

# Best Evidence Summaries of Topics in Mental Healthcare

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

## Question

How effective are cognitive behavioural interventions (e.g. anger management) compared to no intervention at reducing aggression, violence and anger in people within psychiatric and offender populations (prison, hospital or community)?

## Clarification of question using *PICO* structure

*Patients:* Psychiatric and Offender populations  
*Intervention:* Cognitive Behavioural interventions  
*Comparator:* No intervention  
*Outcome:* Reduction in aggression, violence and anger

## **Clinical and research implications**

Limited evidence, from two small RCTs and observational studies included in a systematic review suggests that group CBT interventions may be associated with short-term, post-treatment improvements in measures of anger, aggression and hostility in incarcerated violent offenders. The longer-term effects of group CBT in this population remain unknown, as no study reported follow-up data beyond the end of treatment. There are no consistent data on the effects of individual CBT, the effects of group CBT in other relevant populations, or the effects of CBT on incidence of violent or aggressive behaviour or recidivism rates in violent offenders.

Further research is required to assess the longer-term effects of CBT in relevant populations and to ascertain the optimal format, mode of delivery and duration of CBT.

## **What does the evidence say?**

### ***Number of included studies/reviews (number of participants)***

We identified one systematic review<sup>1</sup> and two additional randomised controlled trials (RCTs)<sup>2,3</sup> which reported results relevant to this evidence summary. The systematic review assessed the effects of psychological therapies on violent behaviour in clinical and forensic settings and included ten studies, of which seven assessed cognitive behavioural therapy (CBT) interventions.<sup>1</sup> Two RCTs compared individual CBT interventions to treatment as usual and social activity therapy (the first RCT was conducted in community dwelling patients with antisocial personality disorder and the second RCT was conducted in inpatients and outpatients with schizophrenia and a history of violence), and one additional very small case series also reported information on the effects of individual CBT; studies reported the effects of CBT on violent and aggressive incidents and measures of anger.<sup>1</sup> Two comparative 'before and after' studies reported data on the effects of group CBT on recidivism rates in violent offenders compared to matched controls, and two additional un-controlled observational studies assessed the effects of different group CBT interventions on measures of anger and violent and aggressive incidents in violent offender and psychiatric in-patients.<sup>1</sup> The duration of follow-up in included studies was generally not reported.<sup>1</sup>

The two additional RCTs both assessed group CBT interventions in male prison inmates, compared to treatment as usual.<sup>2,3</sup> Both studies reported pre- to post-treatment changes in measures of anger or aggression and neither study reported any longer term follow-up data.<sup>2,3</sup>

### ***Main findings***

#### ***Individual CBT***

The results of studies included in the systematic review were inconsistent; one RCT found that group CBT significantly reduced the occurrence of violent and aggressive incidents compared to social activity therapy (follow-up duration not reported) and one RCT found no difference in violent and aggressive incidents, between the CBT group and the treatment as usual group, over a 12 month follow-up period.<sup>1</sup> Details of studies included in the systematic review, interventions, duration and results were poorly reported and results were not reported for all listed outcome measures.

#### ***Group CBT***

Two comparative observational studies by the same group, included in the systematic review, provided contradictory results on recidivism rates in violent offenders, however, the larger and more recent study found no significant treatment effect.<sup>1</sup> The systematic review included one additional

observational study (no comparator group) conducted in violent offenders and one in psychiatric in-patients, which reported post-treatment reductions in anger and violent incidents, respectively.<sup>1</sup> The two additional RCTs of CBT compared to usual care in violent offenders, both found that CBT was associated with greater improvements in some measures of anger,<sup>2</sup> aggression<sup>3</sup> and hostility<sup>3</sup> immediately post-treatment. However, neither study provided longer-term follow-up data.

### ***Authors' conclusions***

Ross et al. (2013) – The authors concluded that their findings provide tentative support for the utility of psychotherapeutic interventions in reducing aggressive behaviour in forensic and psychiatric patients with a history of violent behaviour.

Brazão et al. (2015) – The authors concluded that their study provides preliminary support for the efficacy of 'Growing Pro-social' (GPS), a group rehabilitation programme for antisocial behaviour, in producing clinical changes at an emotional level (anger-trait) and at a cognitive level (paranoia) in adult offenders.

Chen et al. (2014) – The authors concluded that their study findings indicate that Williams LifeSkills Training has the potential to be an effective intervention to reduce overt aggression behaviour in young male violent offenders.

### ***Reliability of conclusions/Strength of evidence***

The available evidence was limited. The systematic review was poorly reported and did not provide sufficient details of the included studies (specifically in relation to interventions, study and follow-up duration and numerical results for all outcomes assessed) to allow adequate interpretation. Two additional small RCTs, both with methodological weaknesses, provided some evidence that group CBT may be associated with short term improvements in measures of anger, aggression and hostility in incarcerated violent offenders, however, neither study reported any follow-up assessments beyond the end of treatment.

