

Emotional Well-Being for People with Cancer

A narrative review of charity sector resources and peer-reviewed articles for effects of complementary interventions

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Purpose

The purpose of this document is to provide a summary of the research undertaken during the project, 'Evidence based approaches to emotional well-being'. The contents of this document include potential actions/recommendations highlighted by the research phase of the project, which The Landuu Company may wish to comment on. The remainder of this paper discusses key aspects of the project in further detail, covering the project's background and approach, key findings, an options appraisal, equality, diversity and privacy implications and recommendations. The paper concludes with a summary of the information presented within this document.

Actions/Recommendation

The project team recommends The Landuu Company:

- a)** Review its current service offering with reference to the narrative review attached; Some but not all therapies contained in the project definition document are considered by Charities on their webpages and / or research teams. Identifying these therapies against the current service map will point to gaps of information in the wider community.
- b)** Consider the implications of group intervention (if not offered already), as an avenue for social support; group definition may extend to include healthy individuals that support the individual with cancer.
- c)** Explore opportunities to establish feasibility / pilot studies that examine practices offered by the company not yet in the research literature.
- d)** Canvas local business to map diversity of skills for interventions to consider networking for the future.

1. Background

- 1.1 Following receipt of the project brief, the project team produced the PDD, analysing the project requirements and identifying the outputs and the key milestones.
- 1.2 After an initial search yielded sparse results, the project team met with the Landuu Company to define a wider scope to the project regarding search terms and redrafted the PDD.
- 1.3 This PDD was approved on 24th July 2019, confirming the details of the contract between the company and the project team.
- 1.4 The project is responsible for researching effective approaches to emotional wellbeing, with specific reference to impact during the treatment of cancer. This was to be completed via an analysis of peer reviewed academic sources and the top five cancer charity websites.

2. Approach

- 2.1 The key search terms of the PDD were used to search the webpages of the UK's top five cancer charity websites. A systematic literature search was conducted using the key search terms and associated synonyms as suggested by the database (see annexed report, appendix 1), with results filtered according to parameters set for the scope of the project (see annexed report, appendix 2). Results were collated and formalised into a report consisting of two sections (annexed).

3. Key Findings

- 3.1 Cancer charities are aware of some of the complementary and alternative therapies (CAM) offered by the company, but not all. Research papers reflect this partial coverage.
- 3.2 The literature review suggests that use of the covered complementary therapies is safe both pre-, during and post traditional treatment for cancer.
- 3.3 Summary effects sizes for studies within the literature review range from null to large; RCT studies find small to null effects and appear to be the most rigorous study design to detect effects. Cancer charities are aware of this sparse evidence base and stipulate the need for more research for a stronger evidence base by which to discuss complementary therapies as an unequivocally positive and additional method for treating cancer and its secondary effects.
- 3.4 Emotional well-being in individuals with a cancer diagnosis does not appear to be regarded as its own domain independent of depression or anxiety across the five cancer charities. This is also echoed by the literature review with most studies measuring emotional well-being and / or depression and / or anxiety. Quality of

life is a validated index within research, measured by several assessment instruments (see annexed report, appendix 4) and is used in cancer websites; emotional well-being as a construct is nested within this larger concept.

- 3.5 The cancer charities seem to focus upon individual treatments, while the literature review studies include group-based treatments. One charity extends the idea of therapy provision to those who care for people with cancer.
- 3.6 Investigation into CAM through the use of randomised controlled trials has evolved over time with some evidence to suggest that studies are attempting to separate out the active elements of discrete therapies through careful choice of a contrast treatment group as well as using passive control groups such as standard care or wait-list conditions.
- 3.7 There is some concern within the charity literature that further normalisation of the language and terminology surrounding complementary therapies is needed.

4. Options Appraisal

- 4.1 This section appraises three options, listed below, that reflect the levels of engagement that the company could choose in using the report findings. Each level contains a possible outcome of how the company may act and the project team suggests the benefits and dis-benefits of this example. Progression through the represents an accumulation of actions.
- 4.2 Do nothing: maintain practice as before the implementation of the project brief.
 - i. Benefit: Clear focus on the company's mission to provide a personal and individualised service to their clients.
 - ii. Dis-benefit: missed opportunity to examine broader service models that can complement the individualised provision with models that reflect social support aims.
- 4.3 Do the minimum: Read the final report and add the report findings for each discrete complementary therapy onto their own provision map.
 - i. Benefit: Personal level of knowledge against the original research aim is changed. This could inform client consultations on an ad hoc basis.
 - ii. Benefit: Company level of knowledge – the enriched company provision map would signpost the services that are actively promoted and researched in the wider community and reveal gaps where objective and verified knowledge needs attention.
 - iii. Dis-benefit: the project team cannot identify a dis-benefit to the minimum action option

- 4.4 Do something: Explore the feasibility of regularly timed, group-based interventions as an additional, complementary provision.
- i. Benefit: a diluted investment of time could be more manageable for a wider client group.
 - ii. Benefit: a wider provision may demand a search for additional, local practitioners – networking could be very positive for long term development.
 - iii. Benefit: group-based interventions can feed into individual consultations as a progression in care or represent a ‘next stage’ of continuing care for clients who have completed provision at the individual level of service.
 - iv. Dis-benefit: such an addition may reduce the availability of people who provide the individualised service while timetables adjust to weekly session.
 - v. Dis-benefit: assuring the quality of any additional practitioners has time and costs implications.
 - vi. Dis-benefit: assembling groups in regular meetings has transport and accommodation implications (e.g. car parking / size of room) which could incur further costs during set-up process.

5. Equality, diversity and privacy implications

- 5.1 While an impact assessment was not undertaken as a part of this project, the project team do not foresee any issues pertaining to equality, diversity and privacy with the findings of this report. This is due to all of the information reviewed being either peer-reviewed articles or publically available online resources. However, some of the project’s recommendations may require The Landuu Company to consider equality, diversity and privacy implications, if recommendations were to be actioned.

6. Recommendations

- 6.1 There is potential to grow the client base by offering weekly group-based interventions (models suggested in RCT studies) and to consider including members of the target client’s support network, e.g. formal / informal carers, family members or friends.
- 6.2 Close consideration of a patient’s background may be beneficial in tailoring The Landuu Company’s services to better suit patient needs. For example, a consideration of whether a patient would benefit from alternative therapies involving a spiritual advisor may be beneficial.

- 6.3 Consider implementing pre- and post- measurement of client emotional well-being / depression / anxiety as they engage with the company's services in order to build an additional base of evidence that complements the qualitative nature of client testimonial.
- 6.4 Increased attempts to inform and normalise language employed in the discussion of CAM may be beneficial in encouraging patients to try new therapies. This was noted as particularly problematic for patients who have been advised to undertake talking therapies.
- 6.5 All of the above recommendations would require The Landuu Company to gain a significant amount of personal information from patients. In this respect, equality, diversity and privacy implications may need to be considered.

7. Summary

- 7.1 In summary, this paper has offered a brief action to be considered by The Landuu Company. The paper gives a brief background to the project, discussing the approach to the project, key findings emerging from the narrative review conducted during the project, offers details regarding an options appraisal, along with considerations of equality, diversity and privacy implications. The paper concludes by offering five recommendations for The Landuu Company to consider.

8. Annexes

Emotional Well-Being for People with Cancer: Narrative review of charity sector resources and peer-reviewed articles for effects of complementary interventions

Emotional Well-Being for People with Cancer

Narrative review of charity sector resources and peer-reviewed articles for effects of complementary interventions

September, 2019

Introduction

Additional to the primary health concerns for an individual with cancer are secondary symptoms that can manifest as feelings of reduced emotional well-being, increased feelings of depression or anxiety. While chemotherapy and radiotherapy form the nexus of traditional treatment, many individuals use complementary or alternative therapies (CAM) to manage these secondary health issues. The following report contains two sections. The first section details the content of five UK cancer charity webpages with respect to complementary or alternative therapies. The second section describes the results of a systematic literature review of peer-reviewed articles studying the effects of CAM in patients with cancer since over the last fifteen years.

Macmillan Cancer Support offers the following definition, which will be used throughout this report:

Conventional medical treatments are used by doctors to treat people with cancer. They include surgery, radiotherapy, chemotherapy, hormonal and targeted therapies. These treatments are scientifically tested and researched. They can cure many cancers, help people to live longer or reduce their symptoms...*complementary* therapies are used alongside, or in addition to, conventional medical treatments. They do not claim to cure cancer. People use them to boost their physical or emotional health. Or to relieve symptoms or side effects. Some have been scientifically tested to check how effective and safe they are...*alternative* therapies are used instead of conventional medical treatments. They are not tested in the same way as conventional medical treatments. Some claim to treat or cure cancer. But no alternative therapies have been proven to cure cancer or slow its growth and some may be harmful.'

(www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/complementary-alternative-therapies.html).

Charity sector review

The purpose of this review is to supply The Landuu Company with a detailed account of the information available from the top five UK cancer charities with respect to the use of complementary and alternative therapies (CAM) that may be available to cancer patients.

Cancer Research UK shows that nearly '30-40% of people with cancer use (CAM). The American Cancer Society list the most common forms of CAM as prayer or spiritual practice, relaxation, faith or spiritual healing or nutritional supplements and vitamins. Cancer Research UK's materials includes a discussion of why people may choose to use CAM when dealing with cancer. They suggest that 'many patients like the idea that complementary therapies seem natural and non toxic', while also noting that other aspects, similar to those discussed within the literature pertaining to depression, which may also help to make people feel better (for example, 'touch, talk and time', 'staying positive' and boosting the immune system (www.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/about/why-used?_gl=1*1puvqnp*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)). Research found, however, that this varied between the differing backgrounds of patients and the types of cancer diagnoses that they had received.

While CAM can be useful in making patients feel better and more in control while helping them to cope with cancer, 'There is no evidence to suggest that any type of complementary therapy prevents or cures cancer' (www.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/about/why-used?_gl=1*1puvqnp*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)).

Cancer Research UK calls for additional research into CAM for people with cancer in order to: understand how they work and check if they are safe to use; find out if they interact with conventional medicine and how; check whether specific therapies work and do what they claim to do; test them against accepted treatments to see if they work as well or better; learn if they improve quality of life for people with cancer [and] to find out if they are cost effective. (www.cancerresearchuk.org/about-us/cancer-news/news-report/2008-08-06-study-shows-many-cancer-survivors-use-complementary-therapies?_gl=1*13bm963*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)). One such way of doing so is through the use of clinical trials (www.about-cancer.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/research/about?_gl=1%2A1op6cgi%2A_gcl_dc%2AR0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)).

This review details the online information available for CAM from the top five UK cancer charities, as listed by The Guardian¹, using search criteria specified within the

1 The link for this Guardian article has expired since the original search and finalising the report

Project Definition Document. The top five cancer charities in the UK were identified as: Cancer Research UK, Macmillan Cancer Support, Marie Curie Cancer Care, The Royal Marsden Cancer Charity and Bloodwise (formally Leukaemia and Lymphoma Research). The goals of each charity reviewed are as follows:

- Cancer Research UK suggests that it is ‘the world’s largest charity dedicated to saving lives through research.’ Their ‘vision is to bring forward the day when all cancers are cured’ (www.cancerresearchuk.org/).
- Macmillan Cancer Support (hereafter Macmillan) states that, ‘Whatever cancer throws your way, we’re right there with you. We provide physical, financial and emotional support to help you live life as fully as you can’ (<https://www.macmillan.org.uk/>).
- Marie Curie Cancer Care states that they offer ‘free, practical information and emotional support for anyone affected by terminal illness, when it’s needed most’ (www.mariecurie.org.uk/).
- The Royal Marsden Cancer Charity notes that, ‘The Royal Marsden Cancer Charity raises money solely to support The Royal Marsden, a world-leading cancer centre’ (www.royalmarsden.org/about-us).
- Bloodwise suggests that their charity is ‘here to beat blood cancer’. They stipulate that ‘blood cancer is the UK’s third biggest killer’ (bloodwise.org.uk/about).

Each website was searched for materials found under the following key terms: depression, anxiety, therapy, emotional well-being and emotional resilience. This produced seventy-five separate webpage results, following the removal of duplicate webpages returned as a result of using several key search terms. The content of the seventy-five relevant pages was then coded using the key search terms to highlight similarities and differences between the information offered by each charity.

