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Gillen PA, Sinclair M, Kernohan WG, Begley CM, Luyben AG

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[Intervention Review]

Interventions for prevention of bullying in the workplace

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ABSTRACT

Background

Bullying has been identified as one of the leading workplace stressors, with adverse consequences for the individual employee, groups of employees, and whole organisations. Employees who have been bullied have lower levels of job satisfaction, higher levels of anxiety and depression, and are more likely to leave their place of work. Organisations face increased risk of skill depletion and absenteeism, leading to loss of profit, potential legal fees, and tribunal cases. It is unclear to what extent these risks can be addressed through interventions to prevent bullying.

Objectives

To explore the effectiveness of workplace interventions to prevent bullying in the workplace.

Search methods

We searched: the Cochrane Work Group Trials Register (August 2014); Cochrane Central Register of Controlled Trials (CENTRAL; *The Cochrane Library* 2016, issue 1); PUBMED (1946 to January 2016); EMBASE (1980 to January 2016); PsycINFO (1967 to January 2016); Cumulative Index to Nursing and Allied Health Literature (CINAHL Plus; 1937 to January 2016); International Bibliography of the Social Sciences (IBSS; 1951 to January 2016); Applied Social Sciences Index and Abstracts (ASSIA; 1987 to January 2016); ABI Global (earliest record to January 2016); Business Source Premier (BSP; earliest record to January 2016); OpenGrey (previously known as OpenSIGLE-System for Information on Grey Literature in Europe; 1980 to December 2014); and reference lists of articles.

Selection criteria

Randomised and cluster-randomised controlled trials of employee-directed interventions, controlled before and after studies, and interrupted time-series studies of interventions of any type, aimed at preventing bullying in the workplace, targeted at an individual employee, a group of employees, or an organisation.

Data collection and analysis

Three authors independently screened and selected studies. We extracted data from included studies on victimisation, perpetration, and absenteeism associated with workplace bullying. We contacted study authors to gather additional data. We used the internal validity items from the Downs and Black quality assessment tool to evaluate included studies' risk of bias.

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Main results

Five studies met the inclusion criteria. They had altogether 4116 participants. They were underpinned by theory and measured behaviour change in relation to bullying and related absenteeism. The included studies measured the effectiveness of interventions on the number of cases of self-reported bullying either as perpetrator or victim or both. Some studies referred to bullying using common synonyms such as mobbing and incivility and antonyms such as civility.

Organisational/employer level interventions

Two studies with 2969 participants found that the Civility, Respect, and Engagement in the Workforce (CREW) intervention produced a small increase in civility that translates to a 5% increase from baseline to follow-up, measured at 6 to 12 months (mean difference (MD) 0.17; 95% CI 0.07 to 0.28).

One of the two studies reported that the CREW intervention produced a small decrease in supervisor incivility victimisation (MD -0.17; 95% CI -0.33 to -0.01) but not in co-worker incivility victimisation (MD -0.08; 95% CI -0.22 to 0.08) or in self-reported incivility perpetration (MD -0.05 95% CI -0.15 to 0.05). The study did find a decrease in the number of days absent during the previous month (MD -0.63; 95% CI -0.92 to -0.34) at 6-month follow-up.

Individual/job interface level interventions

One controlled before-after study with 49 participants compared expressive writing with a control writing exercise at two weeks follow-up. Participants in the intervention arm scored significantly lower on bullying measured as incivility perpetration (MD -3.52; 95% CI -6.24 to -0.80). There was no difference in bullying measured as incivility victimisation (MD -3.30 95% CI -6.89 to 0.29).

One controlled before-after study with 60 employees who had learning disabilities compared a cognitive-behavioural intervention with no intervention. There was no significant difference in bullying victimisation after the intervention (risk ratio (RR) 0.55; 95% CI 0.24 to 1.25), or at the three-month follow-up (RR 0.49; 95% CI 0.21 to 1.15), nor was there a significant difference in bullying perpetration following the intervention (RR 0.64; 95% CI 0.27 to 1.54), or at the three-month follow-up (RR 0.69; 95% CI 0.26 to 1.81).

Multilevel Interventions

A five-site cluster-RCT with 1041 participants compared the effectiveness of combinations of policy communication, stress management training, and negative behaviours awareness training. The authors reported that bullying victimisation did not change (13.6% before intervention and 14.3% following intervention). The authors reported insufficient data for us to conduct our own analysis.

Due to high risk of bias and imprecision, we graded the evidence for all outcomes as very low quality.

Authors' conclusions

There is very low quality evidence that organisational and individual interventions may prevent bullying behaviours in the workplace. We need large well-designed controlled trials of bullying prevention interventions operating on the levels of society/policy, organisation/ employer, job/task and individual/job interface. Future studies should employ validated and reliable outcome measures of bullying and a minimum of 6 months follow-up.

PLAIN LANGUAGE SUMMARY

Are there ways in which workplace bullying can be prevented?

Background

Bullying in the workplace can reduce the mental health of working people. It can also harm the organisations where these people work. There has been much research about bullying in the workplace. However, most studies have looked at how to manage bullying once it has happened, rather than trying to stop it happening in the first place. Many people who have been bullied choose to leave their job rather than face up to the bully. It is important to know if the actions workplaces take to prevent bullying are effective.

Our review question

What are the benefits of different ways of trying to prevent bullying in the workplace?

What the studies showed

We included five studies conducted with 4116 participants that measured being victim of bullying or being a bully and consequences of bullying such as absenteeism. We classified two interventions as organisational-level, two as individual-level and one as multi-level. There were no studies about interventions conducted at the society/policy level.

Organisational-level interventions

Two studies found that organisational interventions increased civility, the opposite of bullying, by about five percent. One of these studies also showed a reduction in coworker and supervisor incivility. They also found that the average time off work reduced by over one third of a day per month.

Individual-level interventions

An expressive writing task with 46 employees, showed a reduction in the amount of bullying. A cognitive behavioural educational intervention was conducted with 60 employees who had a learning disability, but there was no significant change in bullying.

Multilevel interventions

One study evaluated a combination of education and policy interventions across five organisations and found no significant change in bullying.

What is the bottom line?

This review shows that organisational and individual interventions may prevent bullying in the workplace. However, the evidence is of very low quality. We need studies that use better ways to measure the effect of all kinds of interventions to prevent bullying.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Controlled before and after study					
Patient or population: Employees Setting: Workplaces in US and Canada Intervention: CREW: complex group-based, at the organisational level Comparison: no intervention					
Outcomes	Absolute effects*		No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with no intervention	Risk with CREW (95% CI)			
Self-reported workplace civility, on a scale of 1 to 5; higher score more civility Follow-up: 6 to 12 months	Mean civility score was 3.58 points	Mean civility score was 0.17 higher (0.07 higher to 0.28 higher)	2969 (2 studies)	⊕○○○ ¹ VERY LOW	
Self-reported co-worker incivility, on a scale of 0 to 6; higher score more frequent incivility Follow-up: 6 months	Mean coworker incivility score was 0.76 points	Mean co-worker incivility score was 0.08 lower (0.22 lower to 0.06 higher)	907 (1study)	⊕○○○ ¹ VERY LOW	
Self-reported supervisor incivility, on a scale of 0 to 6; higher score more frequent incivility Follow-up: 6 months	Mean supervisor incivility score was 0.57 points	Mean supervisor incivility score was 0.17 lower (0.33 lower to 0.01 lower)	907 (1 study)	⊕○○○ ¹ VERY LOW	
Self-reported frequency of incivility instigation, on a scale of 0 (never) - 6 (daily) **; higher score more frequent incivility Follow-up: 6 months	Mean incivility instigation score was 0.50	Mean incivility instigation score was 0.05 lower (0.15 lower to 0.05 higher)	907 (1 study)	⊕○○○ ¹ VERY LOW	

Self-reported days of absenteeism in previous month. Follow-up: 6 months	Mean absenteeism in previous month was 0.83 days	Mean absenteeism in previous month was 0.63 days lower (0.92 lower to 0.34 lower)	907 (1 study)	⊕○○○ ¹ VERY LOW
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***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI)

** 0-6 scale confirmed by email correspondence from author

CI: Confidence interval.

GRADE Working Group grades of evidence

High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

¹ We would have downgraded the quality of evidence twice due to high risk of bias caused by study limitations (lack of randomisation and blinding, and use of self-reporting instrument) and once due to imprecision (limited sample available for outcome measurement, limited matching pre- and post intervention). However, once was enough to reach very low quality evidence as we started at low quality evidence because the included studies used a controlled before-after design. We found no reason to upgrade the quality of the evidence.

BACKGROUND

Numerous terms and concepts have been used as synonyms for bullying. These include psychological terror (Leymann 1990), and work abuse (Bassman 1992). Bullying in the workplace has also been described as: “harassment, intimidation, aggression, bad attitude, coercive management, personality clash, poor management style, brutality and working in a funny way” by Adams 1992. In the United States (US) and Canada, terms such as ‘harassment’ (Brodsky 1976), ‘workplace trauma and employee abuse’ (Wilson 1991), ‘petty tyranny’ (Ashforth 1994), and ‘incivility’ (Cortina 2001), are used. The term ‘bullying’ is now visible in the literature (Vessey 2009), and ‘mobbing’ is also used when describing harassment or bullying of employees (Einarsen 2000; Vandekerckhove 2003). In the context of the workplace, ‘mobbing’ can also indicate behaviour by a group of people against an individual, or as a synonym for bullying. In Australia, the most commonly used term is ‘horizontal violence’, which refers specifically to bullying by peers or colleagues at the same organisational level (McKenna 2003). Occasionally, the term ‘harassment’ has been used interchangeably with bullying. A differentiation between bullying and harassment has been proposed by McMahon 2000, who stated that bullying is abuse of power and this is the factor that differentiates harassment from bullying. It is important to note that there is legislation against ‘harassment’ within the United Kingdom (UK) and European law, which relates specifically to behaviour directed at individuals because of their colour, race, creed, gender, or sexual orientation (European Foundation 2010). As noted above, the terms incivility and bullying are increasingly being used interchangeably. According to Namie 2003 visualising organisational disruption on a 10-point continuum incivility is located between 1 and 3 and workplace bullying between 4 and 9. Clark 2011 developed a ‘continuum of incivility’ of unacceptable workplace behaviours, based primarily on interactions with work colleagues. They argue that incivility that goes unchallenged may be perceived as bullying.

