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Anne Calbusch Schmitz

Eficácia das intervenções para lidar com o estresse e o *Burnout* do médico oncologista: uma revisão sistemática

Florianópolis
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Orientadora: prof.ª Suely Grosseman, Dra.

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O presente trabalho em nível de mestrado foi avaliado e aprovado por banca examinadora composta pelos seguintes membros:

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Certificamos que esta é a **versão original e final** do trabalho de conclusão que foi julgado adequado para obtenção do título de mestre em Ciências Médicas.

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Florianópolis, 2021.

Aos meus filhos Betina e Otto. Que a vontade de aprender continue presente durante toda a vida de vocês.

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Madre Teresa de Calcutá

RESUMO

Introdução. O médico oncologista tem sido cada vez mais afetado pelo *Burnout.* O aumento da incidência desta síndrome é registrado em diversos países, com consequências nocivas para toda a sociedade. **Objetivo**. O objetivo desta revisão sistemática foi identificar intervenções efetivas em prevenir, reduzir ou lidar com o estresse e *Burnout* entre oncologistas. **Metodologia**. Foi realizada busca em oito bases de dados eletrônicas e bases de dados de literatura cinzenta, sem restrição de idioma ou tempo. Os estudos incluídos foram ensaios clínicos randomizados e não randomizados, envolvendo médicos oncologistas e contendo intervenções para prevenir ou lidar com o estresse ou *Burnout* com avaliação de resultados. O risco de viés foi avaliado por meio de três ferramentas diferentes, de acordo com o desenho do estudo: ferramentas do Instituto Joanna Briggs para estudos quase experimentais e estudos transversais analíticos (descritivos) e a ferramenta Cochrane de risco de viés para estudos randomizados. A evidência cumulativa foi avaliada usando os critérios de Avaliação, Desenvolvimento e Avaliação da Classificação de Recomendações (*Grading of Recommendations, Assessment, Development and* Evaluations - GRADE). A análise dos dados foi apresentada de forma descritiva. **Resultados**. Em um processo de seleção de duas fases, 15 estudos foram incluídos entre 1969. O risco de viés foi baixo para sete estudos, moderado para cinco e alto para três. A certeza das evidências foi considerada baixa e muito baixa para os desfechos analisados. As intervenções que tiveram efeito significativo na redução do estresse e *burnout* foram: troca de experiências entre médicos em grupos virtuais, reuniões integrativas fora do ambiente de trabalho e sessões de equipe supervisionadas por conselheiros. **Conclusão**. Diversas intervenções apresentaram resultados promissores, com efeitos variáveis na redução ou prevenção de *burnout* e estresse. Mais estudos são claramente necessários.

Palavras-chave: Oncologista. Coping. Estresse. Síndrome de *burnout.*

ABSTRACT

Introduction. The oncologist has been increasingly affected by *Burnout*. The increased incidence of this syndrome is registered in several countries, with harmful consequences for the entire society. **Purpose.** The purpose of this systematic review (SR) was to identify interventions that are effective to prevent or reduce stress and *burnout* among oncologists. **Design.** Search was conducted in eight electronic databases and grey literature databases, with no language or time restrictions. Included studies were observational, randomized and nonrandomized clinical trials, involving medical oncologists and containing interventions to prevent or deal with stress or *Burnout* with outcomes assessment. Risk of bias was assessed through three different tools, according to the study design: Joanna Briggs Institute tools for quasi-experimental studies and Analytical Cross-Sectional studies (descriptive), and Cochrane risk of bias tool for randomized trials. Cumulative evidence was evaluated using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) criteria. Descriptive data was used to report items. **Results.** In two selection phases process, 15 studies were included out of 1969. Risk of bias was low for seven studies, moderated for five studies and high for three ones. Certainty of evidence was considered low and very low for the analyzed outcomes. Interventions which had a significant effect in the reduction of stress and *burnout* were: exchange of experience between doctors in virtual groups, integrative meetings outside the work environment, and team sessions supervised by counselors. **Conclusion.** Several interventions showed promising results. Although they have had variable effects on reducing or preventing *burnout* and stress, mores studies are clearly needed.

Keywords: Oncologists. Interventions. Stress. *Burnout* syndrome. Systematic review.

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1 INTRODUÇÃO

A história do câncer está intimamente ligada à história da humanidade. A primeira descrição remonta a 2.500 a. C. Mais de 2.000 anos depois, Hipócrates concebeu a imagem de um caranguejo enterrado sob a pele, dando origem ao termo Câncer (MUKHERJEE, 2010). Apesar do termo único, o câncer compreende uma diversidade de doenças que podem ocorrer em qualquer órgão, por meio da proliferação descontrolada de células (KUFE *et al.*, 2006).

Com a melhoria das condições de vida e o aumento da longevidade, o câncer tornou-se uma das doenças mais prevalentes na atualidade. Estima-se que, nos Estados Unidos, um a cada três homens e uma a cada duas mulheres terá câncer durante a vida (MUKHERJEE, BERESFORD; TENNANT, 2014).

Mesmo sendo cada vez mais frequente na população, o diagnóstico do câncer envolve muitos estigmas. O trabalho do médico oncologista, especialista que trata a doença, requer uma série de habilidades, compreendendo entre elas o cuidado com pacientes graves e em final de vida. A saúde mental desses médicos vem ganhando destaque nos últimos anos pela alta prevalência de *Burnout* (BANERJEE *et al.*, 2017; LEITER, 1996; MURALI; BANERJEE, 2019; SHANAFELT; DYRBYE, 2012; TUCUNDUVA *et al.*, 2006).

Os dados fornecidos pelas associações de oncologistas são alarmantes. A Sociedade Americana de Oncologia Clínica (ASCO) detectou, por meio de um questionário enviado aos oncologistas, que 45% deles já haviam experimentado sintomas de *Burnout* (SHANAFELT *et al.*, 2014). Estudo semelhante, realizado em um grande hospital brasileiro, referência nacional de oncologia, diagnosticou a presença de *Burnout* em 58% dos oncologistas (MARTINS; PAIVA; PAIVA, 2016). Na Sociedade Europeia de Oncologia Clínica (ESMO), a porcentagem de oncologistas com sintomas de *Burnout* atingiu 70% dos médicos com menos de 40 anos, justamente quem tem a maior carga de trabalho e a dificuldade em conciliá-lo com a vida pessoal (BANERJEE *et al.*, 2017).

A Síndrome de *Burnout* ou Síndrome da Estafa profissional é uma condição clínica relacionada ao trabalho que, diferentemente da depressão ou outros transtornos mentais, só acontece quando pressões ocupacionais persistem ao longo do tempo. Foi descrita inicialmente na década de 1970 e bastante estudada pela Dra. Maslach. Ela desenvolveu um instrumento para o diagnóstico de *Burnout*, que cunhou com seu nome "*Maslach Burnout Inventory* (MBI)". (LEITER, 1996; MURALI; BANERJEE, 2019; TUCUNDUVA *et al.*, 2006).

A Síndrome de *Burnout* tem três dimensões conhecidas: cinismo e despersonalização, mais frequente em homens, que pode gerar no médico uma mudança na percepção sobre o

paciente, não mais vendo-o como pessoa, mas sim, como objeto; exaustão emocional, mais comum em mulheres; e, sensação reduzida de realização pessoal. O diagnóstico da Síndrome pode ser feito usando-se o *Maslach Burnout Inventory* (MBI), escala que compreende 22 itens e até hoje é a mais utilizada, quando uma dessas dimensões estiver comprometida (LEITER, 1996; MURALI; BANERJEE, 2019; TUCUNDUVA *et al.*, 2006).

Apesar da evolução dos tratamentos que podemos oferecer para o câncer ter sido contínua e de conseguimos curar um número cada vez maior de pacientes, o *Burnout* está aumentando entre os oncologistas. Entre os fatores que contribuem para isso estão a necessidade de atualização constante, a perda da autonomia por agências regulatórias, a burocratização do trabalho e o aumento na demanda da força de trabalho com grande número de atendimentos por dia. Este último fator é decorrente do número cada vez maior de sobreviventes, que passam a ser acompanhados durante muitos anos, e do aumento crescente na incidência do câncer (BANERJEE *et al.*, 2017; CANO; MORÉ, 2016; MURALI; BANERJEE, 2019; MEDISAUSKAITE; KAMAU, 2019; SHANAFELT; DYRBYE, 2012;).

As consequências do *Burnout* são pessoais e profissionais, e podem causar aumento da incidência de doenças cardiovasculares, acidentes de carro, divórcios, obesidade, alcoolismo, depressão, uso de drogas, maior índice de absenteísmo, aposentadoria precoce. Nas instituições isso se reflete na dificuldade em recrutar e manter profissionais, queda da qualidade do serviço e da satisfação do paciente. Ainda, podem ocorrer conflitos nas relações interpessoais com detrimento do cuidado aos pacientes e seus familiares, que geram aumento de erros médicos e maior número de processos. (LEITER, 1996).

Imaginar-se com *Burnout* é difícil para a maioria dos oncologistas. Em um primeiro momento, os sintomas podem ser percebidos como problemas inerentes ao trabalho. (MURALI; BANERJEE, 2019SHANAFELT; DYRBYE, 2012). É comum que a pessoa com *Burnout* encare seus sinais e sintomas como se fossem falhas pessoais. Ao se sentirem incapazes de administrar seus conflitos, acabam retardando o diagnóstico de *Burnout* e seu tratamento (RATH *et al.*, 2015; CANO; MORÉ, 2016).

Tendo em vista a alta prevalência de estresse e de *Burnout* entre os médicos oncologistas, intervenções têm sido realizadas – e deveriam ser encaradas como prioridade, para que eles possam desenvolver estratégias para preveni-los e/ou lidar com eles. Em 2016, uma metanálise verificou que diversas abordagens se mostraram eficazes para evitar e reduzir o *Burnout* dos médicos. No entanto, os autores alertam para a necessidade de mais estudos para estabelecer as melhores estratégias para as diferentes realidades da profissão médica (WEST *et al.*, 2016).

1.1 OBJETIVO

Identificando a lacuna nos estudos sobre esta temática mais específica para os oncologistas, conduzimos uma revisão sistemática com o objetivo de responder a seguinte pergunta: Qual é o efeito das intervenções para evitar, diminuir ou lidar com o estresse e o *Burnout* entre médicos oncologistas?

2 DESENVOLVIMENTO

2.1 METODOLOGIA

2.1.1 Protocolo de pesquisa e Registro

Para o protocolo desta revisão sistemática, seguimos o *Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols* (PRISMA-P) (MOHER *et al.*, 2015). O projeto foi incluído no *International Prospective Register of Systematic Reviews* (PROSPERO), sob o registro: CRD42019141517 (REVIEWS; DISSEMINATION, 2011).

Para a escrita do artigo de revisão sistemática, seguimos o *Preferred Reported Items for Systematic Review* (PRISMA) (MOHER *et al.*, 2010). Adicionalmente, o *checklist Synthesis Without Meta-analysis* (SWiM) foi usado para o relato dos achados (CAMPBELL *et al.*, 2020).

2.1.2 Estratégia de busca e Critérios de seleção

A pergunta de pesquisa fundamentou-se no acrônimo PECOS, em que os participantes (P) foram os médicos oncologistas, a exposição (E) consistiu em intervenções para evitar e reduzir stress e *Burnout*, o controle (C) consistiu em médicos oncologistas que não sofreram estas intervenções e os desfechos (O) incluíram melhora da qualidade de vida, felicidade, prevenção e redução dos sinais e sintomas do estresse e *Burnout.* Os tipos de estudos incluídos (S) foram os observacionais: caso controle e estudos de corte, e experimentais: ensaios clínicos randomizados e não randomizados.

A estratégia de busca foi voltada à identificação de estudos que contemplassem intervenções para prevenir e/ou lidar com o estresse e o *Burnout* dos médicos oncologistas. As palavras-chave incluíram *Burnout*, estresse, oncologistas, intervenções e suas variações. A busca completa pode ser encontrada no Apêndice F.

Com a ajuda de uma bibliotecária experiente, pesquisamos as seguintes bases de dados: Pubmed, LILACS, Web of Science, EMBASE, Scopus Review, Cochrane Library, PsycINFO e CINAHL, além da literatura cinzenta em Google Scholar, ProQuest Dissertation and Theses e OpenGray. Realizamos a revisão da bibliografia de forma manual dos artigos encontrados e, por correio eletrônico, fizemos contato com os principais autores do assunto, perguntando por possíveis artigos não incluídos para complementar o estudo. Não utilizamos filtro para idiomas e não utilizamos restrição de data de publicação dos artigos primários.

De acordo com critérios pré-elaborados foram incluídos estudos que envolveram médicos oncologistas clínicos, radio-oncologistas, cirurgiões oncológicos, oncologistas pediátricos, oncohematologistas; e estudos que contivessem dados específicos sobre intervenções para prevenir ou lidar com estresse ou *Burnout* entre eles. Foram excluídos: 1) estudos envolvendo exclusivamente profissionais do câncer não médicos e estudantes de medicina; 2) estudos que não envolvessem intervenções para prevenir ou lidar com estresse ou *Burnout*; 3) estudos com dados duplicados incluídos em outro estudo ou dados insuficientes; 4) estudos com animais; 5) revisões, cartas, livros, resumos de conferências, relatos de casos, série de casos, artigos de opinião, artigos de técnicas e guidelines; 6) estudos com texto completo não disponível publicamente e não obtido após três tentativas de contato com os autores de correspondência por correio eletrônico (*e-mail*) em um período de 15 dias.

2.1.3 Seleção dos artigos

Os artigos encontrados nas bases de dados foram organizados no programa EndNote X9. De forma independente, duas revisoras (A.S. e C.W.) selecionaram os artigos incluídos em duas fases. Na fase 1, fizeram a leitura de títulos e resumos aplicando os critérios de elegibilidade. Na fase 2, fizeram a leitura do texto completo, também aplicando os critérios. Em caso de discordância, as dúvidas eram resolvidas por consenso e se mesmo assim a incompatibilidade permanecesse, uma terceira revisora (J.M.D.O.) era acionada.

2.1.4 Coleta de dados

Duas revisoras (A.S. e C.W.) coletaram as informações principais dos estudos incluídos, inserindo os dados em uma tabela, de forma independente. Em seguida, os dados coletados foram checados e as discordâncias resolvidas em uma reunião entre elas para chegarem a um consenso. Quando este consenso não era alcançado, uma terceira revisora (J.M.D.O.) atuava para se chegar a uma decisão final.

