



Research paper

Attitudes and factors involved in decision-making around complementary and alternative medicines (CAMs) by older Australians: A qualitative study

Gisselle Gallego^a, Saira Gugnani^b, Mike Armour^c, Caroline A. Smith^c, Esther Chang^d^a School of Medicine, The University of Notre Dame, Sydney, Australia^b School of Medicine, Western Sydney University, Penrith, NSW, Australia^c NICM, Health Research Institute, Western Sydney University, Penrith, NSW, Australia^d School of Nursing and Midwifery, Western Sydney University, Penrith, NSW, Australia

ARTICLE INFO

Keywords:

Decision-making
Older adults
Qualitative research
Complementary medicine
Attitudes
Empowerment
Health literacy

ABSTRACT

Introduction: Recent evidence has indicated that older Australians are increasingly turning to complementary and alternative medicines (CAMs) to address a variety of health issues. This qualitative study aimed to explore the attitudes and factors involved in decision-making around CAMs by older Australians upon the completion of a CAM educational intervention.

Methods: Men and women aged over 65 years living in New South Wales, Australia were invited to participate in semi-structured interviews after taking part in a randomised control trial. Interviews were analysed using the framework approach.

Results: A total of 20 participants aged over 65 years were interviewed. Themes captured the participants heightened awareness on their decision-making processes when choosing CAM, their increased sense of ability to make empowered and informed decisions regarding CAM, and pre-existing knowledge, or lack of, that impacted their ability to make decisions.

Conclusions: The nature of health-related decision-making for older Australians around CAM is multifaceted and involves a consideration of their personal beliefs and experiences, social networks, education levels, healthcare professionals amongst other factors.

1. Introduction

Recent evidence has indicated that older adults are increasingly turning to complementary and alternative medicine (CAM) to address a variety of health issues [1,2]. CAM encompasses a wide variety of treatments, ranging from herbal supplements, common products purchased in pharmacies such as herbal medicine and homeopathy to clinical practices such as massage therapy, naturopathy and acupuncture not associated with conventional medicine [3]. In the United States (US) an analysis of the Wave of the Health and Retirement Study found that 88% of the respondents 65 years of age and over used CAM [4]. Results from AARP/The National Center for Complementary and Alternative Medicine found that 47% of adults aged 50 reported using CAM in the previous 12 months [5]. Arcury et al. [6], also found increase use of herbs and supplements amongst older adults in the US. In Germany, a survey of adults 70 years and older found that 61% used CAM [7]. The majority of Australians (two-thirds) have either used a common CAM modality in the past year or visited a CAM provider (i.e. acupuncturist, herbalist, osteopath, and chiropractor) in that timeframe

[8]. There is growing evidence that older Australian's are high users of CAM. Fifty eight percent of people aged over 65 years have used one of 17 common CAM modalities in the previous 12 months, and 65% of these had visited a CAM provider [9]. A longitudinal study of older Australian women found that 55% reported CAM use [10]. However it is unclear how varying levels of health literacy may influence the ability of older Australians to make informed decisions as they consume or reject CAM [11].

It has been suggested that the decision to use CAM by older Australians has been prompted by both declining physical health and a lack of access to conventional health care providers [1,11]. However, personal beliefs, interactions with social networks and varying levels of health literacy may also play a role in the use of CAMs, not only in older adults, but for people in general, [12]. Health literacy implies having a range of skills and knowledge about health and health care, including but not limited to finding health information [13]. Despite the increase use of CAMs, there is a known discrepancy between levels of health literacy amongst various older Australians, particularly in the domains of healthcare system navigation, and accessing and appraising health

E-mail address: gisselle.gallego@nd.edu.au (G. Gallego).

<https://doi.org/10.1016/j.eujim.2019.100930>

Received 4 February 2019; Received in revised form 12 June 2019; Accepted 12 June 2019

1876-3820/ © 2019 Elsevier GmbH. All rights reserved.

information [11]. Current research suggests the importance of health literacy in contributing to an individual's ability to make informed choices about their health [14], however it is unclear how health literacy is involved in the CAM decision-making process. The qualitative study reported in this article was a sub study within a randomised controlled trial (RCT) that aimed to test the effectiveness of an educational intervention to improve CAM health literacy and decision-making in supporting self-care among older Australians. This study explored the attitudes and factors involved in decision-making around CAMs by older Australians upon the completion of the trial.