### **What do guidelines say?**

Neither National Institute for Health and Care Excellence (NICE) nor Scottish Intercollegiate Guidelines Network (SIGN) guidelines comment on the efficacy of cognitive behavioural interventions (e.g. anger management) in reducing aggression, violence and anger in people within psychiatric and offender populations

<b>Date question received:</b>	01/07/2015
<b>Date searches conducted:</b>	07/07/2015
<b>Date answer completed:</b>	13/07/2015

## References

### ***Systematic reviews***

1. Ross, J., Quayle, E., Newman, E., & Tansey, L. (2013). The impact of psychological therapies on violent behaviour in clinical and forensic settings: A systematic review. *Aggression and Violent Behavior, 18*(6), 761-773.

### ***Randomised controlled trials***

2. Brazão, N., da Motta, C., Rijo, D., do Céu Salvador, M., Pinto-Gouveia, J., & Ramos, J. (2014). Clinical change in anger, shame, and paranoia after a structured cognitive-behavioral group program: Early findings from a randomized trial with male prison inmates. *Journal of Experimental Criminology, 1-20*.
3. Chen, C., Li, C., Wang, H., Ou, J. J., Zhou, J. S., & Wang, X. P. (2014). Cognitive behavioral therapy to reduce overt aggression behavior in Chinese young male violent offenders. *Aggressive Behavior, 40*(4), 329-336.

## Results

### *Systematic reviews*

Author (year)	Search date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
Ross et al. (2013)	11/2012	<p><i>Participants:</i> Adults aged 16+ with a history or current presentation of violent behaviour. Those in prison, forensic inpatient hospitals or being managed in the community as forensic outpatients were included. Studies with participants whose primary reason for detention was a sexual offence or domestic violence and studies conducted in people with learning disabilities were excluded.</p> <p><i>Intervention:</i> Any psychological intervention, including CBT-based interventions delivered in groups (3 studies) or individually (3 studies); CBT-informed anger management (1 study); Aggression replacement training (ART) (1 study); dramatherapy (1 study); Motivation and engagement (1 study).</p> <p><i>Comparator:</i> -In RCTs (2 studies): Social activity therapy (SAT) (1 study); treatment as usual (1 study)</p>	10 (7 studies of CBT, including 2 RCTs)	<p>This review aimed to assess the effects of psychological therapies on violent behaviour in clinical and forensic settings; studies of any psychological therapy, including CBT, were eligible for inclusion.</p> <p><i>Individual CBT</i> The two RCTs included in the review both assessed individual CBT. The details and duration of the CBT intervention were not reported for either study. One study was conducted with a male majority (87%) of inpatients and outpatients with a diagnosis of schizophrenia and a history of violence. This study compared individual CBT to social activity therapy and found that there were fewer incidents of physical aggression during treatment and follow-up (duration not reported) in the CBT group. However, results were not reported for the four psychometric outcome measures listed and the authors</p>	<p>The review addressed a clearly stated objective and defined appropriately broad inclusion criteria.</p> <p>Six bibliographic databases were searched and a simple search strategy was reported. Electronic searches were supplemented by hand searching of selected journals and contact with study authors.</p>

	<p>-In Pre-post intervention studies (6 studies): Matched non-completers or no comparator -In case series studies (2 studies): No comparator</p> <p><i>Outcome:</i> Psychometric outcome measures and reporting of violent incidents. In RCTs: -1 study: (i) Aggression and offending (MacArthur Community Violence Screening Instrument; MCVSI); (ii) Drug use (Drug Abuse Screening Test; DAST); (iii) Alcohol use (Alcohol Use Disorders Identification Test; AUDIT); (iv) Anxiety and depression (Hospital Anxiety and Depression Rating Scale; HADS); (v) Anger (Novaco Anger Scale and Provocation Inventory; NAS-PI); (vi) Social functioning (Social Functioning Questionnaire; SFQ); (vii) Evaluation of self and others (Brief Core Schema Scales; BCSS) -1 study: (i) Anger (Ward Anger Rating; WARS; and Novaco Anger Scale and Provocation Inventory; NAS-PI); (ii) Psychotic symptoms (Psychotic Symptom Rating Scales; PSYRATS; and (Positive and Negative Syndrome Schedule; PANSS).</p> <p><i>Study design:</i> There were no restrictions on study design; RCTs, controlled trials, cohort studies and case-series were eligible for inclusion: RCTs (2 studies); Pre-</p>		<p>stated that there were no significant changes in anger in either group. The second RCT included only community dwelling violent male participants with antisocial personality disorder and compared individual CBT to treatment as usual (not described). This study found no between group differences in incidences of verbal and physical aggression over the 12 month follow-up period; results were not reported for all outcomes listed including NAS-PI-anger.</p> <p>One additional case series (n=3) reported that CBT reduced post-treatment anger and aggression in all three cases (detailed results and duration of intervention not reported), however, the effect was not maintained at follow-up (duration not reported).</p> <p><i>Group CBT</i> Two studies from the same group assessed the effects on recidivism of a group CBT intervention (details and duration not reported) in violent offenders, compared to a matched group of violent offenders who had not received the intervention. The initial small study (n=22) found no between group difference in non-violent convictions, but 31% fewer violent interventions in the CBT</p>	<p>Two reviewers independently assessed studies for inclusion and extracted data.</p> <p>The methodological quality of included studies was assessed and reported.</p> <p>The use of a narrative synthesis was appropriate, given the different interventions, comparators and study designs included. However, included studies were not described in sufficient detail (e.g. follow-up periods were described as varying between studies, but were not reported for all</p>
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		<p>post interventions (6 studies); case series (2 studies)</p>	<p>group. However, the subsequent larger study (n=112) found no difference in re-offending rates. Follow-up periods were not reported for either study. One observational 'before and after' study assessed the effects of a two-day drama-based CBT intervention in 62 male violent offenders in three high security hospitals; the study did not include a comparator group. This study reported reductions in anger (STAXI-2) pre- to post-intervention and reductions in self-reported anger at three month follow-up. The remaining study was a small (n=12) observational study assessing a brief (two-session) CBT-based intervention in patients on a psychiatric ward who had a history of anger and violence; the study did not include a comparator group. This study found a significant decrease in the numbers of violent and aggressive incidents in the two weeks post-intervention compared to the two weeks prior to the intervention (no further details reported).</p> <p>Numerical results (e.g. absolute numbers of violent incidents) were not reported for any of the included studies.</p>	<p>studies, durations of interventions not reported), and results were not reported for all outcomes listed.</p>
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**Randomised controlled trials**