Each of the following sections explores the online content offered with reference to depression and anxiety and the associations pertaining to emotional well-being, emotional resilience and therapy. The remainder of this review follows a similar fashion, including sections associated with the terminology used during the key word search to explore similarities and differences across the literature provided by the top five cancer charities in the UK.

Depression

Depression and emotional well-being

Cancer Research UK suggests options for treating depression such as: ‘seeing your doctor’, ‘anti-depressant medicines’, ‘talking therapies’ and ‘herbal remedies’. (www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions/depression/treating-depression_gf=1*1eihznb*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE). Similarly, Macmillan suggests that, emotional well-being is a significant factor in dealing with a cancer diagnosis, noting aspects such

as 'who can help' and 'managing day-to-day life'. Furthermore, Macmillan also offers advice for carers, including young-carers, of people with cancer and for anyone who knows a person with cancer (www.macmillan.org.uk/information-and-support/coping/your-emotions).

Cancer Research UK and Macmillan note a range of emotions, for example, shock, denial, fear, anxiety, panic, guilt, blame, anger, sadness, feeling alone and depression which the charities seek to normalize as emotional responses to a cancer diagnosis. Additionally, Cancer Research UK suggests that 'trying to stay positive' and 'managing your emotions' are important aspects when in receipt of treatment ([www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions?](http://www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions?_gl=1*vh23ti*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)

[_gl=1*vh23ti*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE](http://www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions?_gl=1*vh23ti*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)). Both charities suggest a range of options to facilitate emotional well-being. For example, Macmillan notes that emotional and practical support may be required for patients dealing with cancer pain. The charity suggests that 'pain can affect many aspects of your life including your body, thoughts and feelings'. This may also include spiritual pain

(www.mariecurie.org.uk/help/support/terminal-illness/wellbeing/emotional-spiritual-pain). Macmillan further suggests that talking is a good way to cope with emotional distress brought on by a cancer diagnosis, with GPs, cancer support specialists, support groups, religious or spiritual leaders and counselling organizations being suggested as good starting points

(www.macmillan.org.uk/information-and-support/coping/side-effects-and-symptoms/pain/getting-emotional-and-practical-support.html). Macmillan cites a clinical trial of singing as a method for improving one's emotional state: 'A study looking at choir singing as a way to improve people's well-being'. Results suggest that singing in a choir for one hour a week, for upto 12 weeks can 'improve your mood...reduce the amount of stress hormones (and) improve your immune system'

([www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-study-looking-at-choir-singing-as-a-way-to-improve-peoples-wellbeing?](http://www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-study-looking-at-choir-singing-as-a-way-to-improve-peoples-wellbeing?_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)

[_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE](http://www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-study-looking-at-choir-singing-as-a-way-to-improve-peoples-wellbeing?_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)).

Although absent from Cancer Research UK's website, Macmillan also details suggestions for individuals who know or are caring for someone with cancer. The charity notes that the feelings experienced by patients of a cancer diagnosis, may also be applicable to those who know them or are involved with their care. This, Macmillan suggests, is also a normal response to the situation. Similar to the advice offered to those with cancer diagnoses, Macmillan suggests that talking (for example, to family, friends or a doctor) is a good starting point to managing the emotions brought on by a cancer diagnoses in a supporting individual (www.macmillan.org.uk/information-and-support/coping/your-emotions/dealing-with-your-emotions/cancer-and-your-feelings.html).

Suggestions for support for carers is further broken down, offering further guidance for those adults and young people. The charity suggests that writing down feelings might be a good coping mechanism for addressing emotional distress while again

emphasising that negative emotions are normal in such situations (www.macmillan.org.uk/information-and-support/coping/your-emotions/if-you-are-a-young-carer/your-emotions.html). Macmillan further suggests that young carers should take care to look after themselves, particularly if they 'feel overwhelmed by the situation' (www.macmillan.org.uk/information-and-support/coping/your-emotions/if-you-are-a-young-carer/getting-emotional-support.html). This, Macmillan notes, may be achieved by talking to someone such as those in similar situations, or by asking an advocate to discuss issues with teachers, professionals or other stakeholders on their behalf.

Further advice from Macmillan suggests finding a website or organization that could help, letting school, college or work know about the situation in order to gain any additional help, support or time off that might be needed, making time for the things that they enjoy and letting people know if they are uncomfortable with any of the duties associated with caring for someone with cancer, as alternative assistance for the patient could be sought (www.macmillan.org.uk/information-and-support/coping/your-emotions/if-you-are-a-young-carer/getting-emotional-support.html).

Ultimately, both Cancer Research UK and Macmillan suggest that a wide range of negative feelings may arise from a cancer diagnosis. Indeed, both charities suggest that depression is a possible outcome and that emotional well-being could be important for people living with cancer and those caring for them. However, Macmillan notes that, 'the way you feel can influence the way you cope with cancer and its treatment. But there is no evidence that feelings can affect the cancer itself' (www.macmillan.org.uk/information-and-support/coping/your-emotions/dealing-with-your-emotions/cancer-and-your-feelings.html).

Depression and emotional resilience

Cancer Research UK offers details of a treatment programme 'which offer patients one-to-one sessions with specially trained cancer nurses to help them manage their depression more effectively'. The charity found that 'after three months of receiving the new treatment, almost 20% fewer patients were depressed compared with patients who received standard NHS treatment. The difference was still evident after one year'. During the trial stage of the treatment, half of participants were offered standard care for individuals facing depression from their GP or specialists. 'The other half received the special programme which entailed sessions on: understanding depression and the effects of anti-depressants; problem-solving therapy to help patients overcome feelings of helplessness; liaison with oncologist and GP to collaborate in treatment of depression; monthly monitoring of progress by telephone and providing optional "booster" sessions'. After three months of treatment, measures demonstrated improvements in anxiety and fatigue, in addition to symptoms of depression

(www.cancerresearchuk.org/about-us/cancer-news/press-release/2008-07-04-beating-depression-for-cancer-patients?_gl=1*1eihznb*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGh

[Rb2REUWtPTVE](#)). The inclusion of this study suggests supportive evidence that treatment option of talking (as detailed in the above section 'depression and emotional well-being') is being further explored and shows promising results. However, there is also the possibility that such findings could be explained by patients receiving additional social interaction and support, rather than findings being solely based upon the impact of the therapy alone.

Depression and therapy

Cancer Research UK notes that researchers are currently looking at improving ways to help to treat depression in cancer patients. According to the charity, recent projects include exploration into; 'how advanced cancer affects depression; how cognitive behavioural therapy can help people with advanced cancer; how long treatments for depression should be; differences between support from specialist nurses and counsellors; how changes to your body can affect depression; having depression after treatment and how technology can help (such as programmes on your mobile or online)' (www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions/depression/research?_gl=1*1eihznb*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE). While such research is still ongoing, advice available from the top five cancer charities online suggests a range of potential treatment options.

One such treatment is that of herbal medicines, a complementary approach which uses 'plants, or mixtures of plant extracts, to treat illness and promote health', however, further scientific evidence is required to show benefits for cancer patients. 'Herbal medicine aims to restore your body, so that it can protect, regulate and heal itself', with the two most common types of herbal medicine being those of Western herbal medicine, which 'focuses on the whole person rather than their illness', and Chinese herbal medicine, which 'aims to restore the balance of your Qi'. Herbal medicines are a common therapy used by individuals with cancer, with 'as many as 6 out of every 10 people with cancer' using them alongside conventional treatments (www.about-cancer.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/individual-therapies/herbal-medicine?_gl=1*v2nagg*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

In addition, Cancer Research UK suggests St John's wort as, 'a herbal remedy used as a complementary therapy for mild to moderate depression', however, it also notes that there is the potential that St John's wort could 'interact with cancer drugs and other medication', such as irinotecan, docetaxel or imatinib. The charity suggests that St John's wort has previously been reported 'as a wonder drug to treat depression and help people to feel better'. Cancer Research UK notes that people often use St John's wort to attempt to treat depression, rather than discussing problems with trained medical staff, however, guidance offered by the charity does point towards the benefits of talking to a doctor or nurse about issues (and before taking St John's wort)

(www.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/

[complementary-alternative-therapies/individual-therapies/st-johns-wort?_gl=1*7jmesj*_gcl_dc*R0NMLjE1NjQ0MMDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE](http://www.cancerresearchuk.org/about-cancer/complementary-alternative-therapies/individual-therapies/st-johns-wort?_gl=1*7jmesj*_gcl_dc*R0NMLjE1NjQ0MMDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)).

Homeopathy is another area explored in depth by Cancer Research UK, with homeopathy using 'small doses of a substance that in large doses would cause symptoms of the illness'. However, Cancer Research UK states that there is no scientific evidence to support homeopathy as a cure or preventive method for cancer. It also states that it may interact with other medicines.

Despite Cancer Research UK's assertion that homeopathy is not a cure or preventive therapy for cancer; homeopathy 'is [still] one of the most common complementary therapies used by people with cancer', as 'followers believe that homeopathic medicines work by starting the body's self-healing process', during which 'the body tries to keep a stable internal environment'. Homeopathy is used by cancer patients as it 'may help them feel better or more in control of their situation' and it can be used in addition to conventional medical treatments. Cancer Research UK suggests its users believe it to improve: relaxation, coping with stress, anxiety and depression and controlling symptoms/side effects like pain, sickness and tiredness. However, this may be due to the placebo effect and in 2010 the UK Science and Technology Committee recommended that the NHS no longer fund homeopathic treatments

www.about-cancer.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/individual-therapies/homeopathy?_gl=1*1efqf0x*_gcl_dc*R0NMLjE1NjQ0MMDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

Taking a different approach, Cancer Research UK further suggests that 'talking therapies' may also be beneficial in treating depression for individuals with a cancer diagnosis. The charity notes that while some patients may find 'counselling', 'psychotherapy' or other related terminology off-putting, discussing issues with a therapist can be a helpful tool in tackling depression. The charity attempts to normalise seeking this form of intervention through a discussion of reasons as to why an individual might seek this form of treatment (e.g. phobias, panic attacks or sleeping disorders). Further advice details the different types of therapists (counsellor, psychotherapist, psychologist and psychiatrist) that patients may come into contact with and notes the importance of feeling comfortable with the chosen professional, to ensure the treatment received is the best fit.

www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions/depression/treating-depression/talking-therapies?_gl=1*fomdh1*_gcl_dc*R0NMLjE1NjQ0MMDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

Cancer Research UK describes counselling as 'talking to a trained person (counsellor) and exploring problems or issues in a safe and supportive environment', while cognitive behavioural therapy (CBT) 'aims to help you change how you respond to certain situations or emotions. It helps you understand how your thought patterns may be contributing to your feelings of depression or fear', while also

teaching control and calmness for body and mind. Psychotherapy is described as involving 'talking to a trained therapist, although sometimes other methods may be used such as music or art'. The purpose is to allow patients an in-depth look at 'problems and worries, and deal with problems such as depression or fear'. Cancer Research UK further emphasises that it is possible to combine anti-depressants and therapy, with the treatments 'complementing each other'

(www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions/depression/treating-depression/talking-therapies?_gl=1*fomdh1*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

Further evidence of the potential benefits of 'talking cures' can be found in a Cancer Research UK press release, which suggests that talking (in this case to cancer nurses) 'eases chronic insomnia in cancer patients'. However, it is important to note that the trial's participants had already received 'the all clear' with regards to their cancer diagnosis

(www.cancerresearchuk.org/about-us/cancer-news/press-release/2008-10-01-talking-cure-eases-chronic-insomnia-in-cancer-patients?_gl=1*1bjfchj*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

In a similar vein, managing personal emotions is also seen as a key area for patients with a cancer diagnosis, according to the materials available online from Cancer Research UK. Suggestions include; 'taking each day as it comes, exercise, eating well, avoiding alcohol and drugs, relaxation techniques, talking to other people, drawing or keeping a journal (and) reading about your feelings'. Similarly to previously discussed material within this subsection, Cancer Research UK again emphasises that patients may need to cope with sleep problems, suggesting that discussing such issues with a doctor or specialist nurse could be beneficial

(www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions/managing-your-emotions?_gl=1*fomdh1*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

Further advice includes the importance of controlling symptoms (i.e. 'The better you feel physically, the more help it will be in coping with your feelings or with depression'), learning to live with cancer, which the charity suggests can take a significant amount of time to get used to, looking well but not feeling well which may be impacted by the recovery time required and if others expect patients to complete certain tasks which they may not feel ready for. Finally, Cancer Research UK suggests that worrying about cancer returning can be a significant issue. The charity notes that this can be difficult to come to terms with and suggests talking treatments may be helpful in developing coping strategies (www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions/managing-your-emotions?_gl=1*fomdh1*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

Increasing attention appears to be being paid to the potential benefits of Art Therapy's ability to ease pain for cancer patients. For example, materials from Cancer Research UK notes a study that aimed to explore the impact of 'using art therapy to help with pain after breast cancer treatment' and the intervention's capacity to 'change the experience of pain', in addition to monitoring patients 'pain score and use of painkillers'. The study 'involved 50 cancer patients over a four-month period and aimed to relieve symptoms such as pain, tiredness, nausea, depression, anxiety, drowsiness, lack of appetite, general well-being and shortness of breath'. The results were positive for eight out of nine symptoms, the exception being symptoms of nausea, as measured by the Edmonton Symptom Assessment Scale (ESAS). This was viewed as being due to offering patients 'a means of expressing inner feelings through creative activity'.

