Energy Conservation Strategies in Increasing Engagement in Occupation for Individual Experiencing Cancer Related Fatigue

Jenn Hutchinson, OTD/S

Case Study Research Design for Evidence Based Practice OTD Course

Author Note

Jennifer Hutchinson https://www.enbyot.com

Abstract

Individuals with cancer face many side effects as they undergo treatment, with some effects lasting through and into survivorship. Some side effects experienced include fatigue, pain, and cognitive changes. Cancer-related fatigue (CRF) occurs when these combined side effects become chronic conditions that are not relieved through standard fatigue management approaches. Cancer and CRF affect cancer survivors' ability to participate in meaningful daily activities, known as occupations in occupational therapy practice, and impact overall quality of life. The purpose of this study was to examine whether training in energy conservation strategies would increase engagement in occupations for an individual with CRF. A mixed methods SSRD case study design was conducted using data collected from a cancer patient experiencing CRF and subsequent decrease in engagement of meaningful activities. Subjective qualitative and quantitative data was collected through interview and self-rating scale assessments. Services were provided in a multidisciplinary clinic setting. Interventions were selected to meet specific goals of resuming homemaker and intimate partner roles as indicated by evaluation and assessments. Energy conservation strategies is a thoroughly researched intervention in CRF, and occupational therapists have extensive knowledge in training clients to apply these strategies to increase engagement in meaningful occupations and improved quality of life.

Introduction

It is estimated that there are more than 16 million cancer survivors in the United States (National Cancer Institute, 2019). Cancer treatments are becoming more successful, leading to survival rates of five or more years for 67% of overall cancer patients (Howlander et al., 2020). However, the treatments can impact cancer survivors' engagement in meaningful daily living activities. Some side effects from cancer and treatment include pain, fatigue, and cognitive changes (American Cancer Society, 2020). While cancer related side effects are difficult to avoid, it is important to collaborate with clients on management strategies to improve their quality of life.

KR is a 40-year-old cisgender woman of Native American heritage. She lives with her husband and wife, two adult children, and 3-year-old granddaughter. KR has a history of traumatic brain injury and facial reconstruction with lasting impacts on vision and executive function abilities which leaves her unable to drive or have a career outside of the home. However, she does receive social security disability benefits which offset some of the financial challenges her family faces. Her husband is a disabled veteran, and her wife is a surgeon, so it is difficult for either to assist with household management, making KR the primary homemaker and caretaker for the family. These roles are deeply meaningful to her and they connect emotionally to her Native heritage and Pagan spirituality. For the past year, KR has been undergoing treatments and surgeries for leukemia which has left her with increased anxiety, depression, and cancer related fatigue. KR notes that the fatigue is making it difficult to keep up with her homemaker and caretaker roles. Additionally, she worries about the loss of intimacy with her spouses as a result of the shifting of roles in the household and the time and energy she spends in cancer related care. She is seeing an outpatient occupational therapist to learn

strategies on being a better caretaker for her loved ones, resume her active homemaker role, tend to her garden, and resume sexual and intimate connection with her spouses.

Occupational therapists collaborate with clients to get them back to living and engaging in their meaningful activities and roles. It is also within the scope of occupational therapy practice to address sexuality and intimacy concerns clients may have (MacRae, 2013). A primary method of occupational therapy intervention for many conditions is employment of energy conservation strategies. Thus, pertinent to this case, a question to be researched is: *Do energy conservation strategies improve occupational engagement for an individual with cancer experiencing cancer related fatigue?*

Literature Portfolio

Method of Literature Search

A search and review of the literature were conducted in May-June of 2020. Databases and websites searched were CINAHL and American Occupational Therapy Association (AOTA) which included a search of American Journal of Occupational Therapy (AJOT). Keywords and search terms were occupational therapy, cancer, fatigue, energy, and energy conservation. For CINAHL, articles were limited to full text, peer reviewed, English language, and published between 2015-2020. Expanders were inclusion of related words, search within the full text, and apply equivalent subjects. While occupational therapy has a deep foundation and background knowledge in addressing energy conservation, teaching energy conservation strategies is not exclusive to the occupational therapy profession, thus articles from any profession that focused on energy conservation and CRF were included in the CINAHL query. For AOTA and AJOT, articles were limited to pdf versions available, English language, and published within the last

five years. Exclusion criteria were any articles that did not connect energy conservation strategies to cancer related fatigue.

Description of Portfolio

The literature search found 12 articles that fit within the inclusion criteria. Due to time restraints, only five articles were included in the portfolio for review that specifically mentioned the use of energy conservation for fatigue management by occupational therapists. Articles included in the portfolio were from worldwide sources, two articles from Australia, one from Iran, and two from the United States. The articles from Australia and the United States were originally published in English and the article from Iran was translated to English.

A modified version of the critically appraised paper template and Levels of Evidence model provided by the American Occupational Therapy Association (AOTA; 2020) as well as the AMSTAR 2 Checklist (Shea et al., 2017) were used to guide the critical appraisal process. The articles appraised comprised of three level II and two level III articles (See Appendix A: Critically Appraised Paper Worksheets and AMSTAR-2's**)**. In addition to a systematic review and a scoping review which provided breadth to the literature appraisal, also included were cross-sectional, observational, and single-blind clinical trial studies.

Sample sizes varied in the level II systematic review of the impact of physical activity and fatigue symptom management interventions by occupational therapy in adult cancer care rehabilitation (Hunter et al., 2017) and level II scoping review evaluating occupational therapy and cancer care (Wallis et al., 2020). A level III cross-sectional study reviewed 204 participant surveys on occupational therapy's role in cancer survivorship care (Buckland & Mackenzie, 2017). A level II single-blind clinical trial consisted of 80 breast cancer patients and effect of energy, fatigue, and self-care strategies delivered by occupational therapists (Khozimeh et al.,

2019). Finally, a level III observational study consisted of 49 participants to evaluate the efficacy of an occupational therapy led one-to-one fatigue management course for people with chronic conditions and fatigue (Van Heest et al., 2017).

Several themes were identified that are relevant to this research study. A primary theme across all studies was evidence to support the common and effective use of energy conservation strategy interventions by occupational therapists to assist clients in fatigue management. Four articles were specific to cancer and mentioned utilizing energy conservation strategies to manage CRF symptoms (Buckland & Mackenzie, 2017; Hunter et al., 2017; Khozimeh et al., 2019; Wallis et al., 2020). One study was not limited to participants with cancer, but also included those with a plethora of chronic conditions, primarily multiple sclerosis, that lead to fatigue. This study evaluated the efficacy of a fatigue management course which included energy conservation strategies led by occupational therapists and occupational therapy assistants (Van Heest et al., 2017).

