BEST
in Mental Health
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Best Evidence Summaries of Topics in Mental Healthcare

BEST *in* MH *clinical question-answering service*

Question

In adults with Schizophrenia, how effective are virtual reality interventions in improving patient outcomes?

Clarification of question using *PICO* structure

Patients: Adults with Schizophrenia
Intervention: Virtual reality interventions
Comparator: Any/no other interventions
Outcome: Improving patient outcomes

Plain language summary

There is limited high quality evidence available to determine whether virtual reality interventions are effective in improving symptoms of schizophrenia. More rigorous trials are needed to help understand this area further.

Clinical and research implications

No definite clinical implications may be made based on the current evidence. The authors of a systematic review have suggested that if virtual reality is used, 'the experimental nature of the intervention should be clearly explained'. The authors also stated that more high-quality studies are needed to evaluate this novel intervention for people with schizophrenia.

What does the evidence say?

Number of included studies/reviews (number of participants)

One Cochrane systematic review met the inclusion criteria for this BEST summary (Välimäki et al. 2014).

Main findings

The aim of this systematic review was to investigate the effectiveness of virtual reality in supporting treatment compliance in people with serious mental illness. Searches were conducted in September 2013. Three short-term RCTs (ranging from five to 12 weeks) met the inclusion criteria, with a total of 156 participants.

Five outcomes were evaluated in RCTs included in the systematic review. No significant differences were observed between patients who received a virtual reality intervention plus standard care versus standard care for cognitive functioning (1 RCT, n = 27, MD average score on Cognistat: 4.67, CI -1.76 to 11.10), social skills (1 RCT, n = 64, MD average score on Social Problem Solving Inventory – Revised: -2.30 CI -8.13 to 3.53), compliance (3 RCTs, n = 156, RD loss to follow-up: 0.02 CI, -0.08 to 0.12) or acceptability of intervention (2 RCTs, n = 92, RD 0.05 CI -0.09 to 0.19). Satisfaction with treatment, reported as "interest in training", was significantly better for the virtual reality group compared to the usual care group (1 RCT, n = 64, MD 6.00, CI 1.39 to 10.61).

Authors' conclusions

The authors concluded that "there is no clear good quality evidence for or against using virtual reality for treatment compliance among people with serious mental illness."

Reliability of conclusions/Strength of evidence

This systematic review was well-conducted. The authors of the review considered that all of the evidence was considered to be of low quality, so that their conclusions accurately reflect the limited data available.

What do guidelines say?

Nice guidelines do not comment on virtual reality interventions for schizophrenia.

3

Date question received: 09/05/2016
Date searches conducted: 17/05/2016
Date answer completed: 17/06/2016

References

Systematic reviews

Välimäki, M., Hätönen, HM., Lahti, ME., Kurki, M., Hottinen, A., Metsäranta, K., Riihimäki, T., Adams, CE. (2014) Virtual Reality for Treatment Compliance for People with Serious Mental Illness (Review). *Cochrane Database of Systematic Reviews,* 10.

Results

Systematic reviews

Author (year)	Search date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
Välimäki et al (2014)	17th September 2013	*Participants*: Adults or older adults with a diagnosis of schizophrenia or related disorder, varied from inpatient hospital settings to long-stay care units. *Intervention*: All three included studies used virtual reality programmes to deliver skills training sessions. *Comparator*: Standard care; usual program and VR programme three months later; verbal, writing, picture and video supplies as simulators of the scenes and social skills training therapists; work simulated workshops in the occupational therapy department. *Outcome*: Compliance, mental state, cognitive functioning, social functioning, quality of life, satisfaction with treatment, acceptability of intervention. *Study design*: Randomised controlled trials were eligible for inclusion.	3 studies (156 participants)	**Cognitive functioning**: One study (n = 27) found no difference between the groups on average Cognistat scores (MD 4.67, CI -1.76 to 11.10). **Social skills:** One study (n = 64) reported on average endpoint change scores in specific skills (assertiveness, relationship change, social behaviour, social problem solving), but found no statistically significant difference between the groups (MD -2.30, CI -8.13 to 3.53). **Compliance:** Three trials (n = 156) reported no difference between the groups in loss to follow-up (RD 0.02, CI -0.08 to 0.12). **Satisfaction with treatment**: One study (n = 64) found a significant difference in favour of the virtual reality group for an "interest in training" (MD 6.00,	Low

