

Rapid Synthesis

Assessing the Effectiveness of Virtual Care for Adults with Mental Health and/or Addictions Issues

29 July 2020



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Rapid Synthesis:
Assessing the Effectiveness of Virtual Care for Adults with Mental Health and/or Addictions Issues
10-day response

29 July 2020

McMaster Health Forum

The McMaster Health Forum's goal is to generate action on the pressing health-system issues of our time, based on the best available research evidence and systematically elicited citizen values and stakeholder insights. We aim to strengthen health systems – locally, nationally, and internationally – and get the right programs, services and drugs to the people who need them.

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Timeline

Rapid syntheses can be requested in a three-, 10-, 30-, 60- or 90-business-day timeframe. This synthesis was prepared over a 10-business-day timeframe. An overview of what can be provided and what cannot be provided in each of the different timelines is provided on McMaster Health Forum's Rapid Response program webpage (www.mcmasterforum.org/find-evidence/rapid-response).

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Conflict of interest

The authors declare that they have no professional or commercial interests relevant to the rapid synthesis. The funder played no role in the identification, selection, assessment, synthesis or presentation of the research evidence profiled in the rapid synthesis.

Merit review

The rapid synthesis was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

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KEY MESSAGES

Questions

- What is known about the effectiveness, feasibility, and acceptability of clinician-led virtual mental health and addiction care (i.e., care delivered via any information and communication technology such as phone, internet, teleconferencing, or text) for adults, and relevant implementation considerations?
- What is known about the effectiveness, feasibility, and acceptability of virtual peer and group-based mental health and addictions support for adults, and relevant implementation considerations?

Why the issue is important

- The emergence of the COVID-19 pandemic and related public-health measures have meant that most mental health and addictions services and supports abruptly pivoted to providing services virtually, with little-to-no opportunity to plan for this switch.
- Many peer-support services and group-based mental health and addictions services have been put on hold during this transition rather than shifting to a virtual format, leaving potentially large gaps in the available services and supports.
- There are many understandable concerns about the accessibility of such virtual services to clients (and in some cases, service providers and peer-support workers), who may face barriers such as a lack of access to technology, data plans or sufficient bandwidth to participate in virtual care, and privacy constraints to effectively participate in services.
- As services plan to fully reopen, there is interest in exploring how we may sustain the gains achieved by virtual care during the pandemic, while limiting the risks and addressing the barriers.
- This presents an opportunity to examine the literature on virtual care to understand the effectiveness, feasibility and acceptability of delivering virtual services and supports for adults aged 18 and older with mental health and/or addictions issues.

What we found

- We identified 31 recent systematic reviews relating to the two questions above. We excluded reviews published prior to 2015, due to rapid changes in the nature and uptake of information and communication technology, and those that focused on transition-aged youth.
- For the first question we found that:
 - virtually delivered psychotherapy is generally as effective as face-to-face care for people with mood, anxiety, and traumatic stress disorders, but ‘working alliance’ may be weaker than in face-to-face care;
 - less is known about effectiveness of remote clinician-led interventions for people with severe mental illness including eating disorders, personality disorders, and schizophrenia-spectrum disorders, but acceptability is high and remote medication reminders in this population may be effective;
 - studies of clinician-led remote substance-use treatment were not identified in our search;
 - implementing virtual care is facilitated by factors including patient and provider perceptions of acceptability and appropriateness, patient awareness of and preferences for virtual care, information technology support and infrastructure, organizational culture and management approaches, and reimbursement policies; and
 - there is a need for further research to address who may benefit from virtual care and what levels and patterns of uptake can be expected.
- For the second question, we found that:
 - group-based, clinician-led virtual care is feasible and effective;
 - digital interventions that include peer-to-peer networks as a component may be effective in reducing symptoms and increasing knowledge, but the contribution of peer support to the outcomes of multi-component interventions is unclear; and
 - online peer networks for people with serious mental illness may benefit from clinician moderators.

QUESTIONS

- What is known about the effectiveness, feasibility, and acceptability of clinician-led virtual mental health and addiction care (i.e., care delivered via any information and communication technology such as phone, internet, teleconferencing, or text) for adults (aged 18 years and older), and relevant implementation considerations?
- What is known about the effectiveness, feasibility, and acceptability of virtual peer and group-based mental health and addictions support for adults (aged 18 and older), and relevant implementation considerations?

WHY THE ISSUE IS IMPORTANT

The emergence of the COVID-19 pandemic, and the public-health measures introduced to limit its transmission, have meant that most mental health and addictions services abruptly pivoted to providing services virtually, with little-to-no opportunity to plan for this switch. The consequence of this pivot was that decision-makers and service providers did not have the opportunity to benefit from an understanding of what the evidence says about what services can safely and effectively be delivered virtually, and how to implement them effectively. There was also no opportunity to prepare current clients for the switch, leaving many of them ill-prepared for the adjustment.

The public-health measures introduced during the COVID-19 pandemic have also meant that some services and supports that are normally in the continuum of care available to people with mental health and/or addictions issues were put on hold. In particular, peer-support services and group-based mental health and addictions services have frequently been affected, leaving potentially large gaps in the services and supports that many people rely on.

Furthermore, the pandemic has highlighted many understandable concerns about the accessibility of such virtual services to clients, who may face barriers such as a lack of access to technology (computers or smart phones), data plans or sufficient bandwidth to participate in virtual care, and privacy constraints/limitations (in terms of private time and space in their homes) to effectively participate in services. These access and implementation challenges are most likely to be experienced by those already facing other systemic barriers, such as those from racially, culturally and ethnically diverse populations, Indigenous peoples, people experiencing homelessness, low-income households, and more. Additionally, many of these barriers may equally apply to mental health and addictions service providers and peer-support workers, who have been expected to make adjustments to this new model of care with little-to-no training and limited available transition supports.

As the pandemic's first wave has largely passed in Ontario and elsewhere, plans are now being developed on how to safely reopen many of the in-person mental health and addictions services and supports. As part of

Box 1: Background to the rapid synthesis

This rapid synthesis mobilizes both global and local research evidence about a question submitted to the McMaster Health Forum's Rapid Response program. Whenever possible, the rapid synthesis summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies, and to synthesize data from the included studies. The rapid synthesis does not contain recommendations, which would have required the authors to make judgments based on their personal values and preferences.

Rapid syntheses can be requested in a three-, 10-, 30-, 60- or 90-business-day timeframe. An overview of what can be provided and what cannot be provided in each of these timelines is provided on the McMaster Health Forum's Rapid Response program webpage (www.mcmasterforum.org/find-evidence/rapid-response).

This rapid synthesis was prepared over a 10-business-day timeframe and involved four steps:

- 1) submission of a question from a policymaker or stakeholder (in this case, the Ontario Mental Health and Addictions Centre of Excellence);
- 2) identifying, selecting, appraising and synthesizing relevant research evidence about the question;
- 3) drafting the rapid synthesis in such a way as to present concisely and in accessible language the research evidence; and
- 4) finalizing the rapid synthesis based on the input of at least two merit reviewers (completed after the 10-day timeline).

this exercise, many questions are arising about how the system might sustain the gains achieved by virtual service delivery, while being attentive to the barriers identified above. This presents an opportunity to examine the literature on virtual care to understand the effectiveness, feasibility and acceptability of delivering services and supports virtually for both services that are led by a clinician, as well as peer- and other group-based supports. The present review focuses specifically on evidence relating to virtual care for adults over the age of 18.

WHAT WE FOUND

We identified 31 recent systematic reviews relating to the two questions above. We excluded reviews published prior to 2015, due to rapid changes in the nature and uptake of information and communication technology. We also excluded reviews that focussed specifically on transition-aged youth. In addition, recognizing that there is already work underway in Ontario examining the limited evidence that exists for virtual care for children and youth with mental health and/or addictions issues, we focused this rapid synthesis on findings in relation to adults. Summaries and quality appraisal for each of these reviews can be found in Appendix 1 (for virtual clinician-led care) and Appendix 2 (for virtual peer and group-based care). A list of rapid syntheses that are currently underway in Canada from other CIHR operating grant awardees that are relevant to this topic are available in Appendix 3 Finally, a list of reviews that were excluded prior to data extraction can be found in Appendix 4.