Os critérios para extração dos dados foram determinados previamente à revisão através de uma tabela que incluía: autor, ano, participantes, país, tipo de estudo, objetivos primários e secundários, tipo de intervenção, resultados iniciais e de seguimento, quando existentes, aceitabilidade dos participantes, satisfação e eficácia da intervenção. As medidas de desfecho primário foram stress e *Burnout*. Não foram feitas restrições em relação a como esses desfechos seriam mensurados. Os dados extraídos foram sintetizados de maneira descritiva. Caso os dados

não fossem encontrados no artigo, três tentativas de contato eram realizadas em um período de 15 dias por correio eletrônico com os autores correspondentes para obtenção de informações relevantes não publicadas.

2.1.5 Risco de viés dos estudos incluídos

O risco de viés foi avaliado de forma independente pelos dois revisores principais, por meio do sistema de escores das ferramentas do Instituto Joanna Briggs (JBI) para ensaios clínicos não randomizados *quasi*-experimentais (JOANNA BRIGGS INSTITUTE, 2017) e transversais analíticos (JOANNA BRIGGS INSTITUTE, 2014), e pelas ferramentas de análise de risco de viés da Cochrane (RoB 2.0) (ELDRIDGE *et al.*, 2016) para estudos randomizados (simples) e randomizados por conglomerados. O julgamento foi realizado de forma independente pelas revisoras (A.S. e C.W.) e as decisões finais dos escores foram checadas e combinadas por elas após a aplicação das ferramentas adequadas para os estudos selecionados. O risco de viés foi determinado como alto se o estudo obtivesse no máximo 49% de baixo risco de viés, moderado se obtivesse entre 50 e 60% de baixo risco de viés e baixo se obtivesse mais de 70%. Todas as figuras do risco de viés foram criadas utilizando o aplicativo *online robvis* (MCGUINNESS, 2019).

2.1.6 Síntese dos resultados

Níveis de estresse e sintomas de *Burnout* foram considerados como os desfechos principais e a análise não foi restrita por nenhum método de mensuração ou diagnóstico. Complementarmente, nenhuma restrição foi feita em relação por quem esses resultados seriam avaliados, admitindo-se dados obtidos por psicólogos ou por autoavaliação. Foram incluídos estudos com qualquer tipo de intervenção e qualquer número de médicos.

A heterogeneidade entre os estudos incluídos foi avaliada pelo índice de inconsistência (I^2), obtido por análise estatística e de análise crítica de características clínicas, metodológicas e estatísticas dos estudos (HIGGINS; GREEN, 2011).

A metanálise foi considerada inapropriada devido à heterogeneidade nas categorias clínicas e metodológicas dos estudos incluídos. A síntese dos resultados também foi descritiva.

2.1.7 Certeza da evidência acumulada

Um resumo da confiança geral nas evidências acumuladas disponíveis foi apresentado, dividido pelos resultados analisados, usando os "Critérios de Avaliação, Desenvolvimento e Avaliação da Classificação de Recomendações" (*Grading of Recommendations Assessment, Development and Evaluation* - GRADE). (www.gradeworkinggroup.org) A tabela de resumo das descobertas foi produzida usando o *software online* GRADEpro (MANHEIMER, 2012).

3 RESULTADOS

3.1 SELEÇÃO DOS ESTUDOS

Ao aplicar a estratégia de busca nas bases de dados, foram identificados 1969 artigos. Após a remoção dos duplicados, permaneceram 1235 estudos para a primeira fase de seleção dos artigos, para leitura dos títulos e resumos e aplicação dos critérios de elegibilidade. Em seguida, as listas de referências dos artigos incluídos foram avaliadas e *experts* no assunto foram consultados, sendo eleitos 179 artigos para a segunda fase de seleção, constituída pela leitura na íntegra dos artigos. Após esta leitura, 15 estudos preencheram os critérios de elegibilidade para análise qualitativa dos dados. O Apêndice G apresenta os motivos de exclusão dos 164 artigos restantes.

Não foi possível realizar a análise quantitativa dos dados, devido à alta heterogeneidade das intervenções e avaliações de seus desfechos entre os artigos incluídos. O fluxograma detalhado do processo de seleção está apresentado na Figura 1 (Apêndice C).

3.2 CARACTERÍSTICAS DOS ESTUDOS INCLUÍDOS

Os 15 estudos incluídos foram realizados em 13 países: Alemanha (BROWN *et al.*, 2014; MACHE *et al.*, 2017), Australia (BROWN *et al.*, 2014; BUTOW *et al.*, 2008), Austria (BROWN *et al.*, 2014), Bélgica (BRAGARD *et al.*, 2010), Canadá (CLEMONS *et al.*, 2019), Costa Rica (LANDAVERDE *et al.*, 2018), Estados Unidos (SEKERES *et al.*, 2003; MOODY *et al.*, 2013; GRAFF *et al.*, 2018), Holanda (LE BLANC *et al.*, 2007), Israel (BAR-SELA, LULAV-GRINWALD; MITNIK, 2012; MOODY *et al.*, 2013), Itália (ITALIA *et al.*, 2008; BARZELLONI *et al.*, 2014), Nova Zelândia (BROWN *et al.*, 2014), Reino Unido (TJASINK; SOOSAIPILLAI, 2018; MEDISAUSKAITE; KAMAU, 2019) e Suíça (BROWN *et al.*, 2014). O país onde a maioria dos estudos foi realizado foram os Estados Unidos (3 estudos) (SEKERES *et al.*, 2003; MOODY *et al.*, 2013; GRAFF *et al.*, 2018).

Um total de 1376 indivíduos foram analisados. Os participantes dos estudos que incluíam médicos oncologistas eram médicos especialistas (oncologistas, onco-hematologistas, onco-pediatras, radio-oncologistas, especialistas em cuidados paliativos) (BARZELLONI *et al.*, 2014; BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; BUTOW *et al.*, 2008; CLEMONS *et al.*, 2019; GRAFF *et al.*, 2018; ITALIA *et al.*, 2008; LANDAVERDE *et al.*, 2018; LE BLANC *et al.*, 2007; MACHE *et al.*, 2017; MEDISAUSKAITE; KAMAU, 2019; MOODY *et al.*, 2013;

SEKERES *et al.*, 2003; TJASINK; SOOSAIPILLAI, 2018), residentes de oncologia (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012), enfermeiros (LE BLANC *et al.*, 2007; ITALIA *et al.*, 2008; MOODY *et al.*, 2013; BARZELLONI *et al.*, 2014; LANDAVERDE *et al.*, 2018), assistentes de radioterapia (BUTOW *et al.*, 2008; LE BLANC *et al.*, 2007;), psicólogos e assistentes sociais (MOODY *et al.*, 2013).

Em relação ao desenho dos estudos incluídos, seis estudos foram classificados como ensaios clínicos não randomizados *quasi*-experimentais (BAR-SELA, LULAV-GRINWALD e MITNIK, 2012; ITALIA *et al.*, 2008; LANDAVERDE *et al.*, 2018; SEKERES *et al.*, 2003; TJASINK; SOOSAIPILLAI, 2018; CLEMONS *et al.*, 2019), um como transversal analítico (GRAFF *et al.*, 2018), e oito estudos foram classificados como ensaios clínicos randomizados (um com randomização por conglomerados (LE BLANC *et al.*, 2007) e sete randomizados individualmente com grupos paralelos (BARZELLONI *et al.*, 2014; BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; BUTOW *et al.*, 2008; MACHE *et al.*, 2017; MEDISAUSKAITE; KAMAU, 2019; MOODY *et al.*, 2013).

Todos os estudos incluídos possuíam pelo menos um grupo com médicos oncologistas (corpo médico, residentes ou especialistas). Um resumo detalhado das características dos estudos incluídos pode ser encontrado no Quadro 1 (Apêndice D).

As estratégias mais frequentes para prevenção e/ou redução dos níveis de estresse e *Burnout foram* aulas em forma de palestra (BARZELLONI *et al.*, 2014; LE BLANC *et al.*, 2007; MEDISAUSKAITE; KAMAU, 2019; MOODY *et al.*, 2013) (quatro estudos por aproximadamente 15 horas), oficinas (BROWN *et al.*, 2014; BUTOW *et al.*, 2008; LANDAVERDE *et al.*, 2018) (três estudos por aproximadamente 14 horas) e sessões em grupos (BRAGARD *et al.*, 2010; BAR-SELA, ITALIA *et al.*, 2008; LULAV-GRINWALD; MITNIK, 2012; MACHE *et al.*, 2017; SEKERES *et al.*, 2003; TJASINK; SOOSAIPILLAI, 2018) (seis estudos por aproximadamente 16 horas). Dois estudos trabalharam o autoconhecimento usando técnicas de arte, (ITALIA *et al.*, 2008; TJASINK; SOOSAIPILLAI, 2018). Outro estudo usou uma lista de virtudes (CLEMONS *et al.*, 2019) e um desenvolveu uma comunidade virtual de mulheres no Facebook (GRAFF *et al.*, 2018).

Para analisar os desfechos, identificando os parâmetros pré e pós intervenção, o MBI foi utilizado em 12 estudos (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; BARZELLONI *et al.*, 2014; BRAGARD *et al.*, 2010; BUTOW *et al.*, 2008; CLEMONS *et al.*, 2019; ITALIA *et al.*, 2008; LANDAVERDE *et al.*, 2018; LE BLANC *et al.*, 2007; MACHE *et al.*, 2017; MEDISAUSKAITE; KAMAU, 2019; MOODY *et al.*, 2013; TJASINK; SOOSAIPILLAI, 2018;). Três destes se associaram a outras avaliações por meio de

questionários (BARZELLONI *et al.*, 2014; MACHE *et al.*, 2017; MEDISAUSKAITE; KAMAU, 2019). Três estudos não incluíram o MBI e usaram, questionários não validados para avaliar o comportamento e a satisfação dos participantes após a intervenção (BROWN *et al.*,2014; GRAFF *et al.*, 2018; SEKERES *et al.*, 2003).

O período de *follow-up* variou entre sete dias (MEDISAUSKAITE; KAMAU, 2019) e dois anos (LANDAVERDE *et al.*, 2018). Em cinco estudos este período foi superior a um ano (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; BARZELLONI *et al.*, 2014; BUTOW *et al.*, 2008; LANDAVERDE *et al.*, 2018; MACHE *et al.*, 2017) e em nove, menor que 6 meses (BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; CLEMONS *et al.*, 2019; ITALIA *et al.*, 2008; LE BLANC *et al.*, 2007; MEDISAUSKAITE; KAMAU, 2019; MOODY *et al.*, 2013; SEKERES *et al.*, 2003; TJASINK; SOOSAIPILLAI, 2018). Apenas um estudo avaliou os participantes de forma transversal, não apresentando acompanhamentos (GRAFF *et al.*, 2018).

3.3 RESULTADOS INDIVIDUAIS DOS ESTUDOS

Oito estudos constataram diminuição significativa nos níveis de estresse e *burnout* (BROWN *et al.*, 2014; GRAFF *et al.*, 2018; ITALIA *et al.*, 2008; LANDAVERDE *et al.*, 2018; LE BLANC *et al.*, 2007; MACHE *et al.*, 2017; MEDISAUSKAITE; KAMAU, 2019; TJASINK; SOOSAIPILLAI, 2018), enquanto sete estudos não a constataram. (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; BUTOW *et al.*, 2008; CLEMONS *et al.*, 2019; MOODY *et al.*, 2013; SEKERES *et al.*, 2003).

Entre os oito estudos em que houve diminuição nos níveis de estresse e *burnout*, dois estudos *quasi*-experimentais (*before and after*) utilizaram o autoconhecimento associado à arte. (ITALIA *et al.*, 2008; TJASINK; SOOSAIPILLAI, 2018). Em um destes estudos, além das estratégias de arte foram associados diversos processos e dinâmicas como psicodrama, jogos, técnicas de relaxamento, meditação *mindfulness* e vídeos, realizadas em reuniões semanais durante 4 meses. (ITALIA *et al.*, 2008). No outro, foram usados desenhos durante seis sessões de 90 a 120 minutos (TJASINK; SOOSAIPILLAI, 2018)

Um estudo transversal analítico avaliou o efeito de uma comunidade de práticas em mídia social fechada (Facebook) na redução do *burnout* entre mulheres oncologistas (GRAFF *et al.*, 2018). Neste grupo, os pesquisadores tiveram a oportunidade de discutir casos clínicos complexos, promover atualizações na prática clínica e clubes de revistas, e divulgar protocolos de pesquisa. Além disso, eles puderam trocar ideias sobre o equilíbrio entre vida e trabalho.

Outras estratégias que reduziram níveis de estresse e *burnout* em médicos incluíram: um programa de treinamento supervisionado por conselheiros (LE BLANC *et al.*, 2007), estratégia de solução de problemas com base no modelo de Lazarus (MACHE *et al.*, 2017) e abordagem educacional sobre estresse, *burnout* e métodos para combatê-los (MEDISAUSKAITE; KAMAU, 2019). Landaverde *et al.* (2018) desenvolveram um programa antiestresse que consistia em levar oncologistas para um dia fora do trabalho para atividades de integração, trabalho em equipe e *workshops* de enfrentamento ao estresse (LANDAVERDE *et al.*, 2018).

Dos sete estudos que não constataram diminuição nos níveis de estresse e *burnout*, três avaliaram se a promoção de habilidades de comunicação entre médicos e pacientes poderia combater o *burnout* de oncologistas (BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; BUTOW *et al.*, 2008). No entanto, esses estudos não demonstraram eficácia.

Dois estudos avaliaram o impacto de grupos *Balint* na redução do *burnout* em residentes e médicos oncologistas do corpo clínico hospitalar (BAR-SELA, LULAV-GRINWALD; MITNIK, 2012; SEKERES *et al.*, 2003). A intervenção promoveu melhora das habilidades de comunicação e contribuiu para o senso de realização pessoal dos médicos, porém não foi constatada prevenção ou diminuição nos níveis de *burnout*.

Um ensaio clínico randomizado avaliou o efeito de uma intervenção com ensino e prática de atenção plena (*mindfulness*). Apesar de terem sido constatados relatos de mudanças positivas nos participantes no trabalho e em casa, não foi constatada diminuição de *burnout* entre seus participantes. (MOODY *et al.*, 2013).

Também não foi constatado aumento da felicidade e redução de níveis de *burnout* em intervenção sobre as virtudes, programa de 13 semanas desenvolvido por Benjamin Franklin, em que cada virtude é cultivada durante 1 semana com o objetivo de crescimento pessoal. (CLEMONS *et al.*, 2019).