				CI 1.39 to 10.61), and in applying the learned skills into specific social knowledge (MD 5.10, CI 1.03 to 9.17). **Acceptability of the intervention**: Two studies (n = 92) reported on the acceptability of the intervention (based on leaving the study early for any reason), and no significant differences were observed between the groups for this outcome (RD 0.05, CI -0.09 to 0.19). The authors reported that no data were reported for mental state, insight, behaviour, quality of life, costs, service utilisation, or adverse effects.	

Risk of bias

Systematic reviews

Author (year)	RISK OF BIAS				
	Inclusion criteria	Searches	Review process	Quality assessment	Synthesis
Välimäki et al (2014)	☺	☺	☺	☺	☺

Search details

Source	Search Strategy	Number of hits	Relevant evidence identified
Guidelines			
NICE	Virtual Reality Schizophrenia	0	
Systematic Reviews			
MEDLINE	1. Medline; (schiz*).ab,ti; 108343 results.	865	
	2. Medline; (psychos*).ab,ti; 120294 results.		
	3. Medline; (psychot*).ti,ab; 77061 results.		
	4. Medline; exp SCHIZOPHRENIA/; 91331 results.		
	5. Medline; exp PSYCHOTIC DISORDERS/; 44880 results.		
	6. Medline; 1 OR 2 OR 3 OR 4 OR 5; 301954 results.		
	7. Medline; ((virtual* adj3 realit*)).ti,ab; 5477 results.		
	8. Medline; ((virtual* OR VR)).ti,ab; 99374 results.		
	9. Medline; ((second adj2 life) OR (2nd adj2 life)).ti,ab; 4295 results.		
	10. Medline; ((facebook* OR twitter*)).ti,ab; 1988 results.		
	11. Medline; ((third adj2 generation*) OR (3rd adj2 generation*)).ti,ab; 13402 results.		
	12. Medline; ((video* OR hypermedia* OR computer* OR multimedia*)).ti,ab; 320968 results.		
	13. Medline; ((immersive adj2 multimedia)).ti,ab; 5 results.		
	14. Medline; (computer AND stimualted AND reality).ti,ab; 3 results.		
	15. Medline; exp VIRTUAL REALITY EXPOSURE THERAPY/; 234 results.		
	16. Medline; 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15; 432075 results.		
	17. Medline; 6 AND 16; 6067 results.		
	18. Medline; 17 [Limit to: (Document type Meta-analysis or Review)]; 865 results.		
EMBASE	1. EMBASE; (schiz*).ti,ab; 148186 results.	314	