(www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-study-using-art-therapy-to-help-with-pain-after-breast-cancer-treatment?_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE). There is sparse empirical evidence to support art therapy as beneficial for cancer patients, however, and Cancer Research UK concedes that further research is still required.

Massage therapy is another CAM identified as potentially of benefit for cancer patients by both Cancer Research UK and Macmillan Cancer Support. Cancer Research UK notes that, 'Massage is an ancient therapy that works by stroking, kneading, tapping or pressing the soft tissues of the body', however, advice does state that 'there is no scientific evidence that massage can treat cancer'. Several types of massage are listed by the charity (Swedish, aromatherapy, deep tissue, sports, shiatsu and neuromuscular) which are promoted as a way to improve mood and sleep, enhance well-being and as a coping mechanism for stress, anxiety, headaches and pain. Macmillan adds a benefit for those individuals experiencing breathing difficulties (www.macmillan.org.uk/information-and-support/mesothelioma/pleural-mesothelioma/treating/supportive-therapies). Both charities advise against deep tissue massage even though it confirms that no research has proven the assertion that 'having a massage when you have cancer may make the cancer cells travel to other parts of the body'. Furthermore, Cancer Research UK suggests that massage therapy should be avoided on areas of the body undergoing radiotherapy or on swollen arms or legs due to lymphedema (www.about-cancer.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/individual-therapies/massage?_gl=1*1bjfchj*_gcl_dc*R0NMLjE1NjQ0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

In addition to massage therapy, Cancer Research UK suggests that exercise therapy may be beneficial for cancer patients. One trial study examined whether 'exercise would help improve quality of life and reduce feelings of fatigue, anxiety and depression' with particular focus upon 'how the treatment affected people physically, mentally and emotionally'. Despite promising results, a further, larger scale trial was reported to be required to gain 'more reliable results'

(www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/exercise-therapy-for-

[women-having-treatment-for-early-stage-breast-cancer?_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE](https://www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-trial-looking-at-relaxation-therapy-and-guided-imagery-for-people-with-bowel-cancer?_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)).

Relaxation also features as a CAM. A separate trial described by Cancer Research UK explored 'relaxation therapy and guided imagery for people with bowel cancer'. The study examined 'the effect of relaxation and guided imagery on patients undertaking chemotherapy to explore any potential benefits to quality of life'. Cancer research UK describes guided imagery as, for example, imagining your body being healthy or as attacking cancer cells. The results of the study demonstrated no significant change in outcome measures for their participant sample.

(www.cancerresearchuk.org/about-cancer/find-a-clinical-trial/a-trial-looking-at-relaxation-therapy-and-guided-imagery-for-people-with-bowel-cancer?_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

Meditation is also listed by Cancer Research UK as a method by which people with a cancer diagnosis can try to calm and relax their minds and bodies. Guidance suggests that people with cancer use meditation as it can help to reduce anxiety and stress while also helping to 'control' problems such as; 'pain, difficulty sleeping, tiredness, feeling sick [and] high blood pressure'. Cancer Research UK suggests that meditation can be led by 'people who have training in practising and teaching meditation, doctors and nurses, psychiatrists, psychologists and other mental health professions [and] yoga teachers'. Advice from the charity also suggests that individuals can practice meditation by themselves at home and that meditation can be undertaken individually or as part of a group. The different types of meditation mentioned by Cancer Research UK include; 'mindfulness meditation, mindfulness based stress reduction (MBSR), focused meditation, visualisation and guided imagery, transcendental meditation, prayerful meditation [and] meditation and movement'. Indeed, while typically small scale, studies suggest that meditation (particularly MBSR) might be beneficial in improving mood and concentrations, reducing depression, anxiety, symptoms and side effects and boosting the immune system (www.about-cancer.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/individual-therapies/meditation?_gl=1*8fvdg5*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

An additional therapy discussed by Cancer Research UK is healing. 'Healers believe that healing energy exists all around us, and that they can channel this energy' to heal others. Again, Cancer Research UK states that there is no scientific evidence supporting healing as a treatment for cancer. Beliefs about healing include various strengths of 'universal energy' and some believe that 'love and care create energy. This can encourage your spirit to change the process of your disease physically. So, for example, it can shrink a tumour'. Different types of healing include; contact healing, therapeutic touch, absent healing and faith healing. Healers suggest healing as a natural way to relax and cope with issues such as; stress, anxiety, depression, pain, sickness and fatigue.

(www.about-cancer.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/

[complementary-alternative-therapies/individual-therapies/healing?_gl=1*v2nagg*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE](https://www.bloodwise.org.uk/complementary-alternative-therapies/individual-therapies/healing?_gl=1*v2nagg*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE)).

Anxiety

Anxiety and emotional well-being

Both Bloodwise and Macmillan discuss coping with anxiety and the importance of emotional well-being in the information they provide for individuals with a cancer diagnosis. For example, information provided by Bloodwise suggests that some people with blood cancer may not need immediate treatment. Instead, symptoms are monitored, a process often called 'watch and wait', 'active surveillance' or 'watchful waiting'. In cases where 'watch and wait' is applicable, the charity suggests that the following could be beneficial in dealing with anxiety surrounding the situation: talk to people you care about, look for peer support, make use of support organisations, appreciate good things, take each day as it comes, look after yourself, stay active, access counselling if needed, trust healthcare professionals and do what works for you (www.bloodwise.org.uk/community/how-to-cope-anxiety-blood-cancer-watch-wait).

While advice from Bloodlines refers to dealing with anxiety in relation to a specific type of cancer, information from Macmillan is more generalised. Similar to previously discussed information from Cancer Research UK, Macmillan suggests talking to those close to you, discussing concerns with health care professionals and discussing issues with others in similar situations as good methods in dealing with anxiety. Additionally, the charity suggests that writing may also be beneficial. Other advice offered by Macmillan includes: relaxation exercises, cutting down alcohol and caffeine, getting enough sleep, exercising regularly, using imagery meditation or mindfulness and using complementary therapies like massage or aromatherapy (www.macmillan.org.uk/information-and-support/coping/changes-to-appearance-and-body-image/body-image-after-treatment/changes-to-your-body.html). However, specifics as to which type of massage are not discussed here, unlike the earlier information from Cancer Research UK.

Furthermore, Macmillan includes information for individuals with a cancer diagnosis on relaxation techniques. For example, guidance is offered about how to relax when experiencing breathlessness (www.macmillan.org.uk/information-and-support/coping/side-effects-and-symptoms/breathlessness/relaxation-techniques.html). Macmillan also provides information pertaining to lifestyle choices and well-being, for improvement of long-term health. They include aspects such as: stopping smoking, being more physically active, eating healthily and maintaining a healthy weight, limiting alcohol consumption and doing enjoyable activities with family and friends (www.macmillan.org.uk/information-and-support/treating/after-treatment/recovery/lifestyle-and-well-being.html).

Anxiety and therapy

Marie Curie suggests there is some cross-over between symptoms and treatments for anxiety and depression

(www.mariecurie.org.uk/help/support/terminal-illness/wellbeing/depression-anxiety) with one such aspect being providing emotional care to individuals dealing with a cancer diagnosis (<https://www.mariecurie.org.uk/professionals/palliative-care-knowledge-zone/individual-needs/psychological-needs>).

This crossover is echoed across the other charity webpages, with much of the online charity literature containing similarities between methods outlined as potentially beneficial treatments for both depression and anxiety in cancer patients, such as: herbal medicine, homeopathy, talking therapies, St John's wort, healing, meditation, massage therapy and art therapy (all of which appear in Cancer Research UK's literature pertaining to anxiety and therapy). Royal Marsden also offers similar advice, suggesting that cancer patients may benefit from 'message therapy, relaxation, reflexology and aromatherapy', which the charity suggests can 'help to relieve symptoms and enhance physical and emotion well-being' for patients (www.royalmarsden.org/difference-you-make/helping-cancer-patients-mothers-day).

An additional herbal remedy for anxiety reduction is to drink green tea: 'a drink made from the unfermented leaves of the Asian plant Camellia Sinensis', however, once again there is not enough scientific evidence to suggest that consumption may prevent cancer. Cancer Research UK, however, does note that 'there is some evidence from early studies to suggest that having green tea might reduce the risk of some cancers. But at the moment evidence is not strong enough to know this for sure'. Beliefs of cancer patients who drink green tea are that it can: 'boost their immune system which might help them fight their cancer'; 'improve health, energy levels and well being'; 'get rid of toxins in the body'; 'give them some control over their cancer and its treatment' and that it might 'treat their cancer if no other conventional treatment can'. There has also been suggestions from the media that black tea might be an 'anti-cancer agent' (www.about-cancer.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative-therapies/individual-therapies/green-tea?_gl=1*1sdqxI0*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

In a similar vein, other herbal remedies are also discussed by Cancer Research UK in relation to anxiety and therapy for cancer patients. For example, ginkgo 'has been reported to help people with anxiety, memory loss, stress, sexual problems and asthma'. Research has also shown that ginkgo 'can improve blood flow to the brain, so it may help improve mood', despite various side effects being reported (www.cancerresearchuk.org/about-cancer/coping/emotionally/cancer-and-your-emotions/depression/treating-depression/herbal-remedies?Gl=1*14tzb7x*_gcl_dc*R0NMLjE1NjQ0MDM0MzkuQ01ITnlQaVEydU1DRmRTVGhRb2REUWtPTVE).

Therapy

Several of the cancer charities explored during this review include information in relation to the therapy processes available for cancer patients. For example Royal Marsden suggests they have specialist staff who are experts in 'systemic therapies including innovative therapies ... [helping patients] to feel well during and beyond cancer' (www.royalmarsden.org/difference-you-make/dr-naureen-starling-speaks-cancer-treatment). Marie Curie offers more specific advice, suggesting that relaxation can be beneficial in helping an individual with a cancer diagnoses to 'cope better with their symptoms and feelings'. Marie Curie's website offers information on 'getting comfortable, relaxing activities, breathing and massage for relaxation [and] complementary therapies'. Initial advice from the charity notes 'aromatherapy and reflexology' as complementary therapies that may be beneficial for relaxation (www.mariecurie.org.uk/help/support/being-there/caring/helping-relax). Furthermore, Marie Curie suggests that complementary therapies can be beneficial in aiding relaxation and should be undertaken in addition to conventional treatments. Suggested complementary therapies include aromatherapy, massage, reflexology, acupuncture, acupressure, art therapy, hypnotherapy, reiki, relaxation techniques and shiatsu massage (www.mariecurie.org.uk/help/support/terminal-illness/wellbeing/complementary-therapies).

Therapy and depression

Limited online resources were found in relation to therapy and depression and therapy and anxiety exclusively. Most resources indicate a consideration of therapy, anxiety and depression. However, Macmillan suggests mind-body therapies as a method of combating depression. Mind-body therapies are described by the charity as 'based on the belief that what we think and feel can affect our well-being'. Macmillan further notes 'some of the most popular mind-body complementary therapies used by people with cancer in the UK' as being; relaxation, visualisation, meditation, hypnotherapy, art therapy and music therapy. The charity notes that such complementary therapies can be performed at home and in individual or group environments (www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/mind-body-therapies.html). Macmillan goes into further detail for the complementary massage therapy, suggesting its benefits in being able to 'relax your mind and body, relieve tension, improve the flow of fluid (lymph) in the lymphatic system ... [and] enhance your mood', while also suggesting there are various different types of massage and that 'some studies of people with cancer suggest that massage therapy reduced symptoms, such as pain, anxiety, depression and fatigue' (www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/massage-therapies.html).