Box 2: Identification, selection and synthesis of research evidence

We identified research evidence (systematic reviews and primary studies) by searching Health Systems Evidence (www.healthsystemsevidence.org) in July 2020 and drawing relevant reviews from a previous rapid synthesis on virtual care in primary care. In Health Systems Evidence, we applied the following filters: under delivery arrangements, 'Other information and communication technologies (ICT) that support individuals who provide care' and 'ICT that support individuals who receive care'; under diseases, 'mental health and addictions'; and under type, 'overviews of systematic reviews,' 'systematic reviews of effects,' 'systematic reviews addressing other questions,' and 'systematic reviews in progress.'

The results from the searches were assessed by one reviewer for inclusion. A document was included if it fit within the scope of the questions posed for the rapid synthesis.

Question 1: What is known about the effectiveness, feasibility, and acceptability of clinician-led virtual mental health and addictions care for adults, and relevant implementation considerations?

We summarize the findings for question in relation to specific mental health and addiction conditions (mood and anxiety disorders, traumatic stress disorders, severe mental illness and substance use), followed by an overview of implementation considerations. In general, we found that:

- virtually delivered psychotherapy is generally as effective as face-to-face care for people with mood, anxiety, and traumatic stress disorders, but working alliance may be weaker than in face-to-face care;
- less is known about the effectiveness of remote clinician-led interventions for people with severe mental illness including eating disorders, personality disorders, and schizophrenia-spectrum disorders, but acceptability is high and remote medication reminders in this population may be effective;
- studies of clinician-led remote substance-use treatment were not identified in our search;
- implementing virtual care is facilitated by factors including patient and provider perceptions of acceptability and appropriateness, patient awareness of and preferences for virtual care, information technology support and infrastructure, organizational culture and management approaches, and reimbursement policies; and
- there is a need for further research to address who may benefit from virtual care and what levels and patterns of uptake can be expected.

Mood and anxiety

Videoconferencing psychotherapy for depression was found to produce equivalent outcomes to face-to-face treatment in one medium-quality systematic review;(1) videoconferencing psychiatry was also found to be

equivalent to face-to-face treatment for depression in a high-quality review focused on general psychiatric practice and excluding psychotherapy.(2) Telephone-based psychotherapy was found to be effective for both depression and anxiety disorders in a third medium-quality systematic review.(3) Broadly, the literature suggests that virtual delivery of treatment for depression and anxiety can achieve similar clinical outcomes to face-to-face support.

Other reviews focused on treatment of mood and anxiety disorders in specific populations. Comparability of remote and in-person care was also observed for geriatric depression in two lower-quality reviews.(4; 5) Socially supportive video calls were not found to reduce depression in older adults in one review based on three Taiwanese studies.(6) One review considered remote treatment of depression in Hispanic populations (7) and another focused on Black and African-American populations;(8) both found reductions in symptoms, but the latter study also pointed to an overall need for more knowledge around cultural adaptations to tailor remote care for specific populations. Preliminary evidence was found for the effectiveness of telephone psychotherapy for depression in people with multiple sclerosis.(9) Telehealth support was found to reduce depression in cancer patients in a minority of included studies in one review,(10) and to lead to distress reduction with a small effect size in another.(11)

Beyond treatment, one high-quality review found that comparisons of in-person to videoconferencing psychiatric assessment were inconclusive.(2) A further review focused on remote perinatal depression screening and found substantial limitations in the literature.(12) Finally, a review considered remote measurement-based care, which draws on principles of measurement-based care (where regular, standardized symptom screening is used to inform clinical decision-making) but uses technology to enable measurement outside of the clinical environment.(13) Depression was the most common diagnosis among participants in included studies, followed by psychotic disorders and substance use, with most studies taking place in primary care. Remote measurement-based care was generally used as one component of a multi-component intervention. Among 13 randomized controlled trials included in the review, seven found larger effects in the condition including remote measurement-based care than the control condition.(13) However, only three studies isolated the effect of remote measurement-based care from other intervention components: two found no difference, with one finding that adding remote measurement to treatment as usual resulted in lower depression severity.(14) Participants' satisfaction and ease-of-use ratings were moderately high.(13)

One high-quality systematic review specifically explored working alliance in videoconferencing psychotherapy.(15) The majority of included studies focused on mood and anxiety disorders. While all included studies found good working alliance in videoconferencing psychotherapy, this alliance was nonetheless inferior when compared to face-to-face. The authors call for more high-quality investigations into this topic, as well as studies in which videoconferencing psychotherapy is delivered in the client's home (as the majority of included studies took place in a clinical building for research purposes).(15)

Traumatic stress disorders

Videoconferencing psychiatric care for post-traumatic stress disorder was found to produce equivalent outcomes to face-to-face treatment in the general population in a high quality review,(2) and videoconferencing therapy was found to be equivalent to face-to-face treatment for military veterans in a medium-quality review.(16) Another medium-quality review found that telepsychology interventions for post-traumatic stress disorder (PTSD) generated short-term improvements in a number of symptom domains, but follow-up evaluations one to six months later found mixed outcomes.(17)

Process measures point towards good working alliance and treatment satisfaction in video treatment of PTSD.(17) A review focusing on PTSD treatment for military veterans further noted that attendance, drop-out, satisfaction, and therapist fidelity to structured interventions were similar between remote and face-to-face interventions, but mixed results were found on comparisons of therapeutic alliance.(16) Two reviews note that conducting exposure-based work may require special considerations in a virtual milieu: one review included a study finding that patients reported apprehension around conducting exposures with remote

support,(16) while another review included a study in which participants' ratings of therapist presence were lower following exposure activities.(17)

Severe mental illness

Four reviews were found which address virtual, therapist-led care for people experiencing schizophrenia-spectrum disorders or psychosis, and one review focused on suicidality and self-harm. No reviews were found that addressed virtual, therapist-led care for people with eating disorders, personality disorders, or other forms of severe mental illness.

One high-quality review found that mobile phone-based contact including calls and text messages were effective in promoting medication adherence for people with severe mental illness (predominantly schizophrenia). Mobile phone contact led to improved medication adherence, with participants achieving significant improvements over baseline relative to control groups.(18) Another medium-quality review found two studies suggesting reduced hospitalizations could be achieved through remote symptom monitoring with results provided to clinicians.(19)

Two medium-quality reviews provide information about acceptability of virtual care in this population. A systematic review with meta-analysis found that 60% of participants with psychosis were open to using mobile phones for symptom tracking, 56% for receiving information, 56% for appointment or medication reminders, and 51% for contact with healthcare professionals.(20) Overall, phone ownership was 66%; considering only papers from the two years before this review was published in 2016, the rate of mobile phone ownership was much higher at 81%.(20) Another systematic review found that in studies of online and mobile phone interventions for people with severe mental illness (again, predominantly schizophrenia), ratings of satisfaction ranged from moderate to high, with high ratings being most common. Satisfaction was not predicted by symptom severity.(21)

An additional medium-quality review considered digital interventions for caregivers of people with psychosis. Family psycho-education provided via telepsychiatry was found to increase caregivers' knowledge, and telephone follow-up after in-person psycho-education for caregivers was associated with lower caregiver burnout and depression.(22)

Finally, a medium-quality meta-analysis considered three types of brief interventions (telephone calls, letters or postcards, and crisis cards encouraging help-seeking) targeting suicide, suicide attempts, and self-harm.(23) The authors note that these interventions include no psychotherapy and minimal psycho-education, and are conducted according to a schedule. Odds of suicide attempts, self-harm, or completed suicide in groups receiving the intervention were lower, but this finding did not reach statistical significance. A significant reduction in the number of suicide or self-harm attempts was observed in a meta-analysis of the three studies for which such data was available (all of which used postcards).(23)

Substance use

We did not identify any systematic reviews addressing therapist-led, virtual care for substance use in adults.

