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REVIEW ARTICLE

Online Psychological Intervention in Breast Cancer Survivors: a Review

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ABSTRACT

Introduction: *Online psychotherapy has shown promise in a variety of settings. The goal of this review was to compare outcomes following online psychotherapy in breast cancer survivors.*

Methods: *We searched Ovid MEDLINE for randomised controlled trials investigating the benefit of online psychotherapy relative to controls in breast cancer survivors. We sought to capture data on a standardised pre- and post-intervention symptom scale. Baseline characteristics were collected, including highest education level achieved, breast cancer treatment, and description and duration of the psychosocial intervention. Trials were stratified based on behavioural or psychological indications for treatment. Effect sizes were computed using Cohen's d.*

Results: *From an initial search of 99 articles, 838 participants across five relevant studies were included. The mean age of the women was 51.7 years (range, 50.2-56.9). Each study had a unique indication: insomnia, fatigue, sexual dysfunction, psychological adjustment, and stress management. Two primary and one secondary outcome were recorded for each study, for a total of 15. Of the 10 included primary outcomes, women in the intervention groups showed a statistically significant improvement in nine outcomes. Of the five secondary outcomes, women in the intervention groups showed a significant improvement on four scales. Effect sizes ranged from 0.33 to 1.10.*

Conclusion: *Overall, online psychotherapies are effective across a variety of symptom states in breast cancer survivors. Limitations of online psychotherapy include logistical factors, privacy, personal factors, and availability. Future studies should compare in-person psychotherapy with online psychotherapy.*

Key Words: *Internet-based intervention; Psychotherapy; Patient reported outcome measures; Breast neoplasms; Cancer survivors*

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中文摘要

乳癌康復者線上心理干預的綜述

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引言：線上心理治療已在各種場景中顯示其前景。本綜述旨在比較乳癌康復者接受線上心理治療後的效果。

方法：我們從Ovid MEDLINE搜索隨機對照研究，用以檢視接受線上心理治療的乳癌康復者相比對照組的益處。我們試圖在標準化的干預前和干預後症狀量表上獲取數據。收集基線特徵，包括康復者的教育水平、乳癌治療方案及心理社會干預的描述和持續時間。根據治療的行為或心理指徵對研究進行分層。使用Cohen's d計算效應量。

結果：從最初搜索的99份文獻中，納入5份相關研究涉及838名參與者均為女性，平均年齡51.7歲（介乎50.2-56.9歲）。這5項研究分別針對不同的適應症，包括失眠、疲勞、性功能障礙、心理調節和壓力管理，記錄共15個主要結果和次要結果。每項研究分別記錄2個主要結果和1個次要結果。干預組在其中9個主要結果以及5個次要結果中的4個量表均有顯著改善。效應大小範圍介乎0.33至1.10。

結論：總體而言，線上心理治療能有效改善乳癌康復者的多種症狀。線上心理治療的局限性包括後勤因素、隱私、個人因素和可獲取性。未來研究應考慮將面對面的心理治療與線上心理治療進行比較。

INTRODUCTION

Psychotherapy is an interpersonal process designed to modify several aspects of an individual's psycho-emotional state, including feelings, cognition, and behaviours. Several different types of psychotherapies (e.g., cognitive behaviour therapy (CBT), interpersonal therapy, psychodynamic therapy) have been shown to be efficacious.[1,2] Data have shown that psychotherapy has an efficacy similar to that of psychotropic drugs for disorders such as anxiety and depression,[3,4] with a moderate-to-large effect size for depression (d= -0.66, 95% confidence interval [CI]= -0.73 to -0.60) compared to waitlist controls.[2,4]

Cancer is a common disease, representing the second leading cause of death in the United States.[5] Both cancer itself,[6] and its associated therapies, such as chemotherapy,[7] produce physical and psychological adverse effects. The reaction to a cancer diagnosis can cause neuropsychological stress, such as anxiety, depression, and fear of recurrence or death, all of which can adversely impact a patient's quality of life.[6] There is increasing support for integrating psychotherapy in oncology practice. For example, Saeedi et al[6] and Breitbart et al[8] found that psychotherapy increased the perceived meaning of life[6] and quality of life[8] of cancer patients, respectively, relative to traditional care. This supports the notion that psychotherapy can improve a variety of symptoms in cancer patients.