A secondary theme across many articles was a highlight on the scope and importance of occupational therapy's role in cancer care across the lifespan and throughout the continuum of care, however with limited research to support occupational therapy's role in this area. Buckland & Mackenzie (2017) found that the primary barriers to caring for cancer survivors reported by respondents were lack of funding for occupational therapy positions and a lack of recognition of occupational therapy's role both by professionals and the consumers of survivorship care. Buckland & Mackenzie further suggest that occupational therapy continue to play a vital part in interdisciplinary care for cancer survivors and argue that more evidence-based research is needed to support occupational therapy's role and recognition in cancer survivorship care.

Description of the Project

Research Design and Methodology

The research study will provide mixed methods data through a test-retest design utilizing the Canadian Occupational Performance Measure (COPM; Law et al., 2019) and the Occupational Performance Inventory of Sexuality and Intimacy measure (OPISI; Walker, 2020). The assessments selected for outcome evaluation are self-rated, Likert-type scales which measure the client's subjective experience of what activities are most meaningful to address in therapy and the level of impact that CRF has on satisfaction and engagement in those activities. Initial data collected pre-intervention will shape goal setting and intervention planning, and post intervention data will be used to describe any progress and outcomes over time in client satisfaction levels in occupations impacted by CRF.

During the consultation and evaluation session, data will be collected through interview using the Canadian Occupational Performance Measure (COPM; Law et al., 2019). Additionally, the client is provided with the initial screening and in-depth forms of the Occupational Performance Inventory of Sexuality and Intimacy measure (OPISI; Walker, 2020) to fill out at home and bring back to the following the session where answers provided will be discussed and rated using the OPISI Performance Measure form. Follow-up of these assessments are completed again at the end of the therapy process, post-intervention for comparative data. Qualitative data may also be gathered during the practitioner-client introduction phase while gathering information for the occupational profile which gathers general information about the client and their day to day activities. More qualitative data will also be gathered at the closing of the therapeutic relationship when discussing the results of the follow-up assessments. In addition to any improvement in client satisfaction levels, data collected post-intervention will also be used to

support the efficacy of energy conservation strategies for management of CRF, the use of self-rating assessments for this type of intervention design, and to determine if further research may be needed.

The guiding theoretical occupational therapy model during the case study research is the Canadian Measure of Occupational Performance and Engagement (CMOP-E; Townsend & Polatajko, 2007). The CMOP-E is an occupational performance model that includes three main components: person factors, environment factors, and occupations. The person factors include affective, physical, and cognitive abilities. Additionally, spirituality is a central tenet of the person which relates to KR's case in the research study that not all occupational models include. Environment factors include social, physical, cultural, and institutional influences. Occupation encompasses productivity, self-care, and leisure activities performed by the person within their environment, as influenced by and influencing the person and environment factors. There are continuous transactions and interactions between the person, environment, and occupation that result in occupational performance and engagement, which is the ability of a person to perform and participate in daily activities that they need, want, or are expected to do and is the focus of occupational therapy practice.

Assessment Phase

During the review of the literature, a wide variety of assessment tools were utilized, primarily to assess fatigue levels and subjective satisfaction levels. One common assessment tool among many of the studies was the Canadian Occupational Performance Measure (COPM; Law et al., 2019). This assessment was chosen for this study due to its common application to occupational therapy practice and its alignment with the Canadian Model of Occupational Performance and Engagement (CMOP-E; Townsend & Polatajko, 2007) which is guiding the

therapeutic process. The COPM is a Likert-type assessment tool that provides both qualitative and quantitative data of an individual's perceived occupational performance over time. The occupations being assessed are determined by the client based on importance and then each is rated based on current performance level and satisfaction with current levels of performance. As KR expressed homemaker and caretaker roles and activities as meaningful occupations and areas where she is not performing optimally, the COPM will be able to assess those areas specifically, once at the beginning of the therapeutic process to get a baseline and again post-intervention to compare and contrast any changes over time during outcome evaluation.

KR also specifically mentioned concerns about sexuality and intimacy and desire in resuming her role as intimate partner. In order to properly address those oft-neglected areas, the newly published Occupational Performance Inventory of Sexuality and Intimacy (OPISI; Walker, 2020; Walker et al., 2020) was selected for the study to complement the COPM (Law et al., 2019). Much like the COPM, the OPISI uses a Likert-type self-rating scale. However, it is based on the client's specific sexuality and intimacy areas of concern and subjective perceptions of occupational performance and engagement in those identified areas. The OPISI Performance Measure form (Walker, 2020) will also be completed twice during the therapeutic process, pre-intervention, and post-intervention, to evaluate any subjective client progress made in those areas as a result of the use of energy conservation strategies.

Intervention Design

Environment of Care

KR is receiving outpatient occupational therapy services in a multidisciplinary clinic in a downtown area within the state she resides. While most occupational therapy service is delivered in the clinic, a home or community visit may also be included as needed in accordance with

liability and reimbursement requirements. The clinic is ADA accessible throughout with ramp access into the building. There is a waiting area and two restrooms available for clients. The clinic has five private office spaces for each health professional with one shared, semi-private, large rehabilitation room. The shared room includes rehabilitation equipment such as transfer mats and massage tables, exercise equipment and assistive devices, and a demo apartment area including kitchenette, stacked washer and dryer, a full restroom with bath and shower, and a built-in murphy bed. Flooring in the rehabilitation room is a combination of wood, low profile carpet, and rubber mat. Moveable partitions are installed to segment off areas as needed. Lighting in the rehabilitation room has the option of dim or bright settings and includes overhead track lighting, floor lamps, and task lighting. Some shared multidisciplinary and profession specific assessment and intervention tools are available in a storage unit within the rehabilitation room. Some profession specific assessment and intervention tools are also kept within individual, professional office spaces. All occupational therapy services are provided within the occupational therapists' offices and shared rehabilitation room. The former for occupational profile interview and evaluation, the latter for interventions. Some interventions such as patient education may also be delivered within the occupational therapist office as needed.

Method

KR's main goals are to manage CRF symptoms so that she may engage in homemaker and intimate partner roles. Throughout the intervention, the occupational therapist will provide patient education on cancer related fatigue's impact on occupation and the potential benefits of applying energy conservation strategies to daily routines which include pacing, planning ahead, making tasks easier, avoiding exhaustion and needless motions and tasks, and using good posture and body motions (Hall, 2018). Each session will be focused on conserving KR's energy during

engagement in her meaningful daily activities as indicated by the occupational profile interview and the Canadian Occupational Performance Measure (COPM; Law et al., 2019). The energy conservation strategies intervention will recur weekly for three, hour long one-to-one sessions delivered by an occupational therapist beginning in Week Two of the study. Session One will consist of an overview of KR's daily roles, routines, and activities and description of CRF symptoms she experiences throughout the day. The occupational therapist and KR will discuss some strategies on pacing that she may practice at home over the next week. The occupational therapist will offer limited information on how CRF impacts aspects of sexuality and intimacy and assure her that this is a relevant area to address in occupational therapy. At the conclusion of the session, the occupational therapist will provide an educational handout on general energy conservation strategies and an Initial Screen form of the Occupational Performance Inventory of Sexuality and Intimacy (OPISI; Walker, 2020) for KR to review and complete at home and bring along to the next session to further discuss.