Implementation considerations

Three systematic reviews focused on implementation-related concerns for virtual, clinician-led mental health care. One medium-quality review, which focused on implementation of videoconferencing and web-based interventions for mood disorders, used the RE-AIM (reach, effectiveness, adoption, implementation, and maintenance) framework to organize findings.(24) With respect to reach, key patient-related factors included acceptability and appropriateness (the patient's perception of whether eMental health is a good fit for their needs). At an organizational level, reach was affected by availability of infrastructure, fit of eMental health with organizational processes including referral pathways and billing, and organizational culture. At the level

of health systems, reach was affected by policy processes, availability of qualified staff, and collaboration across the system. Similar factors to those affecting reach also affected adoption, along with staff awareness of eMental health as an option, and mechanisms and policies supporting collaboration and information sharing at a system level. Determinants of implementation included: staff acceptance of eMental health (which can be enhanced through specific, in-depth training and education); support for staff involved in implementation (e.g., a program coordinator, resources including staffing, funding and infrastructure); leadership; and managerial support for balancing new programs with existing clinical demands. Factors affecting maintenance included: convenience at a user level; organizational norms at a provider level; funding, infrastructure, supporting structures and activities, and leadership at an organizational level; and community acceptance of eMental health, the plans of involved organizations, resources, and policies at a system level.(24)

A low-quality American-based review identified reimbursement, professional-liability concerns, and limits on interstate practice as barriers to tele-mental health.(25) Another high-quality review considered implementation of virtual care specifically in the Australian context.(26) Barriers were identified including patient preference for face-to-face services, and a lack of awareness of eMental healthcare. Findings for the effects of other factors conflicted across studies. For instance, stigma, rural residence, and symptom severity were argued to facilitate uptake in some studies and to inhibit uptake in others. For other factors, the impact depended on patient perceptions. For instance, anonymity was a facilitator to those concerned about privacy, and a barrier to those who felt online services were depersonalized. No studies were found that addressed policy-level factors in implementation in Australia. The review authors call for more policy-relevant research, noting that at present the literature on e-mental healthcare in Australia does not address questions of who may benefit, what level of uptake might be expected, or how policy can support implementation.(26)

Question 2: What is known about the effectiveness, feasibility, and acceptability of virtual peer and group-based mental health and addictions support for adults, and relevant implementation considerations?

We identified evidence related to clinician-led groups and peer-support groups, which we summarize below. In general, we found that:

- group-based, clinician-led virtual care is feasible and effective;
- digital interventions that include peer-to-peer networks as a component may be effective in reducing symptoms and increasing knowledge, but the contribution of peer support to the outcomes of multi-component interventions is unclear; and
- online peer networks for people with serious mental illness may benefit from clinician moderators.

Clinician-led groups

A high-quality systematic review of clinician-led, videoconferencing-delivered groups found equivalent outcomes to face-to-face groups or to usual care.(27) All but one included study reported that participants found videoconferencing groups to be satisfactory, positive, or very positive. Qualitative studies suggest that participants in videoconferencing groups were able to engage in discussions of sensitive topics. Accessing the group from home was considered a benefit in all but one study.(27) An additional medium-quality systematic review on digital interventions for caregivers of people with psychosis included three articles about online multi-family group interventions.(22) Results were mixed, with one study finding fewer patient admissions during the intervention year while another found no differences in outcomes between the treatment and control arms.

With respect to implementation concerns, most studies included in a review of videoconferencing groups reported that participants found videoconferencing easy to use or were able to overcome initial difficulties. Information technology support to assist participants was argued to be a vital component.(27)

Peer support

Virtual peer networks were a component of three interventions included in a medium-quality systematic review of online early intervention following exposure to traumatic events.(28) Two of these interventions were associated with reductions in PTSD symptoms. Both of these were studies targeted at those with sub-threshold symptom. Studies targeting all those exposed to trauma regardless of symptoms, including a study with a peer component, did not find that interventions outperformed controls.(28)

A high-quality systematic review of digital peer-support interventions for people with severe mental illness found 13 studies in which informal virtual peer networks were one component of a multi-component intervention.(29) These multi-component interventions achieved statistically significant improvements in a range of measures including psychiatric symptoms, cardiovascular fitness, and knowledge, among other outcomes, with attrition rates varying widely. However, the independent impact of the peer component could not be ascertained within that systematic review. The European Psychiatric Association found two randomized controlled trials and a previous review that suggested that participation in unmoderated peer-support forums was not associated with improvements to quality of life, distress or recovery for people with psychotic disorders. The same review found that online groups for relatives of people with schizophrenia were associated with high satisfaction but minimal improvements in distress.(19) With respect to implementation, the European Psychiatric Association report, rated at medium quality, recommends that online support groups for patients with psychotic disorders and their caregivers should be moderated by healthcare professionals.(19)

Results for the effectiveness of peer support in promoting engagement in online substance-use interventions were mixed in a medium-quality review.(30) An online social bulletin board was associated with increased visit duration, but not an increase in pages visited. In a four-arm trial, the arm with an online social support community had greater engagement; however, this arm also included a cognitive-behavioural course that the review authors argue may have moderated the effect. In another study, a peer- and therapist-led support group did not offer additional benefits over email reminders with respect to engagement.(30)

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APPENDICES

The following tables provide detailed information about the systematic reviews identified in the rapid synthesis. The ensuing information was extracted from the systematic reviews: the focus of the review, key findings, last year the literature was searched, and the proportion of studies conducted in Canada.

For the appendix table providing details about the systematic reviews, the fourth column presents a rating of the overall quality of each review. The quality of each review has been assessed using AMSTAR (A MeaSurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8).

All of the information provided in the appendix tables was taken into account by the authors in describing the findings in the rapid synthesis.

Appendix 1: Summary of findings from systematic reviews about clinician-led virtual care for adults with mental health and/or addictions issues

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Efficacy and effectiveness of videoconferencing psychotherapy for depression (1)	Thirty-three studies of synchronous videoconferencing psychotherapy were identified in which depression outcomes were reported, including randomized, quasi-experimental, and uncontrolled studies. These studies included multiple modalities of psychotherapy, with cognitive-behavioural therapy, behavioural activation, and exposure therapy as the most common. Twenty-two (of 33) studies found significant reduction in depression symptoms following intervention. The remaining 11 did not report statistical significance. Sixteen studies compared videoconferencing to in-person. Findings on this comparison were variable, but broadly suggest equivalence between the two groups: seven studies found no significant difference between groups, three were inconclusive, and the remaining had a range of outcomes with respect to rate of change, outcome after intervention, and outcome at follow-up. The review authors note that clinical significance was rarely addressed and call for further research into this.	2017	4/11 (AMSTAR rating from McMaster Health Forum)	4/33
Meta-analysis of randomized trials comparing face-to-face with videoconferencing delivery of psychiatric counselling (excluding specific psychotherapies) (2)	Fourteen RCTs were found comparing videoconferencing to in-person psychiatric counselling. Remote psychiatric treatment was not inferior to in-person provision in a meta-analysis, consistent with the findings of all but one included study. Sub-group analysis found no difference for videoconferencing and face to face for both major depressive disorder, and post-traumatic stress disorder, but heterogeneity could not be ruled out as an explanation. Twelve RCTs were found comparing videoconferencing to in-person psychiatric assessment. Meta-analysis of these comparisons was inconclusive due to heterogeneity.	Last year searched not reported; published 2016	8/11 (AMSTAR rating from McMaster Health Forum)	2/26
Effect of delivering manualized, evidence-based psychotherapy over the phone for depression or anxiety (3)	Ten studies focusing on depression, and four on anxiety, were included in this systematic review. Three of the included studies focused on patients who would not have been able to access traditional face-to-face therapy, and one study focused on patients in rural areas. Five studies focused on patients with concurrent physical health concerns. Twelve of the 14 studies evaluated cognitive-behavioural therapy interventions, with the remaining two evaluating interpersonal therapy. Thirteen of the 14 studies found statistically significant reductions in anxiety or depression symptoms following telephone psychotherapy. Only four studies addressed whether these changes were clinically significant, with the percentage of participants achieving clinical recovery ranging widely. Few studies addressed whether improvements were maintained following treatment.	2016	7/11 (AMSTAR rating from McMaster Health Forum)	3/14
Identifying types and outcomes of phone-based interventions used with Hispanic and psychiatric outpatient populations (7)	This study considers the types and outcomes of phone-based interventions used with a number of populations. Most relevant to this synthesis are Hispanic psychiatric populations, and psychiatric populations generally. Four articles were found on phone-based mental health interventions for Hispanic patients. Two involved telephone psychotherapy for Hispanic breast cancer survivors, one involved telephone counselling for depression for Hispanic people with diabetes, and one used an interactive voice-	2014	5/9 (AMSTAR rating from McMaster Health Forum)	0/21