Therapy and anxiety

Royal Marsden suggests that 'There are no rules about how a cancer patient will feel, or how they should deal with their emotions – the illness affects everyone differently'. This, the charity suggests, inspires them to take 'a holistic view' in offering complementary therapies and occupational therapies. Such treatments offered by the charity include 'a hair-loss specialist, a relaxation service, and the therapeutic massage team who provide aromatherapy, massage and reflexology' (www.royalmarsden.org/difference-you-make/complementary-therapies).

Further information offered by Macmillan as found using the search parameters of this review includes discussion of energy-based therapies. Macmillan notes that, 'Energy-based therapies aim to improve your physical and emotional health using little, if any, physical contact', however, the use of physical touch may differ for other practitioners². Suggestions for energy-based therapies include; shiatsu, acupuncture, reflexology, therapeutic touch.

(www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/energy-based-therapies.html). Mind-body therapies are also explored, as within an earlier section of this review (www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/mind-body-therapies.html). Psychological and self-help therapies are also mentioned by Macmillan, which states such therapies can be helpful during or after treatment and may be beneficial in coping with 'confusing or upsetting emotions'

(www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/psychological-self-help-therapies.html).

However, Macmillan also states that patients don't always report their use of complementary therapies to health care providers and the charity would like to see further research done in the area to help in supporting patients and other stakeholders in making decisions on the use of complementary therapies. Macmillan also stresses its position that the charity does 'not advocate the use of alternative therapies' (www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/complementary-therapies-our-position.html).

Depression, anxiety and therapy

Macmillan (www.macmillan.org.uk/information-and-support/coping/complementary-therapies/types-complementary-therapies) offers a useful directory, listing links to information on many of the complementary therapies discussed throughout this review. Further information is supplied on talking therapies (www.macmillan.org.uk/information-and-support/coping/your-emotions/who-can-help/talking-therapies.html), with a more detailed explanation of counselling, group therapy and CBT being offered. The charity also clarifies information (again, as previously discussed at earlier sections within this review) on therapies using herb

and plant extract, such as aromatherapy, flower remedies, homeopathy and herbal medicines (www.macmillan.org.uk/information-and-support/coping/complementary-therapies/complementary-therapies-explained/therapies-using-herb-plant-extracts.html).

Discussion and summary

This review has explored CAM advice available to cancer patients contained in the webpages of the UK's top five cancer charities, Cancer Research UK, Macmillan Cancer Support, Marie Curie Cancer Care, The Royal Marsden Cancer Charity and Bloodwise.

Cancer Research UK and Macmillan placed emphasis on the need to normalize terminology in relation to the talking therapies. The charities suggest that this is needed to help potential users of the talking therapies in understanding the options available to them and to find a good fit in terms of which talking therapy they may wish to use. Although the charities recommend talking to GPs, cancer nurses and oncologists, this may be a difficult course to pursue, as practitioners at the frontline of primary care may have limited time to spend with patients. This may require further emphasis from cancer charities or organizations such as The Landu Company, in order to have a significant impact on patient understanding of the talking therapies.

Cancer Research UK and Macmillan suggest that a fuller understanding of patient background could be beneficial in determining which CAM (if any) would be appropriate. For example, people with spiritual inclinations may wish to become involved with CAM involving spiritual components, however, this would not be the appropriate route for other patients. There is also consideration of those people who feature significantly in the ongoing care of the patient from Macmillan, such as family and friends who may be acting, informally or formally, in the capacity as carers. This is an interesting contrast to the materials provided by the other charities discussed within this review, which primarily lend focus to cancer patients themselves. This suggests that it may be beneficial to involve individuals who know or are caring for someone with cancer in CAM provision as it may help them to better cope emotionally with the situation and also bridge supporting strategies across the CAM provider and the home setting, in which most of the care takes place.

The review shows that there is a strong cross-over between the charities' results pertaining to depression and anxiety, with the charities reviewed offering advice on the same CAM for patients with depression *or* anxiety. On the other hand, The Royal Marsden Cancer Charity, for example, places emphasis on the benefits of CAM that they themselves offer to patients. Each of the five charities reviewed offered no direct information with reference to emotional well-being or emotional resilience. The lack of primary information for the improvement of emotional well-being seems to suggest that the charities do not consider it as a distinct area for advice, while depression and anxiety, possibly because they are recognised medical conditions, receive comprehensive coverage with emotional well-being occurring as an additional benefit.

It is also key to note that Cancer Research UK and Macmillan do not advocate for the use of CAM to the exclusion of traditional methods of cancer treatment. The information provided suggests that the two charities are simply attempting to inform potential users of these therapies. Conversely, while accepting that it is a challenge, both Cancer Research UK and Macmillan do advocate the use of formal research methods to investigate the effects of CAM for people who have cancer. The following section discusses research findings on just this subject.

Empirical Research Review

The Landuu Company commissioned a literature review of the effects of CAM in the facilitation of improved emotional well-being, depressive or anxiety symptoms in individuals living with chronic illness, in particular cancer. The explicit objective is to have an evidence base to refer to in consultation with clients and also to plan for future development of their service model.

Method

Relevant studies were identified via a systematic search of four databases (Academic Search Ultimate, CINAHL, MEDLINE Complete, PsychARTICLES) using a scoping search strategy that included base keywords and their synonyms as suggested by the database's internal thesaurus (see Appendix 1).

Search results were included for title and abstract review according to the following inclusion criteria: peer reviewed articles; written in the English language; published within the last 15 years; samples of male and female adults only.

After automated removal of duplicates, the search yielded 60 studies for title and abstract sifting for eligibility for inclusion (see Appendix 2 for inclusion criteria and sifting protocol). Forty-four studies were excluded as not relevant, leaving 16 studies for full text review. One study was excluded during the full text review process. A citation search during full text review of the remaining 15 articles produced a further 26 articles for potential inclusion that yielded an additional 5 articles eligible for inclusion in the review (see Figure 1 for flow chart of abstract sifting and full text review process).

Of those studies that did not meet the criteria for inclusion, 31 studies were excluded on the bases of pertaining to cost-benefit studies of CAM, focussing upon samples of children, dissertations (i.e. not peer reviewed), studies that evaluated only pharmacological interventions or did not include a measure of emotional well-being / depressive or anxiety symptoms. Seven studies were excluded as they used CAM therapies in an illness other than cancer; five studies were methodological / theoretical articles concerning the basis of CAM therapies; 11 articles were review articles; four studies did not include post intervention measures to be able to evaluate improvement.

Design and Demographic Information

Twenty studies were included in the review, encompassing CAM therapies used as interventions to promote feelings of emotional well-being, or reduce symptoms of depression or anxiety in cancer patients. Half the studies followed a randomized controlled

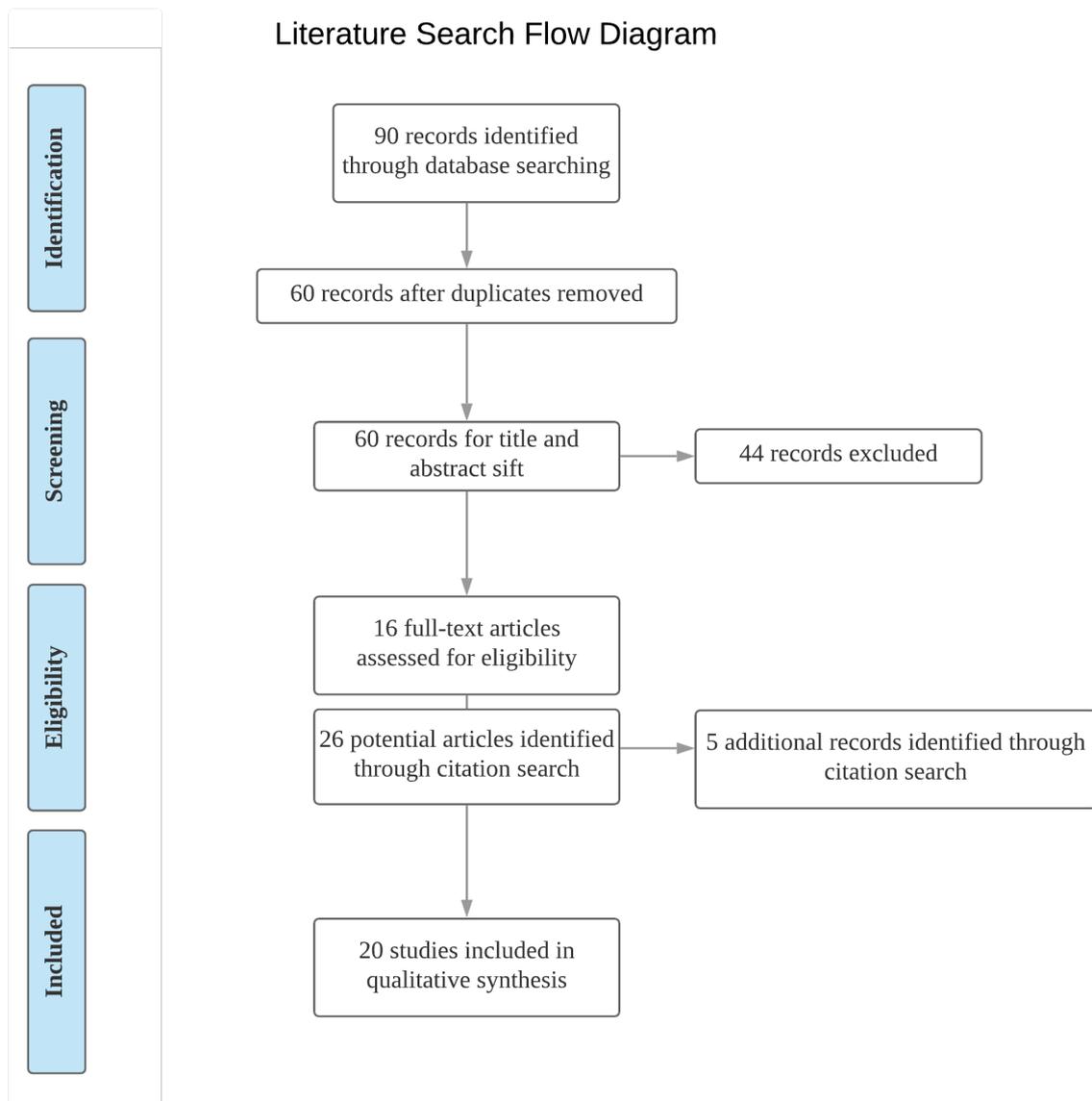


Figure 1. Flow chart of abstract and full-text review process

trial (RCT) design, with an additional two using RCT-Pilot design. Two studies were a quasi-experimental design, two used a pre-post intervention approach and two used a self-selecting design. One study explored the feasibility of their CAM therapy and one study used an evaluation design.

Methods of randomisation varied across studies; levels of reporting randomisation also varied with minimal reporting in the presence of randomisation finishing at the method of randomisation. CONSORT guidelines require naming the role of the person who conducted the randomisation and the how the sequence was concealed. Sixty percent described randomisation in their methods section, however only 80% of those detailed the method, 50% the method of concealment and 30% listed the person responsible.

Blinding is also required by the CONSORT statement in RCT studies. Seven studies reported blinding processes, which was always associated with randomised methods. All of the seven studies detailed who was blinded within the study. Only Loh, Lee and Murray (2014) reported blinding of participants - a process made easier as the two groups were separated geographically. Most studies found that the active nature of the controlled trials meant that participants realised that the form of intervention related to the measures was the study. Even so, only three of the seven studies listing blinding procedures talked about methods they took to limit possible bias from participant knowledge of study research aims.

Eight studies were conducted in the United States, with two studies each from Canada, China, Denmark, Malaysia and one study each from Australia, Israel, New Zealand and Spain. Sample size ranged from 29 - 272 with a median of 156 participants at recruitment point into a study, with a range of 48.22% - 100% (median = 89.37%) of participants' data being included for analysis. Studies were included from 2004 onwards. The search was conducted in July 2019. Studies published before or after these dates are not included.