Each of the following sessions will begin with a check-in of implementation of the energy conservation strategies discussed in the previous session. Session Two will focus on additional energy conservation strategies during engagement in meaningful activities through use of the clinic facilities and resources. The session will include patient education, collaborative discussion, and demonstration of tasks using specific energy conservation strategies. At the end of Session Two, the occupational therapist and KR will go over the completed OPISI Initial Screen form (Walker, 2020). KR will then be provided with the follow-up OPISI In-Depth intimacy assessment form that she will complete at home and bring back to the following session. Session Three follows the same format as the previous with additional discussion and focus on items indicated on the OPISI In-Depth intimacy assessment form while KR rates each

relevant area on the OPISI Performance Measure form (Walker, 2020). The final session will include a general overview of KR's energy conservation implementation and outcome measurement assessment through secondary completion of COPM (Law, et al., 2019) and OPISI Performance Measure form (Walker et al., 2020). As need or requested, the occupational therapist will suggest and offer referral for more intensive therapy that is not within the scope of the occupational therapy practitioner's skill set.

Timeline

The study will occur in three phases: consultation evaluation, intervention, and outcome measurement. Each session will be an hour long and recur weekly over the course of four weeks. The consultation and evaluation will occur Week One where an occupational profile will be gathered through an interview and completion of the Canadian Occupational Performance Measure (COPM; Law, et al., 2019) to identify specific areas that KR will want to address during the intervention sessions. This will provide a foundation of what activities KR finds most meaningful and the baseline level of impact that CRF has on her satisfaction and engagement in those activities. The occupational therapist and KR will collaborate on goal setting and intervention strategies to apply during Phase Two, which begins in Week Two.

During Session One, KR will outline what a typical day looks like including medication and treatment schedules and days that she has doctor appointments. KR will then identify which tasks and parts of the day she has the most and least amounts of energy. Through verbal discussion and handouts, the occupational therapist will provide an overview of energy conservation strategies that KR may apply to her daily routines such as pacing strategies to apply throughout the day with scheduled rest times. The occupational therapist and KR will discuss ways in which she may plan and prioritize one day in the following week to conserve energy. At

the end of Session One, the occupational therapist will briefly discuss the categories of the Occupational Therapy Sexual Assessment Framework (OTSAF; Walker, et al., 2020) which offers an occupational perspective on sexuality and intimacy concerns that KR may be experiencing as a result of CRF, and she will be sent home with the Initial Screen form of the Occupational Performance Inventory of Sexuality and Intimacy (OPISI; Walker, 2020) so that she may have time to contemplate and complete then bring along with her to the next session.

The following session will begin with a check-in of how successful, or not, KR was in implementing energy conservation strategies discussed in the previous week. Session Two will focus on applying energy conservation strategies to specific homemaker tasks that she identified as important, such as cooking. This will include verbal education and a take home handout of tips to conserve energy with meal and home tasks such as gathering items and preparing part of a meal ahead of time, sitting during parts of the meal preparation and clean-up, and using quick and easy recipes (Hall, 2018). A demonstration of energy conservation strategy use during cooking activities will be completed by KR using the kitchen and supplies in the apartment area of the large rehabilitation room. Session Two will also include a discussion about the areas of the OPISI Initial Screen Form (Walker, 2020) that she has checked off. The occupational therapist will then provide the follow-up OPISI In-Depth Inventory form (Walker, 2020) for KR to complete and bring back to the following session. Session Three will follow the same procedure as the previous with a check-in about energy conservation strategy implementation. Following discussion of sexuality and intimacy concerns as indicated in the OPISI In-Depth Inventory form (Walker, 2020), KR will rate each relevant category on the OPISI Performance Measure form (Walker, 2020).

To address KR's intimacy goals, the remainder of the session will focus on energy conservation strategies related specifically to self-care, sexuality, and intimacy. This includes pacing throughout the day and resting often, allowing plenty of time for self-care and prioritizing times of the day that she has the most energy to engage in intimate activities. In the apartment area of the rehabilitation room, the occupational therapist will educate KR on adaptive and positional aids for self-care and sexual activity such as wedges and cushions. The occupational therapist and KR will discuss energy conservation strategies and alternative ways of engaging in intimate activities such as scheduled date nights and cooking and showering together which KR may apply at home over the following week.

The final session will consist of an overview of how KR felt about implementing the energy conservation strategies at home and identify specific strategies that worked well that she will continue to use consistently moving forward. The session will conclude with re-assessment of the COPM (Law et al., 2019) and OPISI Performance Measure (Walker, 2020) which will identify an increase of satisfaction that the energy conservation strategies helped her achieve in engagement in her meaningful daily activities. The occupational therapist may offer recommendations and referrals for any residual issues that KR may continue to encounter outside the scope of occupational therapy or the specific occupational therapist's skill set, including community support groups, certified sexuality counselors, or other health professionals.

Qualifications

Occupational therapy assessment and evaluation is to be completed by a licensed occupational therapist. The COPM (Law et al., 2019) and OPISI (Walker, 2020) are specific to the occupational therapy profession. Both assessments were designed for use in occupational therapy by licensed and registered occupational therapy practitioners. The OPISI (Walker, 2020)

manual indicates that an occupational therapist is responsible for all aspects of the screening, evaluation, and reevaluation process and analyzes and interprets data in accordance with federal and state laws, other regulatory and payer requirements, and American Occupational Therapy Association (AOTA) documents. An occupational therapist accepts and responds to referrals in compliance with state or federal laws, other regulatory and payer requirements, and AOTA documents. A certified occupational therapy assistant may contribute to the screening, evaluation, and reevaluation process by administering delegated assessments and by providing verbal and written reports of observation and client capacities to the occupational therapist in accordance with federal and state laws other regulatory and payer requirements, and AOTA documents (Walker, 2020). The energy conservation strategies and educational materials may be delivered by an occupational therapy assistant under supervision by an occupational therapist.

Success Parameters

Data is collected through Likert-type self-rating assessments pre and post intervention phase which are compared and contrasted at the closing of the therapeutic process. As compared to baseline data, success parameters in follow up data are determined by the client's own perceptions in positive changes as shown by a minimum increase in score by 2 points on the COPM (Law et al., 2019) for homemaker and caretaker activities and a minimum 2 point score increase on the OPISI (Walker, 2020) for sexuality and intimacy areas.