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	response system for the same population. Depression outcomes improved in the first three studies and were unavailable for the latter study. This review also includes seven papers on telephone interventions for mental health in the general population. Three of these involve clinician-led counselling or monitoring. One of these studies found no significant difference for PTSD symptoms, another found reduced emergency-department use for severe and persistent mental illness, and a third found improved symptoms, treatment continuation, and medication adherence for depression.			
Use of telehealth to treat depression and anxiety in Black or African-American adults (8)	Three studies were included, with a pooled total of 32 participants. One study included only HIV-positive participants, while a majority of participants in a second study were also HIV-positive. Two of the three studies addressed cognitive-behavioural therapy delivered by telephone, while the third focused on an online intervention. All studied interventions lead to statistically significant reductions in depression symptoms. Participants reported satisfaction with the interventions. The review authors call for more research on remote mental healthcare for Black and African-American patients, including research into culturally-tailored interventions.	2018	4/10 (AMSTAR rating from McMaster Health Forum)	0/3
Feasibility, acceptability, and cost-effectiveness of telehealth in geriatric psychiatry, and implementation barriers in the U.S. context (4)	Thirteen of the 76 included studies address psychotherapy and caregiver support (other areas addressed in this review, less relevant to the present synthesis, include cognitive assessment, consultation to nursing homes, and dementia diagnosis and treatment). Remotely-delivered problem-solving therapy and behavioural activation were compared to in-person treatment in one study each; both studies found that remote delivery was non-inferior to in-person treatment. Non-controlled studies found that cognitive-behavioural therapy, behavioural activation, and counselling with cognitive training all produced benefits. Videoconferencing caregiver-support groups had high participant satisfaction, and increased perceived support while reducing caregiver burden. However, caregiver support did not reduce depression. Medicare reimbursement is argued to present a barrier to wider implementation of telehealth in geriatric psychiatry. Only rural residents receive Medicare reimbursement for telehealth under fee-for-service arrangements (although Medicare Advantage Plans and accountable care organizations have more flexibility). This has stymied state-level efforts to increase access to telehealth. By contrast, telehealth has been used widely in Veterans' Administration services; this has been facilitated by early adoption of electronic health records, greater authority over budgeting and provision of care, and legislation enabling VA doctors to provide care in any state regardless of the state in which they are licensed.	2018	3/10 (AMSTAR rating from McMaster Health Forum)	10/76
Impact of telehealth on depression in older adults, user perceptions, and enablers and barriers to use (5)	Nine studies were included in this review. Skype-based cognitive-behavioural therapy for depression and insomnia was found to reduce symptoms in a small pilot study (n=5). In a separate study, Skype-based problem-solving therapy was further found to be comparable to in-person treatment immediately after intervention, and to have a greater positive effect than in-	2017	5/10 (AMSTAR rating from McMaster)	1/9

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	person at 36-week follow-up. Phone-based psychotherapy was found to reduce depression in one study and to have no effect on quality of life in another. Providers in Ontario expressed positive perceptions of a long-standing telepsychiatry service, and noted that there was skepticism when the service was new. Providers in Hong Kong expressed neutral attitudes towards a telepsychiatry service. One study addressed barriers and enablers to using telehealth with older adults in Australia, and found that trust in telehealth, acceptance of technology, “healthcare habits,” dissatisfaction with current services, and online behaviours all predicted uptake in a regression model.		Health Forum)	
Effect of video calls on social isolation, loneliness, depression symptoms, and quality of life in older adults (6)	This rapid review identified three cluster randomized trials evaluating the impact of video calls on loneliness and depression in older adults. All were conducted in Taiwan and all had the same principle author. Low-quality evidence suggests that video calls do not affect loneliness, depression, or quality of life at three or six months. Video calls may have a small impact on depression at one year of follow-up, but the evidence for this is low quality as well.	2020	7/10 (AMSTAR rating from McMaster Health Forum)	0/3
Effect of telephone psychotherapy on depression and other psychosocial outcomes for people with multiple sclerosis (9)	This review includes 11 studies about telephone psychotherapy for people with multiple sclerosis. All studies compared telephone psychotherapy to a control group: three studies used a wait list control, four used standard care as the control, and the remainder compared telephone cognitive-behavioural therapy to telephone support emotion-focused therapy. Ten of the 11 studies were included in a meta-analysis (one was excluded from the meta-analysis because it reported insufficient data). In studies comparing telephone psychotherapy to usual care or wait-list controls, telephone psychotherapy was found to moderately improve depression outcomes. One study suggests these advantages are not sustained in long-term follow-up. In studies comparing cognitive-behavioural and emotion-focused therapy, no significant difference was found between the two in terms of depression outcome, although CBT was associated with small advantages in quality-of-life outcomes. The review authors conclude that tentative evidence suggests telephone psychotherapy may improve depression symptoms in people with multiple sclerosis in the short term, and call for higher-quality studies.	2015	7/11 (AMSTAR rating from McMaster Health Forum)	0/11
Effect of telehealth support on depression as well as pain and quality of life for people with cancer (10)	Twenty randomized controlled trials were located that addressed telehealth support for depression, pain, and/or quality of life in cancer patients. Eight of these studies focused on depression, one focused on both depression and pain, and one focused on psychological well-being. Included interventions were telephone support from providers or peers as well as web-based programs. Four of the 10 studies on depression found that telehealth interventions resulted in statistically significant improvement in symptoms. Three of eight studies focusing on quality of life, and two of three studies focused on pain, found statistically significant improvements.	2015	6/10 (AMSTAR rating from McMaster Health Forum)	0/20

