

Best Evidence Summaries of Topics in Mental Healthcare

BEST in MH *clinical question-answering service*

Question

In adults in prison populations, how effective are mindfulness based interventions, in improving patient outcomes?

Clarification of question using *PICO* structure

Patients: Adults in prison settings

Intervention: Mindfulness

Comparator: Any/no other intervention

Outcome: Improving patient outcomes

Plain language summary

There is very little evidence available which looks specifically into the effectiveness of mindfulness interventions for adults in prison populations. More high quality research in this area is required and it is also important that long-term follow up studies are conducted in order to adequately assess the effectiveness of mindfulness interventions on improving patient outcomes.

Clinical and research implications

Evidence about the effectiveness of mindfulness interventions in adult prison populations is weak. Only one, small randomised control, with substantial methodological weaknesses, specifically stated that the meditation intervention being evaluated was mindfulness based. Although this trial did report that the intervention was associated with significant improvements in depression, anxiety and overall mood, outcomes were measured immediately post-intervention and no long-term follow-up was reported. In addition, the study was conducted in male long-term prisoners in China, all of whom had committed serious offences, and may therefore be of limited applicability to the general prison population in the UK.

Studies are needed to assess the effects of specific mindfulness interventions. Interventions should be clearly described and compared to alternative active interventions as well as control groups. Possible differential effects of mindfulness interventions in different types of prison populations should be investigated. Long-term follow-up is particularly important to determine whether any observed effects persist beyond the study period.

What does the evidence say?

Number of included studies/reviews (number of participants)

We identified one systematic review¹ and two additional small randomised controlled trials (RCTs)^{2,3} which reported results that were partially relevant to this evidence summary. The systematic review aimed to assess the effects of prison yoga and meditation interventions on psychological well-being and behavioural functioning; studies were conducted in a wide range of settings (low to high security) and participant details were not fully reported.¹ Although meta-analyses were presented, results were not stratified by type of intervention and no details of the interventions and comparators used in the individual included studies were reported.¹ Similarly, meta-analyses were reported for “psychological well-being” and “behavioural functioning”, but no details of the specific measures used by the included studies were reported.¹ The number of included studies which assessed a mindfulness-based intervention was unclear.¹ The first additional RCT assessed the effects of a meditation intervention (a mindfulness component was not specified) on specific emotions and behaviours in female non-violent detainees who were participating in an intensive residential detention program, in the USA, which had an existing silence rule.² The second RCT assessed the effects of a mindfulness-based cognitive therapy program on measures of mindfulness, anxiety, depression and overall mood, in long-term male prisoners in China, who had committed serious criminal offences.³ No study reported long-term outcomes; all data were for post-treatment effects.

Main findings

The systematic review reported the results of two meta-analyses indicating that yoga and meditation interventions were associated with a moderate improvement in “psychological well-being” (Cohen’s d effect size estimate of 0.46 (95% CI: 0.39 to 0.54)) and a small improvement in “behavioural functioning” (Cohen’s d effect size estimate of 0.30 (95% CI: 0.20 to 0.40)).¹ However, the characteristics of participants were not fully reported and it was not clear what type of interventions and comparators were included in the analyses or what instruments had been used to measure “psychological well-being” and “behavioural functioning”, making the reported effect estimates essentially meaningless. The additional RCT, conducted in female non-violent offenders

who were participating in an intensive residential program in the USA, reported that a structured meditation intervention was associated with small reductions in sleep difficulties, wanting to throw things or hit people, and nail biting, compared to small increases in these emotions and behaviours in the control group; there were no significant between group differences in seven other symptoms, emotions and behaviours assessed.² The final RCT, conducted in male long-term prisoners in China, was the only study to specifically assess a mindfulness intervention.³ This study reported that a six-week group mindfulness intervention was associated with significant improvements in measures of anxiety, depression, and overall mood.³

Authors conclusions

Auty 2015 – The review authors concluded that overall, the evidence suggests that yoga and meditation have favourable effects on prisoners.