3.4 RISCO DE VIÉS INDIVIDUAL E ENTRE OS ESTUDOS INCLUÍDOS

Dos 15 estudos incluídos, sete preencheram todos os requisitos dos *checklists* de risco de viés, sendo classificados como baixo risco de viés considerando critérios de qualidade metodológica: dois ensaios clínicos randomizados (LE BLANC *et al.*, 2007; MEDISAUSKAITE; KAMAU, 2019), o estudo transversal analítico (GRAFF *et al.*, 2018) e quatro ensaios clínicos não randomizados *quasi*-experimentais (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; ITALIA *et al.*, 2008; TJASINK; SOOSAIPILLAI, 2018;

CLEMONS *et al.*, 2019). Cinco artigos foram classificados com risco de viés moderado (BRAGARD *et al.*, 2010; BUTOW *et al.*, 2008; MOODY *et al.*, 2013; MACHE *et al.*, 2017; SEKERES *et al.*, 2003) e três classificados com alto risco de viés (BARZELLONI *et al.*, 2014; BROWN *et al.*, 2014; LANDAVERDE *et al.*, 2018) de acordo com os *checklists* específicos para cada tipo de desenho de estudo.

Nessa revisão sistemática, os principais tópicos identificados nos *checklists* de risco de viés que aumentaram os escores dos estudos incluídos foram: o processo de seleção dos resultados relatados e a existência de outras intervenções nos grupos comparados (confundidores). As Figuras 2 a 5 (disponíveis no Apêndice C) apresentam os gráficos de risco de viés e as informações detalhadas sobre a avaliação dos *checklists* de risco de viés, respectivamente.

3.5 SÍNTESE DOS RESULTADOS

As intervenções que tiveram um efeito significativo na redução do estresse e *burnout* foram a troca de experiências entre médicos em grupos virtuais (GRAFF *et al.*, 2018), terapia pela arte (ITALIA *et al.*, 2008; TJASINK; SOOSAIPILLAI, 2018), reuniões mensais da equipe fora do ambiente de trabalho (LANDAVERDE *et al.*, 2018), treinamentos supervisionados por conselheiros (LE BLANC *et al.*, 2007), sessões baseadas no modelo de Lazarus com estratégias para lidar com fatores estressores focadas tanto no problema quanto na solução (MACHE *et al.*, 2017) e abordagem educacional aos médicos sobre estressores, *burnout*, como lidar com a morte e com o estresse (MEDISAUSKAITE; KAMAU, 2019).

As intervenções que não reduziram os níveis de estresse e *burnout* foram o treinamento de habilidades de comunicação simulada (BRAGARD *et al.*, 2010; BAR-SELA, LULAV-GRINWALD; MITNIK, 2012; BROWN *et al.*, 2014; BUTOW *et al.*, 2008), o novo modelo de virtudes de Franklin (CLEMONS *et al.*, 2019) e a meditação *mindfulness* (MOODY *et al.*, 2013).

Todos os estudos se basearam em intervenções voltadas para o indivíduo, mesmo quando organizadas pelas instituições para um dia de folga (LANDAVERDE *et al.*, 2018). Não houve estudo que fizesse uma mudança estrutural no ambiente de trabalho.

3.6 CERTEZA DA EVIDÊNCIA ACUMULADA

Todos os estudos foram avaliados conforme os critérios do sistema GRADE. Os

desfechos avaliados foram: o impacto dos sintomas de *burnout*, prevenção de *burnout* e nível de estresse. A certeza na evidência acumulada foi considerada baixa e muito baixa para estudos randomizados e observacionais, respectivamente. Explicações adicionais com relação à avaliação das evidências estão apresentadas no Quadro 2 (Apêndice D).

3.7 DISCUSSÃO

O objetivo dessa revisão sistemática foi avaliar o efeito de intervenções para redução ou prevenção de estresse e *burnout* entre médicos oncologistas. Nossos achados mostraram que algumas intervenções se mostraram efetivas e outras não. Entretanto, a variedade de intervenções e a quantidade de grupos com a mesma intervenção foi pequena. Nossos resultados mostraram que oito estudos tiveram intervenções eficazes.

Encontramos dois estudos (ITALIA *et al.*, 2008; TJASINK; SOOSAIPILLAI, 2018) que constataram a eficácia do autoconhecimento associado à arte. Esse tipo de intervenção tem sido utilizado na área da oncologia e ambientes relacionados a cuidados paliativos com o objetivo de ajudar a superar o luto e reduzir o desgaste da equipe multidisciplinar (HUET; HOLTTUM, 2016; ITALIA *et al.*, 2008; TJASINK; SOOSAIPILLAI, 2018). Apesar dos bons resultados, existem dúvidas em um dos estudos, sobre qual das técnicas impactou a mudança ou se foi a associação delas.

Outra intervenção que reduziu o *burnout* foi o desenvolvimento de uma comunidade de práticas para troca de experiências entre médicos em ambiente virtual (GRAFF *et al.*, 2018). Tratou-se de um trabalho inovador, sem referência na literatura. No entanto, o estudo foi transversal e avaliou os membros da comunidade (médicas praticando hematologia e oncologia) por meio de uma pesquisa on-line voluntária anônima de 12 perguntas usando uma escala visual analógica, que não é a forma padrão ouro de medir o esgotamento antes e depois de qualquer intervenção. Assim, os resultados encontrados neste estudo podem levar a um efeito mais subjetivo do estresse do que o próprio *burnout.*

Abordagens que trabalharam para reduzir o estresse e o *burnout* de médicos a partir de pequenos grupos avaliados nesta revisão sistemática têm em comum que a intervenção, embora individual e não institucional, ocorreu em horário protegido (pago) pelo empregador. É importante que médicos e empregadores compartilhem a responsabilidade para promover o bem-estar do médico (WEST *et al.*, 2016).

Por outro lado, sete estudos tiveram intervenções que não tiveram efeito sobre o estresse e *burnout.*

Três estudos incluídos nesta revisão não conseguiram constatar o efeito do ensino de habilidades de comunicação nos níveis de *burnout* (BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; BUTOW *et al.*, 2008). Seria esperado que houvesse efeitos, pois uma comunicação ineficaz, além de influenciar negativamente no bem-estar do paciente, interfere na equipe multiprofissional, o que pode causar aumento do estresse e *burnout*, bem como menor satisfação com o trabalho (MOORE *et al.*, 2018). Porém, os dados encontrados alinham-se ao que foi constatado em uma revisão sistemática atualizada pela terceira vez em 2018, que demonstrou que o treinamento de habilidades de comunicação não era eficaz para reduzir o desgaste de profissionais que trabalham com câncer (MOORE *et al.*, 2018).

Dois estudos avaliaram o impacto de Grupos *Balint* na redução do *burnout* em médicos residentes e do corpo clínico hospitalar da área da oncologia (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; SEKERES *et al.*, 2003). Os grupos *Balint* foram criados na década de 1950 pelo psicanalista Michael Balint e consistem em um trabalho em pequenos grupos, de 10 a 12 pessoas, em que se apresentam casos que mobilizam emocionalmente os médicos, a abordagem de emoções e sentimentos que possam estar ocorrendo no médico, no paciente e no processo que se passa na relação médico-paciente (BALINT, 1957). A intervenção teve efeito na melhora das habilidades de comunicação e contribuiu para o senso de autorrealização dos médicos, porém não foi eficaz na prevenção ou redução do *burnout.* Apesar disso, os resultados devem ser interpretados com cautela, devido ao limitado número de estudos (apenas dois), de participantes dos grupos e de sessões. Estes resultados vão ao encontro de outros estudos que não constataram eficácia dos grupos *Balint* na redução de estresse e *burnout* .(BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; CLOUGH *et al.*, 2017; SEKERES *et al.*, 2003).

O ensaio clínico randomizado com os efeitos da atenção plena *(mindfulness)* não conseguiu identificar seu efeito sobre o estresse e o *burnout*, mas causou mudanças positivas nos participantes, tanto no trabalho quanto em casa. (MOODY *et al.*, 2013) A atenção plena (*mindfulness*) apareceu em estudos recentes como um tratamento potencial para o *burnout* relacionado ao trabalho (KABAT-ZINN, 2003; KRASNER *et al.*, 2009). Definida como atenção plena, a *mindfulness* origina-se de valores budistas e pode ser aprendida (KABAT-ZINN, 2003). A maioria os programas oferecidos atualmente baseiam-se em um programa desenvolvido na década de 1970, denominado Redução do estresse com base em *mindfulness* (MBSR) (KABAT-ZINN, 2003). Alguns estudos exploram a relação entre *mindfulness* e *burnout* em profissionais de saúde e sugerem benefícios, mas sem impacto significativo na redução do *burnout* (KRASNER *et al.*, 2009).

Tanto a *mindfullness*, como os grupos Balint requerem um período de aprendizado ou prática e, talvez, estudos que os incluíram não tenham tido tempo duração suficiente para demonstrar sua eficácia (PETRIE *et al.*, 2019). Assim, sugere-se que intervenções como estas tenham continuidade para surtir maior efeito e evitar recidivas. (ROTHENBERGER, 2017; SHANAFELT *et al.*, 2006).

Em relação ao foco predominante das intervenções nos indivíduos, resultados semelhantes foram encontrados em outras revisões. (WEST *et al.*, 2016).

West *et al.* (2016) realizaram revisão sistemática e metanálise avaliando a eficácia das intervenções em médicos com *burnout*. Foram incluídos 15 estudos randomizados e 37 estudos observacionais, sendo 49 com base em indivíduos e apenas três com base institucional (WEST *et al.*, 2016).

Na metanálise realizada por Petrie *et al.* (2019), analisando intervenções para redução de sintomas de transtornos mentais e ideiação suicida entre médicos, os autores não conseguiram incluir nenhum estudo controlado em nível institucional. Isso foi considerado bastante preocupante para os autores, pois um estudo institucional tem a vantagem de identificar os fatores de risco presentes no ambiente de trabalho, o potencial de ser mais aceitável pelos participantes e de ter maior poder preventivo (PETRIE *et al.*, 2019).

3.8 LIMITAÇÕES

As limitações do nosso estudo, que geraram risco de viés e baixo grau de evidências incluíram tamanho pequeno da amostra em muitos estudos, número limitado de sessões, recrutamento voluntário, presença de interação entre grupos controle e intervenção, estudos realizados em apenas uma instituição, variação nos instrumentos para avaliar as variáveis consideradas antes e depois da intervenção, associação de estratégias impossibilitando diferenciar qual ou quais realmente foram mais efetivas e tempo variável de *follow-up*. Em geral, os estudos apresentaram várias diferenças metodológicas entre si, tanto em termos de delineamento quanto em relação à população heterogênea, na qual, nem sempre foram incluídos apenas os oncologistas. Além disso, os questionários de autoavaliação foram diversos e muitos autopreenchidos, podendo levar ao viés de desejabilidade social. (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; BARZELLONI *et al.*, 2014; BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; BUTOW *et al.*, 2008; CLEMONS *et al.*, 2019; GRAFF *et al.*, 2018; ITALIA *et al.*, 2008; LE BLANC *et al.*, 2007; MACHE *et al.*, 2017; MEDISAUSKAITE; KAMAU, 2019; MOODY *et al.*, 2013; LANDAVERDE *et al.*, 2018; TJASINK; SOOSAIPILLAI, 2018;

SEKERES *et al.*, 2003).

Ainda assim, intervenções para prevenir ou reduzir o estresse e o *burnout* entre médicos oncologistas, cuja prevalência varia de 23% a 48% ao redor do mundo, são extremamente importantes e espera-se que sejam continuados, idealmente, com maior quantidade de participantes e tentando homogeneizar os parâmetros avaliados. (MEDISAUSKAITE; KAMAU, 2019).

Não podemos afirmar que as intervenções que não se demonstraram eficazes no desfecho que avaliamos, tendo em vista que a limitação na quantidade de estudos e às limitações de cada um deles. Também, pela escassez de estudos com base institucional, sugerimos estudos futuros que os incluam. Apesar de abordagens individuais serem úteis, para os médicos se envolverem e realmente cuidarem das pessoas, a organização de saúde deve trabalhar para controlar ou eliminar as causas conhecidas de desgaste e melhorar os sistemas de defesa e apoio dos médicos (ROTHENBERGER, 2017). Sociedades médicas, hospitais e governos têm uma grande responsabilidade para melhorar as condições de trabalho, mas geralmente têm dificuldade em alocar recursos para trazer mudanças efetivas (SHANAFELT; DYRBYE, 2012).

4 CONCLUSÃO

Nesta revisão sistemática, as intervenções que tiveram efeito na redução do estresse e *burnout* foram comunidade de práticas de mulheres oncologistas virtuais para compartilhar experiências (GRAFF *et al.*, 2018), promoção do autoconhecimento associado à arte (ITALIA *et al.*, 2008; TJASINK; SOOSAIPILLAI, 2018), reuniões mensais da equipe fora do ambiente de trabalho (LANDAVERDE *et al.*, 2018), sessões de treinamento supervisionadas por conselheiros (LE BLANC *et al.*, 2007), o ensino de estratégias de enfrentamento do estresse (MACHE *et al.*, 2017) e sobre estressores, *burnout* e forma de identificá-los e lidar com eles. (MEDISAUSKAITE; KAMAU, 2019). As intervenções que não reduziram foram o treinamento de habilidades de comunicação (BRAGARD *et al.*, 2010; BROWN *et al.*, 2014; BUTOW *et al.*, 2008), grupos Balint (BAR-SELA; LULAV-GRINWALD; MITNIK, 2012; SEKERES *et al.*, 2003), o novo modelo de virtude de Franklin (CLEMONS *et al.*, 2019) e Mindfulness (MOODY *et al.*, 2013).

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APÊNDICE A – APRESENTAÇÃO

Esta dissertação foi originalmente escrita como um artigo na língua inglesa, com o objetivo de ser submetida ao *Journal of Clinical Oncology*. Essa pesquisa foi realizada em parceria com os pesquisadores **Camila da Rosa Witeck**, **Ma. Júlia Meller Dias de Oliveira**, **Prof. Dr. André Luís Porporatti**, **Prof.ª. Dr.ª Graziela De Luca Canto**, **Prof.ª Dr.ª Suely Grosseman**, da Universidade Federal de Santa Catarina; o pesquisador **Prof. Dr. Mark Clemons**, do Departamento de Medicina (Oncologia Médica), Ottawa Hospital, Ottawa, Canadá; e o pesquisador **Prof. Dr. Carlos Eduardo Paiva**, do Hospital de Câncer de Barretos.