<b>Author (year)</b>	<b>Inclusion criteria</b>	<b>Number of participants</b>	<b>Summary of results</b>	<b>Risk of bias</b>
Brazão et al (2015)	<p><i>Participants:</i> Male prison inmates aged 19-40 from three Portuguese prisons, remaining in prison for at least 12 months from the start of the program, without (i) cognitive impairment, (ii) active substance use, (iii) being sentenced exclusively for sexual offence and (iv) psychotic disorders.</p> <p><i>Intervention:</i> Growing Pro-Social (GPS), a group rehabilitation programme for antisocial behaviour; consisting of 5 modules over 40 weekly sessions, in addition to treatment as usual.</p> <p><i>Comparator:</i> Treatment as usual; supervision of school frequency, occupational and job-related tasks, and sentence-planning supervision over time.</p> <p><i>Outcome:</i> (i) Perception of negative judgment by others (Other as Shamer Scale; OAS); (ii)</p>	56 (27 in the treatment group and 29 in the control group)	<p>This study aimed to assess the effects to of a structured group CBT program, Growing Pro-Social (GPS), on anger, paranoia, and external shame in male prison inmates.</p> <p>There were no significant differences between the treatment and control groups in demographic or socioeconomic characteristics. Outcome measures were similar in the two groups at baseline. However, participants in the control group scored lower than those in the treatment group on STAXI anger-trait sub-scale; this difference did not reach statistical significance. The mean post-treatment STAXI anger-trait scores were significantly lower in the intervention group (<math>16.29 \pm 4.40</math>) than in the control group (<math>19.50 \pm 5.79</math>). There was no significant difference between intervention and control groups in post-treatment mean anger-state score. Data were also reported for measures of paranoia and external shame. All outcomes were measured one week after completion of the intervention and no follow-up outcome assessments were reported.</p>	<p>Randomisation used a random number table; no further details of randomisation or allocation concealment procedures were reported.</p> <p>The nature of the intervention precluded blinding of study participants and personnel. Data collection was carried out by psychologists who were not responsible for delivery of the intervention and by the authors of the paper; it was not clear whether the authors were involved in delivery of the intervention.</p> <p>Only participants who completed the study were included in the analyses; three participants from the treatment group and five</p>








	Paranoia (Paranoia Scale); (iii) Anger experience and expression State-Trait Anger Expression Inventory; STAXI).			from the control group did not complete the study.  Results were reported for all listed outcomes.
Chen et al. (2014)	<p><i>Participants:</i> Male prison inmates in the Yuela district of China aged 14-24 who were imprisoned due to a violent offence. People were excluded if they had an intellectual disability, schizophrenia, major depression, bipolar disorder or at least one from various medical conditions.</p> <p><i>Intervention:</i> Williams LifeSkills Training, based on cognitive behavioural principles, involving 10 core skill modules delivered to a group over 9 weeks (with a 1 hour individual assessment at week 1, followed by 2 hour sessions from weeks 2-9).</p> <p><i>Comparator:</i> Routine intervention (treatment as usual)</p> <p><i>Outcome:</i> Primary outcome: Aggression (Modified Overt Aggression Scale; MOAS) Secondary outcomes: (i) Impulsiveness</p>	66 (33 in the treatment group and 33 in the control group)	<p>This study aimed to assess the effects of a commercial CBT program (Williams LifeSkills Training) on overt aggressive behaviour in Chinese young male offenders.</p> <p>There were no significant between group differences in demographic or socioeconomic characteristics, previous criminal history, or history of drug abuse. All outcome measures were similar in the two groups, at baseline.</p> <p>There were significantly greater pre- to post-treatment improvements in overall aggression (MOAS) in the treatment group (<math>-4.74 \pm 10.53</math>) than in the control group (<math>3.68 \pm 10.15</math>). Similar effects were seen for the sub-scales verbal aggression score, auto aggression score and physical aggression score; there were no significant between group differences on the sub-scale aggression against property score. Williams LifeSkills Training was also associated with a significant pre- to post-treatment reduction in hostility on the Cook-Medley Hostility Scale (<math>-2.00 \pm 6.21</math>) compared to the</p>	<p>No details of the randomisation of allocation concealment procedures were reported.</p> <p>The nature of the intervention precluded blinding of study participants and personnel. However, outcome assessors and statisticians analysing the data were blinded to treatment group.</p> <p>Two participants from each group were excluded from the primary analysis.</p> <p>Results were reported for all listed outcomes.</p>