	2. EMBASE; (psychos*).ti,ab; 161610 results.		
	3. EMBASE; (psychot*).ti,ab; 108457 results.		
	4. EMBASE; exp SCHIZOPHRENIA/; 155157 results.		
	5. EMBASE; exp PSYCHOSIS/; 236363 results.		
	6. EMBASE; 1 OR 2 OR 3 OR 4 OR 5; 442047 results.		
	7. EMBASE; ((virtual* adj2 realit*)).ti,ab; 6985 results.		
	8. EMBASE; ((virtual* OR VR)).ti,ab; 116106 results.		
	9. EMBASE; ((second adj2 life) OR (2nd adj2 life)).ti,ab; 701 results.		
	10. EMBASE; ((facebook* OR twitter*)).ti,ab; 2937 results.		
	11. EMBASE; ((third adj2 generation*) OR (3rd adj2 generation*)).ti,ab; 17315 results.		
	12. EMBASE; ((video* OR hypermedia* OR computer* OR multimedia*)).ti,ab; 401353 results.		
	13. EMBASE; ((immersive adj2 multimedia)).ti,ab; 2 results.		
	14. EMBASE; ((computer AND stimulated AND reality)).ti,ab; 4 results.		
	15. EMBASE; exp VIRTUAL REALITY/; 10219 results.		
	16. EMBASE; 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15; 529733 results.		
	17. EMBASE; 6 AND 16; 9799 results.		
	18. EMBASE; 17 [Limit to: (EBM-Evidence Based Medicine Evidence Based Medicine or Meta Analysis or Systematic Review)]; 314 results.		
PsycINFO/CINAHL	1. PsycInfo; (schiz*).ti,ab; 109005 results.	444	
	2. PsycInfo; (psychos*).ti,ab; 120423 results.		
	3. PsycInfo; (psychot*).ti,ab; 143546 results.		
	4. PsycInfo; exp SCHIZOPHRENIA/; 78530 results.		
	5. PsycInfo; exp PSYCHOSIS/; 100114 results.		
	6. PsycInfo; 1 OR 2 OR 3 OR 4 OR 5; 327476 results.		
	7. PsycInfo; ((virtual* adj3 reality*)).ti,ab; 3405 results.		
	8. PsycInfo; ((virtual* OR VR)).ti,ab; 27992 results.		
	9. PsycInfo; ((second adj2 life) OR (2nd adj2 life)).ti,ab; 2399 results.		

	10. PsycInfo; ((facebook* OR twitter*)).ti,ab; 3172 results. 11. PsycInfo; ((third adj2 generation*) OR (3rd adj2 generation*)).ti,ab; 1170 results. 12. PsycInfo; ((video* OR hypermedia* OR computer* OR multimedia*)).ti,ab; 122195 results. 13. PsycInfo; ((immersive adj2 multimedia*)).ti,ab; 3 results. 14. PsycInfo; ((computer AND stimulated AND reality)).ti,ab; 2 results. 15. PsycInfo; exp VIRTUAL REALITY/; 5909 results. 16. PsycInfo; 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15; 152303 results. 17. PsycInfo; 6 AND 16; 7585 results. 18. PsycInfo; 17 [Limit to: (Methodology Literature Review or Meta Analysis or Systematic Review)]; 444 results.		
Primary Studies			
MEDLINE	1. Medline; (schiz*).ab,ti; 108343 results. 2. Medline; (psychos*).ab,ti; 120294 results. 3. Medline; (psychot*).ti,ab; 77061 results. 4. Medline; exp SCHIZOPHRENIA/; 91331 results. 5. Medline; exp PSYCHOTIC DISORDERS/; 44880 results. 6. Medline; 1 OR 2 OR 3 OR 4 OR 5; 301954 results. 7. Medline; ((virtual* adj3 realit*)).ti,ab; 5477 results. 8. Medline; ((virtual* OR VR)).ti,ab; 99374 results. 9. Medline; ((second adj2 life) OR (2nd adj2 life)).ti,ab; 4295 results. 10. Medline; ((facebook* OR twitter*)).ti,ab; 1988 results. 11. Medline; ((third adj2 generation*) OR (3rd adj2 generation*)).ti,ab; 13402 results. 12. Medline; ((video* OR hypermedia* OR computer* OR multimedia*)).ti,ab; 320968 results. 13. Medline; ((immersive adj2 multimedia)).ti,ab; 5 results. 14. Medline; (computer AND stimualted AND reality).ti,ab; 3 results. 15. Medline; exp VIRTUAL REALITY EXPOSURE THERAPY/; 234 results. 16. Medline; 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15; 432075 results.	550	