Given the advances in electronic communication in the past several decades, there has been increasing interest in online psychotherapy as an alternative to face-to-face therapy. Chakrabarti[9] reviewed studies performing this comparison. The results revealed that online psychotherapy is reliable, and outcomes are comparable to that of in-person psychotherapy in many heterogeneous samples for a variety of measures. These findings suggest that online psychotherapy may be seen as a viable alternative to traditional psychotherapy, due to its similar efficacy for various populations. Due to the nature of CBT, such as a heavy focus on skills training and homework, it is the therapeutic approach that is easiest to transfer to an online format.[10]

There are several studies that have examined the efficacy of online psychotherapy for breast cancer patients. Cheung et al[11] aimed to teach women with metastatic breast cancer positive affect skills through an online intervention paradigm. Intervention participants showed

reductions in both depression and negative affect by the 1-month follow-up (d= -0.81). These participants fell below the clinical threshold for depression at follow-up, whereas control participants did not fall below clinical threshold.

Despite the positive oncologic treatment outcomes that are experienced by many patients with breast cancer, psycho-emotional, behavioural, and physical symptoms may still persist even after breast cancer has been treated and/or cured.[12] Such challenges tend to be overlooked by healthcare professionals, since the individual has been deemed 'cured',[13] resulting in reduced support when transitioning from active cancer to the survivorship stage. A study conducted by Mitchell[13] examined the occurrence of depression in long-term survivors of breast cancer, and found that 10% of these individuals exhibited clinical depression, despite being diagnosed ≥3 years prior. Another study[12] looked at the symptomology of breast cancer survivors (BCS) and described four presentation classes: symptoms within normal limits, pain with fatigue and sleep disturbances, depression with fatigue and symptom disturbances, and high symptom burden. Other issues that have been linked to additional stress for BCS are the financial burdens associated with treatment,[14] and a fear of cancer recurrence.[15] This suggests that when women shift to the survivor stage of breast cancer, there are still a multitude of factors that can trigger or exacerbate psychological symptomatology.

The purpose of this review was to examine the efficacy of online therapy treatments for BCS. By identifying useful therapies, we aimed to raise awareness of useful support available for BCS.

METHODS

Search Strategy, Inclusion Criteria, Study Selection

A literature search was conducted using Ovid MEDLINE and MEDLINE In-Process (inception to July 2019) to identify relevant studies (Table 1). Articles were eligible for inclusion if they (1) were a randomised controlled trial (RCT), (2) included only adult BCS (aged ≥18 years), (3) compared online psychosocial therapy to any control group not receiving psychotherapy; and (4) provided baseline information and post-intervention psycho-emotional outcomes. One reviewer (MP) screened the identified search results in a two-stage process, with a title and abstract screening followed by a full-text screening.

Table 1. Ovid MEDLINE search strategy.*

#	Searches	Results
1	breast neoplasm.mp. or exp Breast Neoplasms	280,742
2	exp Web Browser/	964
3	exp Internet/	74,737
4	exp User-Computer Interface/	36,065
5	exp Depression/th [Therapy]	12,560
6	exp Anxiety/th [Therapy]	6026
7	exp Fatigue/th [Therapy]	1777
8	exp Cognitive Behavioural Therapy/	26,383
9	exp Emotional Adjustment/	840
10	exp Cancer Survivors/px [Psychology]	1072
11	exp Survivors/px [Psychology]	12,017
12	exp Psychotherapy/	189,064
13	exp Stress, Psychological/	124,509
14	2 or 3 or 4	104,775
15	5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or *15*.mp.	1,858,578
16	1 and 14 and 15	913
17	limit 16 to a randomised controlled trial	99

* exp = exploded as a MeSH heading (i.e., uses the term along with more specific terms); mp. = finding phrase anywhere within the paper.

Studies that met all criteria were included in the review. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) reporting guidelines were implemented in the preparation of the manuscript.

Data Extraction

Data extraction was completed independently by two authors (MP and VR). Information extracted included studies at baseline: country of origin, number of participants in both the intervention and control groups, age, education, type and duration of treatment for breast cancer, as well as the type and duration of psychotherapy received.

Data Analysis

Studies were divided into subgroups based on indications for psychotherapy. For each included study, baseline demographics and study endpoints were reported using descriptive statistics. For continuous parameters, means and standard deviations were reported where available, while categorical variables were reported as proportions of the study sample. Commercial software (Microsoft Excel; Microsoft, Inc., Redmond [WA], United States) was used to collect all data. Study statistics were summarised, and a p value < 0.05 was used as a threshold to establish statistical significance.