Health-service unions have classified bullying in the workplace as “humiliating an individual, especially in front of colleagues, picking on someone; belittling someone, undermining someone’s ability to do their job; and abusive or threatening behaviour” (RCM 1996; Royal College of Nursing 2002; UNISON 1997). Major work in this area has been undertaken by Einarsen 2009, with the result that work-related, person-related, and physical intimidation-type behaviours have been incorporated into the *Revised Negative Acts Questionnaire*. However, some concerns have been raised about the limitations of a definitive list of bullying behaviours, as there are a number of ways in which bullying can manifest itself, and these are difficult to encapsulate in a single measure, even if the instrument has good validity and reliability (Carponecchia 2011). Another issue of importance is the misconception that managers and supervisors are the sole perpetrators of bullying. There is evidence that employees can also bully managers (Gillen 2008).

Schreurs 2010 argues that before bullying takes place, several an-

tecedents need to be present. These have been identified in the literature as role conflict, role ambiguity, level of workload, and level of autonomy in the job (Baillien 2009; Samnani 2012). Stress inherent in the job or the environment has also been named as a triggering factor (Hauge 2007; Hauge 2009). Organisational change can also lead to bullying (Skogstad 2007). This is manifest in situations where managers enforce change or conformity by bullying their employees (Beale 2011; Vartia 1996). Gillen 2008 identified perception of the victim, an individual’s locus of control, power, distance, and a permissive culture in the workplace as precursors to bullying. The workplace culture influences how employees behave towards one another (Cleary 2009; Keashly 2010). Lutgen-Sandvik 2014 argue that when bullying is not recognised and prevented, organisations will not meet their full potential. There is also evidence that employees emulate behaviour that they see in other colleagues, so that they can fit in with the workplace culture, thus coming to perceive bullying as normal (Gillen 2007).

There is wide variation in the reporting and recording of bullying around the world. This may be due to a number of factors, such as: lack of clarity in definition, variation in time frames assigned by the researcher, problems with validity and reliability of measurement, and organisational culture and structures (Zapf 2011). In the first study of workplace bullying in France, Neidhammer 2007 reported that 10% of the population studied had been exposed to bullying within the previous 12 months (N = 3132 men and 5562 women). A survey on working conditions by the European Foundation 2010 reported rates as high as 11% in Belgium and 10.7% in Luxembourg, and as low as 2.7% in Montenegro and 3% in Poland, in response to the question: “Have you been subjected to bullying or harassment in the last year?” It is clear that the criteria set by researchers, such as duration and frequency of bullying behaviour, invariably impact on the incidence levels recorded. Two studies of NHS Trust employees in the UK help to demonstrate this, with a prevalence of between 11% (self-reported exposure to bullying in the preceding six months (Hoel 2000)), and 38% (exposure to one or more types of bullying behaviours during the previous year (Quine 1999)). More recently, in a cross-sectional study by Carter 2013, 20% of 2950 Health-service staff reported having been bullied in the previous six months. However, other factors may also impact on these findings, such as workplace and gender (Zapf 2011). Nielsen 2009 reported on a study of 2539 Norwegian employees, where the incidence of workplace bullying ranged from 2% to 14.3%, depending on how the behaviour was measured and frequency estimated. In the US, a 70% rate of exposure to bullying behaviour was recorded among registered nurses (N = 212), although a time criterion was not set by the researchers (Vessey 2010). An Australian workplace project included responses from 5743 workers from six states and territories, and reported that 6.8% of respondents had experienced bullying in the last six months (Safe Work Australia 2012).

The consequences of bullying have implications for the individual

and the organisation. [Berry 2012](#) reported the negative impact of bullying on novice nurses' ability to manage their workload. Generally, employees who have been bullied have lower levels of job satisfaction, higher levels of anxiety and depression, and are more likely to leave their job ([Ball 2002](#); [Quine 2001](#); [Vessey 2010](#)). [Tehrani 2004](#) noted that of the 67 healthcare professionals who they had identified as having been bullied, 44% were experiencing high levels of post-traumatic stress disorder (PTSD). For the individual, the effects of bullying are considered to be more devastating than all other types of workplace stress put together ([Hogh 2011](#)). Building on the work of [Kivimäki 2003](#), [Nielsen 2012](#) suggested that early intervention was necessary to prevent bullying and subsequent psychological distress becoming a 'vicious circle' in which the victim of bullying becomes susceptible to more bullying. Indeed, prolonged exposure to workplace bullying has been identified as a key predictor of mental ill-health five years later ([Einarsen 2015](#)). The consequences for the organisation are most often reported in financial terms. A report commissioned by the Dignity at Work Partnership has estimated that the total cost of bullying for organisations in the UK in 2007 was approximately GBP 13.75 billion ([Giga 2008](#)). In real terms, these costs arise from higher levels of sickness absence, recruitment costs associated with a propensity for staff to leave, and decreased productivity ([Johnson 2009](#)). However, [Beale 2011](#) has argued that some employers do not tackle bullying because they benefit from its existence in the workplace. They suggest that a certain level of bullying by managers in organisations is tolerated, as it is seen as an effective means of controlling the workforce.

It is clear that workplace bullying and its prevalence, manifestations, and consequences has been the subject of a growing body of research throughout the world. There are an increasing number of organisations that provide employee assistance programmes, including counselling, as a means of dealing with the consequences of bullying ([Tehrani 2011](#)). Such management approaches are costly, deal with the aftermath of bullying, and have been largely ineffective, with high financial, individual, and organisational costs ([Hoel 2011](#)). However, what is less clear are the measures that can be put in place before the onset of bullying. Simply put, prevention of bullying requires a proactive approach and management tends to be reactive and problem-focused.

Description of the condition

Three attributes are commonly assigned to bullying: first, the behaviour is repeated (this excludes one-off events or personal attacks); second, the bullying behaviour has a negative effect on the victim; and third, the victim finds it difficult to defend him or herself ([Einarsen 2011](#); [Gillen 2007](#); [Zapf 2011](#)). There is also a fourth attribute, 'intent' of the bully, but as yet, there is no consensus about including it in definitions. Nevertheless, 'intent' is sometimes used to differentiate incivility from bullying. It has

been suggested that incivility is unintentional and often circumstantial, such as a result of workplace pressures ([Clark 2011](#)). Commonly ascribed definitions of bullying used by researchers at an international level include the identification of physical actions, disruptive, psychological behaviours, and acts of incivility ([Einarsen 1996](#); [Einarsen 2011](#)). [Feblinger 2009](#) described various behaviours associated with incivility, similar to those listed in instruments that measure bullying ([Einarsen 2009](#); [Gillen 2007](#)). Bullying has been defined as: "the often intentional, repeated, persistent, offensive, abusive, intimidating, malicious or insulting behaviour, abuse of power, or unfair penal sanctions against which the victim finds it difficult to defend him or herself. It has a negative effect on the recipient, which makes them feel upset, threatened, humiliated or vulnerable; undermines their self-confidence; and which may cause them to suffer stress" ([Gillen 2008](#)). This is similar to the [Einarsen 2011](#) definition: "Bullying at work means harassing, offending, socially excluding someone, or negatively affecting someone's work tasks. In order for the label bullying (or mobbing) to be applied to a particular activity, interaction or process it has to occur repeatedly and regularly (e.g. weekly) and over a period of time (e.g. about six months). Bullying is an escalating process in the course of which the person confronted ends up in an inferior position and becomes the target of systematic negative social acts. A conflict cannot be called bullying if the incident is an isolated event, or if two parties of approximately equal strength are in conflict". Although universally accepted, the [Einarsen 2011](#) definition does not include reference to the negative effect of the bullying behaviour on the victim, i.e. that it causes stress, nor does it include reference to the issue of intent. We used the [Einarsen 2011](#) definition of bullying in this review as it is more commonly known, and has been used extensively in research studies.

Description of the intervention

We considered all interventions within the workplace that were aimed at preventing bullying. Prevention of bullying can be more difficult to define (than bullying itself), as it may occur indirectly from other actions, such as achieving a positive workplace culture. Interventions may be targeted at individual employees, groups of employees, or organisations as a whole, and aim to prevent new cases of bullying or to prevent further instances of bullying of those who have already suffered from it. We used the levels of 'society/policy', 'organisation/employer', 'job/task' and 'Individual/job interface' to classify prevention interventions according to [Vartia 2011](#).

Interventions aimed at preventing bullying in the workplace may be internally derived and developed, but more often are influenced by local, national or international policy ([Leka 2008](#)). According to [Lamontagne 2007](#) interventions may be classified as primary (preventative), secondary (ameliorative), or tertiary (reactive). For the purpose of this review, we considered only primary interventions.

Vartia 2011 identified four different levels of bullying interventions as follows:

Society/policy

These interventions are normally law- or regulation-based, with agreements of individual companies, for example, the [Dignity at Work Partnership 2007](#), or European Legislation, such as the Framework Agreement on Harassment and Violence at Work ([European Social Dialogue 2007](#)). These set the standards of accepted behaviour, which are cascaded to employers who are actively encouraged to implement them.

Organisation/employer

These interventions are derived most often from law- or regulation-based initiatives such as health and safety directives and the legislation described above. By definition, they are workplace-specific and deal with the organisation's policy, aims, and expectations for the culture of the workplace, setting out clearly expected and agreed levels of behaviour. Such policies and procedures are often the first step that workplaces take when trying to influence workplace bullying ([Carponecchia 2011](#)). These documents should clearly indicate the types of behaviour that are considered unacceptable and describe a reporting mechanism for those who perceive themselves to be 'bullied' ([Salin 2008b](#)). Pre-intervention surveys may also be carried out to establish baseline levels. Although it should be remembered that reports of bullying often rise following the introduction of a new intervention. This is perhaps because workers are now more aware of what bullying is.