It is hypothesized that energy conservation strategies will lead to a decrease in fatigue levels while engaging in specific activities thus an increase in levels of client's perceived performance and satisfaction in performance of occupations will increase. If an increase is not found in any specific area, this may indicate the need for alternate energy conservation strategies or finding new ways for the client to engage in activities or engage in different occupations that

hold similar meaning which cause less fatigue. Other solutions may not be possible through energy conservation strategies alone. Additionally, some issues KR is facing may not be within the scope of occupational therapy practice or the skill set of the occupational therapist she works with which may require referral to other health professionals or specialists to address these areas of concern.

Discussion

The aim of the study is to determine the hypothesis that energy conservation strategies will increase engagement in meaningful occupations for an individual experiencing CRF. The focus of the study is on explaining the meaning and importance of the findings for occupational therapy practice with cancer clients who are experiencing decreased engagement in occupations as a result of CRF. The study uses Likert-type self-rating based assessments that provide both qualitative and quantitative data through the lens of the client's subjective perceptions and experiences of CRF and occupational performance and engagement. KR's results showed an increase of baseline scores of at least 2 points on satisfaction of performance and engagement in all specified areas and on both the COPM (Law et al., 2019) and the OPISI (Walker, 2020). The results of this study provide evidence to support the use of energy conservation strategies to manage symptoms of CRF and increase engagement in meaningful activities.

Some practical considerations may need to be taken into account when repeating this study or using energy conservation strategies for therapeutic intervention for CRF. The clinic where this study was conducted is an ideal set-up to discuss and apply energy conservation strategies to everyday activities that are impacted by CRF, however, due to the sensitive nature of sexuality and intimacy concerns, it is worth considering the privacy levels in the spaces where discussion around these topics may occur. KR was comfortable discussing and practicing the use

of equipment and positional aids in the shared, rehabilitation room, though this may not be the case for all clients. The occupational therapist needs to remain flexible regarding where to deliver these interventions or be sure to schedule these sessions when the room is not in use by other practitioners. It is also worth noting that CRF impacts not only fatigue levels but also cognition so when sending a client home with paper forms to complete and bring back, a follow-up call prior to the appointment to remind the client to complete and bring it back may be necessary, or if a care-partner is present during sessions, as their assistance in making sure the form gets completed and returned. The COPM (Law et al., 2019) is a common and widely used assessment that may likely be available in most settings. However, the OPISI (Walker, 2020) is a newer assessment tool and may not be readily available in most settings but the materials are available online and free for use.

Limitations of this study includes that it was conducted in an outpatient setting with an adult client towards the end of the continuum of cancer related care. Further, KR is still undergoing cancer related treatment and is on medications which may cause additional side effects to already existing CRF which may become a confounding factor that not all cancer survivors experiencing CRF would be contending with. Thus, results and success parameters may not be generalizable to all populations and practice settings due to the personal nature of each client's unique story and situation. An additional confounding variable may include occupational therapist comfort and approach to addressing the oft-neglected areas of sexuality and intimacy, if addressed at all. This is an issue of contention in much occupational therapy and other health professional literature and is beyond the scope of this paper.

While results from this individualized single case study design may not be statistically significant, they may be clinically meaningful in connection to client-centered approaches to

care. In addition, the use, and results of both COPM (Law et al., 2019) and OPISI (Walker, 2020) are clinically meaningful in addressing the gap in the current provision of occupational therapy services in addressing both of these domains of occupation in conjunction with one another. Finally, KR's individual results may vary as compared to the general population, however, the focus on the meaning of using client-centered approaches and assessments on the successful use of energy conservation strategies is itself generalizable. The point and findings lead practitioners to understand that while the intervention choice does not change, the study does support the use of using the self-rating assessments and collaboration with the client as to which occupations they specifically want to focus their energy conservation efforts towards and address during the therapeutic process.

Conclusion

The intention of this study was to determine if energy conservation strategies lead to an increase of engagement in meaningful activities for an individual experiencing cancer related fatigue (CRF). KR indicated concerns around CRF symptoms interfering with homemaker, caretaker, and intimate partner roles. The assessment measures and intervention of energy conservation strategies were in alignment with KR's goals and intervention plan to resume her meaningful roles and routines with managed CRF symptoms. The assessments were chosen as a client-centered approach to meeting KR's unique needs for therapy with the ability to identify and self-rate levels of satisfaction in performance and engagement of her meaningful activities prior to and post intervention. Assessment and reassessment of both performance measures showed qualitative and quantitative evidence to support the use of energy conservation strategies in increasing KR's engagement in meaningful activities. Further research should investigate the

use of client centered, self-rating assessments when utilizing energy conservation strategy interventions for CRF.

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Appendix A: Critically Appraised Paper Worksheets and AMSTAR-2's

AOTA'S EVIDENCE EXCHAGE
CRITICALLY APPRAISED PAPER (CAP) WORKSHEET

CITATION AND DOI NUMBER (APA Format)

Buckland, N., & Mackenzie, L. (2017). Exploring the role of occupational therapy in caring for cancer survivors in Australia: A cross sectional study. *Australian Occupational Therapy Journal, 64*(5), 358-368. https://doi.org/10.1111/1440-1630.12386

CLINICAL BOTTOM LINE

Occupational therapists play an integral role as part of an interprofessional team in caring for people with chronic conditions in general. However, there has been limited research on what role occupational therapy plays in cancer care specifically. Through an online cross-sectional survey, this research study sought to uncover the current practice views of Australian occupational therapists in what constitutes as best practices in care for cancer survivors. Additionally, the researchers wanted to identify what barriers providers felt were present in implementing these best practices. Findings suggest that a majority of survey respondents work with cancer survivors some of the time, often in acute care settings, and less often in community settings. The most common intervention methods were equipment provision, energy conservation strategies, and pressure care. The primary barriers to caring for cancer survivors reported by respondents were lack of funding for occupational therapy positions and a lack of recognition of occupational therapy's role both by professionals as well as the consumers of survivorship care.
The takeaway is that the authors suggest that occupational therapy continue to play a vital part in interdisciplinary care for cancer survivors, however, more evidence-based research is needed in supporting occupational therapy's role and recognition in survivorship care.

RESEARCH OBJECTIVE(S), DESIGN TYPE, AND LEVEL OF EVIDENCE

The research objectives were to determine what occupational therapists in Australia feel are best practices in cancer-related care and what they see as potential barriers in achieving these best practices through a level III-IV cross-sectional online survey study of quantitative and qualitative data.