APÊNDICE B – ARTIGO

Coping strategies to prevent or reduce stress and burnout among oncology physicians: a systematic review

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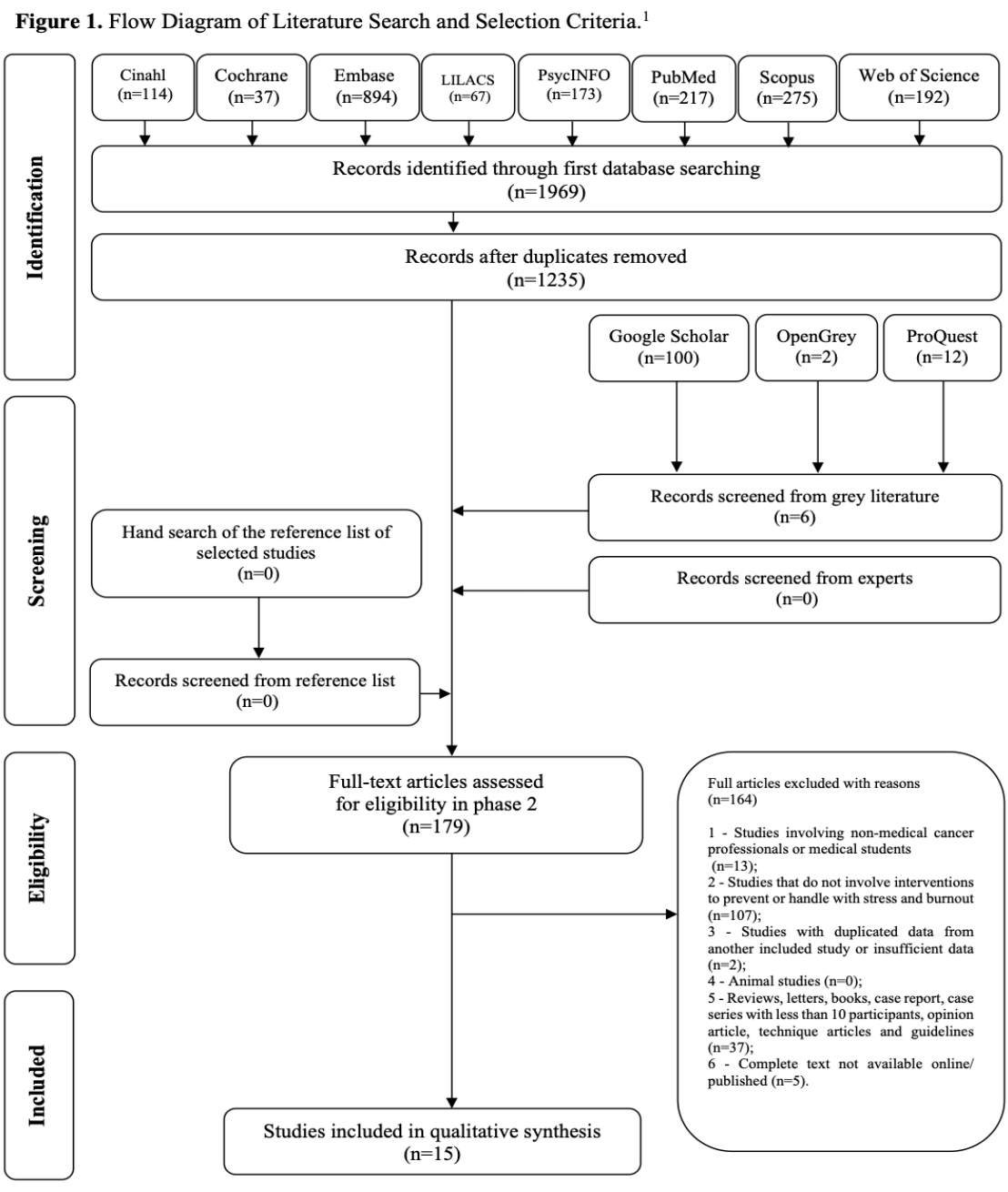
Running head: Coping strategies to reduce burnout in oncologists

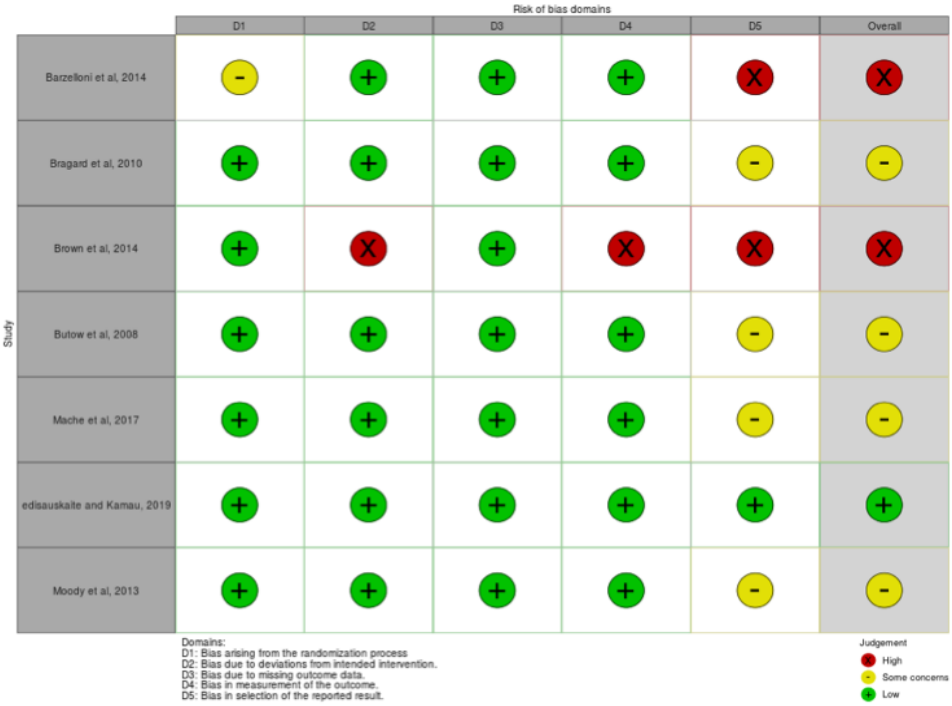
APÊNDICE C – FIGURAS

Figura 1 - Fluxograma da busca na literatura e etapas de seleção dos artigos[1]



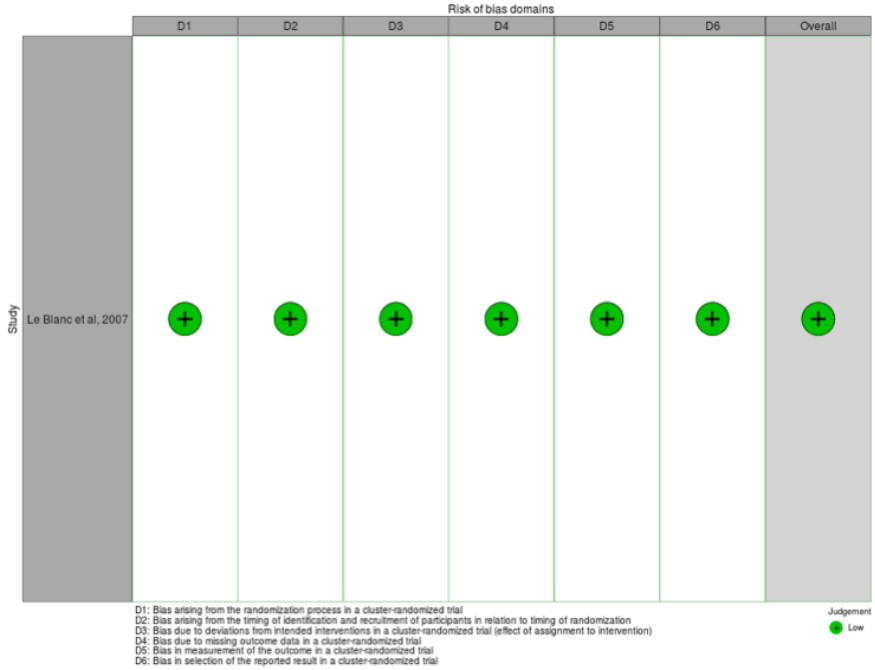
[1] Adapted from PRISMA.

Figura 2 - Representação gráfica por "Traffic-light" dos julgamentos do risco de viés para cada estudo incluído, avaliados pela ferramenta Cochrane para risco de viés (RoB 2.0) para ensaios clínicos randomizados (ELDRIDGE *et al.*, 2016).



Obs.: Imagem gerada usando a ferramenta online *robvis* (VISualização de risco de viés) (Instituto Nacional de Pesquisa em Saúde).(MCGUINNESS, 2019).

Figura 3 - Representação gráfica por "Traffic-light" dos julgamentos do risco de viés para cada estudo incluído, avaliados pela ferramenta Cochrane para risco de viés (RoB 2.0) para ensaios clínicos randomizados por conglomerados (ELDRIDGE *et al.*, 2016).



Obs.: Imagem gerada usando a ferramenta online *robvis* (VISualização de risco de viés) (Instituto Nacional de Pesquisa em Saúde).(MCGUINNESS, 2019).

Figura 4 - Representação gráfica por "Traffic-light" dos julgamentos do risco de viés para cada estudo incluído, avaliados pela ferramenta JBI para ensaios clínicos não randomizados quasi-experimentais (JOANNA BRIGGS INSTITUTE, 2017).

Obs.: Imagem gerada usando a ferramenta online *robvis* (VISualização de risco de viés) (Instituto Nacional de Pesquisa em Saúde).(MCGUINNESS, 2019).

Figura 5 - Representação gráfica por "Traffic-light" dos julgamentos do risco de viés para cada estudo incluído, avaliados pela ferramenta JBI para estudos transversais analíticos. (JOANNA BRIGGS INSTITUTE, 2014).

Imagem gerada usando a ferramenta online *robvis* (VISualização de risco de viés) (Instituto Nacional de Pesquisa em Saúde).(MCGUINNESS, 2019).

APÊNDICE D – QUADROS

Quadro 1 - Resumo das características descritivas dos artigos incluídos (n=15)

CARACTERÍSTICAS DO ESTUDO		POPULAÇÃO				
Autor, Ano (País)	**Desenho do Estudo**	**Participantes/ Contexto / Local**	**Grupos (n/%)**	**Média de idade (anos) ± DP**	**Desfechos Primários**	**Desfechos Secundários**
Bar-Sela, Lulav-Grinwald and Mitnik, 2012 (Israel)	Before and after	15 Oncology residents[1]	Junior: first part of residency (<3y) (8/53.3*) Senior: second part of residency (>3y) (7/46.7*)	NR	Burnout measures (emotional exhaustion and depersonalization)	Communication skills and self-awareness as doctors
Barzelloni et al, 2014 (Italy)	RCT	34 Physicians and nurses	Experimental group (12/35.3*) Control group (22/64.7*)	NR	Prevention of burnout	NR
Bragard et al, 2010 (Belgium)	RCT	62 Cancer physicians specialists	Basic training (BT) without consolidation workshops (CW) group (33/53.2*) BT with CW group (29/46.8*)	NR	Detection of the variables leading to burnout among contextual variables and communication skills	NR
Brown et al, 2014 (Australian/New Zealand/ Swiss/German/Austrian)	RCT	62 Oncologists 21 from 10 Australian/New Zealand (ANZ) centers and 41 from 10 Swiss/German/ Austrian (SGA) centers	1-day workshop group (NR) Control group (NR)	NR	Impact of training on the doctors' communication behavior and their levels of stress and satisfaction	NR
Butow et al, 2008 (Australia)	RCT	30 medical and radiation oncologists	Intervention group (16/53.3*) Control group (14/46.7*)	NR	Evaluation of Communication skills training (CST) and its impact on patient and doctor outcomes	Changes in doctor behaviour and outcomes as a result of training

Clemons et al, 2019 (Canada)	Before and after	13 Medical and surgical oncologists and a palliative care physician[2]	1 group (13/100*)	45y	Impact of the modified version of Franklin's 13 virtues associated with any discernable impact on physician happiness, burnout, or compliance with each of the virtues	Improvement in self-rated compliance with the virtues during the 13-week program
Graff et al, 2018 (United States)	Cross Sectional	169 Female oncologist/ hematologist (H/O), pediatric, radiation oncology, surgical specialties, and palliative care	1 group (169/100*)	62% age younger than 40 years and 35% between the ages of 40 and 49 years	Impact of a Facebook (FB) community for female physicians practicing in hematology/oncology on education, reduction of professional burnout, and improvement of the career satisfaction for its membership	NR
Italia et al, 2007 (Italy)	Before and after	65 Doctors (50.77%*) and nurses of oncology unit	Group A – professionals (16 doctors and 16 nurses) of an adult oncology unit (32/49.2*) Group B – professionals (17 doctors and 16 nurses) of an pediatric oncology unit (33/50.8*)	Group A: Doctors (44.8±8.3) Nurses (39.89±9.1) Group B: Doctors (36.19±7.1) Nurses (41.5±8.8)	Evaluate and reduce the level of burnout in oncology operators in two oncology units (adult and pediatric)	Providing support to and increasing relational dynamics among the single participants
Landaverde et al, 2018 (Costa Rica)	Before and after	Medical oncologists (155 members including hematologists, medical oncologists, pharmacists, laboratory personnel, nurses and secretaries)	NR	NR (Most of the people are around 30 years old (47%), 37% above 40 years old and only 15% under 30 years old)	Reduce the risk of burnout syndrome.	Integrate the medical oncology team end promote self-care
Le Blanc et al, 2007 (the Netherlands)	Cluster Randomized Trial	664 care providers (physicians, nurses, and radiotherapy assistants) working in direct care for oncology patients.of 29 oncology wards [3]	Intervention group (260/39.2%) Control group (404; 60.8%)	(36.2y ± 8.4)	Reduce levels of Burnout over time related to synchronous changes in the level of social support, job control, and participation in decision making	Individual changes in burnout levels over time would be related to synchronous changes in the level of social support, job control, and participation in decision making
Mache et al, 2017 (Germany)	RCT	80 German‐speaking employed junior physicians working in clinic departments of oncology and hematology medicine	Intervention Group (IG) (39/48.75*) Control Group (CG) (41/51.25*)	28y±2.3	Level of perceived stress as measured by PSQ	Work‐related health Psychosocial skills

						self - perceived training outcome and training design
Medisauskaite and Kamau, 2019 (United Kingdom)	RCT	91 doctors[4] - 54.9% (50) work in hospitals and 72.5% (66) work >41 h a week (6% oncologists)[5]	Trial group 4 – Modules 1-4 (39/*) Trial group 5 – Doctors not assigned to any module / Control group (52/*)	NR	Burnout, anxiety, insomnia, grief, alcohol/drug use, binge eating, physical symptoms, and psychiatric morbidity	
Moody et al, 2013 (United States and Israel)	RCT	47 (53% of participants were nurses)	Intervention (23/48.94*) Control (24/ 51.06*)	NR	Burnout	Depression and perceived stress
Sekeres et al, 2003 (United States)	Non-randomized clinical trial	28 first-year hematology-oncology fellows (14 each academic year of 2000-2001 and 2001-2002)	Fellows that started at Dana-Farber Cancer Institute/Brigham and Women's Hospital (DFCI/BWH) – "control" (14/50*) (7 each academic year of 2000-2001 and 2001-2002) Fellows that started at Massachusetts General Hospital (MGH) (14/50*) (7 each academic year of 2000-2001 and 2001-2002)	NR	Fellows' perceptions of how they related to patients and colleagues	- Fellows' perceptions about the "attitudes" questionnaire - Fellows' attitudes during the course of the first fellowship year
Tjasink and Soosaipillai, 2018 (England)	Before and after	16 doctors[7] (4 participants were from medical oncology, 4 from palliative care, 3 from clinical oncology and 3 from haematology)	Single group	NR	Combat the symptoms of Burnout	NR