Sumter 2009 – The study authors concluded that Meditation was beneficial for this population and may be a cost-effective tool for inmates and administrators. It should be noted that this study did not include any measures of cost or cost-effectiveness.

Xu 2016 – The study authors concluded that their results support the use of a mindfulness-based intervention to enhance the emotional health of long-term male prison inmates.

Reliability of conclusions/Strength of evidence

The available evidence was limited and of poor methodological quality. There was very little evidence which was specifically about the effectiveness of mindfulness interventions. The systematic review was of very poor methodological quality and did not report details of the individual included studies, such that it was not possible to make any meaningful interpretation of the results; two meta-analyses were presented, but it was unclear what interventions were being compared to what controls, in what type of participants, and what instruments had been used to measure “psychological well-being” and “behavioural functioning”. Both additional RCTs were small and had significant methodological weaknesses and neither are likely to be directly applicable to UK settings; one was conducted in a male prison in China and one in a specific, high-intensity, military style program in the USA.

What do guidelines say?

National guidelines do not comment on mindfulness based interventions in prison populations.

Date question received: 07/10/2016

Date searches conducted: 12/10/2016

Date answer completed: 17/10/2016

References

Systematic reviews

1. Auty, KM., Cope, A., Liebling, A. (2015) A Systematic Review and Meta-Analysis of Yoga and Mindfulness Meditation in Prison: Effects on Psychological Well-being and Behavioural Functioning. *International Journal of Offender Therapy and Comparative Criminology*: pp 1-22

Randomised controlled trials

2. Sumter, MT., Monk-Tunier, E., Tunier, C. (2009) The Benefits of Meditation Practice in the Correctional Setting. *Journal of Correctional Health Care* 15(1): pp47-57
3. Xu, W., Jia, K., Liu, X., Hofmann, SG. (2016) The Effects of Mindfulness Training on Emotional Health in Chinese Long-Term Male Prison Inmates. *Mindfulness* 7(5): pp 1044–1051

Results

Systematic reviews

Author (year)	Search date	Inclusion criteria	Number of included studies	Summary of results	Risk of bias
Auty et al (2015)	December 2014	<p>Participants: Incarcerated offenders</p> <p>Intervention: Yoga or mindfulness/vipassana meditation</p> <p>Comparator: No comparator was specified; included studies used no comparator, treatment as usual, delayed treatment, or an alternative treatment programme</p> <p>Outcome: Psychological or behavioural outcomes</p> <p>Study design: No limitations on study design were specified, but only studies with a comparator group were included in the quantitative analyses</p>	n=24 studies (n=13 studies included in the meta-analyses)	<p>This systematic review aimed to assess whether prison yoga and meditation programs are associated with psychological well-being and improvements in behavioural functioning.</p> <p>Summary study characteristics were reported for the 24 included studies, but no details of individual studies or summary of the 13 studies included in the meta-analysis were provided. The median sample size was 75 (range not reported). The age of study participants ranged from 18 to 66 years. The distributions of male and female study participants and of yoga versus meditation or combination interventions was unclear (numbers reported did not add up to either 24 or 13 studies) and the duration of programs and intensity and frequency of sessions varied widely. No details of the</p>	<p>The review did not state a clear objective and inclusion criteria were broad and only partially defined.</p> <p>Eleven bibliographic databases were searched, without restrictions on language or study design. The bibliographies of included articles were screened for additional studies.</p>