2. Methods

2.1. The trial

This study was conducted after the completion of an RCT of a CAM education intervention delivered online using a website or DVD plus booklet versus a control group (booklet only) to examine the effect on decision-making efficacy, health literacy, perception of risk, and health-seeking behaviour following completion of the intervention. The RCT outcomes were decision-making self-efficacy (including confidence and being prepared for decision-making), health literacy and health seeking behaviour. Details of the design of the trial including the outcome measurement have been reported elsewhere [15]. The education intervention comprised five modules providing participants information about: evidence around CAM, finding and evaluating CAM evidence, working with CAM practitioners, monitoring CAM decision and decision-making and CAM. This module introduced the SCOPED framework (Situation, Choices, Objectives, People, Evaluations, and Decisions – See Box 1) as a decision aid to allow people to learn to reflect critically on health-related decisions. While the trial provided quantitative outcomes to measure the effectiveness of the educational intervention it did not explore participants' attitudes towards CAM and the decision-making process to use CAMs after the completion of the trial.

2.2. Participants and recruitment

Men and women aged over 65 years, living in the Greater Western Sydney region and the Southern Highlands, New South Wales and who completed the RCT were invited to take part in the qualitative study by the research coordinator. The RCT recruited participants predominantly from retirement villages, this setting is made up of housing for people aged over 55 years who are able to live independently. Many villages offer some healthcare services, leisure facilities, and social clubs. The village may also provide smaller, manageable housing, supportive of the changing needs of older people. Participants were also recruited from various community groups. Stratified purposive sampling [16] was used in order to represent a continuum of experiences (age, gender, initial health literacy scores, intervention (website or DVD) or control group (booklet)).

2.3. Data collection

In-depth face-to-face and telephone semi-structured interviews were conducted with participants by a PhD candidate with experience in

qualitative research. The interviews took place in people's homes, public spaces (e.g. local library meeting room) or over the phone based on participants' preferences. A set of prompt questions was used to guide participants. Three main areas were explored: their experiences with the education modules, their views on CAM and their decision-making process and the barriers and enablers to the implementation of the CAM education intervention. Participants received a gift card to acknowledge their time and contribution to the study. Thematic saturation was reached when additional interviews ceased to provide new information [17]. As such, recruitment ended after 20 interviews. All interviews were digitally recorded (with interviewee consent) and transcribed verbatim. Each participant was allocated a pseudonym and all data was de-identified (names, places were removed).

2.4. Data analysis

Data were synthesised and analysed using the framework approach [18]. This approach was used because we had a prior issue to explore in relation to the RCT—attitudes and participants' health-seeking behaviours—as well as wanting to understand the barriers and enablers to the implementation of the health education intervention. As described by Smeaton et al. [19], one of the advantages of this approach is that it enables systematic comparison of differences across respondents.

Data were summarised within a matrix having themes as columns and participants as rows. This allowed data to be examined across participants and themes and to identify relationships and patterns within the data. The analysis involved several stages: stage one required familiarisation, and two members (SG, GG) of the research team read the transcripts. In stage two, these researchers independently read the interview transcripts and based on the interview guide, an initial coding framework (matrix) was developed. In stage three, a researcher (SG) coded all transcripts to this coding framework using Microsoft Excel version 2013. In stage four, data related to each theme was extracted and written up by SG for discussion within the wider team. In the final stage, the research team considered the relationships between the themes, content, connections and interpretation.

2.5. Ethical considerations

Ethics approval was granted by the [removed for peer-review process] Human Ethics Committee (H11361) and the [removed for peer-review process] Human Research ethics committee (014145S). Participation was voluntary and all participants provided written informed consent.

3. Results

A total of twenty participants were interviewed upon the completion of the educational intervention (131 individuals took part on the trial). All the individuals that were invited to participate in the follow-up interviews agreed to take part. The average interview duration was 25 min, with interviews ranging from 15 to 53 min in length. The age of the participants ranged from 65 to 90 years, with the average age of 75 years. The majority of participants lived in retirement villages 70% (n = 14), and other participants also identified as living independently.

Box 1

Scoped Framework for decision making [13].

Situation: clarifying the facts about my conditions
 Choices: clarifying my options
 Objectives: clarifying what my goals are
 People: who can support me in this decision, and what are their roles and responsibilities?
 Evaluation: how do my choices affect my objectives?
 Decisions: what is my best option? How do I move forward with this?

Table 1
Participant's demographic characteristics (N = 20).

Characteristic	Number
Sex	7
Female	
Age, years (average)	75 Years
Living arrangement	
Retirement villages	14
Highest level of education	
Did not complete high school	1
Completed high school	9
TAFE/trade	5
Undergraduate studies at university	3
Post graduate/higher qualifications at university	2

The highest levels of formal education of the participants varied from not completing high school, to post-graduate/higher qualifications at university (See Table 1). The educational intervention assigned to the participants prior to the interview were either a booklet or a DVD (seven participants), a booklet and a website (eight participants), or just the booklet (five participants).