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Remote provision of psycho-educational interventions for cancer patients (11)	This systematic review includes eight studies about remote provision of psycho-educational interventions to reduce distress and improve quality of life in cancer patients. Three of these interventions were delivered over the phone, three used a website or email, and one combined face-to-face with technology-supported elements. Interventions produced statistically significant reductions in distress, with small effect sizes. Telephone-delivered interventions appeared to have a greater impact on quality of life than other remote interventions, but more research is needed to confirm this.	2016	7/9 (AMSTAR rating from McMaster Health Forum)	1/8
Use of information and communication technologies in screening for perinatal depression (12)	Ten studies were identified that address using information and communication technology to screen for perinatal depression. Phone calls were used in four of these studies; three used webpages, and one each used email, interactive voice response, and a mobile app. The review reports on the percentage of participants screening positive for depression in each study, and notes limitations in the literature including inconsistencies in the timing of screening and the cut-offs used to identify a positive case, limited use of prenatal depression screening, and exclusion of teenage mothers from studies.	2018	4/9 (AMSTAR rating from McMaster Health Forum)	1/10
Exploring remote measurement-based care (13)	Remote measurement-based care draws on principles of measurement-based care (where regular, standardized symptom screening is used to inform clinical decision-making), but uses technology to enable measurement outside of the clinical environment. Forty-two relevant papers were identified, based on 36 unique studies. Most studies used a single-group design, but 13 were randomized controlled trials. Depression, psychotic disorders, and substance use were the most common diagnoses, with most studies taking place in primary care. The most commonly used technologies were apps, text messages, and websites; in half of the studies, providers would automatically be alerted if symptoms deteriorated below a pre-defined threshold. Remote measurement-based care was generally used as one component of a multi-component intervention, along with in-person psychotherapy, self-guided interventions, or treatment as usual. Satisfaction and ease-of-use ratings were moderately high, with 77-87% of participants across three studies expressing satisfaction. Response rates were high, but found to decline over time, and ease-of-use ratings were high. Among 13 randomized controlled trials, seven found larger effects in the condition including remote measurement than the control condition. However, only three studies isolated the effect of remote measurement-based care from other intervention components. Two found no difference; one found that adding remote measurement to treatment as usual resulted in lower depression severity.	2018	4/10 (AMSTAR rating from McMaster Health Forum)	1/37
Equivalency of working alliance and symptom reduction between videoconferencing and face-to-face cognitive-behavioural therapy (or related modalities) (15)	Twelve studies were identified which reported measures of working alliance in videoconferencing cognitive-behavioural therapy (including third-wave cognitive-behavioural therapies). While all included studies found good working alliance in videoconferencing psychotherapy, this alliance was nonetheless inferior when compared to face-to-face. Outcomes were equivalent in videoconferencing and face-to-face psychotherapy. The authors call for more high-quality investigations into this topic, as well as studies in which videoconferencing psychotherapy is	2018	9/11 (AMSTAR rating from McMaster Health Forum)	1/12

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	delivered in the client's home (as the majority of included studies took place in a clinical building for research purposes).			
Trauma-focused therapy for military veterans with PTSD carried out by telephone or videoconferencing (16)	Forty-one studies were included. Thirty of these compared remote to face-to-face delivery. Forty of the included studies addressed videoconferencing, with just one addressing telephone-based therapy. Six studies addressed group interventions. In 23 of the 41 studies, participants received remote care at a local clinic rather than at home. Prolonged exposure, cognitive-processing therapy, and cognitive-behavioural therapy were the most common modalities used. Remote treatment was found to be non-inferior to face-to-face treatment with respect to treatment outcomes in 10 of 12 studies that addressed this comparison. Attendance, drop-out, and satisfaction were similar between remote and face-to-face interventions. Mixed results were found on comparisons of therapeutic alliance. While statistical differences were not found relating to managing patient anxiety during exposures, one study noted that patients reported apprehension around conducting exposures with remote support. Therapist fidelity to structured interventions was rated highly in three studies, with no difference when compared to face-to-face. Minor technical difficulties were noted in various studies. Authors' suggestions include training staff in technology use, and orienting both patients and staff to the technology prior to beginning treatment.	Year of last search not reported; published 2018	4/11 (AMSTAR rating from McMaster Health Forum)	1/41
Effectiveness of remote provision of psychological treatment for post-traumatic stress disorder (17)	Eleven studies were included in this review. Quality issues were noted including under-powered sample sizes and non-random allocation in most studies; only five of the studies used an intention-to-treat analysis. Six studies evaluated therapy provided via videoconferencing, while the rest looked at a combination of internet modules and remote therapist support. All interventions were based on cognitive-behavioural therapy. Across studies, interventions generated short-term improvements in a number of symptom domains. However, follow-up evaluations one to six months later found mixed outcomes. Five studies included process measures and found good working alliance and treatment satisfaction in video studies, although in one study participants' ratings of therapist presence were lower following exposure activities. Remote interventions were not compared to face-to-face interventions in this study.	2014	6/11 (AMSTAR rating from McMaster Health Forum)	2/13
Use of mobile phone contact to improve medication adherence and provide social support for individuals with severe mental illness (18)	This integrative review includes five articles about use of mobile phone contact to support medication adherence for individuals with severe mental illness. Two used text messaging, one used phone calls, and two used both. Four of the five studies had a control group. The majority of participants across studies had a diagnosis of schizophrenia. Mobile phone contact led to improved medication adherence, with participants achieving significant improvements over baseline relative to control groups. One study found that the effect was greater in participants living alone compared to those in assisted living.	2016	9/11 (AMSTAR rating from McMaster Health Forum)	0/5

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	The integrative review authors also argue that mobile phone contact provides participants with four types of social support: instrumental (through provision of phones and reminders); informational (through education about medications, symptoms, and coping skills); emotional (through supportive listening and problem-solving); and appraisal support (through monitoring participants' adherence and symptoms).			
Recommendations relating to eMental health care for people with psychotic disorders (19)	Thirteen studies were identified that pertain to eMental health interventions for psychotic disorders. Two randomized controlled trials and a previously-conducted review suggested that participation in unmoderated peer support forums was not associated with improvements to quality of life, distress or recovery. Online groups for relatives of people with schizophrenia were associated with high satisfaction, but minimal improvements in distress. The report recommends that online support groups for patients and caregivers should be moderated by healthcare professionals. This recommendation was graded level C, meaning it is based on conceptual or descriptive studies. Mobile-based interventions included in this review were largely not therapist-led, and so are not relevant to the present rapid synthesis. However, studies were included which found that remote monitoring of symptoms, with results provided to clinicians, lead to reduced hospitalizations.	Year of last search not reported; published 2016	5/10 (AMSTAR rating from McMaster Health Forum)	0/13
Mobile phone ownership and acceptability of mobile phone-based interventions for people with psychosis (20)	This systematic review considers rates of mobile phone ownership among people with psychosis, and acceptability of mobile phone-based interventions among this group. Fifteen papers, based on 12 studies, were identified. Overall phone ownership was 66%; considering only papers published in the two years before this review, the rate of mobile phone ownership was much higher at 81%. Two studies found that patients with schizophrenia or schizo-affective disorders had lower rates of mobile phone ownership than patients with other diagnoses. Four studies found younger patients were more likely to have phones, although a significant age effect was not observed in the meta-analysis. Two studies in the U.S. and one in the U.K. found that ethnicity did not predict mobile phone ownership among people with psychosis. One study found that participants with a higher level of education or income above \$10,000 were more likely to have a mobile phone. Sixty per cent of participants across studies were open to using mobile phones for symptom tracking, 56% for receiving information, 56% for appointment or medication reminders, and 51% for contact with healthcare professionals.	2015	5/11 (AMSTAR rating from McMaster Health Forum)	2/12
Acceptability of online and mobile interventions for people with severe mental illness (21)	This paper reviews 49 articles on the acceptability of online and mobile interventions for people with severe mental illness, including studies focusing on hypothetical acceptability and those assessing acceptability of actual interventions. Seven studies considered hypothetical acceptability. Hypothetical acceptability varied widely among studies. Interest in text and email-based support was not associated with age or other	2015	5/9 (AMSTAR rating from McMaster Health Forum)	1/49

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	demographic factors, with the exception of medication reminders for which there was higher support among younger participants. In two studies, participants preferred phone to either text or email contact; in two other studies, text was preferred to email. In studies of actual acceptability of mobile and online interventions, ratings of satisfaction ranged from moderate to high, with high ratings being most common. Satisfaction was not predicted by symptom severity. Key qualitative themes in the literature included: concerns about privacy and confidentiality; preference for including peer support; issues with technological functioning and technological literacy; and difficulties engaging when highly symptomatic.			
Digital interventions for caregivers of people with psychosis (22)	Nine studies were included in this review. Two were studies of the effectiveness of digital interventions, six addressed feasibility, acceptability, and usability, and one examined the function of participant communication. Three articles involved online multi-family group interventions, with components including psycho-education and a forum for peer discussion. One of these studies found high levels of satisfaction with the intervention and fewer patient admissions during the intervention year. Another found no differences in outcomes between the treatment and control arms. Two additional studies addressed family psycho-education provided via telepsychiatry, which was found to increase caregivers' knowledge. Telephone follow-up after in-person psycho-education for caregivers was associated with lower burnout and depression. A further study analyzed the content of an unmoderated online peer-support group for caregivers and found that participants provided updates about their experiences and supported each other. The review authors call for higher-quality studies designed to detect outcomes through experimental design and adequate statistical power. They label current knowledge on the subject as "preliminary."	2017	4/9 (AMSTAR rating from McMaster Health Forum)	0/11
Brief contact interventions for reducing suicidal behaviour and self-harm (23)	This meta-analysis considered three types of brief interventions targeting suicide, suicide attempts, and self-harm: telephone calls, letters or postcards, and crisis cards encouraging help-seeking. The authors note that these interventions include no psychotherapy and minimal psycho-education, are conducted according to a schedule, and are not necessarily carried out by a clinician. Twenty articles on 14 unique studies were identified. Most were randomized controlled trials. Follow-up times ranged from six months to 15 years. Six papers addressed telephone support, eight addressed letters or postcards, and the remainder addressed crisis cards. Odds of suicide attempts, self-harm, or completed suicide in groups receiving the intervention were lower, but this finding did not reach statistical significance. A significant reduction in the number of suicide	Year of last search not reported; published 2015	6/11 (AMSTAR rating from McMaster Health Forum)	0/20

