



Research paper

Experience of Western Herbal Medicine practitioners in supporting brain health in mid-life and older patients: A qualitative research study

Surinder Hundal^{1,*}, Julia Green²

Herbal and East Asian Medicine, College of Liberal Arts and Sciences, School of Life Science, University of Westminster, 115 New Cavendish Street, London W1W 6UW, United Kingdom



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ABSTRACT

Aims: Dementia has been identified as a public health and social-care priority, raising the necessity for multi-domain preventative healthcare strategies for at-risk populations. Western herbal medicine (WHM) has a role to play in strategies supporting healthy brain ageing.

The aim of this qualitative, interpretative research study was to explore the experience of Western Herbal Medicine (WHM) practitioners addressing cognitive and vascular brain health in mid-life and older patients, using semi-structured interviews.

Method: Three participants were recruited using purposive sampling and a set of inclusion criteria. In-depth interviews facilitated by a topic guide were used to explore their herbal and therapeutic management approach; and gauge their views on the role of WHM in multi-domain management of brain health in the assay group. Interviews were audio recorded and then transcribed verbatim; thematic analysis was used to analyse the data.

Results: Four themes emerged from the practitioners' narratives of their experience of working with the assay group: the types of conditions their patients presented with; their therapeutic approach to the herbal dietary and lifestyle management of those presentations; the issues of working with the target patient group; and the potential role for WHM in managing brain health in an aging population.

Conclusions: The small exploratory study is the first of its kind attempting to capture the real-life application of WHM in supporting cognitive and vascular brain health in mid-life and older patients.

Limitations of the study have been identified.

1. Introduction

Brain health can be defined as a person's ability to concentrate, learn, remember, reason, and maintain a clear, active mind to function well in their daily life (Center for Brain Health, 2019). It draws on the strengths of cognitive and other higher-level mental processes involved in information processing, problem solving, decision-making, language, perception, imagination, planning and self-management (National Institute of Aging, 2019).

In aging, memory and cognition decline as a consequence of intrinsic, progressive deterioration of physiological functions and senescence (Bäckman et al., 2001; López-Otín et al., 2013; Salthouse, 2009).

However, normal patterns of age-related cognitive change can be exacerbated by neurodegenerative disease, manifesting in a spectrum of clinical presentations from mild cognitive impairment (MCI) to dementia (Duckett and de la Torre, 2001; Hof and Mobbs, 2000).

Dementia is characterised by progressive and irreversible deficit in multiple cognitive domains, resulting in memory loss, language difficulties, executive dysfunction, behavioural and psychological changes, difficulties in social and occupational activities and ultimate loss of capacity for independent living (Alzheimer's Society, 2014; Burns and Iliffe, 2009a, 2009b).

Evidence suggests that MCI represents a near-term risk for developing dementia (Jones et al., 2004; Rosenberg and Lyketsos, 2008).

Alzheimer's disease (AD) is the most common type of dementia,

* Corresponding author.

E-mail address: skhundal@icloud.com (S. Hundal).

¹ Graduate student BSc Herbal Medicine.

² Senior Lecturer Herbal Medicine, Health Sciences and Research.

contributing to 60–70 per cent of cases; other major forms include vascular dementia (VasD), frontotemporal dementia, Parkinson disease dementia, and dementia with Lewy bodies (Alzheimer's Society, 2014; Jellinger, 2008; Lobo et al., 2000).

Evidence from population-based studies show that most types of dementia have both vascular and neurodegenerative brain damage (Fahlander et al., 2002; Rojas-Fernandez and Moorhouse, 2009; Schneider et al., 2007).

The aetiology of dementia is still unclear, but evidence from longitudinal observational studies implicate genetic, environmental, vascular, metabolic, psychosocial and lifestyle-related risk factors (Mangialasche et al., 2012; Mattson, 2004; Prince et al., 2014; Rose-ndorff et al., 2007). Vascular risk factors such as hypertension, atherosclerosis, hyperlipidaemia, obesity, and type 2 diabetes, which become more prevalent in midlife and beyond have been linked to increased dementia risk through a variety of cerebrovascular disease, inflammatory and neurodegenerative pathways; studies also identify low educational attainment in early life, cognitive inactivity and sedentary lifestyle, smoking, depression, social isolation and hearing loss over the entire adult life course as potential risk factors (Imtiaz et al., 2014; Prince et al., 2014; Wilson et al., 2007).

Multiple factors have been cited in the pathogenesis of AD including aberrant production, processing and clearance of amyloid and tau proteins forming senile plaques and neurofibrillary tangles (Ballard et al., 2011; Bloom, 2014; Raskin et al., 2015), oxidative damage (Kim et al., 2015), impaired mitochondrial function (Müller et al., 2010), ischemia, apoptotic cell death cascades and progressive dysfunction of neural cells responsible for the storage and processing of information (de Strooper and Karran, 2016) and neuroinflammation (Heppner et al., 2015). Ischemic damage caused by cerebrovascular/microvascular disease and cardiovascular pathology is implicated in VasD pathogenesis (Fahlander et al., 2002; Jellinger, 2008; Viswanathan et al., 2009).

Dementia may occur at any age but its incidence is much greater in the elderly; increasing exponentially with advancing age (Alzheimer's Disease International, 2015; Burns and Iliffe, 2009a, 2009b; Lobo et al., 2000).

In the UK, the Alzheimer Society reported 850,000 people with dementia in 2015, representing one in every 14 of the population aged 65 years and over; as well as 40,000 people with early-onset dementia under the age of 65 years. If the age-specific prevalence remains stable, and increases are only driven by demographic aging, the total number of people with dementia in the UK is forecast to increase to over 1 million by 2025 (Alzheimer Society, 2014).