PARTICIPANT SELECTION

The authors used both anonymous convenience and snowball sampling survey methods. Surveys were distributed to all occupational therapists who were members of Occupational Therapy Australia in 2013, this included any occupational therapists who wished to participate, including those who did not actively work in oncology roles in order to reach those who work with cancer survivors across the continuum of occupational therapy practice. Emails with a link to the survey were sent out to all members with encouragement to share the link with other occupational therapists who were not members to broaden the survey's reach.

INTERVENTION(S) AND CONTROL GROUPS

This type of research may not fit into this category. Only one group participated in the survey with no control group. The surveys were emailed to 5090 members with a follow up email

reminder 2 weeks following. 230 occupational therapists returned surveys with 204 completed surveys used in the analysis.

OUTCOME MEASURES

This type of research may not fit into this category.

RESULTS

Responses suggest that occupational therapists work alongside interprofessional teams including nurses, oncologists, general practitioners, pharmacists, social workers, surgeons as well as twenty other health professionals identified by participants in the free response section. Further, responses show that occupational therapy has routine involvement in cancer survivor care more so than physiotherapy and speech pathology.

Respondents identified that occupational therapists most frequently address equipment needs, fatigue and energy conservation, pressure prevention and pain management, return to meaningful activities, lifestyle adjustments, lymphoedema management, patient education, stress management, cognition changes, and pain management. Less frequently, occupational therapy addressed generalized weakness, anxiety and depression, decreased range of motion, side effects of chemotherapy, and joint and bone protection. In the free form section, respondents noted that issues faced by cancer survivors that were not routinely addressed by occupational therapy were leisure and other meaningful occupations, community follow-up and outpatient services, as well as sexuality and sexual function.

There was no cohesive agreement as to the timing of occupational therapy interventions.

Half of the respondents reported completing post-graduate qualifications with 14.7% having post-graduate education in cancer care. A majority of respondents declined that specialist training was required to work in cancer care. However, respondents noted that extra training opportunities would enable occupational therapy to take on a greater role in cancer survivorship care.

The key barriers noted by participants were:

1. Lack of funding for occupational therapy positions
2. Lack of recognition for the role occupational therapy plays in cancer care by both health professionals and consumers
3. Dominance of the medical model of practice in oncology care
4. Lack of consumer awareness about occupational therapy and role in care

Respondents were also asked to rate presented strategies for addressing therapeutic gaps in cancer care from highest to lowest priority. The top five strategies rated were:

1. Research to identify effective occupational therapy interventions
2. Promotion of potential occupational therapy role to other disciplines
3. Development of oncology pathways for occupational therapy
4. Continuing professional education for occupational therapists
5. Development of an evidence-based intervention protocol

LIMITATIONS

As they only reached out to members of Occupational Therapy Australia, this sample is not representative of the entire Australian occupational therapy population. Response rate was low so the findings should be regarded as preliminary and caution should be taken in utilization. Due to resource limitations and convenience, it is a limitation that the survey was only available online. Additionally, anonymity posed a limitation in distinguishing what area of practice the occupational therapists were in in determining how active interventions were provided to cancer survivors overall. Finally, some aspects of the survey design may have affected the reliability, such as literacy levels for specific areas of occupational therapy practice.

CONCLUSIONS

The findings indicate that occupational therapists do and should be part of cancer related care in assisting survivors in their return to productive, leisure, and self-care occupations. More research is needed to provide evidence to support occupational therapy's role in cancer care. Finally, collaboration with an interprofessional team is needed in developing long-term treatment pathways for cancer survivors that include occupational therapy interventions.

CAP AUTHOR INFORMATION

Jenn Hutchinson, OTS

AMSTAR 2 Checklist

To cite this tool: Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, Moher D, Tugwell P, Welch V, Kristjansson E, Henry DA. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017 Sep 21;358:j4008.

Article Citation: Hunter, E. G., Gibson, R. W., Arbesman, M., & D'Amico, M. (2017). Centennial Topics—Systematic review of occupational therapy and adult cancer rehabilitation: Part 1. Impact of physical activity and symptom management interventions. *American Journal of Occupational Therapy, 71*, 7102100030. https://doi.org/10.5014/ajot.2017.023564

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1. Did the research questions and inclusion criteria for the review include the components of PICO?

For Yes:

- ☑ Population
- ☑ Intervention
- ☐ Comparator group
- ☑ Outcome

Optional (recommended)

- ☐ Timeframe for follow up

- ☑ Yes
- ☐ No

---

2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?

For Partial Yes:
The authors state that they had a written protocol or guide that included ALL the following:

- ☑ review question(s)
- ☑ a search strategy
- ☑ inclusion/exclusion criteria
- ☑ a risk of bias assessment

For Yes:
As for partial yes, plus the protocol should be registered and should also have specified:

- ☐ a meta-analysis/synthesis plan, if appropriate, and
- ☐ a plan for investigating causes of heterogeneity
- ☐ a plan for investigating causes of heterogeneity

- ☐ Yes
- ☑ Partial Yes
- ☐ No

---

3. Did the review authors explain their selection of the study designs for inclusion in the review?

For Yes, the review should satisfy ONE of the following:

- ☐ Explanation for including only RCTs
- ☐ OR Explanation for including only NRSI
- ☑ OR Explanation for including both RCTs and NRSI

- ☑ Yes
- ☐ No

---

4. Did the review authors use a comprehensive literature search strategy?

For Partial Yes (all the following):

- ☑ searched at least 2 databases (relevant to research question)
- ☑ provided key word and/or search strategy
- ☑ justified publication restrictions (e.g. language)

For Yes, should also have (all the following):

- ☑ searched the reference lists / bibliographies of included studies
- ☐ searched trial/study registries
- ☑ included/consulted content experts in the field
- ☐ where relevant, searched for grey literature
- ☑ conducted search within 24 months of completion of the review

- ☐ Yes
- ☑ Partial Yes
- ☐ No

---

5. Did the review authors perform study selection in duplicate?

For Yes, either ONE of the following:

- ☑ at least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include
- ☐ OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder selected by one reviewer.

- ☑ Yes
- ☐ No

---

6. Did the review authors perform data extraction in duplicate?

For Yes, either ONE of the following:

- [x] at least two reviewers achieved consensus on which data to extract from included studies
- [ ] OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder extracted by one reviewer.

- [x] Yes
- [ ] No

---

7. Did the review authors provide a list of excluded studies and justify the exclusions?

For Partial Yes:

- [x] provided a list of all potentially relevant studies that were read in full-text form but excluded from the review

For Yes, must also have:

- [x] Justified the exclusion from the review of each potentially relevant study

- [x] Yes
- [ ] Partial Yes
- [ ] No

---

8. Did the review authors describe the included studies in adequate detail?

For Partial Yes (ALL the following):

- [x] described populations
- [x] described interventions
- [x] described comparators
- [x] described outcomes
- [x] described research designs

For Yes, should also have ALL the following:

- [ ] described population in detail
- [ ] described intervention in detail (including doses where relevant)
- [ ] described comparator in detail (including doses where relevant)
- [ ] described study's setting
- [ ] timeframe for follow-up

- [ ] Yes
- [x] Partial Yes
- [ ] No

---

9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?