Estudos	CARACTERÍSTICAS DA INTERVENÇÃO				ACHADOS PRINCIPAIS		
Autor, Ano (País)	**Estratégia de Enfrentamento / Intervenções**	**Método Diagnóstico**	**Diagnóstico Prévio / Antes da Intervenção / Basal**	**Limitações**	**Período Acompanhado**	**Diagnóstico Final / Depois da Intervenção**	**Resultados Gerais**
Bar-Sela, Lulav-Grinwald and Mitnik, 2012 (Israel)	Balint-type case discussion groups 1.5h monthy (9 sessions/y)	Maslach Burnout Inventory (MBI) and expectations questionnaire that was completed at the beginning and at the end of the year	MBI parameter score: - Emotional exhaustion: Junior: 3.66 / Senior: 3.14 - Reduced personal accomplishment: Junior: 1.33 / Senior: 1.34 - Depersonalization: Junior: 2.6 / Senior: 0.98	- Small sample size - Limited number of group sessions	1 ano	MBI parameter score: - Emotional exhaustion: Junior: 3.67 / Senior: 3.48 - Reduced personal accomplishment: Junior: 1.96 / Senior: 1.48 - Depersonalization: Junior: 2.13 / Senior: 1.4	Balint group may improve the residents' communication abilities and contribute to their self-accomplishment as doctors.
Barzelloni et al, 2014 (Italy)	1 day of classroom training and discussion meetings on a monthly basis	General Health Questionnaire (GHQ) and MBI - Evaluations were performed on all parties involved at T0 and quarterly (T1, T2, T3, T4).	NR	NR	1 ano	MBI - Emotional exhaustion showed a statistically significant reduction ($p \leq 0.04$) between T0 and T4 in the experimental group - There were no statistically significant differences for the other two dimensions of the MBI test GHQ - Significant differences were statistically highlighted in the experimental group compared to both itself (T0 vs. T4, p	The clinical implications are significant because the burnout on the quality of care offered and has deep personal implications on operators the affected has a negative effect.

						≤ 0.00), and compared to the control group at the end of surgery (T4 p ≤ 0.01).	
Bragard et al, 2010 (Belgium)	19h BT (two 8h day sessions and one 3h evening session - 2h plenary session focusing on theoretical information in the form of two lectures and 17h of small-group role-playing sessions) CW (six sessions of 3h spread over a 3-month period)	MBI Standardized Breaking Bad News Simulated Interview for assessment of communication skills Socioprofessional questionnaire and the Job Stress Survey (JSS) to assess contextual variables	MBI mean (SD): - Emotional exhaustion: BT: 21 (7) BT with CW: 18 (8) - Reduced personal accomplishment: BT: 39 (5) BT with CW: 39 (6) - Depersonalization: BT: 7 (4) BT with CW: 6 (5)	- Use of role play with direct feedback focusing mainly on the acquisition of communication skills oriented towards patient benefit - Use of simulated interviews - Voluntary participation (and thus highly motivated physicians) - Small number of participants	6 meses	MBI mean (SD): - Emotional exhaustion: BT: 22 (8) BT with CW: 18(10) - Reduced personal accomplishment: BT: 39 (3) BT with CW: 39 (4) - Depersonalization: BT: 8 (5) BT with CW: 7 (6)	No statistically significant impact of training programs on burnout was observed. The amount of clinical workload and the overuse of some facilitative communication skills were associated with cancer physicians' burnout.
Brown et al, 2014 (Australian/New Zealand/ Swiss/German/Austrian)	1 day 7h interactive face-to-face workshop (2h of written and oral materials, 30 min of video modeling ideal behavior, 4h of role-play practice, and 30 min of individualized feedback on audio-taped consultations with actual patients)	Coding of consultation transcripts, using the Decision Analysis System for Oncology	NR	NR	1 mês	ANZ: - Intervention doctors: significant increase in collaborative communication after training - Control doctor: decline in use of collaborative behaviors during the study period. There was no effect of training on other doctor communication behaviors. Trained doctors did not demonstrate increased confidence in their	The intervention (targeting one factor -communication efficacy) was not sufficient to reduce stress and burnout

						information provision or reduced stress and burnout	
Butow et al, 2008 (Australia)	CST: 1.5-day intensive face-to-face workshop incorporating presentation of principles, a DVD modelling ideal behaviour and role-play practice, followed by four 1.5h video-conferences at monthly intervals incorporating role-play of doctor-generated scenarios	MBI and Demographic, previous training and current practice assessed at baseline	MBI median: - Emotional exhaustion: Intervention: 18.0 Control: 16.0 - Reduced personal accomplishment: Intervention: 40.0 Control: 40.0 - Depersonalization: Intervention: 8.0 Control: 2.5	- Limited number of doctors recruited - Small number of institution making it i not possible to stratify - skill levels were high at Baseline - over-representation of female doctors in the sample - first study to attempt to evaluate CST delivered in part by video-conferencing, as a novel approach to feasible delivery over a large area	12 meses	MBI median: - Emotional exhaustion: Intervention: 18.0 Control: 13.5 - Reduced personal accomplishment: Intervention: 39.0 Control: 38.5 - Depersonalization: Intervention: 6.0 Control: 3.0	The intervention did not succeed in reducing levels of stress and burnout in the intervention group
Clemons et al, 2019 (Canada)	Modified Franklin's 13 virtues (the next virtue was added to the previously listed virtues and scores were requested daily) - Each day during the 13-week program, oncologists were emailed a list of virtues to focus on and scored how they felt they were complying with them (5-point Likert scale was used instead of a simple yes/no to increase potential variability in responses)	Abbreviated MBI and Oxford Happiness Questionnaire	MBI score: - Emotional exhaustion: 7 - Reduced personal accomplishment: 16 - Depersonalization: 4 Happiness Questionnaire: 4.2	- Small sample size - Included professionals involved in different aspects of cancer care - Use of a 200-year-old program and the "translation" of Franklin's original text, could lead to improvements in happiness and reduced burnout in physicians caring for cancer patients	17 semanas (13w of follow-up and 1mo following study completion)	MBI score: - Emotional exhaustion: 13w: 7 +1mo: 4.5 - Reduced personal accomplishment: 13w: 16 +1mo: 15.5 - Depersonalization: 13w: 3 +1mo: 2	Franklin's 13 virtues model did not lead to improved happiness or reduced burnout (emotional exhaustion, depersonaliza-tion, personal accomplishment). Statistically significant changes in self-rated virtue scores were observed for temperance (p=0.046), order (p=0.049), and resolution (p=0.014). These 3 virtues had increasing scores over time.

						Happiness Questionnaire: 13w: 4.7 +1mo: 4.7	
Graff et al, 2018 (United States)	Online virtual Facebook (FB) community for female physicians practicing in hematology/oncology, founded in 2015, dynamic evolved to include advice on complex deidentified cases, real-time updates from H/O conferences, designated discussions on the art of oncology and career-life balance, virtual journal clubs, easy transfers of care for relocating patients, and improved access to clinical trials	A voluntary anonymous 12-question online survey using a visual analog scale was distributed to the community members	NR	- Self-reported outcomes - A selection bias may have been introduced, with members of Hematology/Oncology Women Physician Group (HOWPG) with better experiences completing - Control arm (regular FB use) - Use of a visual analog scale rather than an independently validated tool for assessment of burnout and/or career satisfaction	Não	Respondents also felt the community as compared with FB in general reduced their sense of professional burnout (FB mean: 5.5; SD, 2.63; 95% CI, 5.0 to 6.0; community mean, 7.8; SD, 1.86; 95% CI, 7.5 to 8.1)	Social media can be an effective venue to educate physicians, augment patient care via advice, foster networking, reduce burnout, and improve career satisfaction among female physicians in the field of H/O.
Italia et al, 2007 (Italy)	13 weekly meetings organized by a psychologist and by a psychologist–art therapist (5 encounters used psychodrama techniques to promote communicative exchanges; 4 encounters to 'play-therapy' and stimulate a sense of comfort by means of non-verbal communication based on play; 3 encounters to Ericksonian relaxation techniques that offer members a practical method to be used consciously to reduce anxiety and/or other	MBI	MBI mean±SD: - Emotional exhaustion: Group A: NR Group B: 15.85±6.37 - Reduced personal accomplishment: Group A: NR Group B: 60.35±11.07 - Depersonalization: Group A: NR Group B: 3.80±4.20	- Intervention was composed of different techniques	4 meses	MBI mean±SD: - Emotional exhaustion: Group A: NR Group B: 11.70±3.63 - Reduced personal accomplishment: Group A: NR Group B: 67.40±9.10 - Depersonalization: Group A: NR Group B: 2.25±2.63	The results demonstrate the effectiveness of treatment by means of AT techniques such as psychodrama and relaxation for the operators who are most at risk of burnout

	negative emotion; and 1 encounter to observe and discuss a video with techniques used to support children during painful procedures, which are considered the most stressful event during the whole therapeutic pathway for both patients and curing team)						
Landaverde et al, 2018 (Costa Rica)	Anti-stress program to medical oncologists based on taking the oncologists outside the workplace one day every three months, where integrative activities, teamwork, and workshops of stress management are realized	MBI	NR	NR	2 anos	NR	Reduction of burnout risk from intermediate in 60% of the oncologists to 10%, none of the oncologists had developed burnout syndrome
Le Blanc et al, 2007 (the Netherlands)	Team-based burnout intervention called "Take Care!" program with a training plan of six monthly sessions of 3h each, which were supervised by both team counselors	MBI and other questionnaires about work situation and well-being	MBI mean±SD: - Emotional exhaustion: Intervention: 1.54±0.89 Control: 1.46±0.80 - Reduced personal accomplishment: NR - Depersonalization: Intervention: 0.96±0.70 Control: 0.86±0.58	- High attrition rate over time was high - Nonresponse - No objective (i.e., non–self-report) outcome measures were included - Interaction of the experimental (training) and control groups	6 meses	MBI mean±SD: - Emotional exhaustion: Intervention: 1.53 0.92 Control: 1.65±1.00 - Reduced personal accomplishment: NR - Depersonalization: Intervention: 0.98±0.65 Control: 0.93±0.62	By means of a relatively brief, team-based intervention program, we could influence not only the stress component of burnout (emotional exhaustion) but also its motivational component (depersonalization).
Mache et al, 2017 (Germany)	The intervention was based on Lazarus transactional model of stress, including 2 strategies of coping with stressors: problem- and emotion-oriented coping	Perceived Stress Questionnaire (PSQ), Copenhagen Psychosocial Questionnaire, MBI-emotional exhaustion	Perceived stress (mean±SD): - IG: 3.25±0.69 - CG: 3.20±0.66 MBI-EE (mean±SD):	- Small sample size - Short follow-up - Only self-report measures were assessed	36 semanas	Perceived stress (mean±SD): - IG: 2.83±0.72 - CG: 3.29±0.64 MBI-EE (mean±SD):	A significant effect indicated that lower scores for perceived stress were present for the IG at T1 ($F = 29.21$, $P < .001$), T2 ($F = 24.7$, $P <$

	psychosocial competency training focus on current working situations and problems of junior oncologists, coping strategies, resilience, and self-efficacy training as well as developing a support system among colleagues (12 weekly sessions of 1.5 hours. All training sessions involved theoretical input, watching videos, oral group discussions, experiential exercises, and home assignments) combined with cognitive behavioral and solution-focused counselling	(EE), and Emotion Regulation Skills Questionnaire–27	- IG: 4.09±0.59 - CG: 4.19±0.60	- Potential positive bias within the study group (participating physicians were motivated to learn and practice new skills and coping techniques) - Potential outcome bias (simply spending time in a group of people facing similar working conditions may have played an important role in the outcomes)		- IG: 3.71±0.68 - CG: 4.18±0.61	.001), and T3 (F = 8.76, P < .01) A statistically significant positive improvements were found for emotional exhaustion (MBI-EE) and some emotion regulation skills (P < .01) with small to medium effect sizes (d = 0.3-0.7)
Medisauskaite and Kamau, 2019 (United Kingdom)	Intervention of 4 modules: - Module 1 taught doctors about stress - Module 2 taught doctors about burnout - Module 3 taught doctors about coping with patient death - Module 4 taught doctors about methods of managing distress.	MBI, General Anxiety Disorder-7, the 12 items General Health Questionnaire, Texas Revised Inventory of Grief, Patient Health Questionnaire, Alcohol Use Disorder Identification Scale (AUDIT), Commonly Abused Drugs Charts, Insomnia Severity Index, 5 items from the Binge Eating Scale from the Eating Disorder Diagnostic Scale and the Physical Symptom Inventory	mean±SD MBI: - Emotional exhaustion: Intervention: 3.26±1.41 Control: 3.2±1.4 - Reduced personal accomplishment: Intervenetion: 4.42±0.83 Control: 4.41±0.82 - Depersonalization: Intervention: 1.98±1.49 Control: 1.68±1.29 Anxiety: Intervention: 0.96±0.81 Control: 0.88±0.74	- Short follow-up	7 dias	mean±SD MBI: - Emotional exhaustion: Intervention: 2.98±1.44 Control: 3.04±1.42 - Reduced personal accomplishment: Intervenetion: 4.38±0.91 Control: 4.27±0.85 - Depersonalization: Intervention: 1.68±1.41 Control: 1.72±1.35 Anxiety: Intervention: 0.73±0.72 Control: 0.81±0.74 Psychiatric morbidity: Intervention: 2.16±0.57 Control: 2.21±0.64	From baseline to time-2 there were significant reductions in burnout (emotional exhaustion), burnout (depersonalization) and anxiety among doctors who completed all modules about the psychology of distress.