In 2015, over 46 million people were living with dementia worldwide, with prevalence expected to increase to 131 million by 2050 due to demographic changes and longer life expectancies (Alzheimer's Disease International, 2015).

Given its significant economic and societal impact, dementia has been identified as a global public health and social care priority (Alzheimer's Disease International, 2015; WHO, 2012). In the absence of proven disease-modifying therapies to cure dementia or to alter its progressive course, public health policy is oriented to primary and secondary prevention of dementia, focusing on early diagnosis and management, reducing modifiable risk factors, intensive monitoring and management of comorbid conditions linked to dementia, and facilitating healthy brain aging across the life course (Alzheimer's Disease International, 2015; Public Health England, 2014; WHO, 2015; Winblad et al., 2016).

Epidemiological studies show that multi-domain interventions which target modifiable cardiovascular and metabolic risk factors and promote the protective role of healthy diet and psychosocial and lifestyle behaviours (Barnard et al., 2014; Ngandu et al., 2015) can help reduce the risk of cognitive decline among older at-risk adults (Barnes and Yaffe, 2011; Mangialasche et al., 2012; Norton et al., 2014; Rabins, 2007).

If the intention is to deploy multi-domain healthcare interventions

focused on prevention, then it is reasonable to posit a role for Western herbal medicine (WHM) practice and practitioners working with middle-aged and older individuals.

The use of herbal medicine in the UK is well established, with approximately 35 per cent of British adults surveyed claiming to have used herbal medicine (Ipsos MORI, 2008); and around 5 per cent of the population visiting a Western herbal medicine practitioner (Nissen, 2010).

There is an established *Materia medica* (based on traditional and evidence-based medicine) for the treatment of a wide range of neurological, metabolic and cardiovascular conditions (e.g. Bone and Mills, 2013; Bradley, 2006; Braun and Cohen, 2015; Hoffmann, 2003). In particular, there are studies reporting potential efficacy of herbs in addressing cognitive and physiological brain function issues; exemplified by *Ginkgo biloba* L., *Rosmarinus officinalis* L., *Curcuma longa* L., *Salvia* spp and *Melissa officinalis* L. (e.g. Akhondzadeh and Abbasi, 2006; Eckert, 2010; Weinmann et al., 2010; Shinjyo and Green, 2017).

The therapeutic model of WHM clinical practice is characterised by a holistic, biopsychosocial approach where treatment is developed through a collaborative patient-practitioner therapeutic relationship (Conway, 2010; Niemeier et al., 2013; Nissen, 2011; Little, 2009). Surveys of WHM practitioners show that this relationship is built on lengthy consultation times capturing and following-up on a comprehensive case history of the patient's medical and family history, occupational and relationship stressors, diet and lifestyle. (Casey et al., 2008; Nissen, 2011; Nissen and Evans, 2012). Treatment is individualized and combines extemporaneous dispensing of herbs (using whole or part plants either alone or as a combination of herbs) for a targeted prescription with dietary and lifestyle advice (Casey et al., 2007; Nissen and Evans, 2012).

Research into prescribing practices of herbalists and patient outcomes of their therapeutic model is beginning to demonstrate real-life applications of WHM (Denham et al., 2011; Green et al., 2007; Hamblin et al., 2008).

However, the authors found no qualitative research relating to individual prescribing practices of WHM practitioners in the specific area of supporting brain health in older adults.

1.1. Aim and objectives

The purpose of this qualitative research study was to use semi-structured interviews to explore the experience and perspectives of WHM practitioners, to understand the herbal and other therapeutic approaches they use to support brain health in mid-life and older patients; and gauge their views on the role WHM can play in multi-domain healthcare strategies for brain health aging in such patients.

The objectives of the study were to:

1. Recruit three participants who are currently practicing herbal medicine in the UK;
2. Carry out 30 min interviews with each participant;
3. Transcribe the interview;
4. Check for accuracy and validity of the data;
5. Analyse the data using simple thematic analysis
6. Discuss and conclude whether the aim of the research have been met.
7. Discuss the key findings and their relevance for the research question.

2. Methods

2.1. Study design

The ontological research philosophy and design of the qualitative study was influenced by an inductive, social constructionist and interpretivist research approach, where the researcher is able to make optimal use of a continuously unfolding conversation in which various

positions may be occupied, elaborated, or vacated as the dialogue proceeds and where the resulting data can be examined to identify patterns and relationships to describe the phenomenon being studied. (Andrews, 2012; Barriball and While, 1994; Mason, 2002; Patten, 2002).

Purposive sampling was used to recruit a group of individuals likely to generate relevant data for the research topic (Green and Thorogood, 2014).

The inclusion criteria for the participants were as follows:

1. A currently practising medical herbalist in the UK, who has been in continuous practice for five years or more;
2. An accredited member of National Institute of Medical Herbalists (NIMH) or of the College of Practitioners of Phytotherapy (CPP) professional bodies.
3. Experience of treating mid-life and elderly assay patients;
4. Lives and practices within a 50 mile radius of Central London for researcher accessibility.

The study was compliant with the University of Westminster's Code of Practice Governing the Ethical Conduct of Research (University of Westminster, 2009).

2.2. Data collection

Three prospective participants – two female and one male - were recruited for the study. They were identified by the authors from peer recommendations and from attendance at a professional body seminar.