	(Barratt Impulsiveness Scale-11; BIS-11); (ii) Hostility (Cook–Medley Hostility Scale; CMHS)		control group ( $1.10 \pm 5.31$ ). Data were also reported for measures of impulsiveness. All outcomes were measured pre- and post-intervention and no follow-up outcome assessments were reported.	
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## Risk of bias

### Systematic reviews

Author (year)	RISK OF BIAS				
	Inclusion criteria	Searches	Review process	Quality assessment	Synthesis
Ross (2013)					

### Randomised controlled trials

Study	RISK OF BIAS					
	Random allocation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective Reporting
Brazão (2015)						
Chen (2014)						

 Low risk

 High risk

 Unclear risk

## Search details

Source	Search Strategy	Number of hits	Relevant evidence identified
<i>Guidelines</i>			
NICE	“anger management” offender anger offender cognitive behaviour offender anger forensic mental cognitive behaviour forensic mental anger management	2 5 0 3 11 3	0 0 0 0 0 0
<i>Systematic Reviews</i>			
MEDLINE	1. Medline; (Psychiatric adj6 disorder*).ti,ab; 36908 results. 2. Medline; (mental adj1 health adj6 disorder).ti,ab; 1511 results. 3. Medline; (Psychiatric adj3 patient*).ti,ab; 23679 results. 4. Medline; (Psychiatric adj6 population).ti,ab; 3042 results. 5. Medline; (mentally adj1 ill).ti,ab; 6720 results. 6. Medline; (offender* OR criminal* OR inmate* OR convict* OR probation* OR remand OR felon*).ti,ab; 28152 results. 7. Medline; exp PRISONERS/; 13012 results. 8. Medline; 1 OR 2 OR 3 OR 4 OR 5; 64125 results. 9. Medline; 6 OR 7; 36431 results. 10. Medline; 8 OR 9; 98728 results. 11. Medline; (Anger adj1 Management).ti,ab; 311 results. 12. Medline; (Anger adj1 Management AND intervention OR therap* OR treatment).ti,ab; 4237735 results. 13. Medline; (Anger AND management).ti,ab; 731 results.	20	1

	<p>14. Medline; (cognitive adj1 behav* AND technique* OR intervention* OR therap* OR treatment*).ti,ab; 4641599 results.</p> <p>15. Medline; exp COGNITIVE THERAPY/; 17276 results.</p> <p>16. Medline; (anger OR aggress* OR violen* OR antipathy).ti,ab; 186619 results.</p> <p>17. Medline; 14 OR 15; 4644017 results.</p> <p>18. Medline; 16 AND 17; 87301 results.</p> <p>19. Medline; 11 OR 12 OR 13 OR 18; 4247481 results.</p> <p>20. Medline; (no adj1 (intervention OR treatment OR therap*).ti,ab; 81433 results.</p> <p>21. Medline; 10 AND 19 AND 20; 404 results.</p> <p>22. Medline; (((("systematic* review*") OR meta-analytic* OR metanalysis OR metaanalysis OR ("meta analysis") OR meta-synthesis OR metasynthesis OR ("meta synthesis") OR meta-regression OR metaregression OR ("meta regression") OR (synthes* adj3 literature) OR (synthes* adj3 evidence) OR ("integrative review") OR ("data synthesis") OR ("research synthesis") OR ("narrative synthesis") OR ("systematic study") OR ("systematic studies")))).ti,ab; 128810 results.</p> <p>23. Medline; META-ANALYSIS AS TOPIC/; 14032 results.</p> <p>24. Medline; meta-analysis.ti,ab,pt; 81430 results.</p> <p>25. Medline; (((("systematic comparison*") OR ("systematic overview*") OR ("evidence based review") OR ("comprehensive review") OR ("critical review") OR ("quantitative review") OR ("structured review") OR ("realist review") OR ("realist synthesis")))).ti,ab; 23705 results.</p> <p>26. Medline; 22 OR 23 OR 24 OR 25; 169680 results.</p> <p>27. Medline; ((medline OR pubmed OR cochrane OR embase OR cinahl OR psyclit OR psycinfo OR psychlit OR psychinfo OR (literature adj3 search*) OR (database* adj3 search*) OR (bibliographic adj3 search*) OR (electronic adj3 search*) OR (electronic adj3 database*) OR (computerized adj3 search*) OR (computerised adj3 search*) OR (internet adj3 search*) OR ("included studies") OR ("inclusion studies") OR ("inclusion criteria") OR ("selection criteria") OR ("selection criteria") OR ("predetermined criteria"))).ti,ab; 183273 results.</p> <p>28. Medline; ((medline OR pubmed OR cochrane OR embase OR cinahl OR psyclit OR psycinfo OR</p>		
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	<p>psychlit OR psychinfo OR (literature adj3 search*) OR (database* adj3 search*) OR (bibliographic adj3 search*) OR (electronic adj3 search*) OR (electronic adj3 database*) OR (computerized adj3 search*) OR (computerised adj3 search*) OR (internet adj3 search*) OR ("included studies") OR ("inclusion studies") OR ("inclusion criteria") OR ("selection criteria") OR ("selection criteria") OR ("predetermined criteria"))).ab; 180467 results.</p> <p>29. Medline; (((("predefined criteria") OR (assess* adj3 (quality OR validity)) OR (select* adj3 (study OR studies)) OR (data adj3 extract*) OR ("extracted data") OR (data adj2 abstracted) OR (data adj3 abstraction) OR ("published intervention") OR ((study OR studies) adj2 evaluat*) OR (intervention* adj2 evaluat*) OR ("confidence interval") OR heterogeneity OR pooled OR pooling OR ("odds ratio*" OR Jadad OR coding))).ti,ab; 953007 results.</p> <p>30. Medline; 27 OR 28 OR 29; 1074467 results.</p> <p>31. Medline; 26 AND 30; 91982 results.</p> <p>32. Medline; review.ti; 285169 results.</p> <p>33. Medline; 30 AND 32; 57968 results.</p> <p>34. Medline; ((review* adj4 (papers OR trials OR studies OR evidence OR intervention* OR evaluation*))).ti,ab; 134695 results.</p> <p>35. Medline; 26 OR 31 OR 33 OR 34; 276739 results.</p> <p>36. Medline; (letter OR editorial OR comment).pt; 1402975 results.</p> <p>37. Medline; exp ANIMALS/; 17891868 results.</p> <p>38. Medline; exp HUMANS/; 13873636 results.</p> <p>39. Medline; 37 NOT 38; 4018232 results.</p> <p>40. Medline; 36 OR 39; 5366910 results.</p> <p>41. Medline; 35 NOT 40; 259666 results.</p> <p>42. Medline; 41 [Limit to: Publication Year 2010-2015]; 130147 results.</p> <p>43. Medline; 21 AND 42; 20 results.</p>		
EMBASE	<p>1. EMBASE; (Psychiatric adj6 disorder*).ti,ab; 50033 results.</p> <p>2. EMBASE; (mental adj1 health adj6 disorder).ti,ab; 1647 results.</p>	18	0