RESULTS

Study Inclusions and Baseline Characteristics

The database search revealed a total of 97 articles, 63 of which were excluded in title and abstract screening (Figure). Twenty-nine articles were then excluded in the full-text screening stage, leaving five studies with a total of 838 participants at baseline and 719 at final follow-up.[16-20]

Baseline characteristics of participants and clinical features of the online psychotherapies are shown in Table 2. All five studies were RCTs.[16-20] Across the five included studies, all participants were female and were BCS. The mean age was 51.7 years (range = 50.2-56.9). Education levels of the women varied, with most women having completed some higher education. Treatments that were received by participants included surgery, chemotherapy, radiation therapy, endocrine/hormone therapy, immunotherapy, or a combination of treatments (Table 2). Stages of cancer included stage 0 to III,[16,20] stages I-III,[17] stages T1-T4,[18] and not specified.[19] Patients that were not cancer-free, or that experienced any recurrence, were removed from the study. Each study specified diagnoses and/or treatment completion timeframe for inclusion prior to recruitment. Online psychotherapy ranged from 6 weeks[16] to 24 weeks,[17] with a mean duration of 15.1 weeks. The included studies involved CBT[16-18] or incorporated certain properties of CBT.[19,20]

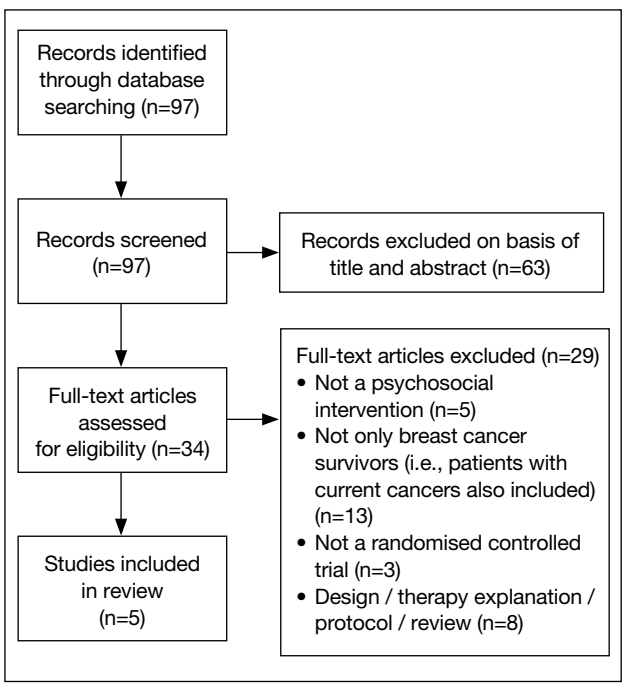

Figure. Modified Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram.

Behavioural Indications

Zachariae et al[16] assessed internet-delivered CBT for insomnia, which consisted of six cores which aimed to improve patients' sleep hygiene. Participants were included in the study if they suffered from insomnia, which was defined as a score >5 on the Pittsburgh Sleep Quality Index (PSQI),[21] with higher scores representing poorer sleep quality. They randomised 133 participants to the intervention group and 122 participants to the control group. The online therapy (SHUTi [Sleep Healthy Using The Internet])[22] was interactive internet-delivered CBT for insomnia (Table 2). SHUTi can be completed in 6 weeks, but participants were given 9 weeks to complete the modules. Researchers performed a pre-assessment, and a final follow-up 15 weeks later. Primary outcomes were tested using the PSQI for sleep quality and using the Insomnia Severity Index[23] for insomnia severity. A secondary outcome, fatigue, was tested using the FACIT-F (Functional Assessment of Chronic Illness Therapy–Fatigue[24]). Baseline parameters between the intervention and control groups were similar for all three scales ($p > 0.05$). Following the intervention, a greater proportion of participants in the intervention group reported better sleep quality, lower insomnia severity ($p < 0.0001$), and lower fatigue levels ($p < 0.001$) compared to controls. The proportion of participants who no longer met the criteria for PSQI >5 was much higher for participants in the intervention arm as compared to the control group ($p = 0.011$).