All three participants in this study met the inclusion criteria, being in continuous practice for over 20 years and being members of a relevant professional body, and running their practices within a 50 mile radius of Central London. They were between 45 and over 65 years of age, with a total average of 20 years in practice. All three ran sole practices from their homes, with two working part-time and one full-time. They all treated mid-life and elderly female and male patients, with two practitioners estimating that 70 per cent of their patients were aged over 50.

Each individual was invited to participate in the study by e-mail, with an offer of a follow-up phone call to explain the purpose of the study verbally. All three agreed to be interviewed and a participant information sheet and consent form was sent to them, followed by e-mail confirmation of the date, time, and venue for the interview. All three participants gave their consents before the start of the interview.

A topic guide was prepared, with one open-ended question to initiate the interview, and a set of prompt and probe questions to support the interview with all three participants (Bowling, 2009; Spradley, 1979). A pre-formatted form was also used to collect participants' demographic data to validate the purposive sampling criteria.

Two interviews were conducted face-to-face and one interview was conducted by teleconference call. The interviews were audio recorded using a digital recording device providing a total of 110 min, with an average of 36 min per interview.

The audio recordings were transcribed *verbatim* by the researcher to reduce any likelihood of bias (Green and Thorogood, 2014). Each participant was provided with the transcript post-interview, to clarify or amend any information and confirm its accuracy and validity (DiCicco-Bloom and Crabtree, 2006; Fox and Ward, 2008) and give their approval to use in the study.

The transcripts were anonymised, with the participants ascribed a single identifying number, for the purposes of writing up the research (e.g. P1); and letter T when referring to the transcript (e.g. T1).

2.3. Data analysis

Simple thematic analysis was used to analyse the narrative accounts, because it is a flexible method for identifying, analysing and synthesising patterns of meaning within the data (Braun and Clarke, 2006; Braun and Clarke, 2012a; Vaismoradi et al., 2013).

Familiarisation with the data began during transcription of each interview, and initial ideas were noted down in the form of a mind map. Each line of the transcripts was numbered for referencing and a colour coding key was used to systematically highlight and generate a finite set of codes (Denscombe, 2007). Inductive thematic analysis was used, as there were no previous studies dealing with the research topic, and therefore the coded categories needed to be derived directly from the text data (Hsieh and Shannon, 2005).

The codes and the associated text segments were extracted from the transcripts and collated into potential themes. The extracted data was used to construct thematic maps, reviewed by both the researcher and the project supervisor to ensure consistency with the aims of the research study (Attride-Stirling, 2001).

3. Results

Four themes emerged from content analysis of the practitioners' narratives of their experience of working with brain health in mid-life and elderly patients: (a) the conditions their patients presented with; (b) their therapeutic approach to the management of those presentations and reported patient outcomes; (c) the issues identified in working with the target patient group; and (d) the practitioners' opinions about the role professional WHM can play in the wider healthcare ecosystem addressing brain health in an aging population.

3.1. Conditions treated by the WHM practitioners

All three practitioners confirmed they see mid-life and elderly patients with a wide range of brain health concerns, explaining that it was uncommon for patients to directly come for dementia and also more common for the patients to be self-referrals.

They were able to describe the conditions patients presented with, distinguishing between those who come in with (a) complaints and concerns about memory loss and cognitive function or a clinical diagnosis of MCI and those who (a) present with a comorbid neurological, psychological, metabolic or cardiovascular condition (Table 1).

The practitioners varied in their approaches to assess their patients.

P1 used patient's self-assessment and own observation over time to monitor changes in mental function and associated factors such as sleep, stress and anxiety:

"As for assessment, that is an important question – how do we assess? In self-referral, it's the person's subjective view of what's going on with their own mental function and memory. I don't use a standardised testing procedure. What I tend to do is to use my own observation over time and try to be clear as to where I am seeing changes in mental function...if you are seeing someone regularly, you are able to see changes" (P1)

P2 also used no formal assessment procedure, citing that many

Table 1
Patient presentations treated by practitioners.

Category of presentation	Examples of patient complaints related by the practitioners
Mild cognitive impairment Diagnosed; referral	<i>Amnesic episodes; diagnosed with MCI; concerns about mental function, vascular dementia;</i>
Memory loss, mental and cognitive function Self-referral	<i>Forgetfulness, worries about memory loss, anxiety; forgetfulness and concern about family history of dementia; menopause – feelings of confusion, "muzzy headedness", "chemo brain" fog</i>
Neurological conditions and function Self-referral	<i>Parkinson's disease, MS with memory loss; motor neurone disease; anxiety; stress; sleep problems; live on their own, frightened about the future and getting dementia;</i>
Cardiovascular and metabolic function	<i>CVS conditions with issues of cognitive impairment; circulation problems; poor peripheral circulation; type 2 diabetes; concern about high blood pressure, heart disease, diabetes link with cognitive impairment</i>

patients already come with a clinical diagnosis for cognitive or memory deficits or other comorbid conditions and related laboratory data (e.g., cholesterol, BP, metabolic markers) which then together inform the practitioner's therapeutic decisions and subsequent monitoring of the patient's responses:

"If possible, you definitely do need laboratory data. Taking on a serious case, you have to have biochemical data in front of you. The chances are you're not going to be the first one that has seen this patient. They'll come to you having had a diagnosis, so they will come to you with a whole lot of information. You want to know what their cholesterol is, you'll want to know what their blood pressure is, whether any problem has been found with their cardiovascular system. And of course, the other big thing is that you'll need to know about any diabetes". (P2)

P3 used a formal test for signs of cognitive impairment and assess subsequent progress of the condition and response to therapy.