Job/task

These interventions relate specifically to the job that employees are expected to do and the psychosocial environment in which they work. A risk assessment, including the identification of antecedents of bullying within the organisation, is used to inform a risk-reduction intervention.

Individual/job interface

These interventions relate specifically to training, such as assertiveness training, or educational interventions aimed at altering behaviour or perception.

Interventions may operate at one or more of these levels. They may be targeted at individuals, in particular managers or supervisors, using a prevention perspective. They may focus on policy, procedures, and guidelines, or on locally designed and implemented education and training, which may be facilitated by occupational health departments.

How the intervention might work

Interventions to prevent workplace bullying may work by:

1. strengthening the policies and culture of intolerance of bullying in the workplace by processes of engagement with employees;
2. providing a safe environment within which mediation and negotiation may take place when problematic behaviour (not bullying) is first identified;
3. undertaking risk assessments of job-related precursors to bullying; and
4. providing awareness-raising or education sessions that will encourage employees to reconsider their behaviour and how they interact with colleagues.

Why it is important to do this review

Bullying has been shown to cause widespread emotional harm and distress ([Gillen 2008](#); [Hogh 2011](#)). It is viewed as a negative behaviour in the workplace that leads to increased absences, lower productivity ([Fisher-Blando 2008](#)), or continuing inability to work ([Hogh 2011](#)). Mental health and well-being issues are increasingly recognised as being responsible for employee absence and turnover. This is a crucial factor in recruiting and maintaining a healthy workforce, which is currently of particular importance in healthcare services in particular ([World Health Organization 2008](#)), and in business in general, when organisations are attempting to keep costs low ([CIPD 2013](#)). It was important to do this review in order to determine the effectiveness of interventions that currently exist to prevent bullying in the workplace. Prevention is important, as often the damage that is caused by bullying is difficult to undo, and has long-term consequences on employees' health and well-being ([Gillen 2012](#); [Butterworth 2013](#)).

OBJECTIVES

To evaluate the effectiveness of workplace interventions to prevent bullying in the workplace.

METHODS

Criteria for considering studies for this review

Types of studies

We included all studies that evaluated the effectiveness of interventions to prevent bullying in the workplace (those targeted at individual employees, groups of employees, and organisations as

a whole). We included randomised controlled trials (RCT) and cluster-randomised controlled trials (cRCT) of person-directed interventions. As it is more difficult to randomise whole companies or work units, we also included controlled before and after (CBA) studies and interrupted time-series (ITS) studies of organisational interventions.

Types of participants

We included all studies where participants were employees in paid work within private, public, or voluntary organisations.

Types of interventions

We considered for inclusion all interventions aimed at primary prevention of bullying in the workplace. We excluded interventions that were focused on managing behaviours associated with bullying. Prevention is a proactive approach, which aims to reduce the incidence of bullying, while management of bullying is reactive in nature, often only responding when the detrimental impacts on individuals, groups of employees, and organisations are evident. The interventions may have been targeted at an individual employee, a group of employees, or an organisation as a whole. We excluded interventions that were not clearly defined or that did not have a theoretical underpinning. We included studies that compared interventions with each other, with usual practice, or with no intervention. We also included interventions where groups acted as their own control. We classified included interventions according to the four levels identified by [Vartia 2011](#) (see [Description of the intervention](#)) where possible and as multilevel interventions when they engaged multiple levels. We included studies that reported:

- clearly stated aims for the implementation of interventions;
- clear and detailed description of the content and nature of the intervention that enabled the reader to fully understand it; and
- an explanation of the intervention's theoretical underpinnings.

We considered for inclusion all interventions aimed at individuals to prevent bullying by means of:

- informational or educational interventions aimed at altering behaviour or perception;
- organisational policy or incentives that discourage bullying;
- enhancements to reporting mechanisms that make it easier for individuals to report problematic behaviour; and
- health and safety policies that include identification of bullying as a risk.

We also considered for inclusion all interventions targeted at groups of employees or organisations as a whole to prevent bullying by means of:

- Informational or media campaigns to change policy;

- Incentives to change policy or encourage adherence to policies (either positive or negative); or
- Interventions that will alter the accepted culture of the organisation.

Types of outcome measures

Bullying is a complex phenomenon. Hence outcome measures should reflect that complexity. We included studies that used outcome measures related to prevention of workplace bullying, i.e. outcomes that showed a change in the number of reported cases of bullying perpetration, victimisation, or level of absenteeism. Self-reported outcomes were taken in preference to secondary observations.

Primary outcomes

We included studies that reported on the number of cases of self-reported bullying, whether recorded by perpetrator or victim. Hence we defined the primary outcome as the number of occurrences of bullying perpetration or victimisation, or both. Perpetration refers to a measurable act of bullying, while victimisation refers to recipients' reports of such action. We also accepted common synonyms such as mobbing and incivility and antonyms such as civility. We included dichotomous, categorical, integer and continuous measures of bullying.

Secondary outcomes

When included studies reported intervention effectiveness with consequential measures of bullying, namely stress, depression, absenteeism or sick leave, in addition to our primary outcome, we included these data.

We used only the primary outcomes as inclusion criteria. We used the secondary outcomes only to explain the findings of the primary outcomes because the included studies using our secondary outcomes are only a subset of all studies that reported our primary outcomes.

Search methods for identification of studies

We systematically searched for reports on the effectiveness of one or more interventions to prevent bullying in the workplace. The search strategy consisted of key words, including commonly used synonyms for bullying, the workplace setting, employees, and workplace interventions.

Electronic searches

We conducted a search in the following databases:

1. The Cochrane Work Group Trials Register (August 2014; update search not undertaken as small number of papers were retrieved in the original search).

2. The Cochrane Central Register of Controlled Trials (CENTRAL; *The Cochrane Library* 2016, issue 1).
3. PUBMED (1946 to January 2016).
4. EMBASE (1980 to January 2016).
5. PsycINFO (1967 to January 2016).
6. Cumulative Index to Nursing and Allied Health Literature (CINAHL Plus; 1937 to January 2016).
7. Applied Social Sciences Index and Abstracts (ASSIA; 1987 to January 2016).
8. ABI Global (earliest record to January 2016).
9. International Bibliography of the Social Sciences (IBSS; 1951 to January 2016).
10. Business Source Premier (BSP) (earliest record to January 2016).
11. OpenGrey (Previously known as OpenSIGLE-System for Information on Grey Literature in Europe; 1980 to December 2014; update search not undertaken as small number of papers retrieved in original search).

We used an initial strategy developed by the Cochrane Work Group's Information Specialist, outlined in [Appendix 1](#), which we adapted as required for each database. Our search focused primarily on titles and abstracts, with the aim of reducing the number of irrelevant articles retrieved. The Cochrane Work Group's Information Specialist and PG conducted the literature searches.

Searching other resources

Initially, we used a common online search engine to locate relevant websites to access otherwise unpublished material. We also searched the reference lists of all returned studies to identify potential additional studies. We also contacted experts in this area of research (frequently cited authors) to minimise potential studies being missed and to identify unpublished material that may be relevant. We also handsearched proceedings of conferences that focused on the issue of workplace bullying that we found during our database and website searches.

Data collection and analysis

Selection of studies

We discarded all duplicate publications of studies. To identify potentially eligible studies, at least two review authors (PG and one other review author by rotation) screened all titles and abstracts. All authors (PG, MS, GK, CB, AL) undertook a calibration exercise to ensure consistency in selection of potentially eligible papers. Then two review authors (all authors were involved) independently read the abstracts and titles selected for possible inclusion. We screened the references without conferring, against the inclusion criteria. We only conferred once we had individually decided which papers should be included in the review. When a pair of authors could

not agree, a third member of the review team arbitrated. We did not blind ourselves to authors, journal, or date of publication.

Data extraction and management

We designed a data extraction form based on forms developed for other Cochrane Work Group reviews. Two review authors extracted data using the agreed form (PG and one other review author by rotation). We resolved disagreements through discussion with at least one other review author. We filed all studies that had data extracted along with the data extraction forms for the purpose of an audit trail. One review author (PG) transferred all data into RevMan 5.3 ([RevMan 2014](#)), and another review author (GK) checked the accuracy of the data transfer.

Assessment of risk of bias in included studies

For randomised controlled trials, three review authors (PG, MS, GK) independently assessed the risk of bias of the included studies according to the methods described in the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)).

For non-randomised designs, we adapted the approach advocated by [Downs 1998](#), and supported by [Deeks 2003](#). We based our assessment of risk of bias solely on the two internal validity scales consisting of 13 items, as they were the most appropriate in this case ([Verbeek 2012](#)). In order to report the ROB outcome in [RevMan 2014](#), we had to adapt the scoring slightly. Instead of using scores 1 or 0 we assessed each item as 'high risk', 'low risk', or 'unclear risk', depending on the study information provided. We independently assessed the internal validity of studies using the [Downs 1998](#) Checklist. For the non-randomised studies allocation concealment is not applicable so we judged them to have a high risk of bias. Pairs of review authors independently examined the risk of bias of the included studies. We resolved disagreements by discussion.

Measures of treatment effect

We calculated risk ratios (RRs) for dichotomous outcomes and means and standard deviations (SD) for continuous outcomes. When the results could not be entered in the data tables, we described them in the [Characteristics of included studies](#) and in the text.

We did not identify any interrupted time-series studies (ITS) that met our inclusion criteria. If these are included in future versions of the review, we will extract data from the original papers and re-analyse them according to the recommended methods for analysis of ITS designs for inclusion in systematic reviews ([Ramsay 2003](#)).