Three broad categories of themes were identified. These themes are not mutually exclusive, and there are a number of links between themes and their subthemes (See Table 2).

3.1. Theme 1. The decision-making process

A number of participants discussed an increase in awareness of their CAM decision-making processes as they appraised and evaluated the SCOPED framework. By articulating their personal process of making health-related decisions, participants delved into the way in which their method had been affected or unaffected by the educational intervention. This is exemplified by John who explained: "I learnt a lot about myself primarily as I went through the modules and I was able to focus on how I solve my own particular issues".

A number of participants stressed the importance of informed decisions about personal health. Some examples of this include "in reaching an informed decision about anything, you need to consider all the angles and I think it [the educational intervention] was open-ended that way" (John), and "it really has changed my thought process about... researching a little bit more and getting more options" (Kate). A few participants rejected the idea of a framework for decision-making, instead considering it to be 'common sense' (Betty) or similar. It is important to note that these participants did not improve their decision-making self-efficacy scores following the education intervention.

3.1.1. The role of healthcare professionals

In the interviews, participants often identified the factors that were involved in their decision-making process. As well as the various people and resources that played a role this process. The most commonly identified sources appeared to be doctors, particularly general practitioners (GPs), the internet, other healthcare providers such as pharmacists and physiotherapists, and family and friends.

A number of participants stressed the importance of involving

Table 2
Themes and subthemes.

Theme	Subtheme
The decision-making process	The role of healthcare professionals Changing of CAM perceptions
Empowerment	Autonomy Health as a priority
The relationship between knowledge and decision making	The role and perceptions of pre-existing knowledge Barriers to further knowledge

healthcare professionals in their decision-making process, and a significant proportion of these participants further mentioned how this belief has been reaffirmed by their experience of completing the educational intervention. Almost all participants identified their GP as the key healthcare professional consulted. Some of the other healthcare professionals often identified by participants were specialists (often referred by GPs), pharmacists and physiotherapists.

For the majority of participants, their GP was their first-point of contact in obtaining advice and making decisions. The participants that identified risk as a potential barrier to CAM use also identified consulting with their GP as a way to minimise adverse effects. For Adam visiting his GP was considered the "orthodox medical approach". Lucy commented: "The first decision about my health would be I would go straight to my GP". This idea has been reiterated by other participants, such as Michelle: "my doctor would always be my first point of call"; Lyn mentioned "I would probably ask the doctor about it first to see their thoughts on it" and Kate "I run everything past my GP".

An interesting perspective raised by Carlos was the way in which a GP, from a different cultural background, suggested the use of CAM. His anecdote of being suggested turmeric by his GP for gout illustrated this:

"I've got three GPs I go to now... it was through one of them I learnt about turmeric...home remedy type of things that he [GP] comes up with... he's an Indian guy, so maybe it's from their culture there."

Quite a few participants emphasised that they were more likely to approach a doctor or pharmacist about CAM use if the healthcare professional was patient, open-minded and did not instantly dismiss the CAM. This was illustrated by Ava:

"He's a caring sort of doctor... I'm not afraid to ask him things... he's always willing to answer questions."

Lyn mentioned that she was less likely to approach narrow-minded doctors with their "minds in the middle" about CAMs, reaffirming this point further. Carlos emphasised the need to have consultations about CAMs with doctors who practice western medicine in:

"It has to be very consultative between those two areas, the complementary and the traditional."

One barrier to attaining advice from healthcare professionals was the absence of a regular doctor or constantly changing GPs. Hannah mentioned that her doctor is "never there when I need her", demonstrating her inability to seek advice on CAMs. Kate reiterated the way in which the lack of a consistent, understanding doctor can affect CAM advice and decision-making in "I am a bit lucky that I have a GP that I can run things past, but a lot of people that just go to these... medical centres, so don't always see the same person".

3.1.2. Changing of CAM perceptions

Although not all participants had a change in their perception of CAMs as a result of the educational intervention, a number of participants claimed to do so. For example, Ruby stated:

"My views have changed since doing the study, completely changed. I didn't have a lot of views [prior to the study]."

The majority of participants, including those that felt that their views of CAMs had not changed since completing the study, acknowledged that the reflection that the educational intervention allowed for led to overall broadened perceptions of CAMs and an increased awareness of the range of CAMs available. For some participants, this has significantly impacted their prior attitudes towards CAMs by allowing them to be more open-minded about the topic. This has been delineated by Carlos in:

"There's a lot going on here that I wasn't aware of... I've got a much broader way of thinking about stuff now."

Ivana, reaffirmed this point by stating that: "It [the study] opened

your mind up to so many alternatives... certainly opened your eyes to that there is more out there, definitely.”