"It's a Mini-Mental State Examination, it takes about ten to fifteen minutes, depending on the patient. It's quantitative so it's very useful – because they can see the score. And I keep a record of it in their files". (P3)

3.2. Therapeutic approach used by the medical herbalists

The therapeutic approach the practitioners described covered the choice of herbs, as well as dietary and lifestyle evaluations and recommendations.

In terms of specific therapeutic principles, P1 emphasised the benefits of working with the energetics and constitution of the patients.

"... I usually see and treat memory loss as part of other conditions rather than as a single pathology that one is looking at. I don't think I have ever really seen anyone who you are seeing as stand-alone issue....rather than having a set of presentations to which I will match a treatment or medicine, I tend to look at the person from a much broader perspective. For me, that means the constitution and energetic aspects of the person might also be quite important. So, if you have a patient, for instance, who is a very highly driven, anxious person, then dealing with the excess of that and helping to clear that from the body in whatever way – maybe it could be lifestyle, general health advice, dietary advice plus the herbs you give – seems to be very much the way in rather than necessarily saying these herbs are for brain health" (P1).

P2 described the significance of using dietary modifications to mitigate the effects of long term oxidative damage and of the inflammatory processes implicated in depression and degenerative disorders. Citing the example of the patient diagnosed with MCI, the practitioner explained:

...if that basis of nutrition were not there, in this circumstance, because of the huge impact on the brain of long term lack of vegetables and fruit, lack of antioxidants, we're looking at something which is massive...when you've got brain damage of that level, you're looking at oxidative changes in the brain and you have to counter that. This is no small matter because it is a large organ, a large area of the body" (P2)

3.2.1. Choice of herbs

In terms of their herbal approach, the practitioners described between 14 and 20 herbs they might use or had used previously to treat the conditions presented, dispensing them either as simples (single herb) or as polyherb (multiple herbs) formulations in dry form (teas, pills) and as liquid medicines (tinctures, juices).

The practitioners' justification for choice of herbs suggested an effort to optimise pharmacological efficacy of herbs, especially where multiple indications were evident. An example of this was treating cognitive or memory deficits alongside anxiety, stress, sleep and depressive states

often associated with the elderly and which impact their daily life.

Table 2 summarises the herbs and the reasons the practitioners related for prescribing them.

3.2.2. Dietary and lifestyle advice

All three practitioners described the importance of recommending increased intake of fruits and vegetables, nuts and seeds rich in antioxidants and polyphenols and essential fatty acids as well as supplementation with antioxidant vitamins C, E, alpha- lipoic acid, vitamin D and omega-3.

Lifestyle advice centred on exercise, physical activity and social interaction.

"as part of the prescription, I always try for people to get daylight. I think there is a big connection between daylight exposure and mental function. And certainly I think a very big connection between that and insomnia, so I'll usually try and give them advice which will include daylight, activity and exercise" (P1)

"When I see a patient, it's not just the herbs, it's the lifestyle measures. Each person is individually screened in sense for what might affect their cognitive impairment – so their lifestyle choices. Whether they exercise, whether they socialise is important, their social interaction, whether they are learning a new activity, doing new things and whether they are able to do them. That's all supposed to help towards improving or maintaining your cognitive functions" (P3)

...Socialising is so important. Many of the problems we see in our elderly patients is isolation... people are becoming more and more isolated – a lot of elderly people are living on their own –having conversations can be quite difficult.....memory loss is not always in a sense just a physiological issue, it is also a psychological, social and emotional issue...the benefit of socialising and social situations is that people can share and get acknowledgment and validation (P1).

3.2.3. Reporting patient outcomes

In the conversation around patient outcomes, P2 related two case histories of patients treated for MCI and type 2 diabetes over a period of five years. In the case of the former, the practitioner described medical, personal and lifestyle changes in the patient, where a medical reassessment leading to a reversal of diagnosis of MCI, re-acquisition of his driving licence, positive lifestyle and affective improvements, a low maintenance dose of a MCI drug and the reduction in number of follow-up visits exemplified significant outcomes for the patient:

"He went back for assessment and they reversed diagnosis of mild cognitive impairment. He's got his driving licence back... He is now on one drug for the mild cognitive impairment, he has to be on that because of his driving licence and they won't allow him to come off it... He's now got over the worst of the MCI symptoms and if he keeps everything going, there is no reason why he shouldn't remain with all his faculties and be able to drive. That was a big thing for him, obviously not being able to drive" (P2)

In the case of the diabetic patient, stabilisation of the disease (as indicated by HBA1c monitoring), blood pressure, as well patient's self-care and compliance with the dietary and lifestyle advice were reported as positive outcomes:

"... diabetes is a progressive illness ...and it is quite clear that, if you monitor people over time, that you'll see a progression.... So, for someone to remain all these years very stable is a success. You're not expecting in herbal medicine for this sort of serious condition, when this lady came with it, to reverse completely. But the fact that you've got someone in front of you who understands what she's doing, you've explained it. You have in a way an educative role to get her to understand what she's doing.

Table 2
Herbal strategy related by practitioners to treat patient conditions.