	<p>3. EMBASE; (Psychiatric adj3 patient*).ti,ab; 25013 results.</p> <p>4. EMBASE; (mentally adj1 ill).ti,ab; 7932 results.</p> <p>5. EMBASE; (offender* OR criminal* OR inmate* OR convict* OR probation* OR remand OR felon*).ti,ab; 35839 results.</p> <p>6. EMBASE; exp PRISONER/; 12168 results.</p> <p>7. EMBASE; (Psychiatric adj6 population).ti,ab; 3536 results.</p> <p>8. EMBASE; 1 OR 2 OR 3 OR 4 OR 7; 79687 results.</p> <p>9. EMBASE; 5 OR 6; 43894 results.</p> <p>10. EMBASE; 8 OR 9; 121352 results.</p> <p>11. EMBASE; (Anger adj1 Management).ti,ab; 420 results.</p> <p>12. EMBASE; (Anger adj1 (Management OR intervention OR therap* OR treatment)).ti,ab; 456 results.</p> <p>13. EMBASE; (Anger AND management).ti,ab; 1088 results.</p> <p>14. EMBASE; (cognitive adj1 behav* AND (technique* OR intervention* OR therap* OR treatment*)).ti,ab; 22573 results.</p> <p>15. EMBASE; exp COGNITIVE THERAPY/; 37691 results.</p> <p>16. EMBASE; (anger OR aggress* OR violen* OR antipathy).ti,ab; 247204 results.</p> <p>17. EMBASE; 14 OR 15; 44046 results.</p> <p>18. EMBASE; 16 AND 17; 1288 results.</p> <p>19. EMBASE; 11 OR 12 OR 13 OR 18; 2230 results.</p> <p>20. EMBASE; 10 AND 19; 355 results.</p> <p>21. EMBASE; 20 [Limit to: (EBM-Evidence Based Medicine Systematic Review)]; 18 results.</p>		
PsycINFO	<p>1. PsycInfo; (Psychiatric adj6 disorder*).ti,ab; 37495 results.</p> <p>2. PsycInfo; (mental adj1 health adj6 disorder).ti,ab; 1973 results.</p> <p>3. PsycInfo; (Psychiatric adj3 patient*).ti,ab; 24943 results.</p> <p>4. PsycInfo; (Psychiatric adj6 population).ti,ab; 3300 results.</p> <p>5. PsycInfo; (mentally adj1 ill).ti,ab; 10448 results.</p>	8	0

