viewed in the context that multiple meta-analyses do exist for many of the treatments employed by naturopaths and covered in this HTA, a substantial number undertaken by the naturopathic community itself to inform and improve evidence-based naturopathic practice. However, despite such limitations the level of positive outcomes arising from this research warrants consideration and provides a foundation for future research into the impact of naturopathy/naturopathic medicine.

It should be noted that these reviews are not exhaustive of the biomedical or traditional, complementary or integrative interventions employed in naturopathic practice, but a reflection of the naturopathic community's direct contribution to the evidence base for these interventions as applied in a naturopathic context. Some previous HTAs have queried the applicability of the broader

evidence base for clinical interventions to the evidence for their implementation by individual therapeutically eclectic professions such as naturopathy/naturopathic medicine [4, 18]. The broader evidence base for interventions commonly employed by the naturopathic workforce (covered in Chapter 28) should be considered in any assessment of the naturopathic profession, however the approach used by this HTA (limiting to evaluating studies conducted by naturopathic clinician researchers in naturopathic settings) *unequivocally* has direct relevance to assessment of naturopathy/naturopathic medicine and as such form a *minimum* foundational base upon which such assessments should be made.

Policy Relevance and Implementation of Findings

The WHO has consistently called for the appropriate regulation and integration of traditional medicine systems [6]. The WHO Traditional Medicine Strategies defined a framework for policy action, including the promotion of universal health coverage by integrating T&CM services into health service delivery and health care, where appropriate to do so [19, 20]. Global health's defining statement on primary health care – the Alma-Ata

Commitments of the Declaration of Astana

Health For All Policies

Naturopath's/naturopathic doctor's holistic view naturally engages with economic, social, and environmental factors when providing care to their patients. Although the biopsychosocial approach to health care has long underpinned naturopathic practice, the profession is not readily engaged in policy decisions and stakeholder engagements. However, where they have been engaged, the naturopathic community has been an effective advocate for multi-sectoral change and have been actively engaged in translational activities such as educating the public about environmental risk factors [22]. The holistic perspective of the naturopathic community would bring a unique view to providing care to the community and to addressing these factors, as well as lifestyle factors, which may be of value to policy makers.

Build Sustainable Primary Health Care

Disease prevention and health promotion are core principles in naturopathy/naturopathic medicine that are not only reflected in the preventive treatments investigated through clinical research, but also through the active role naturopaths/naturopathic doctors play in educating their patients and the wider community. Naturopaths/naturopathic doctors appear to be more active in health promotion and community education than most other primary care practitioners, and research suggests that they are an effective tool for translating research health promotion tools into clinical practice. Naturopaths/naturopathic doctors offer a broad scope of practice, providing a comprehensive range of services commensurate with their primary health care role, including screening, preventive health care and the treatment and/or management of noncommunicable and infectious diseases. Utilization studies also demonstrate that naturopaths/naturopathic doctors treat a diverse array of patients from across their life span. Even within the constraints of limited integration and associated resource issues, naturopaths/naturopathic doctors provide significant care to underserved populations. Although better collaboration and communication with other primary health care services is needed to ensure continuity of care for patients, naturopaths/naturopathic doctors have shown a commitment to multi-disciplinary care and de-fragmentation of the health care system by actively referring to and engaging with other providers where that option is available to them.

Empower Individuals and Communities

Naturopaths/naturopathic doctors have a philosophically strong focus on empowerment and building capacity in individuals and communities to self-manage their health. Educating patients to improve their health literacy and ability to maintain their own health forms one of the key principles of naturopathic practice – *Docere* – as evidenced by the active role of the naturopathic community in knowledge mobilization and dissemination to a wide variety of audiences using a variety of information sources specific to their community and their patient populations [23-25]. For example, health promotion education is a cornerstone of naturopathic practice, both philosophically and in terms of healthcare delivery, which has resulted in sustained and long-term clinical improvements among naturopathic patients due to improved self-management of health [17, 26]. The empowering nature of naturopathic treatment has also been supported by research that highlighted the intrinsic qualities of naturopathic consultation

and treatment as facilitating patient empowerment, empathy and patient-centredness [27], even more so than many other T&CM professions [28, 29].

Align Stakeholder Support to National Policies, Strategies, and Plans.

Naturopaths/naturopathic doctors are undertaking clinical, research and policy work that already aligns with national and international policies, strategies and plans such as person-centred care, management of chronic illness, and disease prevention. The holistic philosophy and principles-based naturopathic approach to health has many overlaps with public health paradigms. Moreover, research suggests that the naturopathic community is a translational profession, able to implement and facilitate health outcomes of interventions known to be effective. However, naturopaths/naturopathic doctors are often not effectively engaged with policymakers so that they are limited in their ability to fully integrate into plans and strategies as they are implemented. Where the naturopathic community has been engaged to work with policymakers, it has been able to effectively mobilize efforts that support public health. For example, during the COVID-19 pandemic the naturopathic community was asked by numerous international stakeholders to review the evidence for several T&CM products being actively and widely promoted to inform decision-making, resulting in the publication of a rapid review series, a *WNF White Paper on the Role of Naturopathy in a Pandemic* [5, 30], and the development of appropriate practise guidelines for naturopathic practice in the management of COVID-19, including the management of non-communicable disease implications from lockdown interventions or post-infectious recovery [31].