Herb used	Indications/reasons for prescribing the herb
<i>Achillea millefolium</i> L.	"as a hypotensive, improve circulation to brain"
<i>Allium sativum</i> L.	"improve circulation to brain; prevention of atherosclerotic changes in blood vessels" "prevention of infarcts - improve blood flow and address raised blood lipid levels"
<i>Acorus calamus</i> L.	"nervous restorative; neuroprotective; enhancer effect on mental state"; GABAergic cognitive, memory enhancer"
<i>Artemisia absinthium</i> L.	"as a bitter & carminative herb useful for blood sugar dysregulation; hepatic and neurological effects; nervous restorative"
<i>Bacopa monnieri</i> L.	"antioxidant, neuroprotective; nootropic, to improve cognitive function"
<i>Bupleurum falcatum</i> L. & <i>Rehmannia glutinosa</i> L. complex	"adrenal restorative complex to help with adrenal secretions, raise energy "
<i>Chamaemelum nobile</i> L.	"use chamomile floral water as a simple for dissipation of anxiety, reduce amount of overthinking, help clarify thinking processes and help with sleep "
<i>Cinnamomum zeylanicum/verum</i> L.	"blood glucose modulation"
<i>Cordyceps</i> spp	"adaptogen, adrenal tonic herb"
<i>Crataegus</i> spp	"cardiovascular support; anxiety" "address blood flow and age-related cardiac changes; benefit in physical and mental relaxation effect" "reduce cholesterol"
<i>Curcuma longa</i> L.	"antioxidant, neuroprotective; antioxidant, anti-inflammatory actions"
<i>Galega officinalis</i> L.	"blood glucose modulation"
<i>Ganoderma lucidum</i> L.	adaptogen, adrenal tonic herbs
<i>Ginkgo biloba</i> L.	"vascular support; cerebral insufficiency; protect against amyloid protein; "circulatory health, vascular tonic; prevention of infarcts; "hypoglycaemic action"
<i>Gymnema sylvestris</i> L.	"use as a simple – nervous restorative, treatment of MS symptoms, cognitive problems and memory loss"
<i>Hericium erinaceus</i> L.	"depression; anxiety; focusing attention; nerve support" "use as a simple Schoenenberger St John's Wort juice for disturbed sleep; " use St John's Wort with Rose to right disturbed sleep patterns, a beneficial effect on levels of anxiety, improving mental focus "
<i>Hypericum perforatum</i> L.	"cognitive support, calming anxiety and depression" "cardiovascular support; anxiety"
<i>Melissa officinalis</i> L.	"use as a simple – adaptogen; stress and AD symptoms"
<i>Muir puama</i> L.	"anti-anxiety, anti-stress, adrenal herb; supports cognitive enhancement " "blood glucose modulation"
<i>Ocimum sanctum</i> L.	"mild cognitive impairment – enhance mental activity, poor concentration" "cardiovascular support; anxiety"
<i>Panax ginseng</i> L.	"poor memory; increase mental concentration; antioxidant; anti-inflammatory"
<i>Rosa</i> spp	"mental focus herbs added to hormonal support mix of red clover (<i>Trifolium pratense</i> L.) , chamomile (<i>Matricaria recutita</i> L.) , lovage root (<i>Levisticum officinale</i> Koch)"
<i>Rosmarinus officinalis</i> L.	"memory enhancement; anxiolytic; antioxidant" "depression; anxiety; focusing attention; nerve support"
<i>Salvia officinalis</i> L.	"depression; anxiety; focusing attention; nerve support"
<i>Schisandra sinensis</i> L.	"simple anxiolytic and relaxing nerve to reduce overthinking"
<i>Scutellaria lateriflora</i> L.	"nervous debility associated with anxiety and tension; toning and strengthening the nervous system and exerting a relaxing effect at same time"
<i>Stachys betonica</i> L.	"anxiolytic and vascular herb, especially when hypertension is associated with arteriosclerosis and nervous tension".
<i>Tilia x europaea</i>	"blood glucose modulation"
<i>Trigonella foenum-graecum</i> L.	

Table 2 (continued)

Herb used	Indications/reasons for prescribing the herb
<i>Vinca minor</i> L.	"mild cognitive impairment, poor memory and concentration"
<i>Withania somnifera</i> L.	"adaptogen, adrenal tonic herb"
<i>Zanthoxylum americanum</i> Mill.	"improve peripheral circulation"
<i>Zingiber officinalis</i> L.	"improve peripheral circulation" "for circulatory health"

Obviously, it helps if someone in front of you is well educated and this lady is. Exercise, diet, she's very compliant. She wants to keep well." (P2)

P3 also related a positive outcome for herbal interventions in the case of an elderly patient with vascular dementia but also acknowledged the challenge of working with disease progression:

"For a while, the decline was halted with the herbs. His doctor was quite impressed because he was functioning fairly well. At the time, he was going dancing, learning new steps. For two years, it halted, then he started to deteriorate- I don't know why, he was still taking the herbs. But then he was getting older, he was in his late seventies.... the herbs did help – case studies like that are evidence as well on how herbs can improve. Finally, he was on medications which the doctor gave him as well which helped a little bit. But he was deteriorating. He had a vascular type of dementia. So he may have had a few mini strokes." (P3)

P1 described a more generic approach to observing outcomes:

"It's very difficult to make an assessment because you don't know at what rates someone would have degenerated without your input. So you really have to go along with what people are feeling. What I look out for is – are we noticing much degeneration with this patient? Are we seeing increasing forgetfulness or anxiety around it? If not, then one has to assume that we are doing something along the right lines". (P1)

In terms of safety, practitioners identified the importance of monitoring drug-herb (e.g. use of St. John's Wort and CNS drugs), drug-drug interactions (in patients taking multiple medicines); and restricted-Schedule 20 herbs (e.g. impact of long term use of *Datura* and *Hyoscyamus* on cognition).

3.3. Issues identified with the target patient group

There were two main issues related by the practitioners: compliance and working with polypharmacy of prescription drugs. In particular, reference was made to (a) entrenched dietary and lifestyle habits and customs of elderly patients; (b) supporting patients to review their drugs with their general practitioners to retain beneficial and necessary medicines, help reduce dosages where herbs could be indicated safely, and remove redundant drugs (e.g. proton pump inhibitors indicated during a hospital stay); monitoring prescription drugs for adverse side effects including on brain function; and (c) managing patient expectations of equating potency of herbs to prescription drugs and optimising the quantity and potency of herbs to achieve the pharmacological effects required.