			Psychiatric morbidity: Intervention: 2.14±0.57 Control: 2.17±0.61 Grief: Intervention: 1.6±0.6 Control: 1.74±0.66 Insomnia: Intervention: 1±0.84 Control: 1.18±0.84 Physical symptoms: Intervention: 1.75±0.51 Control: 1.84±0.56 Alcohol use habits: Intervention: 7.33±2.26 Control: 6.71±1.92 Binge-eating features: Intervention: 1.38±1.75 Control: 1.1±1.69 Drug use: Intervention: 0.71±0.87 Control: 0.78±0.78			Grief: Intervention: 1.51±0.57 Control: 1.64±0.62 Insomnia: Intervention: 1.02±0.96 Control: 1.11±0.87 Physical symptoms: Intervention: 1.69±0.61 Control: 1.85±0.65 Alcohol use habits: Intervention: 7.39±2.38 Control: 6.99±1.95 Binge-eating features: Intervention: 1.54±1.86 Control: 1.1±1.74 Drug use: Intervention: 0.53±0.69 Control: 0.69±0.81	
Moody et al, 2013 (United States and Israel)	Mindfulness-based course (MBC) participants received 8 weeks of didactic and experiential mindfulness education via a structured, skills-training course delivered in a group setting at their hospital. The course included 1 ini- tial 6-hour	MBI, Beck Depression Inventory and Perceived Stress Scale-14	MBI mean±SD: - Emotional exhaustion: Intervention: 27.2 Control: 26.2 - Reduced personal accomplishment:	- Small sample size - Overrepresentation of women in the sample - Lack of any intervention in the control group	8 semanas	MBI mean±SD: - Emotional exhaustion: Intervention: 26.9 Control: 24.2 - Reduced personal accomplishment:	Notably, nearly 100% of participants met criteria for high levels of burnout in the categories of personal accomplishment (PA) and depersonalization (DP). These findings were found in both the control and interventional arms at

	session; 6 weekly 1-hour follow-up sessions; and a final 3-hour wrap-up session (15 hours total class time).		Intervenetion: 16.0 Control: 15.4 - Depersonalization: Intervention: 19.6 Control: 18.2	- Lack of blinding		Intervenetion: 15.0 Control: 13.9 - Depersonalization: Intervention: 19.3 Control: 18.7	baseline and at the end of the study. In the category of emotional exhaustion (EE), greater than 95% of participants in both groups, at both time points, showed moderate or high levels of burnout
Sekeres et al, 2003 (United States)	Balint-like physician awareness group every 2 weeks for 1.5 to 2 hours for 6 months -	32-item attitudes questionnaire[6], scored 1 to 5, at three time points during their first year (within the first week of the start of fellowship; during the sixth month of fellowship, just before the switch-over; and during the final month of the first year of fellowship)	Mean (range) - Full questionnaire summary score: 3.6 (3.5-3.7) - Stress in the work environment: 3.3 (3.2-3.5) - Comfort dealing with emotional patient/clinical situations: 3.5 (3.3-3.7) - Fellow's views of him/herself as a physician: 3.8 (3.7-3.9) - Discomfort with psychosocial issues: 3.7 (3.5-3.9)	- Small sample size is small - Important effects of the intervention or of the first oncology fellowship year may have been missed - Two-group comparison analyses were used instead of paired comparisons - Fellows in this program may not have been representative of Hematology-Oncology fellows across the United States - Attitudes questionnaire we used has not been validated previously, and individual topic domains varied in their reliability	1 ano	Mean (range) - Full questionnaire summary score: 3.7 (3.6-3.8) - Stress in the work environment: 3.4 (3.2-3.6) - Comfort dealing with emotional patient/clinical situations: 3.7 (3.6-3.9) - Fellow's views of him/herself as a physician: 4.1 (3.9-4.2) - Discomfort with psychosocial issues: 3.7 (3.5-3.9)	In conclusion, hematology-oncology fellows' attitudes change over the course of the first fellowship year. Positive attitudes and development as caring physicians can be enhanced through the institution of a physician awareness group. The impact and effectiveness of the group intervention can be measured, and successful groups should improve the ability of physicians to communicate with their patients, and thus patient satisfaction
Tjasink and Soosaipillai, 2018 (England)	Art Therapy: mixture of different techniques such as mindfulness, relaxation, visualization, psychodrama and skills based supervision alongside art therapy Six weeks of structured art therapy sessions lasting 90–120 minutes each, structured	MBI	MBI mean±SD: - Emotional exhaustion: 30.79±8.31 - Reduced personal accomplishment: 35.38±6.51 - Depersonalization: 7.93±5.05	- Small sample - More effective techniques learned through the first experience may have been used in the second and third groups	1 mês	MBI mean±SD: - Emotional exhaustion: 23.5±7.61 - Reduced personal accomplishment: 38.31±5.31 - Depersonalization: 6.79±4.68	MBI-HS pre- and post-intervention demonstrated statistically significant improvements in emotional exhaustion (p=<0.001) and personal achievement (p=0.011)

	and divided into three broad themes: Self-awareness and self-care; Collegial connection and the organization; Reflecting on death, bereavement and finding meaning	- Group was self-selecting - The authors feel that a reluctance for some to join the course - Data was not collected from those who chose not to respond to the opportunity	

CI=confidence interval; d=days; h=hour; min=minutes; mo=month; NR=Not reported; RCT=randomised-controlled trial; SD=Standard Deviation; U=Unclear; w=weeks; y=years; (*) data calculated by the authors.

[1] Of the 17 residents that were participating, 2 decided not to continue after 2 meetings and therefore were excluded.

[2] 13 physicians completed the baseline scores, 11 completed Maslach/Oxford scores at the end of the study, and 8 the 1-month post-study assessment

[3] Dropouts: at T2 the number of participants had dropped from 664 (experimental group: 260; control group: 404) to 376 (experimental group: 231; control group: 145), and at T3 it had dropped to 304 (experimental group: 208; control group: 96).

[4] The study involved 227 doctors however the analysis considered in the present SR were Group 4 and control (91 doctors).

[5] Additional information by emailing official authors.

[6] The questionnaire derived from the Physician's Belief Scale; the American Academy on Physician and Patient evaluation; common objectives of Balint-like groups across the United States; barriers to physician recognition of psychosocial aspects of health care reports; and from surveys of previous hematology-oncology fellows to explore attitudes toward patients, colleagues, and psychosocial issues

[7] In total 18 candidates were recruited but four were excluded from our analysis as: two candidates withdrew prior to the first session, and two candidates did not complete the intervention

Quadro 2 - Resumo dos critérios de Avaliação, Desenvolvimento e Avaliação (GRADE)

Certainty assessment							Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	
Impact on Burnout symptoms (follow up: range 7 days to 1 years)							
5	randomised trials	serious[a]	serious[b]	not serious	not serious	none	⊕⊕◯◯ LOW
Impact on Burnout symptoms (follow up: range 1 months to 2 years)							
6	observational studies	very serious[c]	very serious[b]	not serious	not serious	none	⊕◯◯◯ VERY LOW
Impact on Burnout symptoms							
1	observational studies	not serious	not serious	not serious	serious [d]	none	⊕◯◯◯ VERY LOW
Prevention on Burnout							
1	randomised trials	very serious [e]	not serious	not serious	not serious	none	⊕⊕◯◯ LOW
Stress level (follow up: range 1 months to 9 months)							
3	randomised trials	very serious[f]	very serious[b]	serious[g]	not serious	none	⊕◯◯◯ VERY LOW

CI: Confidence interval

Explanations:

a. Some included studies presented problems on domains 1 (randomization process), 4 (measurement of the outcome) and 5 (selection of the reported results). Overall risk of bias was considered Moderate.

b. Studies have methodological differences - Measurement method to burnout detection, coping strategy and / or follow-up period.

c. Included studies showed concerns in domain related to control group and it comparision treatment/care.

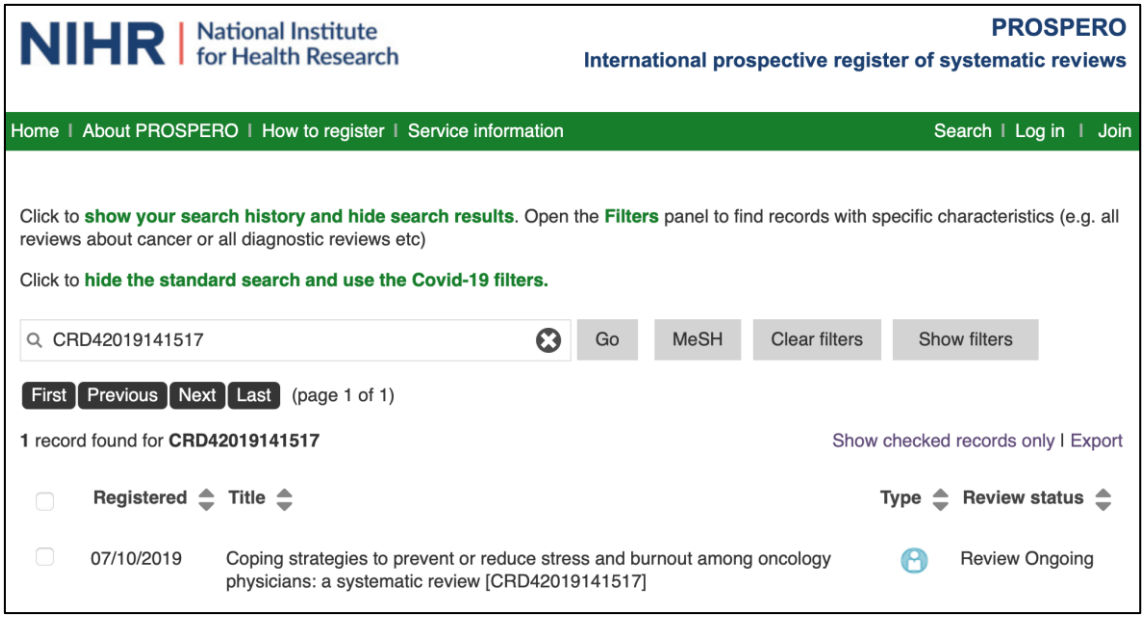
d. Intervention group with small size.

e. The study present concerns in the randomization process.

f. The studies showed some concerns in the domain related to selection of the reported results.

g. Stress is one of the predictor factors to burnout, however isolated is not conclusive.

APÊNDICE E – REGISTRO DO PROTOCOLO NO SITE PROSPERO (INTERNATIONAL PROSPECTIVE REGISTER OF SYSTEMATIC REVIEWS)



APÊNDICE F – ESTRATÉGIAS DE BUSCA NAS BASES DE DADOS

Do artigo em inglês:

Appendix 1. Database search strategy.

Database	Search (on June 1st, 2019)
CINAHL	("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*)
COCHRANE	("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*)
EMBASE	("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*)
LILACS	(tw:("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress* OR estres*) AND (work* OR "job" OR trabalho OR trabajo)))) AND (tw:(oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians" OR oncolog* OR cancerolog* OR radioterapeuta*)) AND (tw:("psychological adaptation" OR "Psychological Adaptations" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention* OR "adaptação" OR "comportamento adaptativo" OR "felicidade" OR "alegria" OR "equilibrio" OR "bem-estar" OR "terapia" OR "Terapeutica" OR tratamento* OR "qualidade de vida" OR prevenc* OR intervenc* OR "adaptacion" OR "felicita" OR "bienestar" OR tratamiento* OR "calidad de vida")) AND (instance:"regional") AND (db:("LILACS") AND type:("article"))

PSYCINFO	("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*)
PUBMED	("Burnout, Professional"[Mesh] OR "Burnout, Psychological"[Mesh] OR "Burn out" OR "Burnout"[Title/Abstract] OR "burned out" OR (("Stress, Physiological"[Mesh:NoExp] OR Stress* OR distress*) AND (work* OR "job"))) AND ("Oncologists"[Mesh] OR "Oncologists"[Title/Abstract] OR "Oncologist"[Title/Abstract] OR "Oncologists"[Title/Abstract] OR "medical oncology"[Title/Abstract] OR "oncology physician"[Title/Abstract] OR "oncology physicians"[Title/Abstract]) AND ("adaptation, psychological"[MeSH Terms] OR "psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR "resilience" OR "Resiliences" OR "happiness"[MeSH Terms] OR "happiness" OR "well being" OR "wellness" OR "therapeutics"[MeSH Terms] OR "therapeutics" OR "therapeutic" OR "treatment" OR "treatments" OR "therapy" OR "therapies" OR "quality of life"[MeSH Terms] OR "quality of life" OR "Life satisfaction" OR "intervention" OR "interventions")
SCOPUS	TITLE-ABS-KEY(("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "Psychological Adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*)) AND (LIMIT-TO (DOCTYPE,"ar"))
WEB OF SCIENCE	("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*)
GOOGLE SCHOLAR	("Burnout" OR "Burn out" OR "burned out") AND (Oncologist) AND ("psychological adaptation" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR "quality of life" OR "Life satisfaction")
OPENGREY	("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*)

PROQUEST	noft(("Burnout" OR "Burn out" OR "burned out" OR ((stress* OR distress*) AND (work* OR "job"))) AND (Oncologist* OR "medical oncology" OR "oncology physician" OR "oncology physicians") AND ("psychological adaptation" OR "psychological adaptations" OR "Coping" OR "Behavior" OR resilienc* OR "happiness" OR "well being" OR "wellness" OR therapeutic* OR treatment* OR therap* OR "quality of life" OR "Life satisfaction" OR intervention*))

†Search strategies were performed for each database by using specifics words combinations and truncations with support of an experienced librarian, Maria Gorete Monteguti Savi and MSc Karyn Munyk Lehmkuhl.

APÊNDICE G – ARTIGOS EXCLUÍDOS E JUSTIFICATIVAS

Do artigo em inglês:

Appendix 2. Articles excluded and the reasons for exclusion (n=164).