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	or self-harm attempts was observed in a meta-analysis of the three studies for which such data was available (all of which used postcards).			
Enablers and barriers of implementing eMental health for mood disorders (24)	This review applies the RE-AIM (reach, effectiveness, adoption, implementation, and maintenance) framework to the implementation of eMental health for mood disorders in routine care. Forty-eight studies were included. Twenty-six of these addressed videoconferencing for mental healthcare, and 20 addressed internet-based interventions. Twenty studies used mixed methods and 16 were qualitative. Five studies, including both mixed methods and observational studies, were experimental. Determinants of practice were identified and grouped into six categories: “(1) acceptance of eMH by patients and service delivery staff, (2) appropriateness or clinical relevance of eMH, (3) engagement of participants in implementing and delivering eMH, (4) resources for implementing and delivering eMH, (5) work processes in delivering eMH, and (6) leadership in implementing and delivering eMH.” With respect to reach, key factors from a patient perspective included acceptability and appropriateness. Acceptability included issues of awareness of eMental health and usability. Appropriateness refers to the patient’s perception of whether eMental health is a good fit for their needs, and was influenced by patient-provider relationships. Meanwhile, engaging providers required supportive organizational policies and procedures as well as availability of appropriate technology. At an organizational level, reach was affected by availability of infrastructure, fit of eMental health with organizational processes including referral pathways and billing, and organizational culture. At the level of health systems, policy processes, availability of qualified staff, and collaboration across the system all affected reach. Similar factors to those affecting reach also affected adoption. Additional factors included staff awareness of eMental health as an option, and mechanisms and policies supporting collaboration and information sharing at a system level. Determinants of implementation included: staff acceptance of eMental health (which can be enhanced through training and education); availability of support for staff involved in implementation, for example a program coordinator; resources including staffing, funding, and infrastructure; leadership; and managerial support for balancing new programs with existing clinical demands. One study addressed maintenance from a user perspective and found that convenience maintained user engagement in eMental health. From a provider perspective, maintenance was facilitated by organizational norms. At the organizational level, factors affecting maintenance included funding, infrastructure, supporting structures and activities, and leadership. At a system level, relevant factors include community acceptance of eMental health, the plans of involved organizations, resources, and policies.	2015	4/9 (AMSTAR rating from McMaster Health Forum)	7/48

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Review of policy-relevant research on target demographics, facilitating uptake, and governance of e-mental healthcare in Australia (26)	This review focuses on policy-relevant research on target demographics, facilitating uptake, and governance of e-mental healthcare in Australia. It includes 30 studies, all completed in the Australian context. Twenty-eight of these were trials or surveys, and two were qualitative. With respect to target demographics, study participants' income was skewed towards middle- and high-income brackets, and education levels were high. Participants were also more likely to be female. These demographics reflect those opting into study participation and do not necessarily reflect the range of potential beneficiaries of e-mental healthcare. In terms of factors facilitating uptake, two studies found a preference for face-to-face over online therapies (in one study 63% of adults preferred face-to-face, compared to 7% preferring online; in another study, 58% of high school students preferred face-to-face, with 16% preferring online). However, young men were found in one study to prefer information-only websites to clinician-supported interventions. Lack of awareness of e-mental healthcare was a barrier in four studies. Findings for various other factors conflicted across studies: for instance, stigma, rural residence, and symptom severity were argued to facilitate uptake in some studies and to inhibit uptake in others. For other factors, the impact depended on patient perceptions. For instance, anonymity was a facilitator to those concerned about privacy, and a barrier to those who felt online services were depersonalized. No studies explicitly addressed policy-level factors in implementation. However, studies did call for training for service providers. Studies also noted participant and provider concerns about confidentiality and liability. Three studies commented on infrastructural issues, particularly in remote or Aboriginal and Torres Strait Islander communities. The review authors call for more policy-relevant research, noting that at present the literature on e-mental healthcare in Australia does not address questions of who may benefit, what level of uptake might be expected, or how policy can support implementation.	2015	7/9 (AMSTAR rating from McMaster Health Forum)	0/30
TeleMental Health (TMH) risks and benefits, standards of care, practice guidelines, reimbursement, and interstate practice issues pertinent to psychiatric nurses and consumers (25)	The number and characteristics of included studies was not reported. TeleMental Health (TMH) assessment and treatment services were demonstrated to be equal in efficacy to that provided in face-to-face encounters and preferred by some populations, such as older adults, children, adolescents, and many underserved ethnic/cultural groups. The superior outcomes of TMH included reducing missed appointments, improved access, reduced hospitalizations, and significant cost savings for defined populations. No adverse outcomes were identified among any patient populations, age, or mental health disorders using TMH. As TMH practice was increasingly recognized and widely accepted in mainstream mental health, multiple TMH practice guidelines and a toolkit were developed to provide a resource for standards of care. Some limitations in the reimbursement models for using TMH should be addressed, including: 1) privacy and confidentiality; 2) security; 3) provider credentialing for clinical privileges and	Last year searched not reported; published 2018		

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	licensing information across state lines; 4) liability coverage (i.e., malpractice insurance); and 5) reimbursement authorization (i.e., insurance policy, including the level and type of reimbursement). The general telemedicine practice standards were developed for identifying specific training for providers, minimum bandwidth, real-time interaction, and development of dedicated telemedicine billing specialists, which will ensure psychiatric advanced practice registered nurses (APRNs) can provide high-quality TMH services, and be cognizant of the additional requirement of laws, licensing, liability and regulations.			
Applications of tele-mental healthcare including associated technologies, advantages, and disadvantages (31)	This review included 25 articles. The types of included studies are not described. The review found that tele-mental healthcare has applications including remote client evaluation and symptom monitoring, online information provision, remote consultation, and synchronous and asynchronous psychotherapy. Design of tele-mental health programs should take into account patient engagement, sociocultural factors, learning and perceptual needs, practitioner skills and workload, and health-system context including regulations. Advantages of tele-mental healthcare are suggested, including improved access and flexibility, reduced costs, and clinical effectiveness. However, the review presents these findings without comparison to a different intervention, making them difficult to interpret. Disadvantages included the need for enhanced professional skills, access issues for some clients as a result of disability or lack of internet, and challenges related to legal and regulatory frameworks, insurance reimbursement, and privacy.	Searched up until 2017	3/9 (AMSTAR rating from McMaster Health Forum)	0

Appendix 2: Summary of findings from systematic reviews about virtual peer and group-based mental health and addictions care