Among the tactics described to improve compliance were accepting some aspect of their patient's habits; using finite number of herbs in a prescription for optimal benefit or using different types of formulations to encourage regular intake.

"with elderly patients, you may find there is a certain reliance on drinking coffee to keep them alert....even if I think there may be some contraindications for coffee, I don't intend to take patients off coffee. I try to limit the intake, and get them to take it in an appropriate way so they are using it almost medicinally, rather than habitually. ... you do have to be aware that they are often using various things, such as coffee, as self-medication Even though we might not think for other reasons what they should be doing, we've got to respect what they find helpful" (P1)

“Compliance is a big issue when working with patients about their brain health. ...If you can get them into a routine, you’ve got a good chance of getting somewhere. So, routine is very important. ...Maybe you can usually get the patient to take maybe one herbal formula in tincture form twice a day. But it depends on the person...Tablets are easier. But some of them can’t take tablets. If you are caring for the individual, then I would actually grind the whole lot up and put it into a big smoothie. Pour in any liquid medicine and just give it to the patient as one smoothie and see if you can get them to take it”

3.4. Perspectives on the role of Western Herbal Medicine in brain healthcare strategies

The practitioners shared different perspectives on how Western herbal medicine practice can contribute to the provision of care to their mid-life and elderly patients:

“I think there is a very big role, if we are given the chance. For the mainstream, we have to base it on the herbs that have been trialled. Certainly there are trials that have gone on with herbs and dementia. I think there is enough to merit further research and further trials” (P3)

“... we are looking at integrated medicine even if you are not having the same person prescribing integrated medicine, and you’re having two sets of practitioners working together which is the same. It will be very unlikely that you’d be dealing with patients without medications” (P2).

“Because we give a rounded treatment as well, not just herbs, we can support the patient in different ways. I think it’s the care and support they are also worried about and people do deteriorate. Because we have time to spend with patients, that is quite an important factor to be in the loop of it”. (P3)

“... sometimes, we may well find that they come in to have their blood pressure taken, but actually they are coming to talk to someone... a lot of elderly people are living on their own – actually having conversations can be quite difficult. as well as the medicines we give, we are fulfilling a very important role of continuity and context in their lives... ..the provision of regular contact with someone who’s got to know the patient is very powerful medicine...part of our role as practitioners is that we are actually fulfilling a social role... someone who becomes a reassuring part of their social network (P1)

P2 described the opportunity for creating ‘bridges’ to WHM within the wider ecosystem.

“...with the medical profession, you’re not going to change every doctor’s mind, but you can start to get quite a body of doctors who are positive about herbal medicine, and are interested in herbal medicine. You might get one or two actually studying herbal medicine, you might get one or two like that, like the doctor I had referred to me. gradually, what’s going to bridge the gap in my view is evidence of efficacy of herbals” (P2)

Turmeric could act as a bridge in raising the awareness of herbal medicine by the public and mainstream professions ...It’s known by the public, it’s a food eaten as a spice. Things like that are going to make an inroad in public/ mainstream recognition gradually (P2).

With THRs. Traditional Herbal Registrations - you are getting the herbs you think you’ve got... the doses are more realistic, which means they’ll be effective. That is really, really helpful because once people start to find it useful, there could be other, more complex circumstances, where they might be inclined to go and get some professional herbal advice. (P2)

4. Discussion

The survey provided an insight into the prescribing practices and experiences of the WHM practitioners in supporting brain health of their

patients; as well as an opportunity to explore the emerging themes within the wider context of the public health strategies proposed for the prevention of dementia in an aging population.

4.1. Prescribing practices and experiences

The narratives showed that the practitioners’ knowledge of the research topic was substantive, displaying an understanding of both the disease state and the patient.

The practitioners described therapeutic strategies which addressed their patients’ primary concerns about brain health but also incorporated control of co-morbid medical conditions and advice on diet and lifestyle into the goals of therapy.

The clinical evaluations were consistent with empirical findings which report links between coexisting medical conditions such as chronic inflammation, hypertension, atherosclerosis, adiposity, diabetes and AD and vascular dementia (e.g. Hejl et al., 2002; Kumar et al., 2015; Rosendorff et al., 2007; Vagelatos and Eslick, 2013; Viswanathan et al., 2009; Watson and Craft, 2003); and the link between chronic distress, due to anxiety, depression, feelings of isolation in the elderly, and increased risk of atherosclerosis, neurodegeneration and dementia (e.g. Gorwood et al., 2008; Tilvis et al., 2004; Tsolaki et al., 2009; Wilson et al., 2007).

The medicinal herbs the practitioners cited in their treatments were compatible with the therapeutic applications frequently recommended for neurological, cardiovascular and metabolic conditions in published *Materia medica* (e.g. Bone and Mills, 2013; Bradley, 2006; Braun and Cohen, 2015; Hoffmann, 2003; British Pharmacopoeia, 2008). An in-depth review of all the herbs the practitioners prescribed is not within the scope of this article, but a few examples can be used to illustrate their choice. For instance, some clinical evidence suggests potential efficacy of *Salvia* spp., *Melissa officinalis* L. and *Rosmarinus officinalis* L. in memory and cognitive dysfunction (e.g. Akhondzadeh et al., 2003a, 2003b; Shinjyo and Green, 2017).