Abrahams et al[17] examined an eight-module online CBT for severe fatigue in a sample of BCS in the Netherlands. The sample consisted of 66 women in the intervention group, and 66 women in usual care as the control group. To be included in the study, patients had to have significant fatigue based on a score of ≥35 on the Checklist Individual Strength–Fatigue Severity subscale.[25] Participants initiated their internet-based CBT (I-CBT) first with two in-person sessions with a therapist, and then subsequent online sessions (Table 2). Participants aimed to work on improving their fatigue and related symptoms. At baseline, both groups were well beyond the cut-off of 35 on the Checklist Individual Strength–Fatigue Severity subscale, indicating severe fatigue. After 6 months, scores of both groups decreased, however, the women in the intervention group had significantly lower levels of fatigue (mean difference:

Table 2. Baseline demographics and clinical features.

Study	Initial No. of cases	Final No. of cases	Age, y (mean ± SD)	Education	Treatment for breast cancer	Indications	Type of therapeutic intervention	Duration of online intervention
Zachariae et al[16]	Intervention: 133 Control: 122	Intervention: 101 Control: 97	Intervention: 53.2 ± 8.8 Control: 52.9 ± 8.9	Intervention: • <2 y of higher education: 22.3% • 2-4 y: 55.4% • ≥5 y: 22.3% Control: • <2 y of higher education: 25.7% • 2-4 y: 60.6% • ≥5 y: 13.8%	Intervention: • Mastectomy: 31.6% • Chemotherapy: 50.4% • RT: 74.5% • Endocrine therapy: 77.4% Control: • Mastectomy: 33.9% • Chemotherapy: 63.6% • RT: 85.9% • Endocrine therapy: 81.0%	Insomnia	SHUTi (interactive I-CBT)	9 wk (can be completed in 6 wk)
Abrahams et al[17]	Intervention: 66 Control: 66	Intervention: 61 Control: 64	Intervention: 52.5 ± 8.2 Control: 50.5 ± 7.6	Intervention: • Low: 26% • Middle: 36% • High: 38% Control: • Low: 21% • Middle: 47% • High: 32%	Intervention: • Surgery: 8% • Surgery and RT: 11% • Surgery and chemotherapy: 23% • Surgery, RT and chemotherapy: 59% • HT (during study): 58%; prior to: 17% • Targeted therapy (during study): 3%; prior to: 14% Control: • Surgery: 5% • Surgery and RT: 15% • Surgery and chemotherapy: 21% • Surgery, RT and chemotherapy: 59% • HT (during study): 67%; prior to: 8% • Targeted therapy (during study): 3%; prior to: 14%	Fatigue	I-CBT	24 wk
Hummel et al[18]	Intervention: 84 Control: 85	Intervention: 69 Control: 82	Intervention: 51.6 ± 7.7 Control: 50.5 ± 6.8	Intervention: • Primary: 1.2% • Secondary: 21.7% • Higher: 77.1% • Unknown: 1.2% Control: • Primary: 0% • Secondary: 13.1% • Higher: 86.9% • Unknown: 1.2%	Intervention: • BCT: 58.3% • Mastectomy with reconstruction: 22.6% • Mastectomy: 19% • Chemo: 77.4% • Endocrine therapy: 84.5% • Current endocrine therapy: 71.4% • Immunotherapy: 20.2% • Current immunotherapy: 2.4% • RT: 86.9% Control: • BCT: 54.1% • Mastectomy with reconstruction: 25.9% • Mastectomy: 20% • Chemo: 89.4% • Endocrine therapy: 78.8% • Current endocrine therapy: 72.9% • Immunotherapy: 24.7% • Current immunotherapy: 4.7% • RT: 75.3%	Sexual functioning	I-CBT	20 wk (maximum 24 wk)
van den Berg et al[19]	Intervention: 70 Control: 80	Intervention: 58 Control: 66	Intervention: 51.44 ± 8.30 Control: 50.5 ± 9.15	Intervention: • Low: 20% • Medium: 46% • High: 34% Control: • Low: 16% • Medium: 60% • High: 24%	Intervention: • Surgery, chemotherapy and RT: 69% • Surgery and chemotherapy: 27% • Surgery and RT: 4% • HT: 66% Control: • Surgery, chemotherapy and RT: 70% • Surgery and chemotherapy: 28% • Surgery and RT: 2% • HT: 66%	Psychological adjustment	BREATH (BREAst cancer e-healTH)	16 wk
Carpenter et al[20]	Intervention: 71 Control: 61	Intervention: 57 Control: 59	Intervention + Control: 50.9 ± 9.9	Intervention + Control: 67% graduated from college	Intervention + Control: • Surgery: 94% • Chemo: 45% • Radiation: 49% • Current chemo or radiation: 20%	Stress management	*Coping with Cancer Workbook*	10 wk

Abbreviations: BCT = behaviour change techniques; HT = hormone therapy; I-CBT = internet-based cognitive behavioural therapy; RCT = randomised controlled trial; RT = radiation therapy; SD = standard deviations; SHUTi = Sleep Healthy Using The Internet.