Drivers of Success

Knowledge and Capacity Building

Naturopathic researchers are contributing an immense amount of new knowledge through conducting studies, but also synthesizing existing knowledge to improve its translation and access to the naturopathic profession and the wider health community. The therapeutically eclectic nature of naturopathic practice has resulted in the naturopathic community being actively involved in knowledge and capacity building in multiple disciplinary fields. There are also numerous naturopathic institutions, and naturopaths/naturopathic doctors in other institutions, supporting the next generation of naturopathic clinician and researcher. The philosophically-based naturopathic approach on education – *Docere* – further facilitates this role.

Human Resources for Health

The growth in the practice, training and development of naturopaths/naturopathic doctors has increased, and formalization of standards has resulted in a workforce capable of primary health care practice, particularly where the profession is well-regulated. Even where regulation is absent, the naturopathic profession has historically encouraged initiatives to self-governance, or has been involved in regulating new areas (for example, the leading role of the naturopathic profession in the initiation and implementation of natural health products regulations in Canada [32]). The global naturopathic workforce of over 100,000 practitioners represents an untapped resource with significant potential to improve primary health care delivery and outcomes.

Technology

The diversity of treatment and therapies employed by naturopaths/naturopathic doctors, coupled with the range of conditions and populations they treat, and the unique consistent philosophically and principles-based naturopathic approach to using therapeutic tools, places naturopaths/naturopathic doctors in a strong position for identifying, testing, and assisting with the understanding of new treatment options for existing and emerging conditions. The therapeutically eclectic nature of naturopathic practice, coupled with a deep understanding and experience of both traditional and biomedical approaches to healthcare may also position naturopathy/naturopathic medicine as an ideal bridge between T&CM and conventional services.

Financing

Whilst most naturopathic care is financed by third party funding or direct patient expense, there is evidence that integration of naturopathic services has both clinical and economic benefits at an individual and systems level. Furthermore, naturopathic care may reduce resource requirements by reducing reliance on pharmaceutical medications or invasive interventions. However, despite evidence of clinical and cost-effectiveness, lack of integration creates inequities in the accessibility of naturopathic care.

Declaration – noting that primary health care relied on a multi-disciplinary workforce, including T&CM practitioners. The role of T&CM was expanded in the update to this document – the Astana Declaration – an expansion which is partly evidenced by the extension of a formal invitation to the World Naturopathic Federation to participate. The Astana Declaration again acknowledged the importance of multi-disciplinary approaches to health, but also noted the importance of traditional knowledge as a tool to strengthen primary health care and identified T&CM medicines as important tools to achieve primary health care aims. Given the role of naturopathy/naturopathic medicine in primary health care, and the directives to identify appropriate integration strategies for T&CM in the Astana Declaration, the policy relevance of this HTA, and decision regarding implementation of its findings, should be considered within the context of the commitments outlined in the Declaration of Astana [21], as outlined below.

While the evidence base uncovered in this review points to naturopathy/naturopathic medicine being a safe and effective intervention, there are some caveats that warrant consideration. Although there is a global consistency in the application of traditional naturopathic philosophies and principles by the global naturopathic community, there is significant heterogeneity in training, education, regulation and scope of practice (see Chapters 5 & 6). While the naturopathic profession has supported multiple initiatives to address these concerns, such initiatives are naturally self-limiting without the formal assistance or action of policymakers in government. This heterogeneity of standards, more than any other factor, impacts the potential risks identified as being associated with naturopathic practice, the types of which do not differ significantly from other professions with a primary health care scope (see Chapter 7). Importantly, measures that both reduce risks associated with naturopathic practice and support safe and effective naturopathy/naturopathic medicine are well-known – primarily centering around improved standards of regulation and accreditation – and are within the jurisdiction and capacity of policy decision-makers globally. Regulation of T&CM professions such as naturopathy/naturopathic medicine has generally failed to keep up with growing

public utilization of those professions, even though such regulation consistently shows public benefit, with lack of regulatory action serving only to deny minimum standards of accountability in groups already perceived by the public as legitimate by virtue of their significant utilization [33]. Moreover, initiatives to improve regulatory arrangements for naturopathy/naturopathic medicine align with WHO recommendations [20, 34] and also tend to have wide support from the profession and the public [35].

Summary

Naturopathy/naturopathic medicine is a safe and effective intervention that has utility across different geographic regions, clinical settings and conditions, and naturopathic practitioners are trusted and consulted by the global public for a wide range of conditions. Studies demonstrate the clinical effectiveness and efficacy of naturopathic interventions in a wide variety of conditions, and the limited cost-effectiveness studies conducted appear to suggest integration of naturopathic care can generate cost savings at individual clinic and health systems levels. Definitive conclusions on the effectiveness of naturopathy/naturopathic medicine are hampered by the lack of integration of naturopathy/naturopathic medicine into broader health care, research or academic initiatives. Nevertheless, despite such barriers, particularly in areas of global health priority such as non-communicable diseases, naturopaths/naturopathic doctors have been actively engaged in both the conduct and translation and implementation of research, which provides a solid foundation for future integration into future clinical and research endeavors. The potential of naturopathy/naturopathic medicine to deliver consistently positive outcomes for the public is likely to be improved by the development of regulations that support minimum practice and education standards. Given the promising emerging evidence base for naturopathy/naturopathic medicine shown in this HTA, it is warranted that individual policy-decision makers consider how to regulate and integrate naturopathy/naturopathic medicine in the manner most appropriate to their individual setting.

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