The potential benefit and efficacy of long-term use of *Gingko biloba* L. in improving cerebrovascular insufficiency, poor memory, mild cognitive impairment, other symptoms of dementia and neuropsychiatric dysfunction has also been reported (e.g. Brondino et al., 2013; Napyeyenko et al., 2009; Weinmann et al., 2010).

Occimum sanctum L. is reported to benefit memory loss and cognitive function as well as metabolic stress (Cohen, 2014). Similarly, *Hericium erinaceus* (Lion’s Mane) has been reported to show beneficial effects in patients with mild dementia (Mori et al., 2009).

Curcuma longa L. has been shown to have a preventive role in lowering oxidative damage and plaque build-up in the brain (e.g. Goozee et al., 2016; Mishra and Palanivelu, 2008; Ringman et al., 2005).

In recent years, there has been research interest in medicinal plants and their constituents with anti-oxidant, anti-inflammatory and other neuroprotective and cognitive enhancing pharmacological properties that may be relevant in ameliorating cognitive impairment and age-related neurological diseases (Howes and Houghton, 2003; Sun et al., 2008).

The practitioners’ individuality in the choice of herbs (‘mainstream’, common herbs as well as less known botanicals, or ‘left field’ herbs); in dispensing (making own pills and formulations alongside brought-in preparations) and in philosophies (energetics, vitalism, reference to Traditional Knowledge, Evidence Based Medicine) exemplified the structural determinants of WHM practice observed in the UK (Waddell et al., 2013).

The dietary recommendations the practitioners described, emphasising the quality and composition of diet in healthy brain aging, is corroborated by epidemiological, dietary intervention and supplementation studies which report the beneficial use of nuts (Gorji et al., 2018); polyphenols in fruit and vegetables (Caraccio et al., 2014), omega 3 fatty acids, vitamin D, B vitamins and antioxidant vitamins (D’Cunha et al., 2018; Middleton and Yaffe, 2009; Thomas et al., 2015).

Similarly, recommendations for social and physical lifestyle modifications have support from studies reporting how nutritional and lifestyle changes together with systematic cognitive and vascular health monitoring can deliver protective effects against dementia in at-risk older populations (Fratiglioni et al., 2004; Kuiper et al., 2015; Ngandu et al., 2015).

The narratives provided insights into the practitioners' recognition of the challenges they faced with the patient group as well as the efficacy and outcomes of their therapeutic strategies. They identified patient compliance, working with multiple morbidities and multiple prescription drugs, and the pathological stage at which their intervention is regarded as challenges. Their solutions tended to be pragmatic. In the case of compliance, they favoured alternative solutions rather than radical disruption when faced with entrenched habits and customs of their elderly patients, for instance, administering preparations through smoothies, tablets or pills. Similarly, when faced with multiple medicines and multiple comorbidities, they tended to favour working with the patient to manage the complexity, so it best suited their current state and to provide an information role in reviewing and managing the polypharmacy of drugs.

In terms of patient outcomes and efficacy of their interventions, the practitioners related case vignettes on patient treatment, relationship and outcomes, providing insights into their 'storied relationship' approach (Nissen, 2010) and the use of reflective practice in therapeutic relationship (Conway, 2010). There was confidence in their own professional and WHM competency to develop a collaborative patient-practitioner relationship to support the patient's understanding of health, self-care and the herbal therapeutic process.

On the other hand, there was also recognition of some limitations when presented with pathological entrenchment of a patient's condition (as in the case of potential long term oxidative stress in the brain of the MCI patient whose lifetime intake of fruits and vegetables was negligible; or in the case of the elderly patient with vascular dementia who responded to herbal therapy for two years but then declined even with biomedical intervention).

4.2. WHM professional practice and multi-domain prevention strategies

Current priorities in the UK national dementia strategy are focused on prevention, aimed at promoting brain health across the life course, reducing risk factors and managing age-related medical conditions linked to AD and other dementias (Department of Health and Social Care, 2009; Public Health England, 2014). Recommendations include the development of person-centred primary care (NICE, 2006) and integrated models of health and social care to meet the demand for early diagnosis, treatment and care of people with dementia (Winblad et al., 2016).

The practitioners' views provided an opportunity to explore their professional experience and therapeutic approach within this wider public health context of prevention and care strategies.

All three practitioners were experienced in working with patients presenting with symptoms of cognitive impairment, metabolic and cardiovascular and neurological disorders. They recognised the importance of the multi-domain preventative approach, demonstrating a pragmatic understanding of the fact that working in the area of cognitive and neurodegenerative impairment needs to resonate with the broader public health strategies.

The case vignettes related showed how the practitioners used both herbal and orthodox medicine in the best interest of the patients. They recognised that as patients are unlikely to come without prescription medicines or complicated diseases which need conventional medicine interventions, they have to work with their patients' GPs and other healthcare professionals.

The value of such an integrated approach lies in the ability of both WHM and orthodox medical modalities to blend the best evidence-based practices to provide effective support to chronically ill and aging

population (Aggarwal et al., 2017). The practitioners' value to the process would be therapeutic knowledge which is derived from real-life clinical application of medicinal herbs and unique practice-based knowledge of patient outcomes to individualised prescriptions.

The insights provided by the practitioners' narratives into their patient-practitioner therapeutic interaction resonated with the growing interest in the use of narrative evidence and interpretive paradigms in clinical practice. Greenhalgh and Hurwitz (1998) suggest that the clinical process is an interpretive act which draws on the clinician's own accumulated 'case expertise', and the skill to integrate the narratives told by the patient, the clinician and diagnostic findings to inform the most appropriate therapeutic options. Reeve (2010) advocates a similar interpretive role in the delivery of generalist, holistic and person-centred primary care, emphasising that shared exploration and interpretation of individual's illness experience as a social interaction needs to go beyond the technical process of diagnosis, identification and selection of an evidence-based intervention to support the patient's self-capacity in continuing their daily lives (Reeve, 2010).