Reference	Author	Reasons for Exclusion*
	Allegra, C.J., et al. 2005	2
	Alorabi, M., et al. 2015	2
	Ansmann, L., et al. 2013	2
	Armstrong, Jennifer Holland et al. 2004	5
	Asai, M., et al. 2007	2
	Back, A. L., et al. 2017	5
	Balbay 2011	2
	Balch, C. M. 2007	5
	Balch, C. M. 2009	5
	Balch, C. M. 2011	2
	Balch, C., et al. 2010	2
	Banerjee S.; et al. 2017	2
	Barberio, D.; et al. 2015	2
	Beas R., et al 2016	5
	Berman, R.; et al. 2007	2

	Bittner Iv, J. G., et al. 2011	1
	Blanchard, P.; et al. 2009	5
	Blanchard, P.; et al. 2010	2
	Borate, U. 2017	5
	Bragard I., et al. 2010	2
	Bragard I., et al. 2012	2
	Bressi C, et al. 2008	2
	Burki, T. K. 2018	5
	Camps, C., et al. 2009	2
	Cano, Debora Staub 2016	2
	Caruso, A., et al. 2012	2
	Carvalho C. et al. 2014	2
	Catt, S., et al. 2005	2
	Chatwal, M. S., et al. 2018	6
	Ciammella, P., et al. 2011	2
	Cotton, Kelly 2018	5
	Creagan, E. T. 1993	5
	Crowe, Christina 2016	5
	Cubero, D. et al. 2013	2

	Cumbe, Vasco F. J. et al. 2017	2
	Dahn, H., et al. 2019	2
	Daruvala, R., et al. 2019	2
	De Rezende, S. N. et al 2011	5
	Dix, D., et al 2012	5
	Dougherty, E., et al 2009	2
	Eelen, S., et al. 2014	2
	Essaadi, Z., et al. 2013	2
	Fang, C. K., et al. 2010	2
	Fiore, F., et al. 2016	6
	Fitzgerald, C. A., et al 2012	2
	Flores M., et al 2014	2
	Ftanou, M. 2017	5
	Fujimori, M., et al. 2015	1
	Giansante, M. et al. 2012	2
	Girgis, A., et al. 2009	2
	Glasberg, João et al. 2007	2
	Granek, L. et al 2015	2
	Granek, L. et al. 2016	2

	Granek, L. et al. 2016	2
	Granek, L. et al. 2016	2
	Granek, L. et al. 2017	2
	Granek, L. et al. 2017	2
	Granek, L., et al. 2013	2
	Grant, L. 2018	6
	Grootenhuis, M. A., et al. 1996	2
	Gross, S. E., et al. 2014	2
	Grunfeld, E., et al. 2000	2
	Guadagna, F. et al. 2012	6
	Guest, R. S., et al. 2011 (I)	2
	Guest, R. S., et al. 2011 (II)	2
	Guveli, H. et al. 2015	2
	Haley, Gordon R. et al 2004	2
	Hegedus, P. D. 2012	1
	Hipp, M., et al. 2015	2
	Hlubocky, F. J., et al. 2017	5
	Holliday, E. B., et al. 2017	2
	Hudson, M. F., et al. 2018, 2019	2

	Huynh, R. A., et al. 2019	2
	Isc-En, P., et al. 2011	2
	Jackson, V. A. et al. 2008	2
	Jasperse, M. et al. 2014	2
	Jasperse, M., et al. 2012	2
	Joaquim, A. et al. 2018	2
	Jørgensen et al. 2009	2
	Joubert, Lynette et al. 2013	1
	Jutagir, D. et al. 2017	1
	Karnyski, J. et al. 2017	5
	Kash, K. M., Holland, J. C. et al. 2000	2
	Kattlove, H. et al. 1992	5
	Kavalieratos, D. et al. 2017	1
	Kaymak, S. U. et al. 2010	2
	Kearney, M. K., et al. 2009	5
	Kiguchi, H. et al. 2018	5
	Kinderman, A. et al. 2014	3
	Kleiner, S. et al. 2017	2
	Knight, K., et al. 2014	2

	Koh, M. Y. H., *et al.* 2015	1
	Koo, K. et al. 2013	2
	Koocher, G. P. 1980	5
	Korones, D. N.	5
	Kracen, Amanda C. 2011	2
	Kuerer, H. M. et al. 2007	2
	Laurent, J. et al. 2015	2
	Liakopoulou, M. et al. 2008	2
	Lievrouw, A. et al. 2016	2
	López-Castillo, J. et al. 1999	2
	Lyckholm, L. (2001)	5
	Lyckholm, L. 2007	5
	Mahendram, R. et al	1
	Mampuya, A. W., et al. 2016	2
	Mampuya, W. A., et al. 2017	2
	Manochakian, R. 2014	5
	Martins, B. P. et al. 2016	2
	McFarland, D. C. et al. 2017	2
	McLean, M. et al. 2011	2

	Mehlis, K. et al. 2018	2
	Mougalian, S. S. et al. 2013	2
	Mount, B. M. 1986	5
	Mukherjee, S. et al. 2014	2
	Murali, K. et al. 2019	5
	Muriel, A. C., et al. 2009	1
	Na, K. S. 2019	5
	Nabhan, C. 2009	5
	Nowakowski, Jonatan et al. 2016	2
	O'Byrne, K. et al. 1997	2
	Paiva, C. E. et al. 2018	2
	Paula Vega, V. et al. 2017	2
	Penson, R. T. et al. 2000	5
	Penson, R. T. et al. 2005	5
	Poulsen, M. et al. 2018	2
	Poulsen, M. G. et al. 2011	2
	Poulsen, M. G. et al. 2012	2
	Pye, K. et al. 2013	2
	Ramey, S. J. et al. 2017	2

	Ramirez, A. J. et al. 1995	2
	Raphael, M. J. et al. 2019	2
	Rath, K. et al. 2014	2
	Rath, K. S. et al. 2015	2
	Ratti, M. M. et al. 2019	2
	Rohan, E. et al. 2009	2
	Romeo, M. et al. 2016	2
	Romeo, M. et al. 2016	2
	Roth, M. et al. 2011	2
	Royce, T. J. et al. 2019	5
	Russo, A. et al. 2014	2
	Sargsyan, M. et al. 2017	2
	Sarra, Alexandra et al. 2019	2
	Schirmers, C. 2016	5
	Schraub, S. et al. 2004	2
	Shanafelt, T. D. et al. 2005	5
	Shanafelt, T. D. et al. 2014	2
	Shanafelt, T. D., Gradishar, W. et al. 2013	2
	Shanafelt, T. D., Novotny, P. et al. 2005	2

	Shanafelt, T. D., Raymond, M. et al. 2014	2
	Shanafelt, T. D., Raymond, M. et al. 2014	2
	Shanafelt, T., Chung, H., et al. 2006	5
	Shayne, M., Quill, T. E. et al. 2012	1
	Shereck, E., Recht, M. et al. 2014	3
	Shimp, W. 2014	5
	Shinan-Altman, S., Cohen, M. et al. 2018	1
	Sundquist, K. J. 2009	6
	Swetz, K. M. et al. 2009	1
	Thompson, M. et al. 2018	5
	Torres, B. et al. 2013	2
	Tucunduva et al. 2006	2
	Vachon, M. et al. 2016	1
	Vasylyeva, A. et al. 2011	2
	Vetter, M. H. et al. 2018	2
	Wan, L. 2008	5

*Legend: 1) involved only non-medical cancer professionals or medical students; 2) did not involve interventions to prevent or handle with stress and burnout; 3) had duplicated data from another included study or insufficient data; 4) were conducted in animals; 5) were reviews, letters, books, case report, case series with less than 10 participants, opinion article, technique articles and guidelines; 6) did not have their complete text available online/published and if the texts were not accessible after three contact attempts in a 15-day period by electronic mail to corresponding authors.

APÊNDICE H – RISCO DE VIÉS

Do artigo em inglês:

Appendix 3. Risk of bias assessed by Cochrane risk of bias tool (A and B) and Joanna Briggs Institute (JBI) critical appraisal tools (C and D). Risk of bias was categorized as High when the study reaches up to 49% score "yes", Moderate when the study reached 50% to 69% score "yes", and Low when the study reached more than 70% score "yes".

(A) Cochrane Risk of Bias tool for Randomized Trials (RoB 2.0)

Study	Bias	Signalling question	Coments	Authors' judgement
Barzelloni et al, 2014	Bias arising from the randomization process	1.1. Was the allocation sequence random?		**PY**
		1.2. Was the allocation sequence concealed until participants were recruited and assigned to interventions?	Study: Abstract - Few information	**NI**
		1.3. Were there baseline imbalances that suggest a problem with the randomization process?		**N**
		Domain-level judgement	**Some concerns**	
	Bias due to deviations from intended	2.1. Were participants aware of their assigned intervention during the trial?	Intervention: 1 day of classroom training Control: No intervention	**Y**

	interventions (effect of assignment to intervention)	2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**Y**
		2.3. **If Y/PY/NI to 2.1 or 2.2:** Were there deviations from the intended intervention that arose because of the trial context?		**N**
		2.4. **If Y/PY to 2.3**: Were these deviations likely to have affected the outcome?		**NA**
		2.5. **If Y/PY/NI to 2.4**: Were these deviations from intended intervention balanced between groups?		**NA**
		2.6. Was an appropriate analysis used to estimate the effect of assignment to intervention?		**PY**
		2.7. **If N/PN/NI to 2.6**: Was there potential for a substantial impact (on the result) of the failure to analyse participants in the group to which they were randomized?		**NA**
		Domain-level judgement	**Low risk**	
	Bias due to missing outcome data	3.1. Were data for this outcome available for all, or nearly all, participants randomized?		**NI**
		3.2. **If N/PN/NI to 3.1**: Is there evidence that the result was not biased by missing outcome data?		**N**

		3.3. **If N/PN to 3.2**: Could missingness in the outcome depend on its true value?		**PN**
		3.4. **If Y/PY/NI to 3.3**: Is it likely that missingness in the outcome depended on its true value?		**PN**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome	4.1. Was the method of measuring the outcome inappropriate?		**N**
		4.2. Could measurement or ascertainment of the outcome have differed between intervention groups?		**N**
		4.3. **If N/PN/NI to 4.1 and 4.2:** Were outcome assessors aware of the intervention received by study participants?		**NA**
		4.4. **If Y/PY/NI to 4.3:** Could assessment of the outcome have been influenced by knowledge of intervention received?		**NA**
		4.5. **If Y/PY/NI to 4.4**: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?		**NA**
		Domain-level judgement	**Low risk**	

	Bias in selection of the reported result	5.1. Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?	Study: Abstract - Few information	**NI**
		5.2. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?	- Study: Abstract - Few information - Evaluations were performed at T0 and quarterly (T1, T2, T3, T4) but only results comparing T0 and T4 were showed.	**PY**
		5.3. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?		**PY**
		Domain-level judgement	**High risk**	
	Overall bias		**High risk**	
Bragard et al, 2010	Bias arising from the randomization process	1.1. Was the allocation sequence random?		**PY**
		1.2. Was the allocation sequence concealed until participants were recruited and assigned to interventions?		**Y**
		1.3. Were there baseline imbalances that suggest a problem with the randomization process?		**N**

		Domain-level judgement	**Low risk**	
	Bias due to deviations from intended interventions (effect of assignment to intervention)	2.1. Were participants aware of their assigned intervention during the trial?	Intervention: consolidation workshops Control: No intervention	**Y**
		2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**Y**
		2.3. **If Y/PY/NI to 2.1 or 2.2:** Were there deviations from the intended intervention that arose because of the trial context?		**N**
		2.4. **If Y/PY to 2.3**: Were these deviations likely to have affected the outcome?		**NA**
		2.5. **If Y/PY/NI to 2.4**: Were these deviations from intended intervention balanced between groups?		**NA**
		2.6. Was an appropriate analysis used to estimate the effect of assignment to intervention?		**Y**
		2.7. **If N/PN/NI to 2.6**: Was there potential for a substantial impact (on the result) of the failure to analyse participants in the group to which they were randomized?		**NA**
		Domain-level judgement	**Low risk**	
		3.1. Were data for this outcome available for all, or nearly all, participants randomized?		**PY**

	Bias due to missing outcome data	3.2. **If N/PN/NI to 3.1**: Is there evidence that the result was not biased by missing outcome data?		**NA**
		3.3. **If N/PN to 3.2**: Could missingness in the outcome depend on its true value?		**NA**
		3.4. **If Y/PY/NI to 3.3**: Is it likely that missingness in the outcome depended on its true value?		**NA**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome	4.1. Was the method of measuring the outcome inappropriate?		**N**
		4.2. Could measurement or ascertainment of the outcome have differed between intervention groups?		**N**
		4.3. **If N/PN/NI to 4.1 and 4.2:** Were outcome assessors aware of the intervention received by study participants?		**NI**
		4.4. **If Y/PY/NI to 4.3:** Could assessment of the outcome have been influenced by knowledge of intervention received?		**N**
		4.5. **If Y/PY/NI to 4.4**: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?		**N**
		Domain-level judgement	**Low risk**	

	Bias in selection of the reported result	5.1. Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?		**NI**
		5.2. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?		**N**
		5.3. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?		**N**
		Domain-level judgement	**Some concerns**	
	Overall bias		**Some concerns**	
Brown et al, 2014	Bias arising from the randomization process	1.1. Was the allocation sequence random?	Study: Abstract – Few information	**PY**
		1.2. Was the allocation sequence concealed until participants were recruited and assigned to interventions?		**NI**
		1.3. Were there baseline imbalances that suggest a problem with the randomization process?		**PN**

		Domain-level judgement	**Low risk**	
	Bias due to deviations from intended interventions (effect of assignment to intervention)	2.1. Were participants aware of their assigned intervention during the trial?	Intervention: face-to-face workshop Control: No intervention	**Y**
		2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**Y**
		2.3. **If Y/PY/NI to 2.1 or 2.2:** Were there deviations from the intended intervention that arose because of the trial context?		**N**
		2.4. **If Y/PY to 2.3**: Were these deviations likely to have affected the outcome?		**NA**
		2.5. **If Y/PY/NI to 2.4**: Were these deviations from intended intervention balanced between groups?		**NA**
		2.6. Was an appropriate analysis used to estimate the effect of assignment to intervention?		**NI**
		2.7. **If N/PN/NI to 2.6**: Was there potential for a substantial impact (on the result) of the failure to analyse participants in the group to which they were randomized?		**PY**
		Domain-level judgement	**High risk**	
		3.1. Were data for this outcome available for all, or nearly all, participants randomized?		**NI**

	Bias due to missing outcome data	3.2. **If N/PN/NI to 3.1**: Is there evidence that the result was not biased by missing outcome data?		**N**
		3.3. **If N/PN to 3.2**: Could missingness in the outcome depend on its true value?		**PN**
		3.4. **If Y/PY/NI to 3.3**: Is it likely that missingness in the outcome depended on its true value?		**PN**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome	4.1. Was the method of measuring the outcome inappropriate?		**Y**
		4.2. Could measurement or ascertainment of the outcome have differed between intervention groups?		**Y**
		4.3. **If N/PN/NI to 4.1 and 4.2:** Were outcome assessors aware of the intervention received by study participants?		**NA**
		4.4. **If Y/PY/NI to 4.3:** Could assessment of the outcome have been influenced by knowledge of intervention received?		**NA**
		4.5. **If Y/PY/NI to 4.4**: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?		**NA**
		Domain-level judgement	**High risk**	

	Bias in selection of the reported result	5.1. Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?		**NI**
		5.2. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?		**Y**
		5.3. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?		**Y**
		Domain-level judgement	**High risk**	
	Overall bias		**High risk**	
Butow *et al.*, 2008	Bias arising from the randomization process	1.1. Was the allocation sequence random?		**Y**
		1.2. Was the allocation sequence concealed until participants were recruited and assigned to interventions?		**PY**
		1.3. Were there baseline imbalances that suggest a problem with the randomization process?		**N**

		Domain-level judgement	**Low risk**	
	Bias due to deviations from intended interventions (effect of assignment to intervention)	2.1. Were participants aware of their assigned intervention during the trial?	Intervention: Communication skills training Control: No intervention	**Y**
		2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**Y**
		2.3. **If Y/PY/NI to 2.1 or 2.2:** Were there deviations from the intended intervention that arose because of the trial context?		**N**
		2.4. **If Y/PY to 2.3**: Were these deviations likely to have affected the outcome?		**NA**
		2.5. **If Y/PY/NI to 2.4**: Were these deviations from intended intervention balanced between groups?		**NA**
		2.6. Was an appropriate analysis used to estimate the effect of assignment to intervention?		**Y**
		2.7. **If N/PN/NI to 2.6**: Was there potential for a substantial impact (on the result) of the failure to analyse participants in the group to which they were randomized?		**NA**
		Domain-level judgement	**Low risk**	
		3.1. Were data for this outcome available for all, or nearly all, participants randomized?		**Y**