	<p>6. PsycInfo; (offender* OR criminal* OR inmate* OR convict* OR probation* OR remand OR felon*).ti,ab; 64818 results.</p> <p>7. PsycInfo; exp PRISONERS/; 9091 results.</p> <p>8. PsycInfo; 1 OR 2 OR 3 OR 4 OR 5; 70638 results.</p> <p>9. PsycInfo; 6 OR 7; 67939 results.</p> <p>10. PsycInfo; 8 OR 9; 135623 results.</p> <p>11. PsycInfo; (Anger adj1 Management).ti,ab; 1108 results.</p> <p>12. PsycInfo; (Anger adj1 Management AND intervention OR therap* OR treatment).ti,ab; 640138 results.</p> <p>13. PsycInfo; (Anger AND management).ti,ab; 1783 results.</p> <p>14. PsycInfo; (cognitive adj1 behav* AND technique* OR intervention* OR therap* OR treatment*).ti,ab; 820448 results.</p> <p>15. PsycInfo; exp COGNITIVE THERAPY/; 19745 results.</p> <p>16. PsycInfo; (anger OR aggress* OR violen* OR antipathy).ti,ab; 140355 results.</p> <p>17. PsycInfo; 14 OR 15; 821406 results.</p> <p>18. PsycInfo; 16 AND 17; 39448 results.</p> <p>19. PsycInfo; 11 OR 12 OR 13 OR 18; 652484 results.</p> <p>20. PsycInfo; (no adj1 (intervention OR treatment OR therap*)).ti,ab; 11388 results.</p> <p>21. PsycInfo; 10 AND 19 AND 20; 457 results.</p> <p>22. PsycInfo; ((systematic* adj1 review*) OR meta-analytic* OR metanalysis OR metaanalysis OR (meta adj1 analysis) OR meta-synthesis OR metasynthesis OR (meta adj1 synthesis) OR meta-regression OR . AND metaregression OR (meta adj1 regression) OR (synthes* adj3 literature) OR (synthes* adj3 evidence) OR (integrative adj1 review) OR (data adj1 synthesis) OR (research adj1 synthesis) OR (narrative adj1 synthesis) OR (systematic adj1 study) OR (systematic adj1 studies)).ti,ab; 37460 results.</p> <p>23. PsycInfo; meta-analysis.ti,ab,pt; 16118 results.</p> <p>24. PsycInfo; ((systematic adj1 comparison*) OR (systematic adj1 overview*) OR (evidence AND</p>		
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	<p>based AND review) OR (comprehensive adj1 review) OR (critical adj1 review) OR (quantitative adj1 review) OR (structured adj1 review) OR (realist adj1 review) OR (realist adj1 synthesis)).ti,ab; 22471 results.</p> <p>25. PsycInfo; 22 OR 23 OR 23 OR 24; 56286 results.</p> <p>26. PsycInfo; review.pt; 115062 results.</p> <p>27. PsycInfo; (medline OR pubmed OR cochrane OR embase OR cinahl OR psyclit OR psycinfo OR psychlit OR psychinfo OR (literature adj3 search*) OR (database* adj3 search*) OR (bibliographic adj3 search*) OR (electronic adj3 search*) OR (electronic adj3 database*) OR (computerized adj3 search*) OR (computerised adj3 search*) OR (internet adj3 search*) OR (included adj1 studies) OR (inclusion adj3 studies) OR (inclusion adj1 criteria) OR (selection adj1 criteria) OR (selection adj1 criteria) OR (predetermined AND criteria)).ab; 3653167 results.</p> <p>28. PsycInfo; ((predefined adj1 criteria) OR (assess* adj3 (quality OR validity)) OR (select* adj3 (study OR studies)) OR (data adj3 extract*) OR (extracted adj1 data) OR (data adj2 abstracted) OR (data adj3 abstraction) OR (published adj1 intervention) OR ((study OR studies) adj2 evaluat*) OR (intervention* adj2 evaluat*) OR (confidence adj1 interval) OR heterogeneity OR pooled OR pooling OR (odds adj1 ratio*) OR Jadad OR coding).ab; 131412 results.</p> <p>29. PsycInfo; 26 OR 27 OR 28; 3653167 results.</p> <p>30. PsycInfo; 25 AND 29; 55958 results.</p> <p>31. PsycInfo; review.ti; 122999 results.</p> <p>32. PsycInfo; 29 AND 31; 122468 results.</p> <p>33. PsycInfo; ((review* adj4 (papers OR trials OR studies OR evidence OR intervention* OR evaluation*))).ti,ab; 52677 results.</p> <p>34. PsycInfo; 25 OR 30 OR 32 OR 33; 192131 results.</p> <p>35. PsycInfo; (letter OR editorial OR comment).pt; 156316 results.</p> <p>36. PsycInfo; exp ANIMALS/; 6773 results.</p> <p>37. PsycInfo; exp HUMANS/; 1795 results.</p> <p>38. PsycInfo; 36 NOT 37; 6460 results.</p>		
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	<p>39. PsycInfo; 35 OR 38; 162445 results.</p> <p>40. PsycInfo; 34 NOT 39; 185104 results.</p> <p>41. PsycInfo; META ANALYSIS/; 14573 results.</p> <p>42. PsycInfo; 40 OR 41; 186607 results.</p> <p>43. PsycInfo; 42 [Limit to: Publication Year 2010-2015]; 62790 results.</p> <p>44. PsycInfo; 21 AND 43; 8 results.</p>		
<i>Primary Studies</i>			
MEDLINE	<p>1. Medline; (Psychiatric adj6 disorder*).ti,ab; 36908 results.</p> <p>2. Medline; (mental adj1 health adj6 disorder).ti,ab; 1511 results.</p> <p>3. Medline; (Psychiatric adj3 patient*).ti,ab; 23679 results.</p> <p>4. Medline; (mentally adj1 ill).ti,ab; 6720 results.</p> <p>5. Medline; (offender* OR criminal* OR inmate* OR convict* OR probation* OR remand OR felon*).ti,ab; 28152 results.</p> <p>6. Medline; (Psychiatric adj6 population).ti,ab; 3042 results.</p> <p>7. Medline; 1 OR 2 OR 3 OR 4 OR 6; 64125 results.</p> <p>8. Medline; (Anger adj1 Management).ti,ab; 311 results.</p> <p>9. Medline; (Anger adj1 (Management OR intervention OR therap* OR treatment)).ti,ab; 398 results.</p> <p>10. Medline; (Anger AND management).ti,ab; 731 results.</p> <p>11. Medline; (cognitive adj1 behav* AND (technique* OR intervention* OR therap* OR treatment*)).ti,ab; 17677 results.</p> <p>12. Medline; exp COGNITIVE THERAPY/; 17276 results.</p> <p>13. Medline; (anger OR aggress* OR violen* OR antipathy).ti,ab; 186619 results.</p> <p>14. Medline; exp PRISONERS/; 13012 results.</p> <p>15. Medline; 5 OR 14; 36431 results.</p> <p>16. Medline; 7 OR 15; 98728 results.</p> <p>17. Medline; 11 OR 12; 26392 results.</p> <p>18. Medline; 13 AND 17; 822 results.</p> <p>19. Medline; 8 OR 9 OR 10 OR 18; 1500 results.</p> <p>20. Medline; 16 AND 19; 228 results.</p>	74	1