RCTs

For Partial Yes, must have assessed RoB from

For Yes, must also have assessed RoB from:

☑ unconcealed allocation, and	☑ allocation sequence that was not truly random, and	☑ Yes ☐ Partial Yes
☑ lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all-cause mortality)	☑ selection of the reported result from among multiple measurements or analyses of a specified outcome	☐ No ☐ Includes only NRSI

NRSI

For Partial Yes, must have assessed RoB:	For Yes, must also have assessed RoB:	
☑ from confounding, and	☑ methods used to ascertain exposures and outcomes, and	☑ Yes ☐ Partial Yes
☑ from selection bias	☑ selection of the reported result from among multiple measurements or analyses of a specified outcome	☐ No ☐ Includes only RCTs

---

10. Did the review authors report on the sources of funding for the studies included in the review?

For Yes

☐ Must have reported on the sources of funding for individual studies included in the review. Note: Reporting that the reviewers looked for this information but it was not reported by study authors also qualifies	☐ Yes ☑ No

---

11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?

RCTs

For Yes:

☑ The authors justified combining the data in a meta-analysis	☐ Yes
☐ AND they used an appropriate weighted technique to combine study results and adjusted for heterogeneity if present.	☑ No ☐ No meta-analysis conducted
☐ AND investigated the causes of any heterogeneity	

For NRSI
For Yes:

- [x] The authors justified combining the data in a meta-analysis
- [ ] AND they used an appropriate weighted technique to combine study results, adjusting for heterogeneity if present
- [ ] AND they statistically combined effect estimates from NRSI that were adjusted for confounding, rather than combining raw data, or justified combining raw data when adjusted effect estimates were not available
- [ ] AND they reported separate summary estimates for RCTs and NRSI separately when both were included in the review

- [ ] Yes
- [x] No
- [ ] No meta-analysis conducted

---

12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?

For Yes:

- [ ] included only low risk of bias RCTs
- [x] OR, if the pooled estimate was based on RCTs and/or NRSI at variable RoB, the authors performed analyses to investigate possible impact of RoB on summary estimates of effect.

- [x] Yes
- [ ] No
- [ ] No meta-analysis conducted

---

13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?

For Yes:

- [ ] included only low risk of bias RCTs
- [x] OR, if RCTs with moderate or high RoB, or NRSI were included the review provided a discussion of the likely impact of RoB on the results

- [x] Yes
- [ ] No

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14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?

For Yes:

☐ There was no significant heterogeneity in the results	☐ Yes ☑ No
☐ OR if heterogeneity was present the authors performed an investigation of sources of any heterogeneity in the results and discussed the impact of this on the results of the review	

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15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?

For Yes:

☐ performed graphical or statistical tests for publication bias and discussed the likelihood and magnitude of impact of publication bias	☐ Yes ☑ No ☐ No meta-analysis conducted

---

16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?

For Yes:

☑ The authors reported no competing interests OR	☑ Yes ☐ No
☐ The authors described their funding sources and how they managed potential conflicts of interest	

END

AOTA'S EVIDENCE EXCHAGE
CRITICALLY APPRAISED PAPER (CAP) WORKSHEET

CITATION AND DOI NUMBER (APA Format)

Khozimeh, F. S., Navidian, A., Sasanpour, P., & Kiani, F. (2019). The effect of training on energy conservation strategies, fatigue, and self-caring among women with breast cancer undergoing chemotherapy in Zahedan medical sciences hospitals in 2018-2019. *Journal of Evolution of Medical and Dental Sciences, 8*(49), 3661-3667. https://doi.org/10.14260/jemds/2019/792

CLINICAL BOTTOM LINE

One of the most common problems faced by those with cancer is fatigue, also known as cancer-related fatigue, which manifests physically, emotionally, and cognitively. This fatigue disrupts one's roles and routines and ability to engage in meaningful activities. Some non-drug based methods in reducing fatigue includes energy conservation strategies and caring self-efficacy. Through pre and post intervention fatigue assessments, the test group showed that there was a positive effect from energy conservation training on fatigue symptoms. Occupational therapy's main focus is to get people back to living and engaging in their meaningful activities and occupational therapists are well knowledgeable in teaching clients strategies in energy conservation, thus this study is relevant to occupational therapy practice with cancer survivors.

RESEARCH OBJECTIVE(S), DESIGN TYPE, AND LEVEL OF EVIDENCE

The aim of the study was to determine the effect that energy conservation strategies have on fatigue and factors relating to caring self-efficacy in women with breast cancer. To determine this, the authors used a level II single-blind clinical trial using random sampling into either the control or intervention groups. Pre and post intervention assessments were completed to assess efficacy of the results.

PARTICIPANT SELECTION

The study was conducted on 80 breast cancer patients at two Zehedan educational hospitals who were selected by simple random sampling. Inclusion criteria included individuals between 20-60 years of age, in cancer stages of I or II, receiving at least one chemotherapy session, ability to communicate and cooperate, no cardiopulmonary disease, and no known psychiatric illness nor use of psychiatric drugs. Exclusion criteria included absenteeism for one session, failure to implement the trainings program for 1 week, disease and patient's death.

INTERVENTION(S) AND CONTROL GROUPS

Control group: 40 participants. Each participant received a three part assessment pre and post intervention program, which included demographics, fatigue inventory (MFI), and caring self-efficacy questionnaires (SUPPH). No other information was provided as to what types and levels of care were offered to the control group, presumably standard care.

Intervention group: 40 participants. Participants in this group each received a three part assessment pre and post intervention program, which included demographics, fatigue inventory (MFI), and caring self-efficacy questionnaires (SUPPH). Participants received intervention containing energy conservation strategies in 3 individual sessions once a week. The training

sessions included a pamphlet and training booklet, scientifically approved by the oncologist. Follow-up was performed for 6 weeks, followed by the post-assessment.

OUTCOME MEASURES

The outcomes measured relevant to occupational therapy practice were the participants' reported fatigue and caring self-efficacy scores compared between the two groups pre and post intervention on energy conservation strategies. Statistical analysis used to determine the significance of the results bolster the efficacy. Authors note that at first, frequency, percentage, mean, standard deviation, minimum, and maximum were determined by descriptive statistics. To compare pre and post-intervention means in each group, paired t-test was used. Independent t-test was also used to compare means between intervention and control groups. Covariance Analysis test was used to compare fatigue score between two groups before and after intervention. P-value> 0.05 was considered as the significance level.