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Recommendations relating to eMental healthcare for people with psychotic disorders (19)	Thirteen studies were identified that pertain to eMental health interventions for psychotic disorders. Two randomized controlled trials and a previously-conducted review suggested that participation in unmoderated peer-support forums was not associated with improvements to quality of life, distress or recovery. Online groups for relatives of people with schizophrenia were associated with high satisfaction but minimal improvements in distress. The report recommends that online support groups for patients and caregivers should be moderated by healthcare professionals. This recommendation was graded level C, meaning it is based on conceptual or descriptive studies. Mobile phone-based interventions included in this review were largely not therapist-led and so are not relevant to the present rapid synthesis. However, studies were included which found that remote monitoring of symptoms, with results provided to clinicians, lead to reduced hospitalizations.	Year of last search not reported; published 2016	5/10 (AMSTAR rating from McMaster Health Forum)	0/13
Digital interventions for caregivers of people with psychosis (22)	Nine studies were included in this review. Two were studies of the effectiveness of digital interventions, six addressed feasibility, acceptability and usability, and one examined the function of participant communication. Three articles involved online multi-family group interventions, with components including psycho-education and a forum for peer discussion. One of these studies found high levels of satisfaction with the intervention and fewer patient admissions during the intervention year. Another found no differences in outcomes between the treatment and control arms. Two additional studies addressed family psycho-education provided via tele-psychiatry, which was found to increase caregivers' knowledge. Telephone follow-up after in-person psycho-education for caregivers was associated with lower burnout and depression. A further study analyzed the content of an unmoderated online peer-support group for caregivers and found that participants provided updates about their experiences and supported each other. The review authors call for higher-quality studies designed to detect outcomes through experimental design and adequate statistical power. They label current knowledge on the subject as "preliminary."	2017	4/9 (AMSTAR rating from McMaster Health Forum)	0/11
Feasibility, acceptability, effectiveness and implementation of videoconferencing-based groups, delivered to patients' homes, for patient education or social or mental health support (27)	This review includes 17 studies of home-based videoconferencing groups. Six studies targeted caregivers, five targeted people with chronic diseases, and one each targeted new parents, people with traumatic brain injuries, people with obesity, and people not reaching public-health lifestyle guidelines. Nine groups were psycho-educational, two were support groups, and the remainder provided education on a specific condition. Seven studies considered videoconferencing groups alone while the remainder considered groups as part of a multicomponent intervention. All groups were facilitated by health professionals; in three studies, groups were facilitated by a	2016	9/10 (AMSTAR rating from McMaster Health Forum)	6/17

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	professional for 10-12 weeks then transitioned to a self-help, member-led format. Desktop computers were the most commonly used device. Most studies reported that participants found videoconferencing easy to use or were able to overcome initial difficulties. Most studies included information technology support to assist participants, and this was argued to be a vital component. All but one study found that participants found videoconferencing groups to be satisfactory, positive, or very positive. Attendance rates ranged from 66% to 94%; one comparative study found lower attendance and engagement in video groups compared to face-to-face. In groups that transitioned from professional to peer facilitation, attendance dropped in the member-led phase. Qualitative studies suggest that participants in videoconferencing groups were able to engage in discussions of sensitive topics. Accessing the group from home was considered a benefit in all but one study, and concerns over privacy related to accessing the group from home were not noted in any studies. Videoconferencing groups were found to produce equivalent outcomes to face-to-face groups in two studies, and to usual care in one study. Four studies found significant improvement in mental health symptoms obtained through videoconferencing groups, and six found improvement on scores relating to social isolation and social support.			
Effects, feasibility and acceptability of digital peer support for adults with schizophrenia-spectrum disorders or bipolar disorder (29)	Thirty studies describing 24 digital peer interventions were included in this review. Fourteen studies looked at informal peer-to-peer networks, thirteen of which included peer networks along with other intervention components including psycho-education, weight management, parenting skills, self-management, or social-cognition training. Of these 13 studies, 11 used a pre-post design. These studies found statistically significant improvements in a range of measures including psychiatric symptoms, cardiovascular fitness, and knowledge, among other outcomes, with attrition rates varying widely. A further 11 studies considered peer-delivered, technology-supported interventions. Interventions in this category included apps, text messaging, and web-based support, which in four studies were complemented by in-person (rather than virtual) peer support. Studies used a wide range of methodologies and measured an array of outcomes. Statistically significant improvements were found in some studies for shared decision-making, engagement in outpatient services, self-management, and self-reported symptoms. However, some studies found null results for quality of life, self-reported treatment involvement, distress, and patient satisfaction. Qualitative findings point to both user satisfaction and frustration with technology. Three studies explored asynchronous interventions including websites, email and videos. Qualitative and quantitative evidence suggested benefits for recovery, while a comparative study found no difference between asynchronous peer-supported interventions and a psycho-educational website with respect to symptoms or satisfaction among other outcomes. One study	2019	6/9 (AMSTAR rating from McMaster Health Forum)	0/30

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	of synchronous telephone support complementing a web-based intervention targeting physical health found high rates of attrition.			
Effects of internet-delivered early interventions for individuals exposed to traumatic events (28)	Seven studies were identified which described internet-delivered early intervention for people exposed to traumatic events. Three of these had a group or peer component: one was delivered via laptops at bedside in hospital and included access to an online community forum; one involved text messages from peers encouraging use of a website; and a third involved an online peer-support forum. Two of these studies, one of which was a controlled study, found reductions in PTSD symptoms. Both of these were studies targeted at those with sub-threshold symptoms. Studies targeting all those exposed to trauma regardless of symptoms, including a study with a peer component, did not find that interventions outperformed controls. The authors call for higher-quality studies into internet-delivered interventions following trauma exposure.	2017	5/9 (AMSTAR rating from McMaster Health Forum)	0/7
Identifies engagement-promoting strategies used in online substance-use interventions, and their effects (30)	Fifteen studies were identified that compared engagement-promoting strategies in online substance-use interventions. Six of these used social support strategies; social support was peer-led in three studies, therapist-led in one, and a combination of peer- and therapist-led in two. Other engagement-promoting strategies addressed in this review include tailoring, reminders, delivery strategies and incentives. Results for the effectiveness of social support in promoting engagement were mixed. An online social bulletin board was associated with increased visit duration, but not an increase in pages visited. In a four-arm trial, the arm with an online social support community had greater engagement; however, this arm also included a cognitive-behavioural course that the review authors argue may have moderated the effect. In another study, a peer- and therapist-led support group did not offer additional benefits over email reminders with respect to engagement.	2016	6/10 (AMSTAR rating from McMaster Health Forum)	0/15

Appendix 3: Ongoing CIHR rapid syntheses relating to virtual mental health care for adult populations

Title	Principal investigators	Institution
<u>Examining the Efficacy of Evidence-Based Psychosocial Interventions for Schizophrenia-Spectrum Disorders Delivered Through Virtual Care</u>	Best, Michael W Arbour, Simone C Bowie, Christopher R Grossman, Michael Wang, Linbo	University of Toronto
<u>COVID-19 Physical Distancing and Post-Traumatic Stress Injury: Utilization of Digital Health and Remote Mental Health Services for Military, Veterans, and Public Safety Personnel</u>	Bremault-Phillips, Suzette C Clelland, Steven R Snaterse, Mark Agyapong, Vincent O Ferguson-Pell, Martin W	University of Calgary
<u>Knowledge synthesis for mechanistic and targeted in-person and digital social-connection intervention for wellness and resilience in older adults in pandemic context and beyond</u>	Dubé, Laurette	McGill University
<u>Depression In community Residing Elders (DIRE): A Rapid Review and Network Meta-Analysis of Depression Telemedicine Treatments for Older Adults Living in the Community</u>	Goodarzi, Zahra S Holroyd-Leduc, Jayna M Watt, Jennifer A	University of Calgary
<u>Harnessing digital mental health to improve equity in mental health care in the context of COVID-19: Needs, best-practices and opportunities in the Asia Pacific region</u>	Lam Raymond W Michalak, Erin Murphy, Jill	University of British Columbia
<u>Remote cognitive assessment in severe mental illness: A scoping review</u>	Lepage, Martin Lavigne, Katie M Sauvé, Geneviève	CIUSSS de l'Ouest-de-l'Île-de-Montréal-Douglas Hospital
<u>A Review of Best Evidence and Patient Preference-based Options for Online/Virtual Care of Bone/Joint and Muscle Problems That Cause Chronic Pain and Distress</u>	Macdermid, Joy C	University of Western Ontario
<u>Mobilizing Knowledge on the Use of Virtual Care Interventions to Provide Trauma-Focused Treatment to Individuals and Families At-Risk of Domestic Violence During COVID-19</u>	Montesanti, Stephanie R Silverstone, Peter H	University of Alberta
<u>A systematic review on the effectiveness of virtual sleep intervention delivery to improve sleep and mental health outcomes in the post-secondary student population</u>	Papaconstantinou Efrosini A Cote, Pierre Martin, Krystle	University of Ontario Institute of Technology