Unit of analysis issues

Although the included studies' interventions operated in very different ways, they all worked at the level of the individual, that is,

aiming to achieve individual outcomes to reduce the level of victimisation, perpetration, or both. Hence the unit of analysis was the individual. One study was a cluster-randomised trial but it reported insufficient data to assess the cluster effect. If future updates of this review find cluster-randomised studies that report sufficient data to be included in the meta-analysis, but the authors do not make an allowance for the design effect, we will calculate the design effect based on a fairly large assumed intra-cluster correlation of 0.10. We base the assumption that 0.10 is a realistic estimate on studies about implementation research (Campbell 2001). We will follow the methods stated in the *Cochrane Handbook for Systematic Reviews of Interventions* for the calculations (Higgins 2011).

Dealing with missing data

We contacted the authors of three of the studies included in this review. For the McGrath 2010 study, we clarified whether the participants were in paid work. We also contacted one of the authors of the Hoel 2006 study to seek clarification on the process of randomisation and to ask for data in a format that could be more easily included in the analysis. However, we did not receive a response. In addition, communication with Leiter 2011 provided clarification on data from their multivariate analysis.

Assessment of heterogeneity

We could combine results data from different studies in a meta-analysis for just one comparison. Hence we needed to assess heterogeneity between just two studies (Leiter 2011; Osatuke 2009). If more studies are included in future versions of the review, we will group them based on similar study designs, interventions, and outcome measures. We will test for statistical heterogeneity by means of the Chi² test as calculated in Review Manager 5.3 software (RevMan 2014). We will use a significance level of $P < 0.01$ to indicate whether or not there is a problem with heterogeneity. Moreover, we will quantify the degree of heterogeneity using the I² statistic, where an I² value of 0% to 40% may be not important, 30% to 60% may represent important heterogeneity, 50% to 90% may indicate substantial heterogeneity and over 75% to indicate considerable heterogeneity (Higgins 2003).

Assessment of reporting biases

We assessed reporting biases based on publication, time lag, location and language as recommended by Higgins 2011 and looked for signs of reporting biases within articles by checking that all stated outcomes had been reported. We prevented location bias by searching across multiple databases. We prevented language bias by including all eligible articles regardless of publication language.

Data synthesis

We pooled data from two studies judged to be clinically homogeneous (similar intervention, research design and outcome) in a

meta-analysis using Review Manager 5.3 software (RevMan 2014). Because these studies were statistically heterogeneous, we used a random-effects model. Should we identify more statistically homogeneous studies to include in meta-analyses in future updates of this review we will use a fixed-effect model. We conducted a sensitivity check by using the fixed-effect model to reveal differences in results. We included a 95% confidence interval (CI) for all effect estimates.

Should we find ITS studies in future updates, we will use the standardised change in level and change in slope as effect measures. We will perform meta-analyses using the generic inverse variance method. We will enter the standardised outcomes into Review Manager 5.3 as effect sizes, along with their standard errors (SEs).

Quality of the evidence

We used the GRADE approach, as described in the *Cochrane Handbook for Systematic Reviews of Interventions*, and GRADEproGDT software to present the quality of evidence in 'Summary of findings' tables (Higgins 2011). The quality of a body of evidence for a specific outcome is based on five factors: 1) limitations of the study designs; 2) indirectness of evidence; 3) inconsistency of results; 4) imprecision of results; and 5) publication bias.

The GRADE approach specifies four levels of quality (high, moderate, low and very low), incorporating the factors noted above. Quality of evidence by GRADE should be interpreted as follows:

- High quality: We are very confident that the true effect lies close to that of the estimate of the effect;
- Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different;
- Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect;
- Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect.

Subgroup analysis and investigation of heterogeneity

Given the paucity of studies included in this review, we could not perform subgroup analyses. In future updates, if there are sufficient data, we will undertake subgroup analyses based on gender, occupation, type of intervention for prevention, type of organisation, location (country of origin), as well as type and duration of interventions.

Sensitivity analysis

We did not find a sufficient number of studies to permit us to conduct sensitivity analyses, that is, to test if our findings were affected by the choice of studies included in analyses. If we have

sufficient studies in future updates, we will conduct sensitivity analyses in which we exclude studies we judge to have a high or unclear risk of bias.

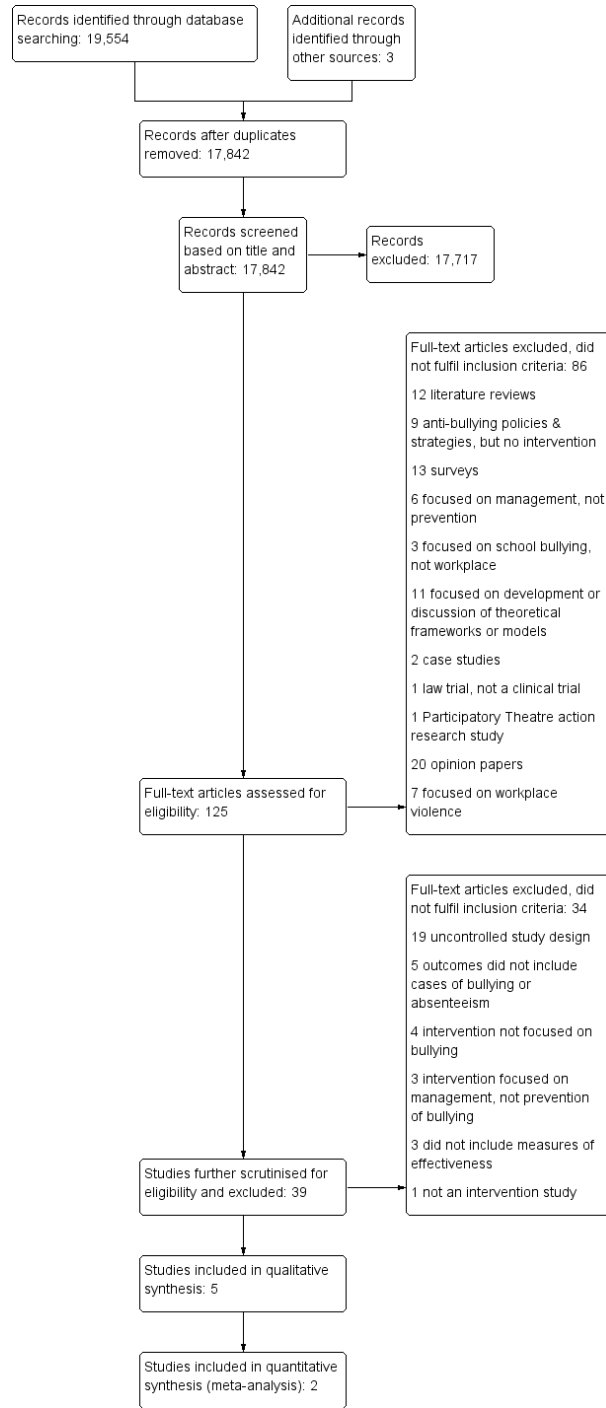
RESULTS

Description of studies

Results of the search

Our systematic search generated 19,544 references ([Figure 1](#)). We identified 125 references that we considered potentially eligible for inclusion and accessed the full text articles. Following further scrutiny, we excluded 86 of these. We read the remaining 39 in greater detail and we excluded 34 as they did not meet our inclusion criteria. Five studies ([Hoel 2006](#); [Kirk 2011](#); [Leiter 2011](#); [McGrath 2010](#); [Osatuke 2009](#)) met the inclusion criteria for this review.

Figure I. PRISMA Study flow diagram.



Included studies

Each of the included studies reported on at least one intervention that was clearly defined or had a clear theoretical underpinning. See [Characteristics of included studies](#).

Study Design

Of the five included studies, one was a cluster-RCT (cRCT) (Hoel 2006), and the other four were CBA studies (Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009).

Two CBA studies used a group intervention with surveys before and after the delivery of the intervention (Leiter 2011; Osatuke 2009). One of these was followed-up at 12 months and reported separately (Leiter 2011). One other CBA study compared reported levels of incivility, perpetration, and victimisation before and after the intervention (Kirk 2011). In another CBA study, victimisation and bullying behaviour were measured at three time points, one before and two after intervention (McGrath 2010).

In the cRCT, clusters were randomly allocated to four different bullying intervention programmes or a control condition.

Setting and participants

One study was carried out with a large healthcare organisation with employees dispersed across Canada (Leiter 2011; N = 907), and another with five organisations with employees across several US states (Osatuke 2009; N = 2062).

In Hoel 2006, the 1041 participants were employees from five public sector organisations in the UK: three NHS trusts (one focused specifically on mental health), one civil service department, and one police force).

The Kirk 2011 study was carried out in Australia. Of the 46 participants 48% were in managerial or professional positions, 15% were employed psychology students, and details of the remaining participants' employment were not given.

The McGrath 2010 study was carried out in Ireland. The 60 participants were adults with a borderline, mild, or moderate learning disability, based in a work centre. We contacted the authors of the paper to determine whether or not the participants in this study were paid for the work. The authors responded that the participants received 'therapeutic earnings' but not enough to affect their benefits. We decided that while these participants could not be considered to be representative of most paid workers, they did meet the inclusion criteria for this review.

The five included studies had altogether 4116 participants.

Interventions

All included studies took account of background literature about bullying and how to prevent it. Two studies were conducted within a framework for Civility, Respect, and Engagement in the Workforce (CREW; Leiter 2011; Osatuke 2009). One study was clearly informed by the intervention literature especially when it comes to the design of the intervention programme, the need to account for organisational context, and to include employee participation (Hoel 2006). The expressive writing intervention was based on the theory of self-efficacy and the demonstrated potential for behaviour change that may result from 'poor emotional processing' (Kirk 2011). The final included intervention was based on cognitive behavioural therapy (CBT), which is suitable for effecting behaviour change (McGrath 2010). According to the authors their intervention was based on "...other-bullying programs, anger management programs and relaxation training programs adapted to meet the needs of adults with a learning disability".

Society/policy level interventions

None of the included studies reported on interventions at the society/policy level.

Organisation/employer level interventions

Two studies reported on the effectiveness of a culture change intervention, which was intended to address Civility, Respect and Engagement at Work (CREW) at the organisational or employer level (Leiter 2011; Osatuke 2009). The core elements of the CREW intervention are included in the [Characteristics of included studies](#). This was a substantial intervention, demanding organisational commitment to a process that lasted longer than six months.