For some participants, this study allowed them to reflect on the nature of CAMs and what it means to them personally. Carlos raised an interesting point regarding what the term ‘complementary medicine’ entails, suggesting that perceptions of what is complementary may vary across cultures—“complementary for each of these areas is totally different”. One participant (Betty) suggested that CAMs were “a healthy way of lifestyle more than complementary medicine” and that she did not “classify it as medicine”, providing an alternative view towards CAMs and reiterating Carlos’ statement.

Regardless of perceptions of the usefulness of the educational interventions, it appeared that being part of the trial was consistently able to catalyse a process of self-reflection within the participants.

3.2. Theme 2: empowerment

Following the educational intervention, a number of participants reported to have gained a sense of empowerment regarding their ability to make informed health-related decisions. Specific factors that contributed to this included: an increased awareness of CAMs; an appreciation of the breadth of resources available that could assist in decision-making alongside an understanding of how these resources can be accessed; refined perceptions of risks, and a clarified understanding of the role of a primary healthcare provider (usually GP) in access to health information and decision-making.

3.2.1. Autonomy

The majority of participants stressed the importance of personal autonomy as a means to gain empowerment and self-efficacy to make health-related decisions. Some participants acknowledged that even if other people were involved in the decision-making process, the ultimate decision was that of the individual. This was elucidated by Ruby: “It’s got to be you to make that decision. It’s your body”.

This idea of personal autonomy being the means to empowerment in decision-making was reaffirmed by Ivana, who stated that “whatever works for you is the way to go” and reiterated by Sharon in “it’s very much an individual decision based on individual need”, which also stressed the unique nature of each case and the importance of autonomy in ensuring optimal health outcomes.

Some participants delved into the importance of having knowledge about their own conditions and medications as a means of autonomy, in order to avoid dependency and be informed when making decisions. For example, Olivia stressed the way in which a lot of older people tend to follow medical professionals but are not personally aware of their health issues: “it’s amazing, the lack of medical knowledge that people... have”. Sharon indirectly emphasised this by focusing on the idea of older people visiting their doctors with a “support person” as a means to compensate for potentially declining autonomy with age.

One participant, Deidre, preferred a paternalistic approach from her doctor and preferred to reject the idea of patient autonomy: “I want to know something, I go and talk to my doctor... more or less, I do what I’m told”. This may be largely due to the previous idea that a doctor was a paternalistic figure who did not provide options, but largely told the patient what to do. Although this is no longer true in the majority of cases, Deidre offered an alternative perspective.

Hannah discussed how the lack of knowledge about the constituents of many CAMs available online posed a risk:

“You never actually know what’s in them because there’s not a great deal of control over how they’re made”.

This was an interesting perception of risk, perhaps either a pre-existing idea or formed as a result of the educational intervention.

3.2.2. Health as a priority

A number of participants mentioned the way in which health is

often a priority for older people, and this is significant in the context of the study because it can influence health-seeking behaviours, such as the decision to consider or use CAMs. It is speculated that health prioritisation with age might be due to: age-related health decline, a consequent increase in the number of medications and healthcare visits, a reduction in support services or networks or a decreased ability to access health information independently (e.g. on the internet). As such, older Australians might be more likely to discuss CAMs with their social networks, consult different treatments with healthcare professionals, or engage in personal research to find health-related information. The focus on health by older Australians was summarised by Adam in:

“It’s amazing when you get to this age that how much of your normal conversations among people of our age relate to our health, our medication.”

Sharon reaffirmed this in:

“Most women post 60 focus largely on their health... I don’t think there’s ever a problem at getting them started about their health.”

Sharon and Ivana also mentioned that they felt that older women were more likely to be proactive about their health compared to older men, by stating respectively “men are far more reticent to talk about health issues or to investigate health concerns than women” and “I think women are more conscious of keeping up with their health than men”.

3.3. Theme 3: the relationship between knowledge and decision-making

The relationship between knowledge and empowerment, autonomy and self-efficacy was evident within the interviews. The theme of knowledge being a means to proactive, informed decision-making regarding health was a recurring theme across all participant interviews. Some participants acknowledged that their prior knowledge (e.g. tertiary education, personal research etc.) allowed them to be more “health literate”, whilst others discussed the ways in which a lack of knowledge (e.g. computer illiteracy) acted as a barrier to informed decision-making. It was noted that perceptions of knowledge, literacy and health literacy varied between individuals. Interestingly, the desire to obtain more knowledge or to restrict to pre-existing knowledge varied considerably among individuals.