The majority of the studies (13) considered two or more of emotional well-being, depression or anxiety concurrently as a focus for their investigation, with only 7 papers considering one of the outcome variables. Group characteristics were tested for equivalence using t-tests or chi-square methods. AN(C)OVA was the most popular statistical method used for analysis of the primary outcome variables. Although four papers stipulated linear regression and three papers explicitly referred to mixed-effects modelling, no results referred to rates of change in the outcome measure that would represent slope terms, or random effects within the model structures. Consequently, it is assumed that the results represent aggregated Group values as a between-subjects variable and Time as a within-subjects variable.

Cancer is a very broad term that covers a multitude of divergent diagnoses. However, most studies constrained their research focus to one cancer type. Half of the studies suitable for inclusion considered patients with breast cancer; three studies explored the effects of CAM for individuals with prostate cancer; one further study considered breast and prostate cancer as separate conditions. Four studies included participants with a heterogeneous mix of cancers. Lung cancer and lymphoma were the focus of the final two papers.

This was not the case, however, with cancer progression, with many studies choosing to include a range of disease stages. Only three studies included stage 0 participants within their sample and only five studies included people with stage IV cancer. As such, the majority of studies included stage I - III cancer patients. At randomisation, however, this covariate was largely controlled for, consequently effects by stage of disease are not detectable. Similarly, studies also ran their trials with samples that were at different stages of their traditional cancer treatment plans. Only one study included patients who had yet to begin their cancer treatment, however, and one study specifically looked at any effects of CAM between groups at pre- and post-treatment stages. Five studies worked solely with patients undergoing treatment; six studies worked solely with patients who had completed their treatment.

Six studies included in their sample patients who were either undergoing or finished with traditional treatment.

Overview of Individual Study Quality

The quality of each study was assessed using the CONSORT Statement for Randomized Trials of Nonpharmacologic Treatments (NPT) Checklist (Boutron, Altman, Moher, Schulz & Ravaud, 2017). The original CONSORT statement extension for NPTs was published in 2008 and updated in 2010. The checklist comprises 25 categories, containing sub-categories. The date range of this literature review encompasses articles published before the CONSORT Statement for NPTs was established, consequently adjudication against these standards for those articles may be unfair. Ratings against the CONSORT NPT checklist were conducted for each article, however, to explore whether more articles fulfilled the standards as a function of time passing, with an expected increase in reported details in the most recent articles. Median percentage for included items across the studies was 69%; range for this sample of studies was 35% - 82%, however, if only inspecting studies that purported to use the RCT design, range was 42% - 82%, with the lower range study occurring in 2006. Studies published more recently are likely to have a higher percentage of CONSORT items included in their full text. Full data for the quality checklists data can be found in Appendix 3.

Fifty percent of studies detailed a power analysis process to be able to detect a defined point change in primary outcomes measures, predominantly based upon findings in previous research. Every power analysis accounted for attrition rates over the course of the study. Median rate for completion of the study protocol over the studies was 50% with a range of 12.96% - 100% (this figure includes unplanned subgroup analyses that were then claimed as findings within the discussion). The percentage of each sample size included in the final data analysis was calculated (see Table 1). Results within this review will not be synthesised by meta-analysis, however, the fact that power analyses within the studies estimated much lower rates of attrition (~25%) means that drawing conclusions from the results must be done with caution.

Each study used validated and reliable assessments for their outcome measures of improvements in emotional well-being, depression and / or anxiety (see Appendix 4 for a list of outcome measures used across studies). These assessments took the form of Likert scales. Many studies included the reliability values of the tasks, however, none of the studies documented recommended test-retest interim periods. Although parametric analysis has been shown to be robust with Likert scale data, no studies documented their inspection of the data for normality before choosing to run parametric analyses. Additionally, and of critical importance where relevant, clustering of participants to take account of their groupings did not occur in any study where multi-groups or multi-sites ran the study protocol. Failing to account for nested structures within data in this way has been demonstrated to produce anti-conservative results. This may introduce bias into a study's final results so statistical significance / effect sizes need to be interpreted with caution.

Results

In this sample, it is true to say that the forms of intervention here are complementary rather than alternative, as all studies worked with samples of patients that were pre-, during- or post their traditional treatment plan. Twelve of the studies represent an integrative health approach to cancer treatment as the study was run within or alongside an operational cancer treatment centre or oncology unit within a hospital (Adamsen et al., 2009; Bar-Sela, Danos, Visel, Mashiach & Mitnik, 2015; Beard et al. 2010; Chen et al., 2013; Cohen, Warneke, Fouladi, Rodriguez & Chaoul-Reich, 2004; Courneya et al., 2007; Isa, Moy, Abdul Razack, Zainuddin & Zainal, 2013; Loh et al., 2014; Moadel et al., 2007; Oh et al., 2009; Paras-Bravo et al., 2017; Quist et al., 2012; Schneider, Hsieh, Sprod, Carter & Hayward, 2007; Witek-Janusek et al., 2008). Every study documented the secondary effects of cancer on an individual's quality of life, arising from not only the disease's physiological assault on the body but also from the traditional treatments administered to slow tumour growth. Manifestations of secondary effects are multiple; the majority of studies cited muscle weakness, due to excess fatigue and a consequent reduced motivation to maintain normal levels of activity, an increase in depressive symptoms or anxiety symptoms over loss of control and fear about tumour growth or recurrence. All studies were clear in their aims to relieve all or some of these secondary effects through the use of their intervention.

Four studies used a single arm design with no control condition (Bar-Sela et al., 2015; Paras-Bravo et al., 2017; Quist et al., 2012; Schneider et al., 2007). There was only one study, Liu et al., (2017), that used an active control condition as the sole contrast to the intervention; Loh et al., (2014) and Gudenkauf et al., (2015) included both an active and passive control group. The rest of the studies included passive control groups in the form of either standard care, wait list or education sessions. No study included data from a group of healthy participants as a form of control.

The majority of studies used an intervention built upon a base of physical exercise and measured its effects on the outcome variables: emotional well-being, depression or anxiety. Within the sample, interventions ranged from resistance and aerobic exercise at differing levels of intensity (Adamsen et al., 2009; Courneya et al., 2007; Quist et al., 2012; Schneider et al., 2007) to Qigong or Yoga (Chen et al., 2013; Cohen et al., 2004; Culos-Reed et al., 2006; Liu et al., 2017; Loh et al., 2014; Moadel et al., 2007; Oh et al., 2009) to muscle relaxation (Isa et al., 2013; Paras-Bravo et al., 2017) and finally relaxation mixed with mindfulness stress management training programs (Beard et al. 2010; Cameron et al., 2007; Gudenkauf et al., 2015; Nidich et al., 2007; Penedo et al., 2006; Witek-Janusek et al., 2008). Bar-Sela et al., (2015) examined multiple intervention methods in a retrospective analysis of sample data. None of the included studies examined the method of emotion-freedom technique, human software engineering, neurolinguistic programming or energy alignment methods (although one study did use Reiki as a contrast to their primary intervention using relaxation).

It seems useful to use these groupings as a way to explore the study results and possibly tease out any differential effects that may occur according to types of intervention. Accordingly, sections below will cover these levels of intervention with an initial evaluation of Bar-Sela et al., (2015) whose study represents a super-ordinate exploration of CAM as a method for improving patient outcomes within one supportive care setting, rather than focussing upon discrete CAM methods.

Study outcomes are listed under these headings in Table 1. Given the time constraints of the review process, effects sizes (Cohen's *d*) were calculated and reported for articles that included the necessary data to be able to do so. Otherwise, *p*. values are used as a proxy for findings of interest. Interpretation guidance for Cohen's *d* is that a value of 0-0.1 indicates no effect, 0.2-0.4 represents a small effect, 0.5-0.7 indicates an medium effect size and values of 0.8 and above indicating a large effect size. Effect sizes that include a minus sign indicate that participants responses makes it appear their symptoms have worsened with the intervention, although the size of the value still needs to be interpreted.

Multiple Complementary Therapies within a Cancer Care Centre

Bar-Sela et al., (2015) conducted a retrospective analysis of individuals covering multiple cancer diagnoses across multiple types of complementary therapies. The sample of the study self-referred to the CAM service and then selected a therapy of their choosing over a period of two years. As such there is no comparison of sample characteristics, simply a global analysis of the measures of emotional well-being, depression and anxiety captured at baseline, end of therapy and a six-week follow-up period. Improvements across all outcomes were evident from baseline to twelve-weeks.

Exercise interventions

Four studies used exercise as their intervention to explore effects across the three outcomes of interest, two of which used an RCT design (Adamsen et al., 2009; Courneya et al., 2007). Schneider et al., (2007) used the pre/post intervention design and Quist et al., (2012) reported their design as a pilot study. Courneya et al., (2007) found no difference between standard care participants or exercise protocols, using a three arm RCT design for all outcomes. Although not explicitly stated, the exercises used suggested that a gym setting was used for resistance and cardio exercise methods of exercise across all studies. Schneider et al., (2007) focussed upon emotional well-being and depressive symptoms and analysed participants as a function of their treatment status - whether they were during or post traditional treatment protocol, however no associations between exercises and outcomes were demonstrated. Adamsen et al., (2009) reported small effects for low and high intensity exercise across multiple diagnoses of cancer in their study. The experimental groups improved to a greater extent than the standard care control group in subscale measures of emotional well-being across two assessment tests.

Study Characteristics by Intervention

Intervention	First Author, Year	Design	Control	Diagnosis	Stage	Status	Gender	Mean age (yrs)	N (% analysed)	Analysis	Measures	Outcome	Variables	p. value	Cohen's d	Effect size
Exercise	Courneya (2007), Canada	RCT	Standard	Breast	I; II; III	D	F	49.2	242 (92.15)	Mixed-model	FACT-A	E	R; A; S; T	>.05		none
											CES-D	D	R; S; T	>.05	0.01	none
													A; S; T	>.05	0	none
											STAI	A	R; S; T	>.05	0.078	none
											A; S; T	>.05	0.096	none		
	Schneider (2007), USA	Pre/Post	None	Breast; Prostate		D; P	unclear		135 (100)	ANCOVA	QoLIC-V3	E	D; T	.378		none
													P; T	.096		none
													T		-0.075	none
												BDI	D	D; T	.001	
											P; T	0		none		
										T		-0.175		none		
Adamsen (2009), Denmark	RCT	Standard	Multiple		D	F; M	47	269 (87.36)	Regression	EORTC	E	G		0.3	small	
										MOS SF-36		G		0.32	small	
Quist (2012), Denmark	Pilot	None	Lung	III; IV	Pr; P	F; M	63	29 (79.31)	T-Test	FACT-L	E	T	.025	0.38	small	
Yoga	Cohen (2004), USA	RCT	Wait-list	Lymphoma	I; II; III; IV	D; P	F; M	51	39 (97.44)	Mixed-model regression	CES-D	D	G*T	>.05		none
													G; T	.56	-0.131	none
											STAI	A	G; T	.9	0.279	none
	Culos-Reed (2006), Canada	Pilot	Wait-list	Breast		P	F; M	50	38 (100)	ANOVA	EORTC	E	G; T	<.05	0.877	large
											POMS	D	G; T	<.01	0.62	medium
	Moadel (2007), USA	RCT	Standard	Breast	I; II; III	D; P	F	54.81	164 (78.05)	Regression	FACT-G	E	G	0.9	-0.07	none
											POMS	A	G		0.3517	small
											FACT-G	E	G	<.015	-0.616	medium negative
					P		164 (43.29) ¹		POMS	A	G	<.046	0.503	medium		
Witek-Janusek (2008), USA	Feasibility	Standard	Breast	I; II	P	F	54.5	75 (88)	ANOVA	QoLIC-V3	E	G	.001	0.894	large	
												G*T	.009	0.563	medium	
Oh (2009), Australia	RCT	Standard	Multiple	I; II; III; IV	D; P	F; M	60	162 (66.67)	Regression	FACT-G	E	G	<.001	0.708 ⁴	medium	
										POMS	D	G	.029	0.426	small	
											A	G	0	0.431	small	
Chen (2013), China	RCT	Wait-list	Breast	0; I; II; III	D	F	50	100 (95)	Multi-level modelling	FACT-G	E	G*T	>.05	0.246	small	
										CES-D	D	G*T	.05	0.336	small	