Job/task level interventions

None of the included studies reported on interventions aimed solely at the job/task level.

Individual/job interface level interventions

One study described the effects of an educational programme that included a three-hour negative behaviour awareness intervention on acceptable and unacceptable behaviours within the workplace (Hoel 2006). We judged the intervention to operate at the individual/job interface level.

One study used an educational intervention aimed at enhancing self-efficacy to reduce workplace incivility victimisation and perpetration through a self-administered writing intervention, which was completed by participants over a three-day period (Kirk 2011). The control group completed a sham writing task.

One study described a cognitive-behavioural educational intervention developed from other unstipulated bullying, anger management and relaxation programmes, which was adapted to meet the needs of adults with a learning disability (McGrath 2010). The intervention lasted 90 minutes and was delivered once a week, at the same time each week, for ten weeks. The intervention included information on bullying and its consequences, raised awareness of personal triggers, and taught participants ways to deal with bullying. The intervention was directed at bullies, victims, and bystanders (those who had witnessed bullying of others).

Multilevel interventions

One study described an educational intervention programme operating at three levels: organisation/employer level, job/task and individual/job interface levels (Hoel 2006). The programme was comprised of three intervention components: policy communication, stress management, and negative behaviour awareness training. These were implemented in various combinations that always included policy communication which we judged to operate at the organisation or employer level. We judged the stress awareness session to operate at the job/task level, whilst we judged the negative behaviour component of the programme to operate at the individual/job interface level.

Outcomes

Studies used several outcomes to establish the effectiveness of interventions that were aimed at preventing bullying in the workplace.

Primary outcomes

Bullying victimisation was measured in all of the included studies. Two studies measured bullying victimisation through self-report questionnaire (Hoel 2006) or interview (McGrath 2010).

The studies by Kirk 2011 and Leiter 2011 recorded experiences of incivility. Kirk 2011 defined incivility as “discourteous interactions between employees that violate norms of mutual respect. Such behaviour can involve expression of hostility, privacy invasion, exclusionary behaviour, and gossiping”. The study by Leiter 2011 reported extending previous work and used a similar pre-existing definition of incivility. We regarded the behaviours covered by this definition as common bullying behaviours.

Two studies reported on experiences of civility (Osatuke 2009; Leiter 2011) using a five-point Likert type scale that averaged the answers on eight questions concerning respect, cooperation, conflict resolution, co-worker personal interest, co-worker reliability, anti-discrimination, value differences, and supervisor diversity acceptance. We regarded these behaviours as the inverse of incivility and therefore an indirect measure of bullying victimisation. The scale scores ranged from one to five.

In both Leiter 2011 and Osatuke 2009 there were differences in baseline scores between the intervention and the control group.

Both studies used a multivariate linear regression analysis for taking these differences into account. We used the betas from the regression analyses as the mean differences of the change values and the associated standard errors (SE). For Leiter 2011, we received the Standard Errors (SE) belonging to the betas on request from the authors. For Osatuke 2009, we calculated SE using beta divided by the square root of the reported F-value.

Bullying perpetration was measured in four of the included studies. Two studies measured bullying perpetration through self-report questionnaire (Hoel 2006) or interview (McGrath 2010). We regarded the incivility measures reported as incivility perpetration (Kirk 2011) and instigated incivility (Leiter 2011) as bullying perpetration.

Secondary outcomes

In addition to reporting intervention effects on one or more of our primary outcomes, two studies reported intervention effects on absenteeism from work (Hoel 2006; Leiter 2011). Leiter 2011 reported absenteeism using self-report and ‘aggregate institutional data’ and Hoel 2006 used self-reports to measure time off work. We did not identify the secondary outcomes stress or depression in any of the included studies.

Follow-up

Follow-up ranged from two weeks (Kirk 2011) to 12 months or longer. Commonly, longer interventions were associated with longer follow-up, from three to six months (Hoel 2006; McGrath 2010), to 11-14 months for culture change interventions (Osatuke 2009; Leiter 2011). Longer follow-up was associated with greater loss of participants.

Excluded studies

There is considerable literature on workplace bullying, most of it focused on the nature, manifestations, consequences, and management. This is reflected in the number of papers that we initially found (Figure 1) and subsequently excluded. We screened and excluded 86 full-text papers.

Twelve papers were literature reviews (Bartlett, 2011; Beech 2006; Branch 2013; Carroll 2012; Dollard 2007; Hodgins 2014; Hutchinson 2013; Illing 2013; Johnson 2009; Stagg 2010; Vessey 2010; Wassell 2009).

Nine papers reported on the implementation or proposed application of anti-bullying policies or strategies but did not include testing of their effectiveness (Bulutlar 2009; Duffy 2009; Hollins 2010; Leka 2011; Meglich-Sespico 2007; Ng 2010; Rasmussen, 2011; Sheehan 1999; Srabstein 2008).

Thirteen papers were surveys and reported on the frequency and nature of bullying behaviour, its impact and outcomes (Baillien 2009; Duncan 2001; Hogh 2011; Mangione 2001; O’Driscoll 1999; Oluremi 2007; Salin 2008a; Salin 2008b; Spector 2007; van Heughten 2010; Vessey 2010; Walrafen 2012), or on the impact of leadership style on frequency of bullying (Nielsen 2013).

Six papers focused on the management of workplace bullying (Appelbaum 2012; Bentley 2012; Gardner 2001; Kahl 2007; Speery 2009; Steen 2011), and three on interventions with school children (Dawn 2006; Farrington 2009; Halleck 2008).

Eleven papers focused on theoretical frameworks or models but did not include an intervention (Baillien 2011a; Djurkovic 2006; Djurkovic 2008; Johnson 2011; Laschinger 2012; Law 2011; Nielsen 2008; Olender-Russo 2009; Ramsay 2011; Saam 2010; Schat 2000).

Two papers reported on case studies (Lippel 2011; Namie 2009), one reported on a trial in a court of law (Weber 2009), and one reported on the use of a participatory theatre action research approach to deal with bullying (Quinlan 2009).

Twenty papers were opinion papers (Al-Daraji 2009; Christmas 2007; Cleary 2010; Dal Pezzo 2009; DelBel 2003; Egues 2013; Farrell 2007; Gerardi 2007; Gilmore 2006; Hubert 2003; Kolanko 2006; Longo 2007; Lutgen-Sandvik 2012; Mahlmeister 2009; Namie 2004; Rayner 1999; Resch 1996; Shreeavtar 2002; Tehrani 1995; Yamada 2009), seven focused on workplace violence directed at healthcare workers by patients (Arnetz 2000; Carter 1997; Farrell 2005; Molloy 2006; Viitasara 2004; Voelker 1996;

Zampeiron 2010), and one study focused on assertiveness training for nurses but did not have a control group (Karakas 2015).

We subjected the remaining 37 potentially eligible papers to a more detailed review against the inclusion criteria, and subsequently excluded all of them because their study design did not meet our inclusion criteria, primarily due to lack of control (Barrett 2009; Beirne 2013; Bortoluzzi 2014; Bourbonnais 2006a; Brunges 2014; Ceravolo 2012; Chipps 2012; Collette 2004; Cooper-Thomas 2013; Crawford 1999; Egues 2014; Fedra 2010; Gedro 2013; Gilbert 2013; Grenyer 2004; Griffin 2004; Holme 2006; Karakas 2015; Lasater 2015; Latham 2008; Leiter 2011; Longo 2011; Léon-Pérez 2012; Mallette 2011; Meloni 2011; Melwani 2011; Mikkelsen 2011; Nikstatis 2014; Ostrom 2008; Osatuke 2009; Pate 2010; Probst 2008; Stagg 2011; Stevens 2002; Strandmark 2014; Wagner 2012; Woodrow 2014).

Further details of these studies are presented in the [Characteristics of excluded studies](#) table.

Risk of bias in included studies

We provide an overview of our risk of bias judgements across studies in [Figure 2](#) and per study in [Figure 3](#).

Figure 2. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies using the Downs 1998 checklist.

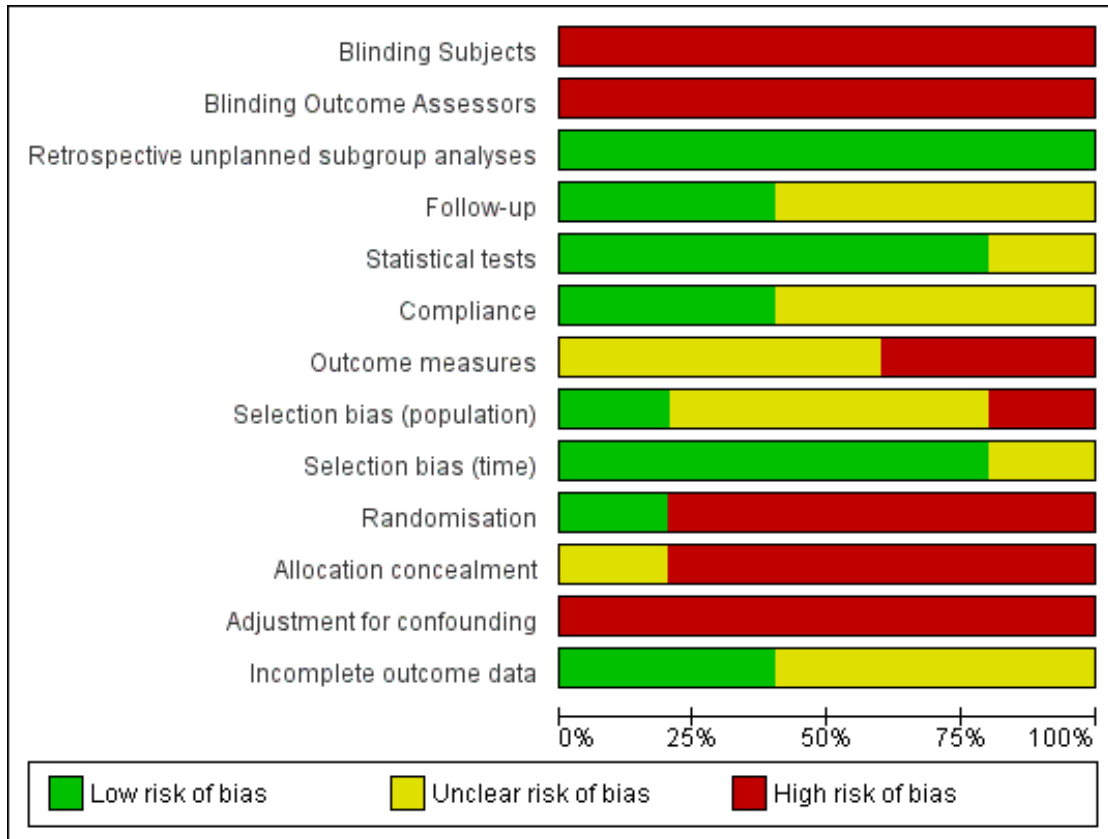


Figure 3. Risk of bias summary: review authors' judgements about each risk of bias item for included studies.