$p < 0.0001$). Similar improvements in functional impairment (using the Sickness Impact Profile 8[26]) and psychological distress (using the Brief Symptom Inventory 18[27]) were also demonstrated. Scores of both groups were similar at baseline, however after 6 months, a larger improvement was seen in the intervention group, both for functional impairment and psychological distress, with a significant mean difference ($p < 0.0001$). In total, 73% of patients in the I-CBT group had improved fatigue symptoms and/or severity, while only 28% women in the control group improved.[17]

Hummel et al[18] conducted a study in the Netherlands looking at the efficacy of online psychotherapy for sexual functioning in BCS. The intervention group consisted of 84 women, while the control group consisted of 85 individuals. All women had to have a prior Diagnostic and Statistical Manual of Mental Disorders Text Revision, 4th edition[28] diagnosis of sexual dysfunction. The therapy was guided by one of four female psychologists/sexologists. The 10-module I-CBT was composed of approximately 20 weekly sessions that were completed in 24 weeks (Table 2). The goal of the intervention was to improve sexual functioning, relationship intimacy and body image. The primary outcome was based on the Female Sexual Function Index,[29] which looked at sexual functioning; higher scores indicate better sexual functioning. The study also evaluated sexual pleasure via the Sexual Activity Questionnaire Pleasure subscale,[30] and sexual distress via the Female Sexual Distress Scale–Revised.[31] At pre-assessment, the intervention group was similar to the control group on all three measures, while at the post-assessment, sexual functioning, sexual pleasure, and sexual distress were all significantly improved in the intervention group compared to the control group ($p = 0.031$, 0.001, and 0.002, respectively).[18]

Psychological Indications

van den Berg et al[19] examined the efficacy of online therapy for BCS in the hopes of improving psychological adjustment. Women were recruited to participate in this RCT and were randomised either into a control group (n=80) or an intervention group (n=70). The 16-week online therapy, called BREATH,[32] used principles of CBT to create this online self-management intervention to help participants cope with survivorship (Table 2). The two primary outcomes were general psychological distress (tested by the Symptom Checklist 90)[33] and psychological empowerment (assessed using the Cancer Empowerment Questionnaire; CEQ).[34] At the baseline assessment, both groups had similar mean scores on both measures. After controlling for baseline levels of psychological distress, the intervention group had significantly less psychological distress than the control group ($p < 0.05$). However, while both groups showed a slight improvement in the CEQ, there was no significant difference between the scores of the two groups ($p = 0.336$; value adjusted for the baseline level). One of the secondary outcomes tested was general negative adjustment by the Hospital Anxiety and Depression Scale[35] total score, where lower scores represent improvement. At baseline, the intervention and control groups had similar mean scores, while at follow-up, those in the intervention group had significantly higher scores than those in the control group when adjusting for baseline Hospital Anxiety and Depression Scale score ($p < 0.05$).[19]

Carpenter et al[20] conducted a study looking at the benefit of an online workbook for stress management levels in BCS. In total, 132 women agreed to participate in the study (intervention group: 71; control group: 61). Inclusion was determined by multiple indications of distress. This pilot study helped determine the efficacy of the online workbook *Coping with Cancer Workbook*, which teaches participants coping strategies, and relaxation management strategies through cognitive and behaviourally based homework. This workbook is typically completed in 10 weeks (Table 2). Two of the primary outcomes tested were (1) self-efficacy for coping with cancer, tested with the Cancer Behavior Inventory v2.0[36]; and (2) self-efficacy for coping with negative mood, assessed with the Negative Mood Regulation Scale.[37] Finding benefit in the cancer experience was a secondary outcome completed by the Benefit Finding Scale (BFS).[38] Baseline measures were all reported as a composite for all participants, regardless of intervention. At follow-up, there was a significant difference for self-efficacy for coping with cancer, with an increase in the intervention group's mean score compared to the control group ($p = 0.019$). At follow-up, individuals in the intervention group had significantly higher scores than those in the control group for the Negative Mood Regulation Scale ($p = 0.007$). For the BFS, there was no significant improvement at follow-up for either group.[20]