			<p>comparators used by studies included in the meta-analyses were reported. Included studies were conducted in minimum and maximum security settings and in substance abuse treatment centres; no details of the distribution of settings were reported. Studies were conducted in the USA, UK, India and Taiwan; again no details of the distribution of study settings were reported. Outcomes were classified as “psychological well-being” or “behavioural functioning”, but no details of the specific measures used by included studies were reported.</p> <p>The meta-analysis of nine comparative studies reporting un-specified measures of “psychological well-being” resulted in a moderate Cohen’s d effect size estimate of 0.46 (95% CI: 0.39 to 0.54). It was not clear whether the analysis included both treatment as usual and active comparator groups.</p> <p>The meta-analysis of ten comparative studies reporting un-specified measures of “behavioural functioning” resulted in a small Cohen’s d effect size estimate of 0.30 (95% CI: 0.20 to 0.40). It was not clear whether</p>	<p>The number of reviewers involved in the first stage (title and abstract screening) of study selection. Only a random sample (10%) of full paper inclusion screening was checked by a second reviewer. The data extraction process was also unclear.</p> <p>No assessment of the methodological quality of included studies was reported.</p> <p>The meta-analyses combined studies which used a variety of different interventions, comparators and outcome measures</p>
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				the analysis included both treatment as usual and active comparator groups. and were conducted in differing populations; study characteristics and results, for individual included studies, were not reported.
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Randomised controlled trials

Author (year)	Inclusion criteria	Number of participants	Summary of results	Risk of bias
Sumter et al (2009)	Participants: Non-violent, female detainees, in a USA residential detention facility which provided a community-based program involving a secure level of supervision in a highly structured, paramilitary community environment, lasting from 20 to 24 weeks. This program was offered to female offenders in lieu of serving time, which could range from 5 to 15 years, in a state prison. The meditation program was conducted with detainees who volunteered to participate and who had a minimum of	n=33 (intervention=17, control=16)	This study aimed to assess the effects of a structured meditation program on medical symptoms, emotions and behaviours, in female detainees. Of the 33 women included in the study, The majority were white (19), single (21), and had children (24). Eighteen women reported that they were not working, outside the home, at the time of their detention. The majority of women reported that they were victims of emotional (19) and physical (20) abuse; 13 reported being sexually abused. Approximately half of study participants had prior meditation experience before entering the detention centre.	The article stated that participants were randomly assigned to the meditation or control group, but no details of randomisation or allocation concealment were reported. The nature of the