RESULTS

The results show that in terms of fatigue levels, pre and post intervention fatigue scores showed a reduction in participants' fatigue levels in the intervention group as compared to the control group. The results also found the energy conservation strategy training improved caring self-efficacy in the participants.

LIMITATIONS

The authors did not include any specific details on study limitations. However, authors did take steps in reducing limitations through randomization, having a control group and intervention group, and showcasing the pre and post test results. One obvious limitation, however, is that 80 patients in Iran may not be a significant representation of the entire breast cancer population locally nor globally.

CONCLUSIONS

Cancer-related fatigue is unpleasant and disruptive for the lives of those living with and surviving cancer. Many strategies may be applied in assisting cancer patients in managing fatigue and caring self-efficacy. Educational intervention in energy conservation may be an effective strategy to complement other therapies in cancer care.

CAP AUTHOR INFORMATION

Jenn Hutchinson, OTS

AOTA'S EVIDENCE EXCHAGE
CRITICALLY APPRAISED PAPER (CAP) WORKSHEET

CITATION AND DOI NUMBER (APA Format)
Van Heest, K. N., Mogush, A. R., & Mathiowetz, V. G. (2017). Effects of a one-to-one fatigue management course for people with chronic conditions and fatigue. *American Journal of Occupational Therapy, 71*(4), 1-9. https://doi.org/10.5014/ajot.2017.023440

CLINICAL BOTTOM LINE
Pathological fatigue greatly differs from normal fatigue and cannot be remediated with rest. This type of fatigue is a serious and problematic concern for people living with chronic illness, including cancer. This fatigue is debilitating on an individual's daily functioning and quality of life. This fatigue not only impacts the person living with chronic illness, but also their support systems. Occupational therapists are uniquely poised to address these fatigue concerns as their clients may be not only the person with the illness, but also their care partners. This study looked specifically at occupational therapy practice to assess the impact of a one-to-one fatigue management course for those living with chronic conditions and fatigue. From pretest to posttest results, participants showed significant increases in self-efficacy and quality of life which speaks to the efficacy of one-to-one education on fatigue management in those living with chronic conditions. Results also show that a one-to-one format has similar benefits to group format, which is more compatible with current occupational therapy practice, providing practitioners a new tool for providing education in fatigue management for their clients with chronic illness and fatigue. While most of the participants in the study has multiple sclerosis, these results support that fatigue management education is applicable to many populations with various diagnosis of chronic disease.

RESEARCH OBJECTIVE(S), DESIGN TYPE, AND LEVEL OF EVIDENCE
The research objective was to assess the effects of a one-to-one fatigue management course for people with chronic conditions and fatigue through a level III observational study of a one-group, pretest-posttest, follow-up design. The authors had hypotheses as follows:

1. Participants with chronic conditions and fatigue will report a significant decrease in fatigue and a significant increase in quality of life and self-efficacy after participation in a one-to-one fatigue management course as compared with before the course.
2. The beneficial effects of the course will be maintained at the 6 week follow-up.

PARTICIPANT SELECTION
How were participants recruited and selected to participate? What were the inclusion and exclusion criteria? *Character count limit: 600*
Participants were recruited a number of ways: flyers sent to members of the Midwest Chapter of the National MS Society, flyers distributed at churches and community centers, and occupational therapist recruitment through an outpatient rehabilitation center. Interested participants were then screened over the phone. Inclusion criteria was a diagnosis of a chronic disease, fatigue levels of moderate to severe, over the age of 18, and the ability to read and understand the English language. During phone screenings, prospective participants completed the Fatigue Severity

Scale and an average score of 4 out of 7 or higher was required to meet the fatigue level inclusion criteria. Exclusion criteria included scores lower than 18 on the full Montreal Cognitive Assessment.

INTERVENTION(S) AND CONTROL GROUPS

This study consisted of only one group. The intervention was a one-to-one fatigue management course that was adapted for individual delivery and consisted of five modules: (1) Basics of Fatigue, (2) Communication and Fatigue, (3) Body Mechanics and Making the Most of Your Environment, (4) Analyzing and Modifying Activities, and (5) Living a Balanced Lifestyle. A manual titled *Therapist Resource Guide* provided background instruction on how to use the course materials with the participants. Patient education materials consisted of new content each session and homework meant to challenge the participants to apply the concepts learned to their everyday lives. Two additional handouts were included to address secondary fatigue and cognitive fatigue.

Interventions were given by occupational therapists and occupational therapy students, the latter of which completed coursework on fatigue management, observed a 2-hour video of group fatigue management, and reviewed patient education materials with an expert on fatigue management. To ensure replication of the courses, all instructors followed the systematic instructions.

During the initial face-to-face meeting, the participants received an overview of the course and the first one-two modules. Researchers then gave the participants homework, answered questions, and set up dates for the following meeting. Subsequent sessions included review of the homework, answering of questions, and instruction on the next course module. Sessions lasted 1-2 hours for four to six sessions until all modules and handouts were appropriately addressed.

OUTCOME MEASURES

The primary outcomes were measured using several assessments. These were the Functional Assessment of Chronic Illness Therapy-Fatigue Scale (FACIT FS), Functional Assessment of Cancer Therapy-General (FACT-G), and the Self-Efficacy for Performing Energy Conservation Strategies Assessment (SEPECSA). Secondary outcomes were measured using the Energy Conservation Strategy Survey (ECSS). All measurement tools used are reliable and valid based on authors citations and evidence to support the assessments. The assessments were given three times to all participants, pre intervention, post intervention, and follow-up.

RESULTS

Results from pretest to posttest revealed significant reductions in participant fatigue and increase in self-efficacy and quality of life. This supports the authors' first hypothesis, save for the one quality of life subscale. No significant differences were noted in outcomes between posttest and follow-up which shows strong support for the authors' second hypothesis. The results are consistent with findings from similar studies on fatigue management and energy conservation courses for groups. This suggests that one-to-one format has similar benefits to group format, which is more compatible with current occupational therapy practice, providing practitioners a new tool for providing education in fatigue management for their clients with chronic illness and fatigue. The authors note that group formats allow for greater social support, accountability, and

problem solving amongst the group participants as shown in group focused studies.

LIMITATIONS

Potential limitations of the course include lack of peer support and application to social activities, emphasis on remediation of deconditioning, experiential teaching techniques, and accountability for the completion of assigned homework.

The major study limitation was the lack of random assignment and no control group to rule out the Hawthorne effect and to ascribe all positive results solely to the intervention course. Since the study participants were primarily those with a diagnosis of MS, it limits the generalizability to other conditions. Additionally, medication and therapy changes were not tracked so it is uncertain if that had any impact on the outcomes. Further, it was a challenge to obtain follow-up data due to the timeframe commitment required. Finally, this study utilized the FACIT FS while others primarily used the Fatigue Impact Scale which limits the ability to compare efficacy of course formats across multiple studies.