DISCUSSION

The aim of this review was to assess published clinical outcomes following online psychotherapy for BCS. Overall, there were three studies (60%) that focused on behavioural indications,[16-18] and two studies (40%) that focused on psychological indications[19,20] (Table 2). For

the behavioural-based studies, one study treated patients with insomnia,[16] one study focused on patients with fatigue,[17] and one study examined sexual dysfunction.[18] Of the psychological indications, one study focused on psychological adjustment[19] and the other examined stress management.[20]

Online interventions generally resulted in favourable outcomes with a statistically significant reduction in symptom severity following therapy. Of the 11 primary outcomes assessed,[16-20] the scores of the women in the intervention groups significantly improved on nine scales, with associated effect sizes of 0.33[19] to 1.10[16] as measured by Cohen's d. Indications that improved were insomnia,[16] sleep quality,[16] fatigue,[17] sexual functioning,[18] sexual pleasure,[18] sexual distress,[18] general psychological distress,[19] self-efficacy for coping with cancer,[20] and self-efficacy for coping with negative mood.[20] One primary outcome that was not significant was the CEQ,[19] which measures how efficiently patients can derive psychological empowerment from their interpersonal and intrapersonal environments.[34] Also, there were no differences seen between the control and intervention groups on the BFS,[20] which evaluates one's ability to find positive outcomes from the cancer experience.[38] Among the four secondary outcomes examined from three different studies,[16,17,19] women in the intervention group showed significant improvements on all four indications (fatigue,[16] functional impairment,[17] psychological distress,[17] and general negative adjustment[19]).

Traditionally, psychotherapies are used to diminish bothersome symptoms.[39] As was demonstrated, the online psychotherapies reviewed were able to decrease a variety of psychosocial and behavioural symptoms. However, whether this can be translated into clinically significant outcomes is not well documented, especially since many of the included scales do not have published estimates of the minimal patient-important differences. As well, the non-significant parameters should be investigated. Both the CEQ and BFS are non-traditional measures, as they measure strengths rather than weaknesses. It is possible that there are smaller effect sizes associated with scales that evaluate strengths, as opposed to those worded with respect to reduction of symptoms.[19] For example, for the primary outcomes, of the nine that were statistically significant, seven dealt with a decrease of symptoms as opposed to improving strengths.[16-19]

The question still remains whether online therapy is more beneficial than in-person therapy for BCS. Women often find face-to-face psychotherapy intimidating when talking about sexual and intimate problems and are more likely to opt out of these programmes than if the psychotherapy is online.[40] Since sexual dysfunction is a possible lingering symptom in BCS, online therapy may be a more attractive alternative. In addition, due to the harsh negative outcomes (e.g., hair loss, disfigurement, weight loss, etc.) following cancer treatment[11] many women may feel self-conscious.[18] They also may feel too unwell to go out of the house to attend therapy, leaving online therapy as a possible alternative. Overall, the results indicate that online therapy for a variety of symptoms in BCS is beneficial. Due to the unique nature of a survivor's life, it may even be more desirable than traditional therapy.

Online therapies have not only been proven effective for BCS, but also across other cancer populations, including the reduction of post-traumatic stress symptoms in long-term survivors of paediatric cancers[41] and the reduction of psychological distress in men with prostate cancer.[42] This invites a search for the benefits of online therapy for other populations, especially given the present need to physically distance during the coronavirus disease 2019 pandemic. During the pandemic lockdowns, most in-person therapy services were either not running or switched to an online format. Online psychotherapy can alleviate time constraints, increase accessibility to a more heterogeneous population,[43] reduce the stigma of seeking therapy, and eliminate other barriers associated with seeking therapy in person.[10] It is also perceived as convenient and comfortable both by patients and by clinicians.[10]