3.3.1. The role and perceptions of pre-existing knowledge

Through the interviews, it was evident that there were different levels of pre-existing knowledge across participants and participants had different perceptions regarding the extent of their personal pre-existing knowledge. Some of the time, the pre-existing knowledge acted as a facilitator for self-reflection and further learning (e.g. computer literacy allowing for a greater access to resources); however, at other times, perceptions of pre-existing knowledge may have prevented participant involvement in gaining further knowledge for personal use, instead creating a sense of “others may benefit” or detachment from the study.

For some participants, it was noted that computer literacy contributed to their ability to interact with the website, and have an overall willingness to use the internet as a means to attain health-related information. An example is Carlos, who stated “I’m quite computer literate” and discussed the way in which this was advantageous for him in regards to researching information online and browsing websites. Similarly, John commented that:

“The lay person with access to resources... are more informed... than GPs who have not moved to the frontiers in their own thinking.”

Here, he discussed the way in which having the knowledge to access resources can allow an individual to seek out further knowledge (for example, regarding their condition or potential treatments).

For some participants, possession of a vast amount pre-existing knowledge meant that the content of the booklet was potentially irrelevant, because they were already aware of the information. Despite this, engagement with the material allowed such participants an opportunity to self-reflect and revise their personal decision-making process. For example, Olivia stated:

“That’s pretty much what I do anyway... I didn’t learn a huge amount from this booklet... I didn’t find it very useful for me because I’m used to making my own decisions about life and know who to ask questions or I look at peer-reviewed articles.”

Olivia explained that her lack of learning from the booklet was not necessarily due to the content of the booklet itself, but rather due to her pre-existing knowledge which rendered the booklet unnecessary for her. John made a similar comment in “it’s a good framework but it’s not so far removed from the one I learnt from myself”.

It was noted that what constituted pre-existing knowledge varied between individuals, and hence perceptions of pre-existing knowledge may have an impact on the willingness of individuals to personally engage with the material. For example, some individuals felt that tertiary education or employment constituted sufficient pre-existing knowledge to make the booklets largely irrelevant; others mentioned the ability to utilise the knowledge of their support networks (e.g. family members and friends that are health professionals) as a preferable method of attaining information.

For some participants, pre-existing knowledge or notions about health created a sense of ‘good for others’, in which participants did not personally find the material relevant, but were able to appreciate the value of the resources for ‘other’ people. For example, John felt that:

“It might have a limited value to me as an individual because I’m capable because of my own research skills... in my pride, I might consider that I don’t need all of that... but, in general terms, I see great value.”

Despite this, he felt that his siblings and other older Australians could greatly benefit from the resources. While John did not find value in the education materials personally as he could conduct his own research, he commented it could be of valuable to others who could not.

3.3.2. Barriers to further knowledge

A recurring theme was the consideration of the barriers that prevent further knowledge acquisition. One example is the presence of pre-existing knowledge (discussed above). Other factors such as computer illiteracy and an unwillingness of older people to modify methods of decision-making can also act as barriers to information access. A number of participants expressed concern regarding the accessibility of computers and the internet. This was largely due to computer illiteracy. As Ruby explained:

“I’m not too happy with computers or some people wouldn’t have the knowledge of using computers.”

Betty also concurred with:

“Older people are greatly disadvantaged because everything is on the computer these days.”

This idea of computer illiteracy affecting information access was commonly the reason for why the booklets were favoured over the website. Kate summarised her personal experience of using the website in “our generation isn’t that computer literate... navigation was a bit difficult... and you get frustrated”.

Another common barrier to accessing information about CAMs was the idea that a number of older people are ‘inflexible’ or do not want to experience change in relation to information access and health-related decision-making. Many participants expressed concern regarding the limited ways in which information can be made accessible to older Australians in an engaging and relevant manner because of this. Sarah

described the mindsets of older people as “they have their ways set” and this was a common opinion. Lyn elucidated this in her opinion:

“Sometimes people are set in their ways and they don’t want to deviate no matter what... some people don’t go outside their four walls”.

Stella also explained a similar notion:

“When you’re getting older... you’re very reluctant to try anything different because you’ve been using the same thing for years and years and years... we’re really set in our way... very stubborn.”

4. Discussion

This study explored the attitudes and decision-making around CAMs by older Australians upon the completion of a CAM educational intervention. The attitudes towards CAM usage were related to personal perceptions of risks versus benefits; attitudes and experiences of support networks such as family and friends; the role of healthcare and medical professionals; levels of formal or informal education and an ability to make informed health-related decisions.