	Blinding Subjects	Blinding Outcome Assessors	Retrospective unplanned subgroup analyses	Follow-up	Statistical tests	Compliance	Outcome measures	Selection bias (population)	Selection bias (time)	Randomisation	Allocation concealment	Adjustment for confounding	Incomplete outcome data
Hoel 2006	-	-	+	?	?	?	-	?	+	+	?	-	?
Kirk 2011	-	-	+	?	+	+	?	-	?	-	-	-	+
Leiter 2011	-	-	+	+	+	?	?	?	+	-	-	-	?
McGrath 2010	-	-	+	+	+	+	-	+	+	-	-	-	+
Osatuke 2009	-	-	+	?	+	?	?	?	+	-	-	-	?

Blinding

Blinding of subjects and outcome assessors was not evident in any of these studies. Therefore we judged all studies to have a high risk of bias in both domains.

Retrospective unplanned subgroup analyses

We did not find evidence of data dredging or additional retrospective unplanned subgroup analyses. Therefore we judged all studies to have a low risk of bias in this domain.

Follow-up

There was wide variation in follow-up with [Kirk 2011](#) using only two weeks, [McGrath 2010](#) using three months, [Hoel 2006](#) using approximately six months, [Leiter 2011](#) using 12 to 24 months.

Pre- and post-intervention matching was reported to be difficult. Furthermore, [Osatuke 2009](#) reported a 'chronological mismatch' between the comparison and intervention groups. We calculated their follow-up to be 11 to 14 months. We judged [Leiter 2011](#) and [McGrath 2010](#) to have a low risk of bias and the remaining three to have an unclear risk of bias in this domain.

Statistical tests

We judged statistical tests to be clearly described and appropriately applied in almost all cases. We found that [Hoel 2006](#) failed to clarify in sufficient detail the main effects of the intervention. Other authors reported descriptive statistics and analysis of variance. Accordingly we judged [Hoel 2006](#) to have an unclear risk of bias and all other studies to have a low risk of bias in this domain.

Compliance

We found a wide variation with compliance across the range of interventions. We judged the resulting risk of bias to be unclear for the educational intervention (Hoel 2006), and low for the expressive writing and cognitive behavioural intervention (Kirk 2011; McGrath 2010). Due to lack of data on compliance, we judged risk of bias for the CREW Intervention to be unclear (Osatuke 2009; Leiter 2011).

Outcome measures

The very nature of workplace bullying and its assessment pre- and post-intervention is complex and we judged outcome measurement to be at high risk of bias in two studies (Hoel 2006; McGrath 2010) and unclear in three (Kirk 2011; Leiter 2011; Osatuke 2009). We judged the risk of bias for all of the outcome measures to be affected by the use of self-report. This is because the sensitivity and stigma associated with perpetrating or experiencing bullying has an intrinsic risk of bias due to social desirability. Self-reported measures are therefore likely to be biased against reporting true levels. On the other hand, investigators in raising the topic will increase awareness and create bias in the other direction (Hawthorne effect). We judged all of the studies to be susceptible to these latent risks of bias.

Selection bias (population)

One study was drawn from a well-defined population (McGrath 2010) and we judged it to be at low risk of selection bias. Three studies were drawn from disparate healthcare workplaces and we judged them to have an unclear risk of bias (Hoel 2006; Leiter 2011; Osatuke 2009). The remaining study used a convenience sample of employees from a variety of unspecified workplaces and we judged it to be at high risk of bias (Kirk 2011).

Selection bias (time)

We judged four studies to have a low risk of selection bias with regard to the time frame for recruitment (Hoel 2006; Leiter 2011; McGrath 2010; Osatuke 2009). We judged the study by Kirk 2011 to have an unclear risk of bias because we were unable to determine the time frame.

Randomisation

We judged four studies to be at high risk of bias due to lack of randomisation (Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009). We judged the single cluster-randomised trial to be at low risk of bias (Hoel 2006).

Allocation concealment

We judged four controlled before-after studies to be at high risk of bias due to lack of allocation concealment (Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009). We judged the single cRCT to have an unclear risk of bias on this domain because the study did not report having concealed allocation (Hoel 2006).

Adjustment for confounding

One study described relevant confounders (Hoel 2006). However, we found no evidence of adjustment in the statistical analysis and this led to our judgement of high risk of bias due to confounding. We were unable to identify confounders in the other four studies (Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009) and therefore we judged them all to have a high risk of bias due to confounding.

Incomplete outcome data

Details on participant loss to follow-up were provided in two studies and we deemed them to be at low risk of bias (Kirk 2011; McGrath 2010). Three studies by Hoel 2006; Leiter 2011; Osatuke 2009 reported numbers of participants lost to follow-up but we were unable to determine whether this had been taken into account in analyses. Consequently, we judged them to be at unclear risk of bias.

Overall risk of bias

We judged all five included studies to have a high risk of bias overall based on: lack of blinding of subjects and outcomes assessors (Hoel 2006; Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009), unreliable outcome measures (Hoel 2006; McGrath 2010), selection bias (Kirk 2011), lack of randomisation (Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009), open allocation (Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009) and lack of adjustment for confounding (Hoel 2006; Kirk 2011; Leiter 2011; McGrath 2010; Osatuke 2009). See Figure 3 for a summary of our judgements about each risk of bias for each included study.

Effects of interventions

See: [Summary of findings for the main comparison Organisational level workplace culture intervention versus no intervention](#); [Summary of findings 2 Multilevel educational intervention versus no intervention](#); [Summary of findings 3 Individual level expressive-writing versus control-writing](#); [Summary of findings 4 Individual level cognitive behavioural intervention versus no intervention](#)

See: [Summary of findings for the main comparison](#); [Summary of findings 2](#); [Summary of findings 3](#); [Summary of findings 4](#).

Society/policy level

None of the included studies reported on the effects of interventions at the society/policy level.

Organisational/employer level

Workplace culture intervention versus no intervention

Effects on bullying in general

Two controlled before-after studies reported on the effects on civility of the same organisational Intervention titled Civility, Respect, and Engagement in the Workforce (Leiter 2011; Osatuke 2009). In the meta-analysis of the two studies, the CREW intervention produced a small increase in civility at a follow-up time between 6 and 14 months (Mean Difference (MD) 0.17 95% CI 0.07 to 0.28; scale range from 1 to 5; Analysis 1.1; 2 studies).

Effects on bullying perpetration

Leiter 2011 reported a small reduction in co-worker incivility (MD -0.08; 95% CI -0.22, to 0.06; scale range from 1 to 6; Analysis 1.2; 1 study), and a small non-significant reduction in supervisor incivility (MD -0.17; 95% CI -0.33 to -0.01; Analysis 1.3; 1 study) at the 6-month follow-up (Leiter 2011). The CREW intervention also produced a small non-significant reduction in the frequency of incivility perpetration (MD -0.05; 95% CI -0.15 to 0.05; scale range from 1 to 6; Analysis 1.4; 1 study).

Effects on secondary outcomes

Leiter 2011 reported a reduction in absenteeism during the previous month (MD -0.63 days per month; 95% CI -0.92 to -0.34; Analysis 1.5; 1 study) at 6-month follow-up.

We rated the overall quality of evidence about the effectiveness of the CREW intervention as very low (Summary of findings for the main comparison).

Job/task level

None of the included studies reported uniquely on the effects of interventions at the job/task level, although one multilevel study incorporated one intervention at this level (Hoel 2006). We were unable to determine the effect of this intervention specifically at the job/task level.

Individual/job interface level

Expressive writing intervention versus control writing

Effects on bullying victimisation

A controlled before-after study reported results of an expressive writing intervention (Kirk 2011) taking account of baseline scores. The authors found that the expressive writing intervention reduced incivility victimisation for participants who initially scored low (MD -5.74; 95% CI -9.88 to -1.60; Analysis 2.1) and moderate (MD -3.44; 95% CI -6.51 to -0.37; Analysis 2.2) on the incivility victimisation pre-test. The expressive writing intervention

had no significant effect on incivility victimisation with participants with high scores on the pre-test (MD -0.73; 95% CI -4.23 to 2.77; Analysis 2.3) nor when we pooled the data (MD -3.30; 95% CI -6.89 to 0.29) (Analysis 2.4).

Effects on bullying perpetration

After controlling for pre-test scores, participants in the expressive writing intervention arm scored significantly lower on workplace incivility perpetration than participants in the control writing arm in one study (Kirk 2011) (MD -3.52; 95% CI -6.24 to -0.80; Analysis 2.5).

Effects on secondary outcomes

This study did not report effects on absenteeism. We rated the overall quality of evidence about the expressive writing intervention as very low (Summary of findings 3).

Cognitive-behavioural intervention versus no intervention

Effects on bullying victimisation

A controlled before-after study reported results of a cognitive-behavioural intervention (McGrath 2010). The authors evaluated the intervention's effectiveness using the number of people who reported they had been victims of bullying. The authors took measurements at baseline, following completion of the intervention, and at three months post-intervention. The likelihood of being bullied was similar at baseline across the intervention and control groups. Following the intervention, there was no significant difference in the risk of being bullied (Risk Ratio (RR) 0.55; 95% CI 0.24 to 1.25; Analysis 3.1), and there was no change at three-month follow-up (RR 0.49; 95% CI 0.21 to 1.15; Analysis 3.1).