The respondents described an understanding of their patients' social and emotional contexts, particularly the impact of social isolation and the patients' perceived experience of the quality of their communication and relationships with primary healthcare. The references to performing a "social role" and becoming "reassuring part of their social network", being part of the "structure of their lives. an anchor within their lives" resonate with the patient-centred attributes of WHM. A study exploring the motives for the use of medical herbalism suggests that patients value social communication as an enabler in building rapport and confidence in the patient-practitioner relationship (Little, 2009).

The movement towards patient choice (Wye et al., 2009), the increasing use of herbal and complementary medicine including people with cognitive and memory concerns (Landin et al., 2008) and the developments in primary health and social care create potential opportunities for experienced WHM practitioners to play a role in integrated models of care.

The view expressed by one of the respondents about the role of turmeric as a 'bridge' and the sale of THR-approved OTC products is a pragmatic recognition of co-existence: in this case, both with the current UK Government policies to promote patient choice and self-care management by people of their own health and with the increasing retail availability and use of OTC products (Cramer et al., 2010). It resonates with the motivation expressed by people for using WHM in an integrated healthcare system, provided it does not interfere with the distinctive holism and pluralistic attributes of WHM they value (Evans, 1993; Little, 2009, 2011).

4.3. Limitations of study

Even though purposive sampling was used to identify experienced practitioners and the interview guide was structured to facilitate asking the participants the same questions, there is a limitation of data saturation in an exploratory qualitative study and hence generalisation of data gathered from a small sample size.

It is also recognised that the subjective nature of interpretivism is open to bias on behalf of the researcher's personal viewpoint and values in how the findings are inferred (Mason, 2002; Patten, 2002).

5. Conclusions

This small, exploratory study is the first of its kind attempting to capture the experience of WMH practitioners working with brain health in mid-life and elderly patients.

The ontological research philosophy was predicated on the premise that participants were a credible homogenous group in terms of their herbal medicine and patient-practitioner knowledge and experience of working with such patients; and generate valid data on their particular experiences and belief system (Andrews, 2012; Green and Thorogood,

2014). The narrative-interpretive qualitative approach was also viewed as being better suited to illuminating the practice of human actors in a generalist practice setting (Reeve, 2010).

Despite the small sample size, the practitioners' expressed opinions allow the authors to infer and reflect on the role professional WHM practice, by virtue of its therapeutic and philosophical attributes, can play in an area which is envisaged as a major public health priority. WHM professional competency, holism and plurality of practice, as distinguishing hallmarks of WHM (Casey et al., 2008; Nissen, 2010; Nissen and Evans, 2012) can be potential enablers in the fulfilment of such a role.

The value of professional competency of experienced herbal practitioners is important, given that WHM operates in an environment where both its practitioners and its users have come under critical scrutiny (Casey et al., 2008). Growth in the use OTC herbal remedies and threats to patient safety from poor advice, product quality control, poor information (including lack of disclosure of herbal medicine use to the GP and clinicians) has raised the debate on the evidence base for complementary and alternative medicine (CAM) and risks to the public of taking OTC products rather than using conventional medicine (Gee et al., 2002; Izzo and Ernst, 2009; Posadzki et al., 2013). The professional competency of professionally trained WHM practitioners mitigates such risks. This is supported by the ongoing discourse on the professionalization of herbal medicine as a profession (Clarke et al., 2004; Evans, 2008; O'Sullivan, 2005) including its positioning within the mainstream healthcare.

Although a case is being made for integration of CAM (Broom and Tovey, 2007, Wye, 2015) into primary healthcare, current regulatory, structural and ideological complexities – many still unresolved – limit the nature of integration of herbal medicine into mainstream conventional medicine structures. This has implications for realisation of the multi-domain paradigm implicit in the vision for preventing dementia in at risk populations.

There are some developments globally which could impact on the perception and role of professional herbal medicine in the wider healthcare ecosystem. The search for new therapeutic agents has led to research into secondary metabolite constituents such as phenols, alkaloids and terpenoids, plant extracts and the synthesis of derivatives as potential pharmaceutical leads in the prevention and treatment of AD and neurodegenerative diseases (Howes and Perry, 2011; Williams et al., 2011). At the same time, the WHO has recognised the use of traditional and complementary medicine (T&CM) in disease prevention, health promotion and health maintenance worldwide; it has developed a strategy to guide integration of conventional and T&CM health sectors, encompassing national policies, law and regulation, standardisation, quality, safety and effectiveness of T&CM as well as the education, accreditation and regulation of practices and practitioners for professional consistency and safety (WHO 2013).

In conclusion, although its findings cannot be generalised, the data yielded fulfils the study aims of understanding current WHM therapeutic practice in supporting brain health in the assay group.

Further investigation is warranted into the role that WHM, with its unique attributes of individualisation and plurality, can play alongside conventional medicine to provide more joined-up brain health care for an aging population. This would benefit from viewpoints of both WHM practitioners and at-risk patients. For instance, surveys or mixed-method research formats could be set up to collect views of other practitioners on their experiences of (a) working with mid-life and elderly patients on brain health; and (b) working within an IM model; as well as gather some baseline data, exploring the motives and experience of mid-life and elderly people seeking WHM support or treatment for brain health issues.

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Conflict of interest

None.

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