CONCLUSIONS

The study provides evidence that a one-to-one fatigue management course is effective in decreasing fatigue, increasing self-efficacy, supports many aspects of quality of life, and increases implementation of energy conservation strategies for people living with chronic illness and fatigue.

CAP AUTHOR INFORMATION

Jenn Hutchinson, OTS

AMSTAR 2 Checklist

To cite this tool: Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, Moher D, Tugwell P, Welch V, Kristjansson E, Henry DA. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017 Sep 21;358:j4008.

Article Citation: Wallis, A., Meredith, P., & Stanley, M. (2020). Cancer care and occupational therapy: A scoping review. *Australian Occupational Therapy Journal*, *67*(2), 172-194. https://doi.org/10.1111/1440-1630.12633

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1. Did the research questions and inclusion criteria for the review include the components of PICO?

For Yes:

- ☑ Population
- ☑ Intervention
- ☐ Comparator group
- ☑ Outcome

Optional (recommended)

- ☐ Timeframe for follow up

- ☑ Yes
- ☐ No

---

2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?

For Partial Yes:

The authors state that they had a written protocol or guide that included ALL the following:

- ☑ review question(s)

For Yes:

As for partial yes, plus the protocol should be registered and should also have specified:

- ☐ a meta-analysis/synthesis plan, if appropriate, and

- [x] a search strategy
- [x] inclusion/exclusion criteria
- [ ] a risk of bias assessment
- [ ] a plan for investigating causes of heterogeneity
- [ ] a plan for investigating causes of heterogeneity

- [ ] Yes
- [x] Partial Yes
- [ ] No

---

3. Did the review authors explain their selection of the study designs for inclusion in the review?

For Yes, the review should satisfy ONE of the following:

- [ ] Explanation for including only RCTs
- [ ] OR Explanation for including only NRSI
- [x] OR Explanation for including both RCTs and NRSI

- [x] Yes
- [ ] No

---

4. Did the review authors use a comprehensive literature search strategy?

For Partial Yes (all the following):

- [x] searched at least 2 databases (relevant to research question)
- [x] provided key word and/or search strategy
- [x] justified publication restrictions (e.g. language)

For Yes, should also have (all the following):

- [x] searched the reference lists / bibliographies of included studies
- [ ] searched trial/study registries
- [ ] included/consulted content experts in the field

- [ ] Yes
- [x] Partial Yes
- [ ] No

☑ where relevant, searched for grey literature

☑ conducted search within 24 months of completion of the review

---

5. Did the review authors perform study selection in duplicate?

For Yes, either ONE of the following:

☐ at least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include

☑ OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder selected by one reviewer.

☑ Yes ☐ No

---

6. Did the review authors perform data extraction in duplicate?

For Yes, either ONE of the following:

☐ at least two reviewers achieved consensus on which data to extract from included studies

☑ OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder extracted by one reviewer.

☑ Yes ☐ No

---

7. Did the review authors provide a list of excluded studies and justify the exclusions?

For Partial Yes:

☐ provided a list of all potentially relevant studies that were read in full-text form but excluded from the review

For Yes, must also have:

☐ Justified the exclusion from the review of each potentially relevant study

☐ Yes ☐ Partial Yes ☑ No

---

8. Did the review authors describe the included studies in adequate detail?

For Partial Yes (ALL the following):

- [x] described populations
- [x] described interventions
- [x] described comparators
- [x] described outcomes
- [x] described research designs

For Yes, should also have ALL the following:

- [x] described population in detail
- [ ] described intervention in detail (including doses where relevant)
- [ ] described comparator in detail (including doses where relevant)
- [x] described study's setting
- [ ] timeframe for follow-up

- [ ] Yes
- [x] Partial Yes
- [ ] No

---

9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?

RCTs

For Partial Yes, must have assessed RoB from

- [ ] unconcealed allocation, and
- [ ] lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all-cause mortality)

For Yes, must also have assessed RoB from:

- [ ] allocation sequence that was not truly random, and
- [ ] selection of the reported result from among multiple measurements or analyses of a specified outcome

- [ ] Yes
- [ ] Partial Yes
- [x] No
- [ ] Includes only NRSI

NRSI

For Partial Yes, must have assessed RoB:

- ☐ from confounding, and
- ☐ from selection bias

For Yes, must also have assessed RoB:

- ☐ methods used to ascertain exposures and outcomes, and
- ☐ selection of the reported result from among multiple measurements or analyses of a specified outcome

- ☐ Yes
- ☐ Partial Yes
- ☑ No
- ☐ Includes only RCTs

---

10. Did the review authors report on the sources of funding for the studies included in the review?

For Yes

- ☐ Must have reported on the sources of funding for individual studies included in the review. Note: Reporting that the reviewers looked for this information but it was not reported by study authors also qualifies

- ☐ Yes
- ☑ No

---

11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?

RCTs

For Yes:

- ☐ The authors justified combining the data in a meta-analysis
- ☐ AND they used an appropriate weighted technique to combine study results and adjusted for heterogeneity if present.
- ☐ AND investigated the causes of any heterogeneity

- ☐ Yes
- ☑ No
- ☐ No meta-analysis conducted

For NRSI

For Yes:

☐ The authors justified combining the data in a meta-analysis

☐ AND they used an appropriate weighted technique to combine study results, adjusting for heterogeneity if present

☐ AND they statistically combined effect estimates from NRSI that were adjusted for confounding, rather than combining raw data, or justified combining raw data when adjusted effect estimates were not available

☐ AND they reported separate summary estimates for RCTs and NRSI separately when both were included in the review

☐ Yes
☑ No
☐ No meta-analysis conducted

---

12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?

For Yes:

☐ included only low risk of bias RCTs

☐ OR, if the pooled estimate was based on RCTs and/or NRSI at variable RoB, the authors performed analyses to investigate possible impact of RoB on summary estimates of effect.

☐ Yes
☑ No
☐ No meta-analysis conducted

---

13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?

For Yes:

☐ included only low risk of bias RCTs

☐ OR, if RCTs with moderate or high RoB, or NRSI were included the review provided a discussion of the likely impact of RoB on the results

☐ Yes
☑ No

---

14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?

For Yes:

☐ There was no significant heterogeneity in the results

☐ OR if heterogeneity was present the authors performed an investigation of sources of any heterogeneity in the results and discussed the impact of this on the results of the review

☐ Yes
☑ No

---

15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?

For Yes:

☐ performed graphical or statistical tests for publication bias and discussed the likelihood and magnitude of impact of publication bias

☐ Yes
☑ No
☐ No meta-analysis conducted

---

16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?

For Yes:

☑ The authors reported no competing interests OR

☐ The authors described their funding sources and how they managed potential conflicts of interest

☑ Yes
☐ No

END