

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

Virtual Health Care for Adults with Schizophrenia and/or Psychosis: Clinical Effectiveness and Guidelines

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Research Questions

1. What is the clinical effectiveness of virtual health care for adults diagnosed with schizophrenia and/or psychosis?
2. What are the evidence-based guidelines regarding the use of virtual health care for adults diagnosed with schizophrenia and/or psychosis?

Key Findings

One systematic review and 17 randomized controlled trials were identified regarding the clinical effectiveness of virtual health care for adults diagnosed with schizophrenia and/or psychosis. One evidence-based guideline was identified regarding the use of virtual health care for adults diagnosed with schizophrenia and/or psychosis.

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, PsycInfo, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were virtual health care and schizophrenia or psychosis. Search filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, network meta-analyses, guidelines, randomized controlled trials, or controlled clinical trials. The search was also limited to English language documents published between January 1, 2015 and September 14, 2020. Internet links were provided, where available.

Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in Table 1. Full texts of study publications were not reviewed. Open access full-text versions of evidence-based guidelines were reviewed when abstracts were not available.

Table 1: Selection Criteria

Population	Q1 and 2: Adults diagnosed with schizophrenia and/or psychosis
Intervention	Q1 and 2: Virtual health care modalities (i.e., videoconferencing, digital messaging, online programming, apps, wearable and sensor technologies, artificial intelligence, virtual reality) used for virtual delivery of mental health services (e.g., online therapy, peer support, group treatment and support, online skill building)
Comparator	Q1: In-person delivery of mental health services (e.g., in-person therapy, peer support, group treatment and support, skill building) Q2: Not applicable
Outcomes	Q1: Severity of schizophrenia and/or psychosis (e.g., symptom severity, level of functioning, quality of life, hospitalization, medication/treatment adherence) Q2: Guidelines and recommendations regarding the use of virtual health care modalities used for virtual delivery of mental health services (e.g., recommended virtual health care interventions)

Results

One systematic review¹ and 17 randomized controlled trials²⁻¹⁸ were identified regarding the clinical effectiveness of virtual health care for adults diagnosed with schizophrenia and/or psychosis. One evidence-based guideline¹⁹ was identified regarding the use of virtual health care for adults diagnosed with schizophrenia and/or psychosis. No health technology assessments were identified regarding the clinical effectiveness of virtual health care for adults diagnosed with schizophrenia and/or psychosis.

Additional references of potential interest that did not meet the inclusion criteria are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

Virtual Reality – Unclear Level of Care

1. Aali G, Kariotis T, Shokrane F. Avatar Therapy for people with schizophrenia or related disorders. *Cochrane Database Syst Rev*. 2020 May 08;5(5):CD011898. [PubMed: PM32413166](#)

Randomized Controlled Trials

Digital Messaging

Non-Primary Care Setting

2. Granholm E, Holden JL, Dwyer K, Link P. Mobile-assisted cognitive-behavioral social skills training in older adults with schizophrenia. *J Behavioral Cognitive Therapy*. 2020 Apr;30(1):13-21.
3. Valimaki M, Kannisto KA, Vahlberg T, Hatonen H, Adams CE. Short text messages to encourage adherence to medication and follow-up for people with psychosis (Mobile.Net): randomized controlled trial in Finland. *J Med Internet Res*. 2017 Jul 12;19(7):e245. [PubMed: PM28701292](#)

Unclear Level of Care

4. Cullen BA, Rodriguez K, Eaton WW, Mojtabei R, Von Mach T, Ybarra ML. Clinical outcomes from the texting for relapse prevention (T4RP) in schizophrenia and schizoaffective disorder study. *Psychiatry Res*. 2020 Jul 29;292:113346. [PubMed: PM32750572](#)
5. Xu DR, Xiao S, He H, et al. Lay health supporters aided by mobile text messaging to improve adherence, symptoms, and functioning among people with schizophrenia in a resource-poor community in rural China (LEAN): A randomized controlled trial. *PLoS*

Med. 2019 Apr;16(4):e1002785.

[PubMed: PM31013275](#)

Virtual Reality

Non-Primary Level of Care

6. Craig TK, Rus-Calafell M, Ward T, et al. AVATAR therapy for auditory verbal hallucinations in people with psychosis: a single-blind, randomised controlled trial. *Lancet Psychiatry*. 2018 Jan;5(1):31-40.
[PubMed: PM29175276](#)
7. Pot-Kolder RMC, Geraets CNW, Veling W, et al. Virtual-reality-based cognitive behavioural therapy versus waiting list control for paranoid ideation and social avoidance in patients with psychotic disorders: a single-blind randomised controlled trial. *Lancet Psychiatry*. 2018 Mar;5(3):217-226.
[PubMed: PM29429948](#)

Unclear Level of Care

8. Geraets CNW, Snippe E, van Beilen M, et al. Virtual reality based cognitive behavioral therapy for paranoia: Effects on mental states and the dynamics among them. *Schizophr Res*. 2020 Jun 08;S0920-9964(20)30301-7.
[PubMed: PM32527676](#)
9. du Sert OP, Potvin S, Lipp O, et al. Virtual reality therapy for refractory auditory verbal hallucinations in schizophrenia: A pilot clinical trial. *Schizophr Res*. 2018 Jul;197:176-181.
[PubMed: PM29486956](#)