Despite the benefits presented, practical concerns and challenges exist that hinder its use in routine practice. First of all, patient privacy and confidentiality must be considered. As is common practice for therapeutic interventions, patients disclose personal information continuously during therapy. Even though privacy settings can be monitored, and data encryption solutions can be employed, one needs to be wary that privacy still cannot completely be guaranteed online.[10,44] If one is accessing online therapy to avoid the stigma of face-to-face appointments,[45] this privacy concern may impact an individual's decision to complete therapy online and may prove to be counterintuitive. In addition, online therapy is only feasible for individuals who can read, write, and are proficient with technology. Those who have poor literacy skills will have difficulty grasping the knowledge that the therapy provides and hence are

not likely to benefit from the programme. An individual with poor technology skills or those from marginalised backgrounds may not be able to access online therapy. Certain techniques, such as body focusing, would be more difficult to apply in the context of an online environment. Finally, one practical concern may ensue with the use of online therapy. How can one know whether there is a congruency between behaviours, cognitions, and emotions experienced in reality compared with what the client reports online? It is possible that individuals may report improvements that are not truly there, and due to the limited non-verbal cues and facial expressions from both parties, the therapist may have difficulties being more certain that their intention was met and that the client has shown improvements.[10] With the present pandemic hindering accessibility to in-person services, both clients and clinicians must carefully weigh the pros and cons of online therapy to determine their comfort with the proposed alternative.

Some limitations of the studies included in this review should be considered. First, given the relatively short duration of follow-up, compared to the survivorship journey, it is unclear whether the demonstrated improvement at post-intervention assessment could lead to the long-term remission of their psychiatric co-morbidities and symptoms. It is thus plausible that women continue to have subclinical symptoms that are still present or may later recur. The psychotherapies presented in the review were typically focused on a specific symptom (e.g., fatigue, sexuality). As such, it is possible that women enrolled in these programmes had multiple psychological comorbidities (e.g., as suggested by Lee et al[12]), some of which were unaddressed by the specific intervention they were receiving. In the future, researchers should investigate the potential of a holistic care approach, focusing on a comprehensive model of change, as opposed to specific symptomology.[46] Also, the types of treatments included in the studies had different treatment protocols, including duration, number, and type of modules, symptoms addressed, and extent of therapist-guidance (Table 2). For example, Abrahams et al[17] began their procedure with three face-to-face sessions, while the other four studies had no in-person therapist contact. This makes it difficult to identify the optimal interventional model through indirect comparisons across studies. Another limitation relates to the online nature of the therapy. Based on literature estimates, most BCS are aged 60 to 75 years.[17] Across all five studies, the mean age was 51.7 years.[16-20] This might suggest that online psychotherapies attract younger women on average and may be less appealing to or practical for older BCS given the necessity for technological proficiency. Moreover, it is well-established that individuals with higher socioeconomic status have better overall health.[30] Since individuals of high SES are more likely to have access to technology and have superior health outcomes than those of low socioeconomic status, this might overestimate the true efficacy of online psychotherapy treatments.[47]

Alongside the limitations of the studies included in this review, there are also limitations of the present study. Only RCTs were included in this paper. Although this improved the internal validity of the study, while decreasing the effects of confounding, this has the potential to limit generalisability. As described above, this review is heterogenous, including studies with diverse treatment protocols (e.g., session duration) and varying indicators. Although this may serve as a benefit for some studies, due to the small number of studies included in this review, it is more of a hinderance. The heterogeneity of the studies, combined with a small sample size, yields a review paper that must be interpreted with caution. These two limitations are reflective of the lack of literature on the topic. Future studies should continue to investigate the efficacy of online therapy for BCS who are struggling with behavioural, psychological, or social symptoms. Once enough studies are compiled, it is suggested that larger reviews and/or meta-analyses are conducted. By conducting these larger reviews, future research will be able to make better sense of the outcomes, without being swayed by high variability.

CONCLUSION

Individuals who have recovered from breast cancer often have residual behavioural, physical, or social symptoms from the cancer experience.[12] Due to these problems, BCS may be a population that may particularly benefit from online psychotherapy. The purpose of this review was to investigate whether online psychotherapy is effective for the behavioural and psychological sequelae of BCS. This study found support for improving behavioural (e.g., insomnia) and psychological (e.g., stress management) symptomology using an online psychotherapeutic paradigm.[16-20] All five studies included in the review were based on CBT, suggesting that this type of therapy may be particularly useful within the BCS population. Although the conclusions of this review are encouraging, limitations must be considered. This review is highly heterogenous and has a small sample size. As such, the generalisability

of this study may be limited. More controlled research must be done in this setting. Once enough literature exists, researchers are encouraged to evaluate the studies comprehensively using meta-analytic or other systematic review methodologies.

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