Study Characteristics by Intervention

Qigong	Loh (2014), Malaysia	RCT	Exercise; Standard	Breast	I; II	P	F		197 (48.22)	ANCOVA	FACT-B DASS-21	E D A	G G G	>.05 .49 .8	0.546	medium none none
	Liu (2017), China	RCT	Stretching	Breast	0; I; II; III	D; P	F	51.1	158 (66.46)	Mixed-model	FACT-B	E	G; T	<.001		size unclear
											HADS	D	G; T	>.05		none
										HADS	A	G; T	>.05		none	
Isa (2013), Malaysia	Quasi-E	Information	Prostate	I; II; III; IV		M	72.3	144 (95.83)	ANOVA	DASS-21	D	G*T	.096	0.009	none	
											A	G*T	< .001	0.995	large	
PMR	Paras-Bravo (2017), Spain	Pre/Post	None	Multiple		D; P	F; M	52.64	272 (97.79)	Kruskal-Wallis	FACT-G	E	T	<.001	2.438	large
	Penedo (2006), USA	RCT*	Half-day	Prostate	I; II	P	M	65.1	191 (100)	SEM	MCS	E	G	<.01	0.485	small
											FACT-G		G	<.05	0.304	small
	Cameron (2007), NZ	Prospective	Standard; Decline	Breast		Pr	F	52.15	154 (100)	ANOVA	FACT-G STAI-s	E A	G; T G; T	>.05 >.05	0.129 0.217	none none
Relaxation	Beard (2010), USA	RCT-P	Radiotherapy	Prostate		D	M	64.3	54 (90.74)	ANOVA	FACT-G	E	G	>.05		none
											CES-D	D	G	>.05		none
											CES-D	D	G	.05		size unclear
											STAI	A	G	0		none
	Gudenkauf (2015), USA	RCT	Education	Breast	0; I; II; III	P	F	54.28	183 (75.41)	ANOVA	FACT-B	E	G*T		0.332	small
ABS											D	G*T	.005	0.448	small	
Meditation	Nidich (2009), USA	RCT	Standard	Breast	II; III; IV	P	F	63.85	130 (100)	ANCOVA	FACT-B	E	G	.046	0.253	small
Various	Bar-Sela (2015), Israel	Pre/Post	None	Multiple	0; I; II; III	D	F; M	163 (82.82)		Wilcoxon signed rank test	EORTC	E	T	<.001		size unclear
											HADS	D		<.001		size unclear
												A		<.001		size unclear

Note: PMR = Progressive Muscle Relaxation; RCT = Randomised Controlled Design; Quasi-E = Quasi-Experimental; Pr = Pre-treatment; D = During treatment; P = Post treatment; F = Female; M = Male; N = Sample size; For explanations of measures, please see appendix 4; Outcomes: A = Anxiety; D = Depression; E = Emotional well-being; Variables: A = aerobic training; D = During treatment; G = group; P = Post treatment; R = resistance training; S = standard care; T = time;

In a later study, Quist et al., (2012) demonstrated small effects for an exercise intervention for lung cancer patients, particularly relevant for such a sample, considering that exercise impacts directly upon lung use. Their explicit aim was to test safety limits for such a protocol. As a pilot study, change is measured from baseline only with no control group against which to compare relative efficacy.

Yoga

Four studies used Yoga as an intervention. Cohen et al., (2004) found no effects of this intervention on depressive or anxiety symptoms using an RCT design. However, Culos-Reed et al., (2006) found medium effects of Yoga for depressive symptoms and large effects of Yoga upon emotional well-being. The contradictory findings across these studies may be due to design introducing bias into the results: Culos-Reed et al., (2006), although formally nominating their study a pilot, used random assignment to experimental or wait-list condition in waves. This clustering was not included in the analysis. Additionally, where Cohen et al., (2004) used a mixed model regression approach in their analysis, Culos-Reed et al., (2006) used ANOVA. The difference between these two methods and how they are able to use the variance within the data may be a source of the apparent contradictions. The small group sample size for each wave in Culos-Reed et al., (2006) ($n = 10$) and small group sample size for both studies suggests that these results need to be read with skepticism. Witek-Janusek et al., (2008) had twice the sample size of Culos-Reed et al., (2006) and also found large main effects for emotional well-being and medium interaction effects for emotional well-being for group over time. Witek-Janusek et al., 2008, however, used a feasibility design and participants were able to choose how they participated in the study, which may introduce a source of bias into the results and hence the difference in magnitude of these results.

Yoga exercise featured as part of a mindfulness based stress reduction (MBSR) program which utilises breath awareness, meditation while sitting and walking and 'mindful yoga'. The study, by Moadel et al., (2007), also used an RCT design and a bigger sample size of individuals who were either finished with or undergoing chemotherapy. Unfortunately, the power imbued in a large sample size at recruitment stage was confounded by the fact that 75% of the intervention group did not take part in any of the intervention sessions. They found no effects of Yoga upon emotional well-being within the global sample. They did, however, conduct a sub-group analyses of participants who had completed their chemotherapy and detected a medium effect of Yoga upon anxiety measures. Interestingly, the emotional well-being analysis in this sub-group registers as worse. The researchers attribute this result to decrements in scores among the control group, as well as improvements for the Yoga group but do not include sufficient detail to be able to confirm this.

Qigong

All studies examining the effects of Qigong used an RCT design. The earliest study of the four included in this sample is Oh et al., (2009). They reported missing data within outcome measures but not the absolute level, nor their methods for imputation of values, nor their analysis of data with and without imputed values. The study reports a medium effect of Qigong for participants' emotional well-being and small, positive effect sizes for depression and anxiety between Qigong and standard control conditions. Chen et al., (2013) also reported small effects for emotional well-being and depressive symptom outcomes. Both studies used passive control conditions. Loh et al., (2014) contrasted the effects of Qigong with both standard care and an exercise group. Exercise was operationalised as a line-dancing group. While they demonstrated a medium effect for emotional well-being, their study design found no difference between conditions for depression and anxiety. Liu et al., (2017) completed a similar study design with 'stretching' as a control condition for Qigong with an explanation that stretching alone does not encompass the breathing and thoughtfulness that accompanies movement within Qigong practice. Although they reported a significant effect for emotional well-being for group, no statistic was listed for calculation of Cohen's *d*. Liu et al., (2017) demonstrated no difference for symptoms of depression or anxiety across Qigong and the stretching group, across the entire sample and across a subgroup analyses of participants who practised extensively at home.

Progressive Muscle Relaxation (PMR)

Emotional well-being, depression and anxiety outcomes are covered across two studies: Isa et al., (2013) and Paras-Bravo et al., (2017). PMR as used by Isa et al., (2013) involved training for abdominal breathing and progressive relaxation through tensing and releasing the 16 large muscle groups of the body over a period of 15 seconds for each muscle group. Paras-Bravo et al., (2017) trained their participants in an abbreviated form of PMR that maintained normal breathing throughout the progressive relaxation stage of the protocol. Isa et al., (2013) enrolled participants in home practice for six months; Paras-Bravo et al., (2017) enrolled participants for four weeks. Neither study used an RCT design, and the quasi-experimental design of Isa et al., (2013) had complete separation of participants by exercise condition (PMR versus Information group), also by site - all of the information group participants were from a separate, independent hospital, introducing confounds into the data analysis. Paras-Bravo et al., (2017) recruited their sample across 10 hospitals and completed the training within the hospitals' oncology units. Isa et al., (2013) reports a large effect for an improvement in anxiety symptoms but no effect for depressive symptoms. This study did not include emotional well-being as an outcome. Paras-Bravo et al., (2017) found a large effect for improvement in emotional well-being over this single arm, single outcome measure study.

Relaxation

Four studies concentrated on relaxation as an intervention to improve emotional well-being, depression or anxiety symptoms. Two studies, Penedo et al., (2006) and Gudenkauf et al., (2015), using an RCT design, found small effects for emotional well-being and emotional well-being and depression respectively. Both of these studies used participants who were post traditional treatment. Cameron et al., (2007) and Beard et al., (2010)'s participants were either pre- or during treatment while the study was carried out. Both of these studies report no difference between standard care control groups and relaxation group. Beard et al., (2010) conducted subgroup analyses using data from participants who registered as clinically depressed ($n = 7$) or clinically anxious ($n = 10$) across the groups at baseline assessment. The null finding for anxiety remained. They report a p . value of .05 finding for depression, however there are no average values within the article by which to calculate effect sizes. Given the borderline significance value and the small sample size, plus the use of ANOVA for analysis, this result needs to be interpreted with caution.

Meditation

One study examined meditation's effect on emotional well-being through an RCT design, Nidich et al., (2007). After completing training in the method, participants were expected to practice at home twice daily. Self-report was used to monitor participant adherence to the program and results represent difference between baseline and end of study assessment, two years later (assessments were conducted at 6 month intervals). Emotional well-being improved over time more for the meditation group, however the significance of the effect is borderline ($p = .046$) and the duration of time between measures compared with the scale of the assessment period (two years between values with a construct that asks individuals to evaluate their life over the last seven days) introduces a note of caution when interpreting the results.

Discussion

This review aimed to investigate effects of complementary interventions for individuals with a concurrent diagnosis of cancer on emotional well-being, depression and / anxiety. In total, 20 studies were reviewed across six complementary medicine methods. The majority of studies used an RCT design or purported to be at the beginning of confirmatory stages of testing methods by running feasibility or pilot studies.

Most studies chose to focus on two or more of the three outcomes which may suggest that although some of the chosen interventions hail from ancient medical customs, the research into their active ingredient is relatively new and researchers are still exploring the range of effects an intervention may influence. All studies reporting large effects for any outcome were a) not of RCT design and b) ran

protocols that could introduce bias into the data analysis and inflate *p*.values, such as small sample sizes, self-selection to study arm.

Very few studies grounded their choice of intervention in any theory, however some studies reported the focus on breathing as key to increasing flow of oxygen to the muscles that helped metabolise toxins while the mind calmed with deeper breathing; believed effects arose from the ability of the connected mind and body to promote regulation of the body somatic system through increased oxygenation and calming. As well as using psychosocial measures of improvement, five studies included objective measures of physiological functioning such as peak oxygen levels, walking capacity and grip strength (Adamsen et al., 2009; Courneya et al., 2007; Culos-Reed et al., 2006; Quist et al., 2012; Schneider et al., 2007). Three studies (Chen et al., 2013; Liu et al., 2017; Witek-Janusek et al., 2008) included blood measures such as cortisol levels or immunological functioning. Those results are not reported here as they are out of the scope of the review, however, it is encouraging to see research projects planning for converging patterns of evidence across different levels of analysis and should be explored further as a method for limiting bias when blinding to conditions is not possible and self-report measures are the predominant method for collecting the psychosocial outcomes.

The choice of control status was, in the main, passive, with only three studies choosing active controls to begin to untangle the mechanism for effects within interventions where present (Courneya et al., 2007; Liu et al., 2017; Loh et al., 2014). Only one study listed a group of healthy controls, however they did not collect primary outcomes, nor report them in their article. Healthy participants who engage in the interventions and control groups, either as discrete groups or mixed with participants, describe another kind of baseline that may inform future planning and study design. Having healthy controls within the same groups could also inform blinding protocols for practitioners.

Implications for future research potential

Effects of the interventions within this sample of papers, looked at conservatively, are small to negligible. Perhaps the strongest implication that can be derived is that detection of the small effects within the sample arose from RCT designs as opposed to other study designs. If we accept that RCT is the best method to capture effects then future research using this design is needed to replicate and extend these results. Since most studies concentrated on one or two cancer diagnoses, it may be the case that certain interventions work better for certain cancers, for example, the feasibility of the exercise program for participants with lung cancer yielded small effects sizes for emotional well-being, while the physical exercises for a study with breast and prostate cancer (Schneider et al., 2007) yielded none. This has implications for how cancer care centres are organised (whether specialist centres or general cancer treatment centres) and how researchers collaborate to facilitate sufficient participants within diagnoses for such comparisons.

Also, power to detect effect sizes may have been compromised by high rates of attrition. Where attrition was analysed, younger participants were more likely to drop out but transport difficulties was also cited as a reason for withdrawal. While a study can plan to include more participants to ensure sufficient power, an investigation into why age and transport issues are a common reason for attrition across studies may be useful. It could be that inequalities are occurring. It is well known that, additional to health, psychological and social decrements in functioning, there is a financial cost for families with members who have cancer. If this indirectly influences access to work or transport, then results of studies may be indirectly biased. A similar concern exists for the location of studies. Anonymity conditions set by journals may have meant that papers could not detail the sites of their studies, however if studies are always within urbanised provision, another bias may be present due to the under-representation of participants from rural locations.