Title	Principal investigators	Institution
<u>Digital Health Solutions to Support Women with Addiction During COVID-19: Applying a Gender- and Trauma-Informed Lens</u>	Quilty, Lena C Agic, Branka Buckley, Leslie	Centre for Addiction and Mental Health
<u>Digital Interventions to Support Population Mental Health During and After the COVID-19 Pandemic: A Knowledge Synthesis</u>	Strudwick, Gillian Crawford, Allison Sackalingam, Sanjeev	Centre for Addiction and Mental Health

Appendix 4: Articles excluded at the final round of reviewing

[Effectiveness of online and mobile telephone applications \('apps'\) for the self-management of suicidal ideation and self-harm: A systematic review and meta-analysis](#)

[Web-based interventions for prevention and treatment of perinatal mood disorders: A systematic review](#)

[Electronic interventions for alcohol misuse and alcohol use disorders: A systematic review](#)

[Very-brief, web-based interventions for reducing alcohol use and related problems among college students: A review](#)

[Digital health technology for use in patients with serious mental illness: A systematic review of the literature](#)

[The benefit of web- and computer-based interventions for stress: A systematic review and meta-analysis](#)

[mHealth based interventions for the assessment and treatment of psychotic disorders: A systematic review](#)

[Internet-based cognitive and behavioural therapies for post-traumatic stress disorder \(PTSD\) in adults](#)

[Computer-assisted cognitive-behavior therapy for depression in primary care: Systematic review and meta-analysis](#)

[Mobile technology for medication adherence in people with mood disorders: A systematic review](#)

[Toward the design of evidence-based mental health information systems for people with depression: A systematic literature review and meta-analysis](#)

[Computer therapy for anxiety and depression disorders is effective, acceptable and practical health care: An updated meta-analysis](#)

[Efficacy of cognitive behavioural therapy delivered over the internet for depressive symptoms: A systematic review and meta-analysis](#)

[The use of technology in the clinical care of depression: An evidence map](#)

[Economic evaluations of internet- and mobile-based interventions for the treatment and prevention of depression: A systematic review](#)

[The efficacy of smartphone-based mental health interventions for depressive symptoms: A meta-analysis of randomized controlled trials](#)

[Efficacy of online lifestyle interventions targeting lifestyle behaviour change in depressed populations: A systematic review](#)

[Serious games for mental health: Are they accessible, feasible, and effective? A systematic review and meta-analysis](#)

[Implementations of virtual reality for anxiety-related disorders: Systematic review](#)

[A systematic review and meta-analysis of applicability of web-based interventions for individuals with depression and quality of life impairment](#)

[Mobile apps for bipolar disorder: A systematic review of features and content quality](#)

[Meta-analysis of technology-assisted interventions for social anxiety disorder](#)

[Internet-based Cognitive Behavioral Therapy for insomnia \(ICBT-i\) improves comorbid anxiety and depression - A meta-analysis of randomized controlled trials](#)

[Depression awareness and self-management through the internet: Protocol for an internationally standardized approach](#)

[The relationship between persuasive technology principles, adherence and effect of web-based interventions for mental health: A meta-analysis](#)

[eHealth as the next-generation perinatal care: An overview of the literature](#)

[Internet- and mobile-based aftercare and relapse prevention in mental disorders: A systematic review and recommendations for future research](#)

[The use of mobile apps and SMS messaging as physical and mental health interventions: Systematic review](#)

[A systematic assessment of smartphone tools for suicide prevention](#)

[Internet interventions for mental health in university students: A systematic review and meta-analysis](#)

[Mobile technology-based interventions for adult users of alcohol: A systematic review of the literature](#)

[Computer- or web-based interventions for perinatal mental health: A systematic review](#)

[Mental health smartphone apps: Review and evidence-based recommendations for future developments](#)

[Is cognitive behavioural therapy effective in reducing suicidal ideation and behaviour when delivered face-to-face or via e-health? A systematic review and meta-analysis](#)

[Can computer-assisted cognitive remediation improve employment and productivity outcomes of patients with severe mental illness? A meta-analysis of prospective controlled trials](#)

[Web-based interventions for comorbid depression and chronic illness: A systematic review](#)

[Internet-based interventions for posttraumatic stress: A meta-analysis of randomized controlled trials](#)

[Efficacy of internet-delivered cognitive-behavioral therapy for insomnia - A systematic review and meta analysis of randomized controlled trials](#)

[Online and mobile technologies for self-management in bipolar disorder: A systematic review](#)

[A systematic review of the effectiveness of mobile apps for monitoring and management of mental health symptoms or disorders](#)

[Smartphone apps for the treatment of mental disorders: Systematic review](#)

[The efficacy of computerized interventions to reduce cannabis use: A systematic review and meta-analysis](#)

[Internet- and mobile-based interventions for anxiety disorders: A meta-analytic review of intervention components](#)

[Web-based cognitive bias intervention for psychiatric disorders: Protocol for a systematic review](#)

[Novel technology as platform for interventions for caregivers and individuals with severe mental health illnesses: A systematic review](#)

[Systematic review with meta-analysis: Online psychological interventions for mental and physical health outcomes in gastrointestinal disorders including irritable bowel syndrome and inflammatory bowel disease](#)

[Evaluating the role of digital intervention design in treatment outcomes and adherence to eTherapy programs for eating disorders: A systematic review and meta-analysis](#)

[A systematic review of mHealth interventions for the support of eating disorders](#)

[Technology-enhanced suicide prevention interventions: A systematic review](#)

[Crisis interventions in online psychological counseling](#)

[Mobile phone messaging for illicit drug and alcohol dependence: A systematic review of the literature](#)

[Use of mobile technologies in patients with psychosis: A systematic review](#)

[A systematic review of the evidence supporting mobile- and internet-based psychological interventions for self-harm](#)

[The effectiveness and cost-effectiveness of e-health interventions for depression and anxiety in primary care: A systematic review and meta-analysis](#)

[Therapist-supported internet cognitive behavioural therapy for anxiety disorders in adults](#)

[Internet-delivered cognitive behavioral therapy for panic disorder with or without agoraphobia: A systematic review and meta-analysis](#)

[Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: An updated systematic review and meta-analysis](#)

[A systematic review and meta-analysis of e-mental health interventions to treat symptoms of posttraumatic stress](#)

[Blending face-to-face and internet-based interventions for the treatment of mental disorders in adults: Systematic review](#)

[Effectiveness of internet-based interventions for the prevention of mental disorders: A systematic review and meta-analysis](#)

[eHealth interventions for the prevention of depression and anxiety in the general population: A systematic review and meta-analysis](#)

[Effectiveness of online interventions in preventing depression: A protocol for systematic review and meta-analysis of randomised controlled trials](#)

[Effectiveness of Internet- and mobile-based psychological interventions for the prevention of mental disorders: a systematic review and meta-analysis protocol](#)

[eHealth intervention for problematic internet use \(PIU\)](#)

[Mobile phone text messaging and app-based interventions for smoking cessation](#)

[Real-time video counselling for smoking cessation](#)

[Internet-based programs incorporating behavior change techniques are associated with increased smoking cessation in the general population: A systematic review and meta-analysis](#)

[Identifying effective components for mobile health behaviour change interventions for smoking cessation and service uptake: protocol of a systematic review and planned meta-analysis](#)

[Impact of tobacco quitlines on smoking cessation in persons with mental illness: A systematic review](#)