Effects on bullying perpetration

The risk of bullying others was not significantly lower following the intervention (RR 0.64; 95% CI 0.27 to 1.54; Analysis 3.2), or at the three-month follow-up (RR 0.69; 95% CI 0.26 to 1.81; Analysis 3.2). However, the wide confidence interval and the small sample size leaves a lot of uncertainty about the true effect.

Effects on secondary outcomes

This study did not report effects on absenteeism. We rated the overall quality of evidence about the cognitive-behavioural intervention as very low (Summary of findings 4).

Multilevel Intervention

Effects on primary outcomes

A five-arm cluster-randomised controlled study of three interventions in different combinations, using a partial factorial design, conducted at five sites, reported outcomes as percentages with small non-significant changes post-intervention (Hoel 2006). Trends in the data were difficult to see as the authors report increases and decreases in outcomes separately for all five settings.

Of the 1041 participants who completed the pre-intervention survey, only 150 employees completed the training intervention. We wrote to the authors requesting access to their raw data so that we could have conducted our own analysis but received no response.

Effects on secondary outcomes

The authors found no effect on self-reported absenteeism. We rated the overall quality of evidence about the multilevel intervention as very low (Summary of findings 2).

ADDITIONAL SUMMARY OF FINDINGS *[Explanation]*

Five-arm cluster randomised trial			
<p>Patient or population: employees Setting: workplaces in several locations in the UK Intervention: education and policy development, at organisational level Comparison: no education</p>			
Outcomes	Effect of the intervention	No. of participants (studies)	Quality of the evidence (GRADE)
Bullying assessed with: Self report Follow up: mean 6 months	Insufficient data reported for analysis	1041 (1 study)	⊕○○○ VERY LOW ¹
Absenteeism assessed with: organisational data	Insufficient data reported for analysis	1041 (1 study)	⊕○○○ VERY LOW ¹
<p>* The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).</p>			
<p>CI: Confidence interval.</p>			
<p>GRADE Working Group grades of evidence High quality: We are very confident that the true effect lies close to that of the estimate of the effect Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect</p>			

¹ We would have downgraded the quality of evidence once due to high risk of bias caused by study limitations (lack of blinding and use of self-reporting instrument) and twice due to imprecision (study conducted in mixed settings and with unclear number of participants). However, once was enough to reach very low quality evidence as we started at low quality evidence because the included studies used a controlled before-after design. We found no reason to upgrade the quality of the evidence.

Controlled before and after study					
Patient or population: employees Setting: New South Wales and Queensland, Australia Intervention: expressive writing, at the individual level Comparison: control writing					
Outcomes	Absolute effects* (95% CI)		No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with Control writing	Risk with Expressive-Writing			
Self-reported frequency of incivility victimisation. Follow up: 2 weeks	Mean number of incivility victimisations was 26	Mean incivility victimisation in the intervention group was 3.3 fewer occurrences (5.4 fewer to 1.2 fewer)	46 (1 study)	⊕○○○ ¹ VERY LOW	
Self-reported frequency of incivility perpetration. Follow up: 2 weeks	Mean number of incivility perpetrations was 23	Mean incivility perpetration in the intervention group was 3.5 fewer occurrences (6.2 fewer to 0.8 fewer)	46 (1 study)	⊕○○○ ¹ VERY LOW	

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).

CI: Confidence interval

GRADE Working Group grades of evidence

High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

1. We would have downgraded the quality of evidence twice due to high risk of bias caused by study limitations (lack of randomisation and blinding, and use of self-reporting instrument) and once due to imprecision (small sample size).

However once was enough to reach very low quality evidence as we started at low quality evidence because the included studies used a controlled before-after design. We found no reason to upgrade the quality of the evidence.

Controlled before and after study						
<p>Patient or population: Adult workers with a learning disability Setting: three work centres in South West Ireland Intervention: cognitive behavioural intervention, at the individual level Comparison: waiting-list control (i.e. no treatment)</p>						
Outcomes	Absolute effects* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with no intervention (Waiting-list control)	Risk with cognitive behavioural intervention				
Self-reported victimisation. Post intervention.	39 per 100 (18 to 64)	21 per 100 (11 to 37)	RR 0.55 (0.24 to 1.25)	60 (1 study)	⊕○○○ ¹ VERY LOW	
Self-reported victimisation. Three-month follow-up.	39 per 100 (18 to 64)	19 per 100 (9.1 to 35)	RR 0.49 (0.21 to 1.15)	60 (1 study)	⊕○○○ ¹ VERY LOW	
Self-reported perpetration. Post intervention.	33 per 100 (14 to 59)	21 per 100 (11 to 37)	RR 0.64 (0.27 to 1.54)	60 (1 study)	⊕○○○ ¹ VERY LOW	
Self-reported perpetration. Three-month follow-up.	28 per 100 (11 to 54)	17 per 100 (7.5 to 32)	RR 0.69 (0.26 to 1.81)	60 (1 study)	⊕○○○ ¹ VERY LOW	

* **The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio.

GRADE Working Group Grades of Evidence

High quality: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low quality: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

1. We would have downgraded the quality of evidence twice due to high risk of bias caused by study limitations (lack of randomisation and blinding, and use of self-reporting instrument) and once due to imprecision (small sample size). However, once was enough to reach very low quality evidence as we started at low quality evidence because the included studies used a controlled before-after design. We found no reason to upgrade the quality of the evidence.

DISCUSSION

Summary of main results

None of the included studies explored the effectiveness of interventions at society/policy-level.

We found two large CBA studies with 2969 participants that evaluated organisational/employer level interventions. These studies evaluated the effectiveness of a workplace culture intervention to achieve Civility, Respect, and Engagement in the Workforce (CREW) (Leiter 2011; Osatuke 2009). The meta-analysis of the two studies showed a small increase in civility (MD 0.17; 95% CI 0.07 to 0.28). This is a 5% increase from the baseline score. One of the two studies reported that the CREW intervention produced a small decrease in supervisor incivility victimisation (MD -0.17; 95% CI -0.33 to -0.01) but not in co-worker incivility victimisation (MD -0.08; 95% CI -0.22 to 0.08) or in self-reported incivility perpetration (MD -0.05 95% CI -0.15 to 0.05). The study did find a decrease in the number of days absent during the previous month (MD -0.63; 95% CI -0.92 to -0.34) at 6-month follow-up.

At the individual/job interface level, we found evidence from one study comparing an expressive writing intervention with a control writing exercise (Kirk 2011). After controlling for pre-test scores, participants in the intervention arm scored significantly lower on workplace incivility perpetration (MD -3.52; 95% CI -6.24 to -0.80). There was no difference in bullying measured as incivility victimisation (MD -3.30 95% CI -6.89 to 0.29). Another controlled before-after study with 60 participants who had a learning disability, compared a cognitive-behavioural intervention with no intervention (McGrath 2010). There was no significant difference in bullying victimisation after the intervention (risk ratio (RR) 0.55; 95% CI 0.24 to 1.25), or at the three-month follow-up (RR 0.49; 95% CI 0.21 to 1.15), nor was there a significant difference in bullying perpetration following the intervention (RR 0.64; 95% CI 0.27 to 1.54), or at the three-month follow-up (RR 0.69; 95% CI 0.26 to 1.81).

Although none of the included studies explored the effectiveness of interventions solely at job/task-level, we found one multilevel intervention that had addressed this level in addition to the organisation/employer level and the individual/job interface levels. This was a five-site cluster-RCT with 1041 participants that compared the effectiveness of different combinations of policy communication, stress management training, and negative behaviours awareness training (Hoel 2006). The authors reported that their intervention did not yield a significant effect but we cannot confirm this as the study authors report insufficient data.

Due to high risk of bias and imprecision, we graded the evidence for all outcomes as very low quality.

Overall completeness and applicability of evidence

We found five studies providing evidence of the effectiveness of bullying prevention interventions aimed at individuals and groups or organisations. However, we did not find all predicted bullying intervention types, such as at the level of society/policy. Four studies employed a CBA design and one used a cluster-randomised controlled trial design. All the included studies had been conducted in high-income countries: Australia, Ireland, North America, and the UK. The participants were diverse, ranging from healthcare workers (Leiter 2011; Osatuke 2009); employees from public sector organisations (Hoel 2006); and unspecified employees (Kirk 2011), to adults with a learning disability employed in a work centre (McGrath 2010). Whilst previous studies have shown that bullying predominates in the healthcare, education and public services professions (Namie 2003), we did not find studies that evaluated interventions among teachers or other public service workers. We found no studies conducted in lower and middle income countries.

We did not find any studies that had evaluated the effectiveness of bullying prevention interventions on our secondary outcomes stress, depression, or sick leave.

We found three studies that focused on education (Hoel 2006; Kirk 2011; McGrath 2010) and two that we categorised as culture-change projects (Leiter 2011; Osatuke 2009). One study covered three intervention levels but we found no programmes of interventions that covered all four levels as defined by Vartia 2011 (see [Description of the intervention](#)). Although all included studies reported the demographic details of participants, none of them used any of these demographic factors as potential explanatory variables.

The follow-up times for all but one study were relatively short, ranging from two weeks to 14 months.

Quality of the evidence

We assessed the overall quality of the evidence provided by the included studies to be very low. We downgraded the quality of evidence due to high risk of bias caused by study limitations (lack of randomisation and blinding, and use of self-reporting instruments) and imprecision (limited sample available for outcome measurement). Where large populations were involved, studies used variable subsets of these populations with little consistency before and after the intervention. We were able to combine the results of two studies using the same outcome measurement in a meta-analysis. We found no reason to downgrade the quality of evidence due to indirectness as all included studies measured bullying or incivility. Due to the small number of included studies, it was not possible to assess publication bias. Only one of the five included studies was a cluster-randomised trial (Hoel 2006). The other four included studies used a less rigorous CBA design (Kirk

2011; Leiter 2011; McGrath 2010; Osatuke 2009). One of the five included studies reported too little data for secondary analysis (Hoel 2006). Blinding and allocation concealment was not possible for participants or outcome assessors in any of the studies. Outcome measures were wholly self-reported, although using valid and reliable instruments. The small number of included studies and the wide range of interventions in terms of both level and type means that individual study results were unverified except for the CREW intervention.