The group setting was pervasive among these studies, with trial sessions predominantly occurring in groups and individuals practising alone at home. Where standard care or wait-list condition was used for the control condition, this raises the question of the influence of social support on any effect that is detected. Given that a description often used for people with a cancer diagnosis is a 'feeling of isolation', then the group setting could be a source for improved feelings of well-being, depression or anxiety. Future research could take account of this, either through design or as the central research question.

The group factor was often cited as problematic for blinding protocols that involved participants. If blinding is not possible for practitioners and participants, co-design could be an implication for future research. Involving primary stakeholders in the construction of a trial protocol could also improve adherence rates and improve confidence in results. Replication of trials is also needed to build confidence in small effects. Building networks amongst practitioners, to run many small (but well-constructed, sufficiently powered) studies could facilitate strength through the use of the same protocols, measurement instruments and analysis plans. The Many-Lab approach in psychology has worked well in networking disparate research laboratories within a collaborative approach where each collect a small number of observations using shared protocols and materials.

Limitations

This study has several limitations. Firstly, the terms for the literature search, while comprehensive in their use of synonyms and beginning from an agreed base, may have produced limited results. Once articles were collated, it became clear that emotional well-being was nested inside the construct of 'Quality of Life', for which there are many formal assessment instruments. Articles that included a quality of life measure as a primary outcome often referred to the construct in the article title or abstract, referring to instrument subscales further down the article, so it is highly likely that there are many more studies that document emotional well-being outcomes if a wider search is conducted that includes 'quality of life' as a search term, or the formal assessment tasks in the search criteria.

Also, a citation search was conducted within the 16 articles that were eligible for inclusion from the initial database search results, however, due to time constraints, the citation search was not extended to those further articles considered eligible. Consequently, this sample represents a truncated selection of papers, so results should be taken as tentative.

Time constraints also truncated the search to the EBSCOhost database. This was a conscious decision made by the author once the first database results were exported. Extending the search to EMBASE database is in itself not a time consuming task, however, sifting and reviewing de-duplicated results would have been beyond the resources committed to this strand of the project.

Several of the complementary medicines listed in the search terms yielded null results. Given the limitations of the search listed above, it may be useful to conduct a second search before regarding this as conclusive evidence for a gap within the research literature. In the absence of peer reviewed articles for those interventions, the above studies could suggest templates of robust protocols to follow in generating such research.

Conclusions

The findings from this review point to possible small effects of particular complementary interventions for emotional well-being, depressive symptoms and / or anxiety symptoms within quite narrow groups of cancer diagnoses. The practices of Yoga, Qigong and Relaxation all appear to be able to motivate a small, reproducible level of effect in the experimental conditions. The most robust method for the detection of these effects appears to be the randomised controlled design, and quality checks using the CONSORT Statement for NPTs point to several areas where design can be made more rigorous, such as blinding and accounting for clustering / correlated data samples through choice of statistical analysis method. Recommendations for extending the utility of RCT design with the hope of improving study adherence, completion and increasing sample diversity are made. Building studies that are generalisable to wider populations may facilitate greater discussion round integrating traditional and complementary medicines in the longer term.

References

- Adamsen, L., Quist, M., Andersen, C., Møller, T., Herrstedt, J., Kronborg, D., ... Rørth, M. (2009). Effect of a multimodal high intensity exercise intervention in cancer patients undergoing chemotherapy: Randomised controlled trial. *BMJ*, 339(7726), 895–898. <https://doi.org/10.1136/bmj.b3410>
- Bar-Sela, G., Danos, S., Visel, B., Mashiach, T., & Mitnik, I. (2015). The effect of complementary and alternative medicine on quality of life, depression, anxiety, and fatigue levels among cancer patients during active oncology treatment: phase II study. *Supportive Care in Cancer*, 23(7), 1979–1985. article. <https://doi.org/10.1007/s00520-014-2560-1>
- Beard, C., Stason, W. B., Wang, Q., Manola, J., Dean-Clower, E., Dusek, J. A., ... Benson, H. (2010). Effects of complementary therapies on clinical outcomes in patients being treated with radiation therapy for prostate cancer.(Clinical report). *Cancer*, 117(1), 96. article.
- Cameron, L. D., Booth, R. J., Schlatter, M., Ziginskis, D., & Harman, J. E. (2007). Changes in emotion regulation and psychological adjustment following use of a group psychosocial support program for women recently diagnosed with breast cancer. *Psycho-Oncology*, 16(3), 171–180. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=mdc&AN=16858670&site=ehost-live&authtype=ip,shib&user=s1523151>
- Chen, Z., Meng, Z., Milbury, K., Bei, W., Zhang, Y., Thornton, B., ... Cohen, L. (2013). Qigong improves quality of life in women undergoing radiotherapy for breast cancer. *Cancer*, 119(9), 1690–1698. article. <https://doi.org/10.1002/cncr.27904>
- Cohen, L., Warneke, C., Fouladi, R. T., Rodriguez, M. A., & Chaoul-Reich, A. (2004). Psychological adjustment and sleep quality in a randomized trial of the effects of a Tibetan yoga intervention in patients with lymphoma. *Cancer*, 100(10), 2253–2260. article. <https://doi.org/10.1002/cncr.20236>
- Courneya, K. S., Segal, R. J., Mackey, J. R., Gelmon, K., Reid, R. D., Friedenreich, C. M., ... McKenzie, D. C. (2007). Effects of aerobic and resistance exercise in breast cancer patients receiving adjuvant chemotherapy: A multicenter randomized controlled trial. *Journal of Clinical Oncology*, 25(28), 4396–4404. <https://doi.org/10.1200/JCO.2006.08.2024>
- Culos-Reed, S. N., Carlson, L. E., Daroux, L. M., & Hatley-Aldous, S. (2006). A pilot study of yoga for breast cancer survivors: Physical and psychological benefits. *Psycho-Oncology*, 15(10), 891–897. <https://doi.org/10.1002/pon.1021>
- Gudenkauf, L. M., Antoni, M. H., Stagl, J. M., Lechner, S. C., Jutagir, D. R., Bouchard, L. C., ... Carver, C. S. (2015). Brief cognitive–behavioral and relaxation training interventions for breast cancer: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, 83(4), 677–688. <https://doi.org/10.1037/ccp0000020>

Isa, M. R., Moy, F. M., Abdul Razack, A. H., Zainuddin, Z. M., & Zainal, N. Z. (2013). Impact of applied progressive deep muscle relaxation training on the level of depression, anxiety and stress among prostate cancer patients: a quasi-experimental study. *Asian Pacific Journal of Cancer Prevention : APJCP*, 14(4), 2237. article. <https://doi.org/10.7314/APJCP.2013.14.4.2237>

Lenhard, W., & Lenhard, A. (2016). Calculation of Effect Sizes. <https://doi.org/10.13140/RG.2.1.3478.4245>

Liu, P., You, J., Loo, W. T. Y., Sun, Y., He, Y., Sit, H., ... Chen, J. (2017). The efficacy of Guolin-Gigong on the body-mind health of Chinese women with breast cancer: A randomized controlled trial. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation*, 26(9), 2321–2331. <https://doi.org/10.1007/s11136-017-1576-7>

Loh, S. Y., Lee, S. Y., & Murray, L. (2014). The Kuala Lumpur Qigong Trial for Women in the Cancer Survivorship Phase-Efficacy of a Three-Arm RCT to Improve QoL. *Asian Pacific Journal of Cancer Prevention : APJCP*, 15(19), 8127–8134.

Moadel, A. B., Shah, C., Wylie-Rosett, J., Harris, M. S., Patel, S. R., Hall, C. B., & Sparano, J. A. (2007). Randomized controlled trial of yoga among a multiethnic sample of breast cancer patients: effects on quality of life. *Journal Of Clinical Oncology: Official Journal Of The American Society Of Clinical Oncology*, 25(28), 4387–4395. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=mdc&AN=17785709&site=ehost-live&authtype=ip.shib&user=s1523151>

Nidich, S. I., Fields, J. Z., Rainforth, M. V., Pomerantz, R., Cella, D., Kristeller, J., ... Schneider, R. H. (2009). A randomized controlled trial of the effects of transcendental meditation on quality of life in older breast cancer patients. *Integrative Cancer Therapies*, 8(3), 228–234. <https://doi.org/10.1177/1534735409343000>

Oh, B., Butow, P., Mullan, B., Clarke, S., Beale, P., Pavlakis, N., ... Rosenthal, D. (2009). Impact of Medical Qigong on quality of life, fatigue, mood and inflammation in cancer patients: A randomized controlled trial. *Annals of Oncology*, 21(3), 608–614. <https://doi.org/10.1093/annonc/mdp479>

Parás-Bravo, P., Salvadores-Fuentes, P., Alonso-Blanco, C., Paz-Zulueta, M., Santibañez-Margüello, M., Palacios-Ceña, D., ... Fernández-de-Las-Peñas, C. (2017). The impact of muscle relaxation techniques on the quality of life of cancer patients, as measured by the FACT-G questionnaire. *Plos One*, 12(10), e0184147–e0184147. <https://doi.org/10.1371/journal.pone.0184147>

Penedo, F., Molton, I., Dahn, J., Shen, B.-J., Kinsinger, D., Traeger, L., ... Antoni, M. (2006). A randomized clinical trial of group-based cognitive-behavioral stress management in localized prostate cancer: Development of stress management skills improves quality of life and benefit finding. *Annals of Behavioral Medicine*, 31(3), 261–270. article. https://doi.org/10.1207/s15324796abm3103_8

Quist, M., Rørth, M., Langer, S., Jones, L. W., Laursen, J. H., Pappot, H., ... Adamsen, L. (2012). Safety and feasibility of a combined exercise intervention for

inoperable lung cancer patients undergoing chemotherapy: a pilot study. *Lung Cancer*, 75(2), 203–208. <https://doi.org/10.1016/j.lungcan.2011.07.006>

Schneider, C. M., Hsieh, C. C., Sprod, L. K., Carter, S. D., & Hayward, R. (2007). Cancer treatment-induced alterations in muscular fitness and quality of life: the role of exercise training. *Annals of Oncology*, 18(12), 1957. article.

Witek-Janusek, L., Albuquerque, K., Chroniak, K. R., Chroniak, C., Durazo-Arvizu, R., & Mathews, H. L. (2008). Effect of mindfulness based stress reduction on immune function, quality of life and coping in women newly diagnosed with early stage breast cancer. *Brain Behavior and Immunity*, 22(6), 969–981. article. <https://doi.org/10.1016/j.bbi.2008.01.012>

Appendices

Appendix 1 - Search Terms and String

Three strings were constructed for initial search and then combined. Filters were then applied and duplicates removed before exporting to management software for title and abstract review.

Search String 1

(DE "emotional intelligence" OR "emotional well-being" OR "Emotional well being"
OR "Emotional well-being" OR)

AND

(DE "oncology" OR DE "Neoplasms" OR "Integrative oncology" OR "Cancer
treatment")

AND

(DE "alternative medicine" OR "Alternative therapies" OR "Complementary medicine"
OR "Complementary therapies" OR "Holistic medicine" OR "Holistic therapies" OR
"Integrative medicine" OR "Integrative therapies" OR "Mind-body practices" OR
"Mind body practices" OR "Mind-body techniques" OR "Mind body techniques" OR
"Mind-body therapies" OR "Mind body therapies" OR "Emotional release" OR
"Emotional intervention" OR "Neuro-linguistic programming" OR "Neuro linguistic
programming" OR "Qigong" OR "Emotional freedom techniques" OR "Relaxation"
OR "Meditation" OR "Human Software Engineering" OR "Energy Alignment
methods")

Search String 2

"Depression"

AND

(DE "oncology" OR DE "Neoplasms" OR "Integrative oncology" OR "Cancer
treatment")

AND

(DE "alternative medicine" OR "Alternative therapies" OR "Complementary medicine"
OR "Complementary therapies" OR "Holistic medicine" OR "Holistic therapies" OR
"Integrative medicine" OR "Integrative therapies" OR "Mind-body practices" OR
"Mind body practices" OR "Mind-body techniques" OR "Mind body techniques" OR
"Mind-body therapies" OR "Mind body therapies" OR "Emotional release" OR
"Emotional intervention" OR "Neuro-linguistic programming" OR "Neuro linguistic
programming" OR "Qigong" OR "Emotional freedom techniques" OR "Relaxation"

OR "Meditation" OR "Human Software Engineering" OR "Energy Alignment methods")

Search String 3

"Anxiety"

AND

(DE "oncology" OR DE "Neoplasms" OR "Integrative oncology" OR "Cancer treatment")

AND

(DE "alternative medicine" OR "Alternative therapies" OR "Complementary medicine" OR "Complementary therapies" OR "Holistic medicine" OR "Holistic therapies" OR "Integrative medicine" OR "Integrative therapies" OR "Mind-body practices" OR "Mind body practices" OR "Mind-body techniques" OR "Mind body techniques" OR "Mind-body therapies" OR "Mind body therapies" OR "Emotional release" OR "Emotional intervention" OR "Neuro-linguistic programming" OR "Neuro linguistic programming" OR "Qigong" OR "Emotional freedom techniques" OR "Relaxation" OR "Meditation" OR "Human Software Engineering" OR "Energy Alignment methods")

Appendix 2: EWB Title and Abstract Sift Criteria

EWB Sift Criteria: Effectiveness of interventions

The aim of this literature review is to assess the impact of complementary / alternative medical treatments on a patient's emotional resilience and wellbeing, and possible link to better response to cancer treatments.