CAM decision making has been explored for specific diseases such as diabetes [20] arthritis [21] or specific subpopulations such as in cancer patients [22,23] but less commonly in populations that may not have a specific chronic condition [24] or in specific age groups such as young children [25]. Decision making does differ but common themes regarding the reasons to use CAM include: prevent disease, mitigate illness, maximise health and in the cancer context CAM as a last resort, and finding hope [26]. Similarly to our study a review conducted by Elliot et al. [27], described how for older adults engagement in healthcare decision-making is complex. How this occurs varies depending on the characteristics of the person and their situation. Knowledge and skills, their social support network and their healthcare provider influence their desired level of engagement. Health care practitioners, particularly GPs appear to be key in these adult’s CAM decision-making process. Contrary to these findings a study about decision-making in adults buying over the counter CAM for “stress”, Clayton et al. [28], described that pharmacy staff and pharmacists were the final authority on efficacy and safety, even if the same issued had been discussed with their doctor.

A study of older Australians and CAM use in residential care also showed how they wanted to be involved in their healthcare decisions [14]. Older adults can also feel empowered by CAM as it promotes a participatory and more active role in their health [29]. Similarly to our study a systematic review on CAM use in Australia described that one of the drivers of its use is a sense of patient control over their treatment [30] and that it offers the opportunity for patients to actively participate in their treatment decisions [31]. A qualitative analysis of self-care decision-making by Thorne et al. [32], concluded that CAM use can be understood as a critical component of self-care management. In a qualitative study in the United Kingdom, ‘well’ adults’ described how decisions to use CAM often relate to whether it was a “treat”, something to that may improve wellbeing, or a ‘treatment’ for a particular condition [24].

Health literacy and self-determination are important for older adults as it fosters feelings of control and autonomy which are associated with higher levels of well-being, quality of life and life-satisfaction [33]. In our study the majority of participants were able to self-reflect on their decision-making processes, and identified factors such as literacy (including computer literacy), their primary healthcare professional (often GP) and experiences of friends and family as the guiding factors towards their use of CAMs. Computer literacy appears important considering that a high proportion of Australian’s 50 years have access to internet and digital devices [34]. However contrary to our study findings a qualitative study in the UK by Lorenc et al. [35], found that older adults did not disclose CAM use to conventional practitioners.

Perceptions of risk varied but the majority of participants, particularly upon the completion of an educational intervention, were able to appreciate that any potential risks could often be alleviated by seeking information and consulting with primary healthcare providers. An earlier study by Braun identified that many people who experience a suspected adverse reaction to CAM do not inform their health care provider and choose to self-manage their reaction [36].

Our findings are significant in that they suggest that the intervention contributed to both a change in attitudes and behaviour with reducing potential risks. Attitudes towards the usefulness of various CAMs also varied, but in general, a considerable number of participants described an increased awareness of the range of CAMs available and broadened perceptions of benefits following the study. As described by Adams et al. [37], it is important for healthcare practitioners to recognise the increase use of CAMs by older people and investigate the potential use of these.

The data reflected the intricate relationships between knowledge, health prioritisation and autonomy as a means to achieve empowerment in health-related decision-making. As well as the way in which these can directly influence perceptions of risks and benefits and ultimately form attitudes towards CAMs. It is evident from the results that health-related education (in the form of information or frameworks) can assist a number of older Australians in forming and reflecting on their personal views of CAM. The way in which such information can be effectively relayed remains a challenge, with pre-existing levels of knowledge, desire to seek more knowledge and the mediums of knowledge delivery acting as potential barriers and facilitators.

The results of this study can be used to create effective, appropriate and relevant health education resources and interventions for older Australians so that they can make informed decisions about their health such as their decision to use or reject CAMs. This could ultimately affect perceptions and attitudes towards risks of various treatments and the ways in which these risks can be addressed. This study has provided an insight into the diversity of attitudes towards health, and the factors which influence CAM health-related decision-making in older Australians. A consideration of these factors can allow for a greater understanding of what underpins CAM health-seeking behaviours in older Australians and can potentially result in the development of more relevant, targeted health interventions to optimise health outcomes with informed CAM use.

5. Strengths and limitations

This study has delved into some of the attitudes of older Australians as they make decisions regarding CAM use after taking part in a trial that aimed to test the effectiveness of an educational intervention to improve CAM health literacy and decision-making about supporting self-care among older Australians. It has encompassed various domains of the decision-making process, including the role of healthcare professionals and a consideration of the way in which health literacy can affect an individual's ability to make informed decisions about their health. While the aim of qualitative research is not to generalise study findings but to provide an in-depth understanding of the phenomenon, it's important to highlight that these participants were recruited from the main trial. Most participants in the trial were predominantly Caucasian, and lived in retirement villages which does not reflect the broader Australian population. The common living for some participants may also have led to bias in opinion if the study was discussed amongst themselves. Additionally, participants had varying levels of education and computer literacy and this may have affected the way in which they were able to access the educational intervention and hence contribute to the study.