	<p>21. Medline; "randomized controlled trial".ti,ab; 38670 results.</p> <p>22. Medline; "controlled clinical trial".ti,ab; 9497 results.</p> <p>23. Medline; randomi?ed.ti,ab; 405402 results.</p> <p>24. Medline; placebo.ti,ab; 164722 results.</p> <p>25. Medline; "drug therapy".ti,ab; 29235 results.</p> <p>26. Medline; randomly.ti,ab; 230007 results.</p> <p>27. Medline; trial.ti,ab; 381563 results.</p> <p>28. Medline; groups.ti,ab; 1460769 results.</p> <p>29. Medline; 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28; 2068039 results.</p> <p>30. Medline; "randomized controlled trial".ti,ab; 38670 results.</p> <p>31. Medline; "controlled clinical trial".ti,ab; 9497 results.</p> <p>32. Medline; randomi?ed.ti,ab; 405402 results.</p> <p>33. Medline; placebo.ti,ab; 164722 results.</p> <p>34. Medline; "drug therapy".ti,ab; 29235 results.</p> <p>35. Medline; randomly.ti,ab; 230007 results.</p> <p>36. Medline; trial.ti,ab; 381563 results.</p> <p>37. Medline; groups.ti,ab; 1460769 results.</p> <p>38. Medline; 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37; 2068039 results.</p> <p>39. Medline; 20 AND 38; 74 results.</p>		
EMBASE	<p>1. EMBASE; (Psychiatric adj6 disorder*).ti,ab; 50033 results.</p> <p>2. EMBASE; (mental adj1 health adj6 disorder).ti,ab; 1647 results.</p> <p>3. EMBASE; (Psychiatric adj3 patient*).ti,ab; 25013 results.</p> <p>4. EMBASE; (mentally adj1 ill).ti,ab; 7932 results.</p> <p>5. EMBASE; (offender* OR criminal* OR inmate* OR convict* OR probation* OR remand OR felon*).ti,ab; 35839 results.</p> <p>6. EMBASE; exp PRISONER/; 12168 results.</p> <p>7. EMBASE; (Psychiatric adj6 population).ti,ab; 3536 results.</p> <p>8. EMBASE; 1 OR 2 OR 3 OR 4 OR 7; 79687 results.</p>	58	0