<p>ten weeks left in the program.</p> <p>Intervention: Structured meditation exercise (2.5 hour per week, for 7 weeks) in addition to regular daily activities of the program</p> <p>Comparator: Regular daily activities of the program; the facility had a general silence rule (detainees were not allowed to talk unless permission was granted)</p> <p>Outcome: Self-reported symptoms: Visual, Ache, Numb, Sleeping difficulties, Chest pain.</p> <p>Emotions: Throw or hit, Guilty, Hopeless.</p> <p>Behaviours: Nail biting, Sleeping problems. Outcomes were assessed pre- and post-intervention, using a 5 point Likert-type scale for the extent to which participants were bothered by emotions and behaviours (0 “never” to 4 “strong desire”)</p>		<p>The structured meditation program was led by two facilitators who had taken classes in meditation and were long-time practitioners of meditation (no prior training was reported). Mindfulness was not specifically mentioned.</p> <p>The intervention and control groups were broadly comparable, however, the overall educational level was higher in the control group and the intervention group included more single women and women who had children. There were no significant pre-intervention differences in symptoms between the groups.</p> <p>The meditation group experienced fewer sleeping difficulties at the post-treatment assessment than the control group; the pre-treatment mean score for the meditation group was 2.25, and the post-treatment mean score was 1.29, compared with 1.87 and 2.07 in the control group. There also was a significant reduction in wanting to throw things or hit people in the meditation group (pre-treatment mean score 1.7 and post-treatment mean score 1.35), compared to a small increase for the control group (pre-treatment mean score 1.68 and post-treatment mean score 1.71). Finally, there was a reduction in nail or cuticle biting among the experimental group (pre-treatment mean score 1.7 and post-treatment mean score 1.35) compared to a small increase of this behaviour in the control group (pre-treatment mean score 2.06 and post-treatment mean score 2.21).</p>	<p>intervention precluded the blinding of participants and study personnel and outcomes were self-rated.</p> <p>All randomised study participants appeared to have been included in the analysis.</p> <p>Results were reported for all specified outcomes.</p>
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			There were no significant differences between the groups for any of the other emotions or behaviours assessed.	
Xu et al (2016)	<p>Participants: Long-term male inmates with a minimum remaining sentence of 10 years, held in a prison in Beijing, China. Participants were excluded if they had serious psychological or other problems that might interfere with the study.</p> <p>Intervention: Mindfulness training group (2.5 to 3 hour weekly group sessions for 6 weeks, based on a mindfulness-based cognitive therapy protocol)</p> <p>Comparator: Waitlist control group</p> <p>Outcome: Five-facet Mindfulness Questionnaire (FFMQ), Zung Self-Rating Anxiety Scale (SAS), Zung Self-Rating Depression Scale (SDS), Profile of Mood States (POMS)</p>	n=54 (intervention=25, control=29)	<p>This study investigated the effects of a 6-week mindfulness training program on the emotional health of long-term male Chinese prison inmates.</p> <p>Study participants were imprisoned for serious criminal offences, such as murder, robbery, kidnapping or drug trafficking. The mean age of participants was 41.3 ± 10.3 years. Approximately half were from urban and half from rural area. 35% Were married and approximately 28% had educational levels at or below elementary school.</p> <p>The mindfulness intervention instructors had at least three years of personal experience with mindfulness practices (no prior training was reported). The mindfulness training sessions involved body scan, sitting meditation, walking meditation, yoga and group discussions. In addition, there was a daily short group mindfulness practice guided by a psychological counsellor of the prison.</p> <p>There were no significant differences in pre-test outcome measures between the groups.</p> <p>The mindfulness group had significantly increased pre- to post-treatment FFMQ total scores ($F(1, 38) = 12.91, p < 0.001$) compared to no change in the control group ($F(1, 38) = 0.25, p = 0.62$). Similar effects were observed for SAS</p>	<p>The article stated that participants were randomised to the study groups with minor adjustments to comply with scheduling constraints of some prisoners (no further details were reported). No details of any allocation concealment procedures were reported.</p> <p>The nature of the intervention precluded the blinding of participants and study personnel and outcomes</p>

		(meditation group $F(1, 38) = 20.96, p < 0.001$) compared to no change in the control group ($F(1, 38) = 0.32, p > 0.05$)), SDS (meditation group $F(1, 38) = 16.10, p < 0.001$) compared to no change in the control group ($F(1, 38) = 0.60, p > 0.05$)), and total POMS score (meditation group $F(1, 38) = 20.42, p < 0.001$) compared to no change in the control group ($F(1, 38) = 0.13, p > 0.05$)).	were self-rated. Only participants who completed the study (n=19 in the mindfulness group and n=21 in the control group) were included in the analyses. The overall dropout rate was 26%. Results were reported for all specified outcome measures.
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Risk of bias

Systematic reviews

Author (year)	RISK OF BIAS				
	Inclusion criteria	Searches	Review process	Quality assessment	Synthesis
Auty et al (2015)	:(sad face)	:)	:(sad face)	:(sad face)	:(sad face)

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
Sumter et al (2009)	?	?	:(sad face)	:(sad face)	:)	:)
Xu et al (2016)	:(sad face)	?	:(sad face)	:(sad face)	:(sad face)	:)