For all titles and abstracts answer ALL questions unless coded as Rev or Exclude at Q1

Or excluded at any stage

	QUESTION	ANS	QUALIFIER	ACTION		
Q1	Is this an evaluation of an intervention or programme	No	Review / Systematic Review or Meta-Analysis	Code as Rev		
			Evaluation of cost-benefits	Exclude		
			Other	Exclude		
		Yes	Population - if focuses solely on children	Exclude		
			Illness is other than cancer	Go to Q4		
			Document type - dissertation	Exclude		
			Intervention - if focuses solely on pharmacological treatment	Exclude		
			Intervention - if complementary / alternative methods mentioned	Go to Q2		
			Intervention population, illness, doc type unclear	Go to Q2		
Q2	Does the study measure well-being / emotional resilience outcomes <i>I.e any measure of how the intervention impacts on well-being / emotional resilience</i>	No		Exclude		
		Yes	Reduce / improve scores on measures of well-being / emotional resilience	Code as Review 1 (R1)		
			Reduce / Improve the scores on measures of depression	Code as Review 2 (R2)		
			Reduce / Improve the scores on measures of anxiety	Code as		

				Review 3 (R3)
			Use qualitative methods of measuring an increase in well-being / emotional resilience	Code as Review 4 (R4)
			Other well-being / emotional resilience outcome	Code Other
		Unclear		Code Unclear
Q3	Does the study have at least one follow up measure after baseline?	No		Tag
		Yes		Include
		Unclear		Code Unclear

EWB Sift Criteria: Effectiveness of interventions for diseases other than Cancer - Q4

The ultimate aim of Q4 is to assess the impact of complementary / alternative medical treatments on a patient's emotional resilience and wellbeing, and possible link to better response for treatments other than cancer.

For all titles and abstracts answer ALL questions unless excluded at any stage

	QUESTION	ANS	QUALIFIER	ACTION	
4.1	Is this an intervention which focuses on helping people manage their emotions while facing a life-threatening disease / long term chronic condition	No	Review / Systematic review or meta-analysis	Code as Rev	
			Evaluation of cost-benefits	Code as Econ	
			Other	Exclude	
		Yes	Document type - dissertation	Exclude	
			Intervention - if focuses solely on pharmacological treatment	Exclude	
Intervention - if complementary / alternative methods mentioned	Go to Q4.2				

		Unclear		Code as Unclear & go to Q4.2
4.2	Does the study measure well-being / emotional resilience outcomes	No		Exclude
		Yes	Reduce / improve scores on measures of well-being / emotional resilience	Code as Alt1 & go to Q4.3
			Reduce / Improve the scores on measures of depression	Code as Alt2 & go to Q4.3
			Reduce / Improve the scores on measures of anxiety	Code as Alt3 & go to Q4.3
			Use qualitative methods of measuring an increase in well-being / emotional resilience	Code as Alt4 & go to Q4.3
Other well-being / emotional resilience outcome	Code as Alt5 & go to Q4.3			
4.3	Does the study have at least one follow up measure after baseline?	No		Exclude
		Yes		Include for appendix list
		Unclear		Exclude

Appendix 3 CONSORT Items for Abstracts

Citation			Methods										Results			Total				
First Author	Year	Type	Title incl RCT?	Address	Trial Design	Participants	Interventions	Objectives	Outcome	Randomisation	Blinding	Random ass n	Recruitment	analysed n	Outcome	Harms	Conclusions	Registration	Funding	Percentage of CONSORT items
Cohen	2004	RCT	Green	Green	Green	Red	Green	Green	Green	Red	Red	Red	Red	Green	Green	Green	Green	Red	Green	58.82
Culos-Reed	2006	Pilot RCT	Red	Green	Green	Red	Green	Green	Red	Red	Green	Red	Red	Green	Red	Red	Green	Red	Red	29.41
Penedo	2006	RCT	Green	Green	Green	Green	Green	Green	Green	Red	Red	Red	Red	Green	Green	Green	Green	Red	Green	58.82
Cameron	2007	Quasi-Experimental	Red	Green	Green	Red	Green	Green	Red	Grey	Grey	Red	Red	Green	Green	Green	Green	Red	Red	
Courneya	2007	RCT	Green	Green	Red	Red	Green	Green	Red	Red	Green	Red	Red	Green	Red	Red	Green	Red	Green	47.06
Moadel	2007	RCT	Green	Green	Green	Red	Green	Green	Red	Red	Red	Red	Red	Green	Green	Green	Green	Red	Green	47.06
Schneider	2007	Pre-post Intervention	Red	Green	Red	Red	Green	Green	Red	Grey	Grey	Red	Red	Green	Green	Green	Green	Red	Red	
Witek-Janusek	2008	Non-randomised	Red	Green	Green	Green	Green	Green	Green	Red	Red	Red	Red	Green	Green	Green	Green	Red	Red	
Adamsen	2009	RCT	Green	Green	Green	Green	Green	Green	Green	Red	Red	Red	Red	Green	Green	Green	Green	Red	Green	64.71
Nidich	2009	RCT	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red	Red	Green	Red	Green	82.35
Beard	2010	Pilot RCT	Red	Green	Green	Red	Green	Green	Red	Red	Red	Red	Red	Green	Red	Red	Green	Red	Red	35.29
Quist	2012	Feasibility Pilot	Red	Green	Green	Green	Green	Green	Green	Grey	Grey	Red	Red	Green	Green	Green	Green	Red	Red	
Chen	2013	RCT	Green	Green	Green	Red	Green	Green	Red	Red	Red	Red	Red	Green	Green	Green	Green	Red	Red	52.94
Isa	2013	Quasi-Experimental	Red	Green	Green	Red	Green	Green	Red	Grey	Grey	Red	Red	Green	Green	Green	Green	Red	Red	
Loh	2014	RCT	Green	Green	Green	Red	Green	Green	Red	Red	Red	Red	Red	Green	Green	Green	Green	Red	Red	47.06
Bar-Sela	2015	Phase-II Study	Red	Green	Red	Red	Green	Green	Red	Grey	Grey	Red	Red	Green	Green	Green	Green	Red	Red	
Gudenkauf	2015	RCT	Green	Green	Green	Green	Green	Green	Green	Red	Red	Red	Red	Green	Green	Green	Green	Red	Green	52.94
Paras-Bravo	2017	Pre-post intervention	Red	Green	Green	Green	Green	Green	Green	Red	Red	Red	Red	Green	Green	Green	Green	Red	Green	
Lui	2017	RCT	Green	Green	Green	Red	Green	Green	Green	Red	Red	Red	Red	Green	Green	Green	Green	Red	Red	41.18

Note: Green squares denote CONSORT items are present; red square denote absent items; grey squares denote NA values for studies not of RCT design. Percentages are calculated for RCT designs only.

Appendix 3 CONSORT Items for Full Text

Citation	Year	Title & abstract	Backgrounds & Objectives	Design	Participants	Interventions	Sample Size	Randomisation	Blinding	Statistical Methods	Results	Recruitment	Baseline Data	N	Outcomes & Estimation	Discussion	Other information	Percentage of CONSORT items																						
																		First Author	Structured Abstract	Clear Objectives Background	Eligibility Criteria Design	Settings	Treatment vs Control stated	Individualisation	Standardisation	Practitioner Adherence	Participant Adherence	Outcomes	Stopping	Random allocation	Sequence Mechanism	Person Responsible	Who	Limitations of bias	Similarity	Clustering?	Name	Additional analyses	N for Random assignment, treated and analysed	Losses Exclusions
Cohen	2004																	64.44																						
Culos-Reed	2006																	42.22																						
Penedo	2006																	68.89																						
Cameron	2007																	64.86																						
Courneya	2007																	73.33																						
Moadel	2007																	66.67																						
Schneider	2007																	35.14																						
Witek-Janusek	2008																	56.76																						
Adamsen	2009																	59.09																						
Nidich	2009																	75.56																						
Beard	2010																	60																						
Quist	2012																	81.4																						
Chen	2013																	70.45																						
Isa	2013																	75.56																						
Loh	2014																	71.11																						
Bar-Sela	2015																	55.56																						
Gudenkauf	2015																	82.93																						
Paras-Bravo	2017																	69.44																						
Lui	2017																	75																						

Note: Green squares denote CONSORT items are present; red square denote absent items; grey squares denote NA values for studies not of RCT design. Percentages are weighted by the number of filled squares.

Appendix 4 - Outcome Assessment Instruments

The outcomes of emotional well-being, depressive symptoms and symptoms of anxiety were measured using a variety of assessments. As stated earlier, every test was published and validated. Each test is summarised below:

Measures for emotional well-being

Functional Assessment of Cancer Therapy - general / breast / lung / anemia (FACT)

FACT contains subscales that measure functional well-being, emotional well-being, physical well-being and social/family well-being. Each subscale is a contained instrument with the score across all subscales being used to represent an index of quality-of-life. Within the FACT assessment battery are additional sub-scales related to discrete cancer diagnoses, indicated by a capital letter after the assessment acronym. These scales are analysed independently of the base scales. A change of two scale points is considered significant within the literature for this instrument (ref here)

Quality of Life Index Cancer Version III (QoLIC-V3)

This instrument asks the individual to rate their satisfaction against areas of their life that they consider important. There are four domains, health and functioning, socioeconomic, psychological/spiritual and family, comprising a total of 66 items. Part I of the instrument asks the individual to rate their satisfaction within each domain; Part II asks the individual to evaluate the importance of each scale item with a weighted satisfaction score between Part I and II being used for analysis.

European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC)

The EORTC has five functional scales: physical, role, cognitive, emotional and social which have been demonstrated to measure distinctive areas of a quality of life index. Each scale can be used independently as a measure of change.

Measures of Depressive Symptoms

Center for Epidemiologic Studies Depression Scale (CES-D)

A 20-item instrument that measures the frequency of depressive affect, somatic symptoms, positive affect and interpersonal relations during the previous week. This scale has a clinical threshold for diagnosis of levels of depression. Values greater than 16 indicate clinically significant symptoms within an individual.

Beck Depression Inventory (BDI)

The BDI has 21 questions. There is a total score of 63 with higher scores indicating increased symptoms of depression.

Measures used for both depression and anxiety outcomes

Affects Balance Scale (ABS)

An instrument of 40 emotion adjectives, for which individuals provide evaluations of the degree to which they experienced the emotion during the previous week. The ABS-depressive affect subscale was used in the study listed here.

Profile of Mood State (POMS)

POMS comprises six subscales with higher scores indicating greater negative affect. POMS was used as a measure of both depression and anxiety within this sample of papers.

Depression and Anxiety Stress Scale-21 (DASS-21)

DASS-21 has three subscales of depressive, anxiety and stress items. Individuals are asked to rate their evaluations against a four point Likert scale for presence and intensity of their symptoms over the previous seven days.

Hospital Anxiety and Depression Scale (HADS)

The HADS has two subscales that measure depression and anxiety. Fourteen items measure emotion states with lower scores indicating improvement.

Measures for symptoms of anxiety

Spielberger State-Trait Anxiety Inventory (STAI)

The STAI has 20 items that assesses concurrent anxiety symptoms. Higher scores indicate a higher feeling of anxiety. One study used a short form of this task.