	Bias due to missing outcome data	3.2. **If N/PN/NI to 3.1**: Is there evidence that the result was not biased by missing outcome data?		**NA**
		3.3. **If N/PN to 3.2**: Could missingness in the outcome depend on its true value?		**NA**
		3.4. **If Y/PY/NI to 3.3**: Is it likely that missingness in the outcome depended on its true value?		**NA**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome	4.1. Was the method of measuring the outcome inappropriate?		**N**
		4.2. Could measurement or ascertainment of the outcome have differed between intervention groups?		**N**
		4.3. **If N/PN/NI to 4.1 and 4.2:** Were outcome assessors aware of the intervention received by study participants?		**Y**
		4.4. **If Y/PY/NI to 4.3:** Could assessment of the outcome have been influenced by knowledge of intervention received?		**N**
		4.5. **If Y/PY/NI to 4.4**: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?		**NA**
		Domain-level judgement	**Low risk**	

	Bias in selection of the reported result	5.1. Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?		**NI**
		5.2. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?		**N**
		5.3. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?		**N**
		Domain-level judgement	**Some concerns**	
	Overall bias		**Some concerns**	
Mache et al, 2017	Bias arising from the randomization process	1.1. Was the allocation sequence random?		**Y**
		1.2. Was the allocation sequence concealed until participants were recruited and assigned to interventions?		**Y**
		1.3. Were there baseline imbalances that suggest a problem with the randomization process?		**N**

		Domain-level judgement	**Low risk**	
	Bias due to deviations from intended interventions (effect of assignment to intervention)	2.1. Were participants aware of their assigned intervention during the trial?	Intervention: problem‐ and emotion‐oriented coping Control: No intervention	**Y**
		2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**N**
		2.3. **If Y/PY/NI to 2.1 or 2.2:** Were there deviations from the intended intervention that arose because of the trial context?		**N**
		2.4. **If Y/PY to 2.3**: Were these deviations likely to have affected the outcome?		**NA**
		2.5. **If Y/PY/NI to 2.4**: Were these deviations from intended intervention balanced between groups?		**NA**
		2.6. Was an appropriate analysis used to estimate the effect of assignment to intervention?		**Y**
		2.7. **If N/PN/NI to 2.6**: Was there potential for a substantial impact (on the result) of the failure to analyse participants in the group to which they were randomized?		**NA**
		Domain-level judgement	**Low risk**	
		3.1. Were data for this outcome available for all, or nearly all, participants randomized?		**Y**

	Bias due to missing outcome data	3.2. **If N/PN/NI to 3.1**: Is there evidence that the result was not biased by missing outcome data?		**NA**
		3.3. **If N/PN to 3.2**: Could missingness in the outcome depend on its true value?		**NA**
		3.4. **If Y/PY/NI to 3.3**: Is it likely that missingness in the outcome depended on its true value?		**NA**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome	4.1. Was the method of measuring the outcome inappropriate?		**N**
		4.2. Could measurement or ascertainment of the outcome have differed between intervention groups?		**N**
		4.3. **If N/PN/NI to 4.1 and 4.2:** Were outcome assessors aware of the intervention received by study participants?		**Y**
		4.4. **If Y/PY/NI to 4.3:** Could assessment of the outcome have been influenced by knowledge of intervention received?		**N**
		4.5. **If Y/PY/NI to 4.4**: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?		**N**
		Domain-level judgement	**Low risk**	

	Bias in selection of the reported result	5.1. Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?		**NI**
		5.2. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?		**PN**
		5.3. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?		**PN**
		Domain-level judgement	**Some concerns**	
	Overall bias		**Some concerns**	
Medisauskaite and Kamau, 2019	Bias arising from the randomization process	1.1. Was the allocation sequence random?		**Y**
		1.2. Was the allocation sequence concealed until participants were recruited and assigned to interventions?		**Y**
		1.3. Were there baseline imbalances that suggest a problem with the randomization process?		**N**
		Domain-level judgement	**Low risk**	

	Bias due to deviations from intended interventions (effect of assignment to intervention)	2.1. Were participants aware of their assigned intervention during the trial?	Intervention: learning modules that presented doctors with information about stress Control: No intervention	**Y**
		2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**N**
		2.3. **If Y/PY/NI to 2.1 or 2.2:** Were there deviations from the intended intervention that arose because of the trial context?		**N**
		2.4. **If Y/PY to 2.3**: Were these deviations likely to have affected the outcome?		**NA**
		2.5. **If Y/PY/NI to 2.4**: Were these deviations from intended intervention balanced between groups?		**NA**
		2.6. Was an appropriate analysis used to estimate the effect of assignment to intervention?		**Y**
		2.7. **If N/PN/NI to 2.6**: Was there potential for a substantial impact (on the result) of the failure to analyse participants in the group to which they were randomized?		**NA**
		Domain-level judgement	**Low risk**	
		3.1. Were data for this outcome available for all, or nearly all, participants randomized?		**Y**

	Bias due to missing outcome data	3.2. **If N/PN/NI to 3.1**: Is there evidence that the result was not biased by missing outcome data?		**NA**
		3.3. **If N/PN to 3.2**: Could missingness in the outcome depend on its true value?		**NA**
		3.4. **If Y/PY/NI to 3.3**: Is it likely that missingness in the outcome depended on its true value?		**NA**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome	4.1. Was the method of measuring the outcome inappropriate?		**N**
		4.2. Could measurement or ascertainment of the outcome have differed between intervention groups?		**N**
		4.3. **If N/PN/NI to 4.1 and 4.2:** Were outcome assessors aware of the intervention received by study participants?		**N**
		4.4. **If Y/PY/NI to 4.3:** Could assessment of the outcome have been influenced by knowledge of intervention received?		**NA**
		4.5. **If Y/PY/NI to 4.4**: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?		**NA**
		Domain-level judgement	**Low risk**	

	Bias in selection of the reported result	5.1. Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?		**Y**
		5.2. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?		**N**
		5.3. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?		**N**
		Domain-level judgement	**Low risk**	
	Overall bias		**Low risk**	
Moody et al, 2013	Bias arising from the randomization process	1.1. Was the allocation sequence random?		**Y**
		1.2. Was the allocation sequence concealed until participants were recruited and assigned to interventions?		**PY**
		1.3. Were there baseline imbalances that suggest a problem with the randomization process?		**N**

		Domain-level judgement	**Low risk**	
	Bias due to deviations from intended interventions (effect of assignment to intervention)	2.1. Were participants aware of their assigned intervention during the trial?	Intervention: Mindfulness-based course Control: No intervention	**Y**
		2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**Y**
		2.3. **If Y/PY/NI to 2.1 or 2.2:** Were there deviations from the intended intervention that arose because of the trial context?		**N**
		2.4. **If Y/PY to 2.3**: Were these deviations likely to have affected the outcome?		**NA**
		2.5. **If Y/PY/NI to 2.4**: Were these deviations from intended intervention balanced between groups?		**NA**
		2.6. Was an appropriate analysis used to estimate the effect of assignment to intervention?		**Y**
		2.7. **If N/PN/NI to 2.6**: Was there potential for a substantial impact (on the result) of the failure to analyse participants in the group to which they were randomized?		**NA**
		Domain-level judgement	**Low risk**	
		3.1. Were data for this outcome available for all, or nearly all, participants randomized?		**Y**

	Bias due to missing outcome data	3.2. **If N/PN/NI to 3.1**: Is there evidence that the result was not biased by missing outcome data?		**NA**
		3.3. **If N/PN to 3.2**: Could missingness in the outcome depend on its true value?		**NA**
		3.4. **If Y/PY/NI to 3.3**: Is it likely that missingness in the outcome depended on its true value?		**NA**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome	4.1. Was the method of measuring the outcome inappropriate?		**N**
		4.2. Could measurement or ascertainment of the outcome have differed between intervention groups?		**N**
		4.3. **If N/PN/NI to 4.1 and 4.2:** Were outcome assessors aware of the intervention received by study participants?		**N**
		4.4. **If Y/PY/NI to 4.3:** Could assessment of the outcome have been influenced by knowledge of intervention received?		**N**
		4.5. **If Y/PY/NI to 4.4**: Is it likely that assessment of the outcome was influenced by knowledge of intervention received?		**N**
		Domain-level judgement	**Low risk**	

	Bias in selection of the reported result	5.1. Were the data that produced this result analysed in accordance with a pre-specified analysis plan that was finalized before unblinded outcome data were available for analysis?		**NI**
		5.2. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible outcome measurements (e.g. scales, definitions, time points) within the outcome domain?		**PN**
		5.3. Is the numerical result being assessed likely to have been selected, on the basis of the results, from multiple eligible analyses of the data?		**PN**
		Domain-level judgement	**Some concerns**	
	Overall bias		**Some concerns**	

Legend – Y=Yes, PY=Probably yes, PN= Probably no, N=No, NA=Not applicable, NI=No information.

(B) Cochrane Risk of Bias tool for Cluster-Randomized Trials (RoB 2.0)

Le Blanc et al, 2007	Bias arising from the randomization process in a cluster-randomized trial	1a.1. Was the allocation sequence random?		**Y**
		1a.2. Is it likely that the allocation sequence was subverted?		**PY**
		1a.3. Were there baseline imbalances that suggest a problem with the randomization process?		**N**
		Domain-level judgement	**Low risk**	
	Bias arising from the timing of identification and recruitment of participants in relation to timing of randomization	1b.1. Were all the individual participants identified before randomization of clusters (and if the trial specifically recruited patients were they all recruited before randomization of clusters)?		**PN**
		1b.2. **If N/PN/NI to 1b.1**: Is it likely that selection of individual participants was affected by knowledge of the intervention?		**PN**
		1b.3.Were there baseline imbalances that suggest differential identification or recruitment of individual participants between arms?		**N**
		Domain-level judgement	**Low risk**	
	Bias due to deviations from intended interventions	2.1a. Were participants aware that they were in a trial?	Intervention: Take Care! Program Control: No intervention	**Y**
		2.1b. **If Y/PY/NI to 2.1a**: Were participants aware of their assigned intervention during the trial?		**Y**

	in a cluster-randomized trial (effect of assignment to intervention)	2.2. Were carers and trial personnel aware of participants' assigned intervention during the trial?		**Y**
		2.3. **If Y/PY/NI to 2.1 or 2.2**: Were there deviations from the intended intervention beyond what would be expected in usual practice?		**PN**
		2.4. **If Y/PY to 2.3**: Were these deviations from intended intervention unbalanced between groups and likely to have affected the outcome?		**NA**
		2.5a. Were any clusters analysed in a group different from the one to which they were assigned?		**N**
		2.5b Were any participants analysed in a group different from the one to which their original cluster was randomized?		**N**
		2.6 **If Y/PY/NI to 2.5**: Was there potential for a substantial impact (on the estimated effect of intervention) of analysing participants in the wrong group?		**NA**
		Domain-level judgement	**Low risk**	
	Bias due to missing outcome data in a cluster-	3.1a. Were outcome data available for all, or nearly all, clusters randomized?		**N**
		3.1b. Were outcome data available for all, or nearly all, participants within clusters?		**Y**

	randomized trial	3.2. **If N/PN/NI to 3.1**: Are the proportions of missing outcome data and reasons for missing outcome data similar across intervention groups?		**PY**
		3.3. **If N/PN/NI to 3.1**: Is there evidence that results were robust to the presence of missing outcome data?	"in the present study, the researchers tried to reduce the detrimental impact of nonresponse as much as possible by using a method of data analysis that was to include observations with incomplete data (i.e., multilevel regression analysis)"	**PN**
		Domain-level judgement	**Low risk**	
	Bias in measurement of the outcome in a cluster-randomized trial	4.1a. Were outcome assessors aware that a trial was taking place?		**Y**
		4.1b. **If Y/PY/NI to 4.1:** Were outcome assessors aware of the intervention received by study participants?		**NI**
		4.2. **If Y/PY/NI to 4.1**: Was the assessment of the outcome likely to be influenced by knowledge of intervention received?		**N**
		Domain-level judgement	**Low risk**	
	Bias in selection of the reported result in a cluster-	5.1. Reported data selected, on the basis of the results, from multiple outcome measurements?		**N**
		5.2. Reported data selected, on the basis of the results, from multiple analyses of the data?		**N**

	randomized trial	**Domain-level judgement**	**Low risk**
	Overall bias		**Low risk**

Legend – Y=Yes, PY=Probably yes, PN= Probably no, N=No, NA=Not applicable, NI=No information.

(C) JBI Critical Appraisal Checklist for Quasi-Experimental Studies (non-randomized experimental studies).

Question	1. Is it clear in the study what is the cause' and what is the effect' (i.e. there is no confusion about which variable comes first)?	2. Were the participants included in any comparisons similar?	3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	4. Was there a control group?	5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?	6. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	7. Were the outcomes of participants included in any comparisons measured in the same way?	8. Were outcomes measured in a reliable way?	9. Was appropriate statistical analysis used?	%yes/risk
Bar-Sela, Lulav-Grinwald and Mitnik, 2012	Y	Y	N	NA	Y	Y	Y	Y	Y	77.78

Clemons et al, 2019	Y	Y	N	NA	Y	Y	Y	Y	Y	77.78
Italia et al, 2007	Y	Y	N	NA	Y	Y	Y	Y	Y	77.78
Landaverde et al, 2018	Y	U	N	NA	Y	U	Y	Y	U	44.44
Sekeres et al, 2003	Y	Y	N	N	Y	Y	Y	N	Y	66.67
Tjasink and Soosaipillai, 2018	Y	Y	N	NA	Y	Y	Y	Y	Y	77.78

Legend - Y=Yes, N=No, U=Unclear, NA=Not applicable.

(D) **JBI Critical Appraisal Checklist for Analytical Cross Sectional Studies**

Question	1. Were the criteria for inclusion in the sample clearly defined?	2. Were the study subjects and the setting described in detail?	3. Was the exposure measured in a valid and reliable way?	4. Were objective, standard criteria used for measurement of the condition?	5. Were confounding factors identified?	6. Were strategies to deal with confounding factors stated?	7. Were the outcomes measured in a valid and reliable way?	8. Was appropriate statistical analysis used?	%yes/risk
Graff et al, 2018	Y	Y	Y	Y	Y	N	N	Y	75

Legend - Y=Yes, N=No, U=Unclear, NA=Not applicable.

APÊNDICE I - PRISMA CHECKLIST

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	

Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	