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| <p>9. EMBASE; 5 OR 6; 43894 results.</p> <p>10. EMBASE; 8 OR 9; 121352 results.</p> <p>11. EMBASE; (Anger adj1 Management).ti,ab; 420 results.</p> <p>12. EMBASE; (Anger adj1 (Management OR intervention OR therap* OR treatment)).ti,ab; 456 results.</p> <p>13. EMBASE; (Anger AND management).ti,ab; 1088 results.</p> <p>14. EMBASE; (cognitive adj1 behav* AND (technique* OR intervention* OR therap* OR treatment*)).ti,ab; 22573 results.</p> <p>15. EMBASE; exp COGNITIVE THERAPY/; 37691 results.</p> <p>16. EMBASE; (anger OR aggress* OR violen* OR antipathy).ti,ab; 247204 results.</p> <p>17. EMBASE; 14 OR 15; 44046 results.</p> <p>18. EMBASE; 16 AND 17; 1288 results.</p> <p>19. EMBASE; 11 OR 12 OR 13 OR 18; 2230 results.</p> <p>20. EMBASE; 10 AND 19; 355 results.</p> <p>21. EMBASE; random*.ti,ab; 986879 results.</p> <p>22. EMBASE; factorial*.ti,ab; 25324 results.</p> <p>23. EMBASE; placebo*.ti,ab; 216466 results.</p> <p>24. EMBASE; (crossover* OR cross-over*).ti,ab; 74497 results.</p> <p>25. EMBASE; (doubl* adj3 blind*).ti,ab; 152372 results.</p> <p>26. EMBASE; (singl* adj3 blind*).ti,ab; 18684 results.</p> <p>27. EMBASE; assign*.ti,ab; 263111 results.</p> <p>28. EMBASE; allocat*.ti,ab; 94003 results.</p> <p>29. EMBASE; volunteer*.ti,ab; 189353 results.</p> <p>30. EMBASE; CROSSOVER PROCEDURE/; 43468 results.</p> <p>31. EMBASE; DOUBLE-BLIND PROCEDURE/; 121614 results.</p> <p>32. EMBASE; SINGLE-BLIND PROCEDURE/; 20516 results.</p> <p>33. EMBASE; RANDOMIZED CONTROLLED TRIAL/; 376146 results.</p> |  |  |
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	<p>34. EMBASE; 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33; 1555761 results.</p> <p>35. EMBASE; 20 AND 34; 58 results.</p>		
PsycINFO	<p>1. PsycInfo; (Psychiatric adj6 disorder*).ti,ab; 37495 results.</p> <p>2. PsycInfo; (mental adj1 health adj6 disorder).ti,ab; 1973 results.</p> <p>3. PsycInfo; (Psychiatric adj3 patient*).ti,ab; 24943 results.</p> <p>4. PsycInfo; (mentally adj1 ill).ti,ab; 10448 results.</p> <p>5. PsycInfo; (offender* OR criminal* OR inmate* OR convict* OR probation* OR remand OR felon*).ti,ab; 64818 results.</p> <p>6. PsycInfo; exp PRISONER/; 33 results.</p> <p>7. PsycInfo; (Psychiatric adj6 population).ti,ab; 3300 results.</p> <p>8. PsycInfo; 1 OR 2 OR 3 OR 4 OR 7; 70638 results.</p> <p>9. PsycInfo; 5 OR 6; 64834 results.</p> <p>10. PsycInfo; 8 OR 9; 132654 results.</p> <p>11. PsycInfo; (Anger adj1 Management).ti,ab; 1108 results.</p> <p>12. PsycInfo; (Anger adj1 (Management OR intervention OR therap* OR treatment)).ti,ab; 1412 results.</p> <p>13. PsycInfo; (Anger AND management).ti,ab; 1783 results.</p> <p>14. PsycInfo; (cognitive adj1 behav* AND (technique* OR intervention* OR therap* OR treatment*)).ti,ab; 31255 results.</p> <p>15. PsycInfo; exp COGNITIVE THERAPY/; 19745 results.</p> <p>16. PsycInfo; (anger OR aggress* OR violen* OR antipathy).ti,ab; 140355 results.</p> <p>17. PsycInfo; 14 OR 15; 38372 results.</p> <p>18. PsycInfo; 16 AND 17; 2106 results.</p> <p>19. PsycInfo; 11 OR 12 OR 13 OR 18; 3739 results.</p> <p>20. PsycInfo; 10 AND 19; 545 results.</p> <p>21. PsycInfo; CLINICAL TRIALS/; 9458 results.</p>	138	1

	<p>22. PsycInfo; random*.ti,ab; 143437 results.</p> <p>23. PsycInfo; groups.ti,ab; 390564 results.</p> <p>24. PsycInfo; (doubl* adj3 blind*).ti,ab; 19507 results.</p> <p>25. PsycInfo; (singl* adj3 blind*).ti,ab; 1916 results.</p> <p>26. PsycInfo; EXPERIMENTAL DESIGN/; 9849 results.</p> <p>27. PsycInfo; controlled.ti,ab; 88711 results.</p> <p>28. PsycInfo; (clinical adj3 study).ti,ab; 11917 results.</p> <p>29. PsycInfo; trial.ti,ab; 75669 results.</p> <p>30. PsycInfo; (treatment AND outcome AND clinical AND trial).ti,ab; 2826 results.</p> <p>31. PsycInfo; 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30; 605543 results.</p> <p>32. PsycInfo; 20 AND 31; 138 results.</p>		
CENTRAL	<p>#1 Psychiatric adj6 disorder* 59</p> <p>#2 mental adj1 health adj6 disorder 4</p> <p>#3 Psychiatric adj3 patient* 337</p> <p>#4 mentally adj1 ill 11</p> <p>#5 offender* or criminal* or inmate* or convict* or probation* or remand or felon* 1607</p> <p>#6 MeSH descriptor: [Prisoners] explode all trees 236</p> <p>#7 Psychiatric adj6 population 59</p> <p>#8 #1 or #2 or #3 or #7 361</p> <p>#9 #5 or #6 1714</p> <p>#10 #8 or #9 2043</p> <p>#11 Anger adj1 Management 11</p> <p>#12 Anger adj1 (Management or intervention or therap* or treatment) 11</p> <p>#13 Anger management 403</p> <p>#14 cognitive adj1 behav* (technique* or intervention* or therap* or treatment*) 91</p> <p>#15 MeSH descriptor: [Cognitive Therapy] explode all trees 5295</p> <p>#16 anger or aggress* or violen* or antipathy 8971</p> <p>#17 #14 or #15 5379</p>	22	0

	#18 #16 and #17 244 #19 #11 or #12 or #13 or #18 580 #20 #10 and #19 128 Trials 22 results		
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## **Disclaimer**

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