	17. Medline; 6 AND 16; 6067 results. 18. Medline; 17 [Limit to: (Document type Controlled Clinical Trial or Randomized Controlled Trial)]; 550 results.		
EMBASE	4. EMBASE; (schiz*).ti,ab; 148186 results. 5. EMBASE; (psychos*).ti,ab; 161610 results. 5. EMBASE; (psychos*).ti,ab; 161610 results. 6. EMBASE; (psychot*).ti,ab; 108457 results. 7. EMBASE; exp SCHIZOPHRENIA/; 155157 results. 7. EMBASE; exp SCHIZOPHRENIA/; 155157 results. 8. EMBASE; exp PSYCHOSIS/; 236363 results. 9. EMBASE; exp PSYCHOSIS/; 236363 results. 10. EMBASE; 1 OR 2 OR 3 OR 4 OR 6; 442047 results. 11. EMBASE; ((virtual* adj2 realit*)).ti,ab; 6985 results. 12. EMBASE; ((virtual* OR VR)).ti,ab; 116106 results. 13. EMBASE; ((second adj2 life) OR (2nd adj2 life)).ti,ab; 701 results. 14. EMBASE; ((second adj2 life) OR (2nd adj2 life)).ti,ab; 701 results. 15. EMBASE; ((facebook* OR twitter*)).ti,ab; 2937 results. 16. EMBASE; ((third adj2 generation*) OR (3rd adj2 generation*)).ti,ab; 17315 results. 17. EMBASE; ((third adj2 generation*) OR (3rd adj2 generation*)).ti,ab; 17315 results. 18. EMBASE; ((video* OR hypermedia* OR computer* OR multimedia*)).ti,ab; 401353 results. 19. EMBASE; ((immersive adj2 multimedia)).ti,ab; 2 results. 20. EMBASE; ((computer AND stimulated AND reality)).ti,ab; 4 results. 21. EMBASE; exp VIRTUAL REALITY/; 10219 results. 22. EMBASE; 8 OR 9 OR 11 OR 12 OR 14 OR 15 OR 16 OR 17 OR 18; 529733 results. 23. EMBASE; 7 AND 19; 9799 results. 24. EMBASE; 20 [Limit to: (Clinical Trials Clinical Trial or Randomized Controlled Trial)]; 963 results.	963	
PsycINFO/CINAHL	1. PsycInfo; (schiz*).ti,ab; 109005 results.	200	

	2. PsycInfo; (psychos*).ti,ab; 120423 results. 3. PsycInfo; (psychot*).ti,ab; 143546 results. 4. PsycInfo; exp SCHIZOPHRENIA/; 78530 results. 5. PsycInfo; exp PSYCHOSIS/; 100114 results. 6. PsycInfo; 1 OR 2 OR 3 OR 4 OR 5; 327476 results. 7. PsycInfo; ((virtual* adj3 reality*)).ti,ab; 3405 results. 8. PsycInfo; ((virtual* OR VR)).ti,ab; 27992 results. 9. PsycInfo; ((second adj2 life) OR (2nd adj2 life)).ti,ab; 2399 results. 10. PsycInfo; ((facebook* OR twitter*)).ti,ab; 3172 results. 11. PsycInfo; ((third adj2 generation*) OR (3rd adj2 generation*)).ti,ab; 1170 results. 12. PsycInfo; ((video* OR hypermedia* OR computer* OR multimedia*)).ti,ab; 122195 results. 13. PsycInfo; ((immersive adj2 multimedia*)).ti,ab; 3 results. 14. PsycInfo; ((computer AND stimulated AND reality)).ti,ab; 2 results. 15. PsycInfo; exp VIRTUAL REALITY/; 5909 results. 16. PsycInfo; 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15; 152303 results. 17. PsycInfo; 6 AND 16; 7585 results. 18. PsycInfo; 17 [Limit to: (Methodology Treatment Outcome/Clinical Trial)]; 200 results.		

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