6. Conclusion

The nature of health-related decision-making for older Australians

(such as the choice to consume or reject CAMs) is multifaceted and involves a consideration of their personal beliefs and experiences, social networks, education levels, healthcare professionals amongst other factors. Perceptions of risks and benefits vary but health literacy delivered in an appropriate and relevant manner can influence the way in which health outcomes can be maximised for older Australians.

Financial support

This work was supported by the Illawarra Retirement Trust (IRT). The sponsor was not involved in any part of the study. Saira Gugnani was supported by a Western Sydney University Summer scholarship. Seeding funds for this qualitative study were provided by the School of Medicine, The University of Notre Dame.

Conflict of interests

CS and MA declare as a medical research institute, NICM Health Research Institute receives research grants and donations from foundations, universities, government agencies and industry. Sponsors and donors provide untied and tied funding for work to advance the vision and mission of the Institute. This study was not specifically supported by donor or sponsor funding to NICM. GG and EC authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

All authors have contributed significantly to the research.

Acknowledgements

We would like to acknowledge the invaluable contribution of all the participants who gave their time to the interview process. Bernadette Curryer who conducted all the interviews.

References

- [1] J. Adams, D. Sibbritt, A.F. Young, A longitudinal analysis of older Australian women's consultations with complementary and alternative medicine (CAM) practitioners, 1996–2005, *Age Ageing* 38 (1) (2009) 93–99.
- [2] A.R. Armstrong, S.P. Thiébaud, L.J. Brown, B. Nepal, Australian adults use complementary and alternative medicine in the treatment of chronic illness: a national study, *Aust. N. Z. J. Public Health* 35 (4) (2011) 384–390.
- [3] Institute of Medicine, Complementary and Alternative Medicine in the United States, The National Academies Press, Washington, DC, 2005.
- [4] J. Ness, D.J. Cirillo, D.R. Weir, N.L. Nisly, R.B. Wallace, Use of complementary medicine in older Americans: results from the health and retirement study, *Gerontologist* 45 (4) (2005) 516–524.
- [5] U.S. Department of Health and Human Services, AARP and National Center of Complementary and Alternative Medicine Survey Report, Complementary and Alternative Medicine: What People Aged 50 and Older Discuss with their Health Care Providers, (2011).
- [6] T.A. Arcury, J.G. Grzywacz, R.H. Neiberg, W. Lang, H. Nguyen, K. Altizer, E.P. Stoller, R.A. Bell, S.A. Quandt, Older adults' self-management of daily symptoms: complementary therapies, self-care, and medical care, *J. Aging Health* 24 (4) (2012) 569–597.
- [7] K. Schnabel, S. Binting, C.M. Witt, M. Teut, Use of complementary and alternative medicine by older adults – a cross-sectional survey, *BMC Geriatr.* 14 (2014) 38–38.
- [8] D. von Conrady, A. Bonney, Patterns of complementary and alternative medicine use and health literacy in general practice patients in urban and regional Australia, *Aust. Fam. Phys.* 46 (2017) 316–320.
- [9] A.L. Zhang, C.C.L. Xue, V. Lin, D.F. Story, Complementary and alternative medicine use by older Australians, *Ann. N. Y. Acad. Sci.* 1114 (1) (2007) 204–215.
- [10] J. Sarris, T.-B. Robins Wahlin, D.C. Goncalves, G.J. Byrne, Comparative use of complementary medicine, allied health, and manual therapies by middle-aged and older Australian women, *J. Women Aging* 22 (4) (2010) 273–282.
- [11] C.A. Smith, E. Chang, S. Brownhill, K. Barr, Complementary medicine health literacy among a population of older Australians living in retirement villages: a mixed methods study, *Evid. Based Complement. Altern. Med.* 2016 (2016) 9.
- [12] D. McLaughlin, C.-W. Lui, J. Adams, Complementary and alternative medicine use among older Australian women - a qualitative analysis, *BMC Complement. Altern. Med.* 12 (1) (2012) 1–8.
- [13] D. Nutbeam, Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century, *Health Promot. Int.* 15 (3) (2000) 259–267.
- [14] J.-A. Rayner, M. Bauer, "I wouldn't mind trying it. I'm in pain the whole time": barriers to the use of complementary medicines by older Australians in residential