Smartphone App – Non-Primary Level of Care

10. Lewis S, Ainsworth J, Sanders C, et al. Smartphone-enhanced symptom management in psychosis: open, randomized controlled trial. *J Med Internet Res*. 2020 Aug 13;22(8):e17019.
[PubMed: PM32788150](#)
11. Tessier A, Dupuy M, Bayle FJ, et al. Brief interventions for improving adherence in schizophrenia: A pilot study using electronic medication event monitoring. *Psychiatry Res*. 2020 Mar;285:112780.
[PubMed: PM31954541](#)

Online Programming

Non-Primary Care

12. Lado-Codecido M, Mendez Perez C, Mateos R, Olivares JM, Garcia Caballero A. Improving emotion recognition in schizophrenia with "VOICES": An on-line prosodic self-training. *PLoS ONE*. 2019;14(1):e0210816.
[PubMed: PM30682067](#)
13. Thomas ML, Bismark AW, Joshi YB, et al. Targeted cognitive training improves auditory and verbal outcomes among treatment refractory schizophrenia patients mandated to residential care. *Schizophr Res*. 2018 Dec;202:378-384.
[PubMed: PM30055883](#)

14. Gottlieb JD, Gidugu V, Maru M, et al. Randomized controlled trial of an internet cognitive behavioral skills-based program for auditory hallucinations in persons with psychosis. *Psychiatr Rehabil J*. 2017 Sep;40(3):283-292.
[PubMed: PM28517948](#)
15. Iwata K, Matsuda Y, Sato S, et al. Efficacy of cognitive rehabilitation using computer software with individuals living with schizophrenia: A randomized controlled trial in Japan. *Psychiatr Rehabil J*. 2017 Mar;40(1):4-11.
[PubMed: PM28182471](#)
16. Gomar JJ, Valls E, Radua J, et al. A multisite, randomized controlled clinical trial of computerized cognitive remediation therapy for schizophrenia. *Schizophr Bull*. 2015 Nov;41(6):1387-1396.
[PubMed: PM26006264](#)

Unclear Level of Care

17. Zhu X, Fan H, Fan F, et al. Improving social functioning in community-dwelling patients with schizophrenia: a randomized controlled computer cognitive remediation therapy trial with six months follow-up. *Psychiatry Res*. 2020 May;287:112913.
[PubMed: PM32203751](#)
18. Fan F, Zou Y, Tan Y, Hong LE, Tan S. Computerized cognitive remediation therapy effects on resting state brain activity and cognition in schizophrenia. *Sci Rep*. 2017 Jul 06;7(1):4758.
[PubMed: PM28684776](#)

Guidelines and Recommendations

19. Australian clinical guidelines for early psychosis, 2nd edition update. Melbourne (AU): Orygen, The National Centre of Excellence in Youth Mental Health; 2016:
<https://www.orygen.org.au/Campus/Expert-Network/Resources/Free/Clinical-Practice/Australian-Clinical-Guidelines-for-Early-Psychosis/Australian-Clinical-Guidelines-for-Early-Psychosis.aspx?ext>. Accessed 2020 Sep 17.
See: Recommendations - Rural and remote populations (p. 105)

Appendix — Further Information

Systematic Reviews & Meta-Analyses

Mixed Population

Online Programming

20. Basit SA, Mathews N, Kunik ME. Telemedicine interventions for medication adherence in mental illness: A systematic review. *Gen Hosp Psychiatry*. 2020 Jan-Feb;62:28-36.
[PubMed: PM31775066](#)

Unclear Comparator

Virtual Reality

21. Bisso E, Signorelli MS, Milazzo M, et al. Immersive virtual reality applications in schizophrenia spectrum therapy: a systematic review. *Int J Environ Res Public Health*. 2020 Aug 22;17(17):E6111.
[PubMed: PM32842579](#)

Digital Messaging

22. D'Arcey J, Collaton J, Kozloff N, Voineskos AN, Kidd SA, Foussias G. The use of text messaging to improve clinical engagement for individuals with psychosis: systematic review. *JMIR Ment Health*. 2020 Apr 02;7(4):e16993.
[PubMed: PM32238334](#)

Wearable and Sensor Technologies

23. Yaegashi H, Kirino S, Remington G, Misawa F, Takeuchi H. Adherence to oral antipsychotics measured by electronic adherence monitoring in schizophrenia: a systematic review and meta-analysis. *CNS Drugs*. 2020 Jun;34(6):579-598.
[PubMed: PM32219681](#)

Apps

24. Camacho E, Levin L, Torous J. Smartphone apps to support coordinated specialty care for prodromal and early course schizophrenia disorders: systematic review. *J Med Internet Res*. 2019 Nov 12;21(11):e16393.
[PubMed: PM31714250](#)