:) Low risk

:(High risk

? Unclear risk

Search details

Source	Search Strategy	Number of hits	Relevant evidence identified
NICE	Mindfulness, meditation, relaxation Prison, jail, forensic		
MEDLINE	1. Medline; exp MINDFULNESS/; 933 results. 2. Medline; exp MEDITATION/; 1864 results. 3. Medline; exp RELAXATION THERAPY/; 7643 results. 4. Medline; (MBSR OR MBCT).ti,ab; 588 results. 5. Medline; (mindfulness OR meditation).ti,ab; 5721 results. 6. Medline; ((mindfulness-based) OR (body-mind OR mind-body) OR (body adj2 mind)).ti,ab; 4700 results. 7. Medline; ((relaxation* adj2 (technique* OR therap*)).ti,ab; 2629 results. 8. Medline; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7; 16152 results. 9. Medline; exp PRISONERS/ OR exp PRISONS/; 19775 results. 10. Medline; exp CRIMINALS/; 3207 results. 11. Medline; ((prison* OR jail* OR detain* OR incarcerat* OR gaol OR correctional)).ti,ab; 23904 results. 12. Medline; exp FORENSIC PSYCHIATRY/; 60219 results. 13. Medline; 9 OR 10 OR 11 OR 12; 92358 results. 14. Medline; 8 AND 13; 90 results.	90	
EMBASE	29. EMBASE; exp MINDFULNESS/; 2975 results. 30. EMBASE; exp MEDITATION/; 5769 results. 31. EMBASE; exp RELAXATION THERAPY/; 9813 results. 32. EMBASE; (MBSR OR MBCT).ti,ab; 944 results. 33. EMBASE; (mindfulness OR meditation).ti,ab; 7919 results. 34. EMBASE; ((mindfulness-based) OR (body-mind OR mind-body) OR (body adj2 mind)).ti,ab; 6394 results. 35. EMBASE; ((relaxation* adj2 (technique* OR therap*)).ti,ab; 2995 results. 36. EMBASE; 29 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35; 23882 results. 37. EMBASE; exp PRISONERS/ OR exp PRISONS/; 25028 results. 38. EMBASE; exp CRIMINALS/; 16572 results.	113	

	39. EMBASE; ((prison* OR jail* OR detain* OR incarcerat* OR gaol OR correctional)).ti,ab; 28583 results. 40. EMBASE; exp FORENSIC PSYCHIATRY/; 12590 results. 41. EMBASE; 37 OR 38 OR 39 OR 40; 60512 results. 42. EMBASE; 36 AND 41; 113 results.		
PsycINFO/CINAHL	15. PsycInfo; exp MINDFULNESS/; 6013 results. 16. PsycInfo; exp MEDITATION/; 3731 results. 17. PsycInfo; exp RELAXATION THERAPY/; 3390 results. 18. PsycInfo; (MBSR OR MBCT).ti,ab; 832 results. 19. PsycInfo; (mindfulness OR meditation).ti,ab; 11329 results. 20. PsycInfo; ((mindfulness-based) OR (body-mind OR mind-body) OR (body adj2 mind)).ti,ab; 9396 results. 21. PsycInfo; ((relaxation* adj2 (technique* OR therap*)).ti,ab; 2223 results. 22. PsycInfo; 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21; 23161 results. 23. PsycInfo; exp PRISONERS/ OR exp PRISONS/; 13561 results. 24. PsycInfo; exp CRIMINALS/; 17670 results. 25. PsycInfo; ((prison* OR jail* OR detain* OR incarcerat* OR gaol OR correctional)).ti,ab; 31673 results. 26. PsycInfo; exp FORENSIC PSYCHIATRY/; 4013 results. 27. PsycInfo; 23 OR 24 OR 25 OR 26; 48006 results. 28. PsycInfo; 22 AND 27; 200 results.	200	
CENTRAL	#1 "mindfulness":ti,ab,kw (Word variations have been searched)1356 #2 mbsr or mbct 416 #3 MeSH descriptor: [Mindfulness] explode all trees 247 #4 meditation 1318 #5 MeSH descriptor: [Meditation] explode all trees 420 #6 #1 or #2 or #3 or #4 or #5 2211 #7 prison 450 #8 jail or correctional or gaol or incarcerat or detain 289 #9 MeSH descriptor: [Prisons] explode all trees 110 #10 MeSH descriptor: [Criminals] explode all trees 88 #11 prisoner or criminal 918 #12 #7 or #8 or #9 or #10 or #11 1429 #13 #6 and #12 24	24	

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