- aged-care facilities, *J. Appl. Gerontol.* 36 (9) (2017) 1070–1090.
- [15] C.A. Smith, E. Chang, G. Gallego, L.G. Balneaves, An education intervention to improve health literacy and decision making about supporting self-care among older Australians: a study protocol for a randomised controlled trial, *Trials* 18 (1) (2017) 441.
- [16] J.W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 3rd ed., SAGE, Los Angeles; London, 2009.
- [17] M.M. Hennink, B.N. Kaiser, V.C. Marconi, Code saturation versus meaning saturation: how many interviews are enough? *Qual. Health Res.* 27 (4) (2017) 591–608.
- [18] J. Ritchie, L. Spencer, W. O'Connor, Carrying out qualitative analysis, in: J. Ritchie, L. Spencer (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers*, Sage, London, 2003, pp. 219–262.
- [19] D. Smeaton, H. Barnes, S. Vegeris, Does retirement offer a “Window of opportunity” for lifestyle change? Views from english workers on the cusp of retirement, *J. Aging Health* 29 (1) (2017) 25–44.
- [20] H.-Y.A. Chang, M. Wallis, E. Tiralongo, H.L. Wang, Decision-making related to complementary and alternative medicine use by people with Type 2 diabetes: a qualitative study, *J. Clin. Nurs.* 21 (21-22) (2012) 3205–3215.
- [21] B. Sleath, L.F. Callahan, R.F. Devellis, A. Beard, Arthritis patients' perceptions of rheumatologists' participatory decision-making style and communication about complementary and alternative medicine, *Arthritis Care Res.* 59 (3) (2008) 416–421.
- [22] L.G. Balneaves, L. Weeks, D. Seely, Patient decision-making about complementary and alternative medicine in cancer management: context and process, *Curr. Oncol.* 15 (Suppl. 2) (2008) s94–s100.
- [23] L. Weeks, L.G. Balneaves, C. Paterson, M. Verhoef, Decision-making about complementary and alternative medicine by cancer patients: integrative literature review, *Open Med.* 8 (2) (2014) e54–e66.
- [24] F.L. Bishop, L. Yardley, G.T. Lewith, Treat or treatment: a qualitative study analyzing patients' use of complementary and alternative medicine, *Am. J. Public Health* 98 (9) (2008) 1700–1705.
- [25] A. Lorenc, Y. Ilan-Clarke, N. Robinson, M. Blair, How parents choose to use CAM: a systematic review of theoretical models, *BMC Complement. Altern. Med.* 9 (1) (2009) 9.
- [26] M.J. Verhoef, L.G. Balneaves, H.S. Boon, A. Vroegindewey, Reasons for and characteristics associated with complementary and alternative medicine use among adult Cancer patients: a systematic review, *Integr. Cancer Ther.* 4 (4) (2005) 274–286.
- [27] J. Elliott, H. McNeil, J. Ashbourne, K. Huson, V. Boscart, P. Stolee, Engaging older adults in health care decision-making: a realist synthesis, *Patient Patient Centered Outcomes Res.* 9 (5) (2016) 383–393.
- [28] K. Clayton, Y. Luxford, I. Stupans, Decision-making factors of pharmacy customers purchasing over-the-counter complementary and alternative medicine for stress, *Adv. Integr. Med.* 4 (3) (2018) 103–108.
- [29] T. Cartwright, 'Getting on with life': the experiences of older people using complementary health care, *Soc. Sci. Med.* 64 (8) (2007) 1692–1703.
- [30] R. Reid, A. Steel, J. Wardle, A. Trubody, J. Adams, Complementary medicine use by the Australian population: a critical mixed studies systematic review of utilisation, perceptions and factors associated with use, *BMC Complement. Altern. Med.* 16 (2016) 176.
- [31] F.L. Bishop, L. Yardley, G.T. Lewith, A systematic review of beliefs involved in the use of complementary and alternative medicine, *J. Health Psychol.* 12 (6) (2007) 851–867.
- [32] S. Thorne, B. Paterson, C. Russell, A. Schultz, Complementary/alternative medicine in chronic illness as informed self-care decision making, *Int. J. Nurs. Stud.* 39 (7) (2002) 671–683.
- [33] A.-K. Mayer, J. Friebe, Health-related control beliefs and health information behaviors of older adults, 2nd International Symposium Healthy Ageing (2017).
- [34] Office of the eSafety Commissioner (Australia), *Understanding the Digital Behaviours of Older Australians*, Commonwealth of Australia, Canberra, 2018.
- [35] A. Lorenc, A. Clow, D. Forte, N. Robinson, “It keeps me going” – older people's perception of well-being and use of complementary and alternative medicine (CAM), *Qual. Ageing Older Adults* 13 (2) (2012) 135–144.
- [36] L.A. Braun, E. Tiralongo, J.M. Wilkinson, S. Poole, O. Spitzer, M. Bailey, M. Dooley, Adverse reactions to complementary medicines: the Australian pharmacy experience, *Int. J. Pharm. Pract.* 18 (4) (2010) 242–244.
- [37] J. Adams, C.-W. Lui, D. McLaughlin, The use of complementary and alternative medicine in later life, *Rev. Clin. Gerontol.* 19 (4) (2009) 227–236.