Online Programming

25. Prikken M, Konings MJ, Lei WU, Begemann MJH, Sommer IEC. The efficacy of computerized cognitive drill and practice training for patients with a schizophrenia-spectrum disorder: A meta-analysis. *Schizophr Res*. 2019 Feb;204:368-374.
[PubMed: PM30097278](#)
26. Valimaki M, Athanasopoulou C, Lahti M, Adams CE. Effectiveness of social media interventions for people with schizophrenia: a systematic review and meta-analysis. *J Med Internet Res*. 2016 Apr 22;18(4):e92.
[PubMed: PM27105939](#)

Randomized Controlled Trials

Mixed Intervention

Apps

27. Lisinge E. Improving medication adherence in patients diagnosed with schizophrenia using cell phone apps in addition to attending focus group therapy [dissertation]. Irvine (CA): Brandman University; 2019.

Digital Messaging

28. Flaherty LR, Daniels K, Luther J, Haas GL, Kasckow J. Reduction of medical hospitalizations in veterans with schizophrenia using home telehealth. *Psychiatry Res.* 2017 Sep;255:153-155.
[PubMed: PM28550756](#)

Online Programming

29. Lindenmayer JP, Khan A, McGurk SR, et al. Does social cognition training augment response to computer-assisted cognitive remediation for schizophrenia? *Schizophr Res.* 2018 Nov;201:180-186.
[PubMed: PM29910120](#).
30. Marono Souto Y, Vazquez Campo M, Diaz Llenderozas F, Rodriguez Alvarez M, Mateos R, Garcia Caballero A. Randomized clinical trial with e-MotionalTraining^R 1.0 for social cognition rehabilitation in schizophrenia. *Front Psychiatry.* 2018;9:40.
[PubMed: PM29535646](#)
31. Reeder C, Huddy V, Cella M, et al. A new generation computerised metacognitive cognitive remediation programme for schizophrenia (CIRCuiTS): a randomised controlled trial. *Psychol Med.* 2017 Sep 04;47(15):1-11.
[PubMed: PM28866988](#)
32. Byrne LK, Pan L, McCabe M, Mellor D, Xu Y. Assessment of a six-week computer-based remediation program for social cognition in chronic schizophrenia. *Shanghai Arch Psychiatry.* 2015 Oct;27(5):296-306.
[PubMed: PM26977127](#)

Unclear Comparator

Online Programming

33. Tan S, Zhu X, Fan H, et al. Who will benefit from computerized cognitive remediation therapy? Evidence from a multisite randomized controlled study in schizophrenia. *Psychol Med.* 2020 Jul;50(10):1633-1643.
[PubMed: PM31298171](#)
34. Garcia-Fernandez L, Cabot-Ivorra N, Rodriguez-Garcia V, et al. Computerized cognitive remediation therapy, REHACOM, in first episode of schizophrenia: A randomized controlled trial. *Psychiatry Res.* 2019 Nov;281:112563.
[PubMed: PM31525673](#)
35. Gulkesen KH, Isleyen F, Cinemre B, Samur MK, Sen Kaya S, Zayim N. A web-based game for teaching facial expressions to schizophrenic patients. *Appl Clin Inform.* 2017

Jul 12;8(3):719-730.

[PubMed: PM28696479](#)

Unclear Outcomes for Comparator Group

Online Programming

36. Kasckow J, Gao S, Hanusa B, et al. Telehealth monitoring of patients with schizophrenia and suicidal ideation. *Suicide Life Threat Behav.* 2015 Oct;45(5):600-611.

[PubMed: PM25688921](#)

Guidelines and Recommendations – Alternative Population

37. VA/DoD clinical practice guideline for the assessment and management of patients at risk for suicide. Washington (DC): U.S. Department of Veterans Affairs; 2019:

<https://www.healthquality.va.gov/guidelines/MH/srb/VADoDSuicideRiskFullCPGFinal5088919.pdf>. Accessed 2020 Sep 17.

See: *Recommendation no. 17 “Discussion” (p. 49)*

Additional Information

38. Evans C, Bullock HL, Wilson MG, Lavis JN. Rapid synthesis: The effectiveness of virtual care for adults with mental health and/or addictions issues. Hamilton (ON): McMaster Health Forum; 2020: <https://www.mcmasterforum.org/docs/default-source/product-documents/rapid-responses/assessing-the-effectiveness-of-virtual-care-for-adults-with-mental-health-and-or-addictions-issues.pdf>. Accessed 2020 Sep 17.

See: *Severe Mental Illness (p. 7), study #3 (p. 17), study #1 (p. 18), study #1 (p. 23), study #1 (p. 24)*

39. Best MW. CIHR knowledge synthesis: examining the efficacy of evidence-based psychosocial interventions for schizophrenia-spectrum disorders delivered through virtual care. Toronto (ON): University of Toronto, TIP Research Lab; 2020: <https://cihr-irsc.gc.ca/e/documents/Best-Initial-Knowledge-Synthesis-2020-06-22.pdf>. Accessed 2020 Sep 17.