The overall outcome of very low quality evidence underlines the fact that there is substantial room for improvement in future studies.

Potential biases in the review process

We used a very broad search strategy to ensure that all intervention types, all synonyms for workplace bullying, and all employees were included. We ran the search in a wide range of electronic reference databases and set no language limitations. We also conducted a trawl of websites that focus on bullying in the workplace. In addition, we contacted a number of cited authors to increase the likelihood of finding all relevant studies. We also set up email search alerts with Zetoc and the National Center for Biotechnology Information (NCBI) databases. Altogether, this resulted in a large number of references (19,544) to be screened for inclusion. Given more high-quality primary research, it may be possible to further refine our inclusion criteria and thereby increase the precision of the search. In any case, we are fairly certain that we have not missed any published studies that would have met our inclusion criteria and should have been included.

In drawing the evidence together, we accepted a range of terms describing the outcome of bullying prevention interventions. We included bullying perpetration, bullying victimisation, incivility victimisation, incivility perpetration, experienced incivility, incivility instigation and civility as primary outcome measures. We assumed these terms to be sufficiently similar to represent a form of bullying or its inverse in the case of civility. This range demonstrates the current lack of agreed definition for outcome measures and associated potential for bias, especially where meaning varies along a continuum of organisational disruption or unacceptable work behaviours.

We were able to report only limited findings from the Hoel 2006 study due to the way in which the authors presented their results. Although we contacted the author to obtain raw data in order to conduct our own analyses, we did not receive a response.

We included studies using self-reported outcome measurement scales despite the potential risk of bias, namely from social desirability in response to a sensitive topic. Self-report, even when anonymised may lead to less reporting of bullying perpetration and bullying victimisation; neither of which are socially desirable. This might have affected the results of the interventions, particularly those that used a no-intervention control group. This is less

likely to have occurred in the Kirk 2011 study that used an active control. In addition, for the CREW intervention the effects were measured in several different ways and were supported by a decrease in absenteeism. Hence, the inclusion of evidence based on self-report did not affect our conclusions adversely.

Agreements and disagreements with other studies or reviews

Our search retrieved 12 reviews related to bullying in the workplace. Following close inspection, we considered four of them to be focused on prevention of bullying in the workplace.

Stagg 2010 identified best practices from 10 studies that aimed to prevent and manage workplace bullying and violence. The authors included school-based studies, a mentor-mentee programme, a survey of students and employees, a study that focused on the development of a personal plan to help deal with psychosocial problems, a patient aggression study, a study that focused on addressing adverse working conditions of healthcare home workers, and a cognitive rehearsal initiative to respond to bullying behaviour. We explicitly excluded the latter (Griffin 2004) from our review as it focused on the management and not the prevention of bullying. Although Stagg 2010 deals with a very diverse body of evidence, we concur with the authors' conclusions about the need for standardised means of developing, implementing, and evaluating bullying programs to enable better comparisons.

Illing 2013 synthesised the evidence about the occurrence, causes, consequences, and management of bullying and inappropriate behaviour in the workplace. The authors focused on how this information could be used to inform decision-making on bullying in the NHS. They highlighted the importance of commitment from senior management if interventions are to be successful, and stressed the importance of preventing bullying as well as managing it and supporting those who have experienced it.

Branch 2013 aimed to articulate the state of the knowledge in the workplace bullying field. The authors designed a model to describe the processes of workplace bullying. They made suggestions for further research that focus on agreeing a definition, a guiding theory, the wider sociology of bullying, and determining the effectiveness of preventative and management interventions.

Hodgins 2014 critically reviewed 12 papers that reported on studies "designed to reduce workplace bullying or incivility", concluding that there was a lack of evaluated interventions in the area. Unlike our Cochrane review, the authors did not focus solely on prevention nor did they limit their inclusion criteria to particular study designs. However, they included evidence of the effectiveness of the CREW intervention as we did in our review.

We highlighted the limited number of well designed studies that have investigated the effectiveness of interventions to prevent bullying in the workplace. Some of the reviews included studies that focused on interventions to prevent bullying among school children. However, it was clear that these participants, their behaviours

and the context are very different to those encountered in workplace bullying, limiting transferability of their findings. These other reviews also reflected the predominance of secondary and tertiary prevention interventions as defined by [Lamontagne 2007](#). Interventions that address prevention rather than ameliorative or reactive practices are needed to help change the culture of bullying that persists in many workplaces.

AUTHORS' CONCLUSIONS

Implications for practice

We found very low quality evidence from two large-scale studies of small improvements in civility after an intensive and long-term organisational intervention in healthcare organisations. There were no studies of organisational interventions in other occupations or branches of industry.

We found only one study evaluating an intervention at the individual level. It engaged a diverse range of individual employees using an expressive writing intervention. The study found very low quality evidence of a reduction in the incidence of incivility victimisation for those participants who showed a low or moderate pretest score. There was one other study that found very low quality evidence of a cognitive behavioural intervention having no effect on the occurrence of bullying.

We found no studies evaluating societal or policy level interventions to prevent bullying at work.

Implications for research

We recommend that future studies should follow the UK Medical Research Council Complex Interventions Framework ([MRC 2008](#); [Moore 2014](#)). Whilst the randomised controlled trial design is still regarded as the preferred design to elicit efficacy, future trials need to ensure the appropriate unit of randomisation, which, depending on the nature of the intervention, may be the individual, the work group, or an entire organisation. However, randomisation is difficult at the group level in workplaces. Controlled before-after studies that take account of the workplace context and fully understand the mechanisms of action to maximise the benefits of interventions are a more feasible approach. Bearing all this in mind, we suggest that future studies should combine the benefits of randomised controlled trials with more realistic evaluation methods to bring the benefits of efficacy together with the understanding of contextual factors and mechanisms of action, for example, following a realist approach ([Bonell 2012](#)). In particular, assessing how the various components of an intervention interact with each other and with local contextual factors is important, as is examining the effects of the separate components. This can be done effectively using multi-arm studies and factorial trials ([Bonell](#)

[2012](#)). The complexity of workplace bullying calls for a multi-level approach to prevention, which may start with policy but ultimately needs to meet the needs of employees and organisations within a diverse and ever-changing context that is the workplace. We do not know if successful prevention interventions need to operate across all the levels advocated by [Vartia 2011](#). Therefore, we need rigorous assessment of the effectiveness of legal and regulation frameworks (society/policy level); interventions focused on workplace culture (organisation/employer level); interventions to address the psychosocial environment (job/task level); and training and educational interventions (individual/ job interface level).

We recommend that studies of interventions at the society/policy level and those addressing the psychosocial environment at job/task level be conducted, as we found none to include in this review. We recommend further research on the CREW intervention ([Leiter 2011](#); [Osatuke 2009](#)) as it aims to improve workers' behaviours at the level of workplace culture. Interventions at individual/job interface level could include a similar expressive writing task to that used by [Kirk 2011](#), as it is a simple, cost-effective intervention to implement. Cognitive-behavioural interventions should also be tested with a larger sample size and longer follow-up period to that used by [McGrath 2010](#). Ideally, interventions would be drawn from a comprehensive evidence-based 'menu' to address all affected levels from individual to organisational. When a specific intervention has been shown to be effective, a cost-benefit analysis should be instigated. The proliferation of online communication within workplaces adds a new dimension to an already complex context. [Hong 2014](#) has reported that online cyber-bullying can occur within organisations, which may require special attention by researchers. On the other hand, the online environment may also provide suitable tools for conducting and evaluating interventions.

In considering the treatment that control group participants should receive, a consideration of research ethics is required. This means taking full account of ethical principles such as beneficence, non-maleficence, autonomy and justice ([Beauchamp 2012](#)). We agree that when there is a known issue of bullying, there are ethical implications of including a control group which denies participants benefits from interventions. However, increasingly the proven effectiveness of interventions is being demanded and this is difficult to demonstrate without a control or comparison group. Future studies on prevention of bullying can circumvent claims regarding the unethical treatment of half the randomised participants by using a wait-list control group. Here no one is denied the possible benefits of the intervention, as the control group receives the same intervention after a waiting period.

Simple effective outcome measures, such as bullying victimisation and perpetration, should continue to be used but they require standardisation. For example, the Civility scale ([Leiter 2011](#); [Osatuke 2009](#)), the Workplace Incivility Scale, documented rates of absenteeism ([Leiter 2011](#)), or rates of reported victimisation ([McGrath](#)

2010) could all be useful outcome measures. Although it would be desirable to establish long-term outcomes, we recognise the inherent difficulties in this, due to the highly dynamic nature of employment in all settings. However, in keeping with Leiter 2011, we recommend a minimum of 6 months follow-up, preferably 12 months, in order to demonstrate a sustained change. Giving feedback to employees, or providing continued small amounts of intervention input, may help participants to stay motivated and continue in the process. Future work should include demographic factors as potential explanatory variables as this may assist in targeting interventions to those most susceptible to bullying victimisation and perpetration.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Hoel 2006

Methods	Five-arm cluster randomised trial	
Participants	<p>272 participants engaged in focus groups pre-survey; 2505 questionnaires distributed to workers from 5 public sector organisations at pre-intervention stage; return rate of 41.5% (N = 1041 questionnaires)</p> <p>Gender: 36.2% male; 63.8% female.</p> <p>150 workers (in total) allocated to one of five intervention groups in each organisation (including one group that acted as a control and did not have an intervention)</p> <p>Post-intervention 2499 questionnaires distributed, with a return rate of 35.4% (N = 884 questionnaires)</p> <p>Gender: 36.4% male, 63.6% female</p> <p>Age: mean age of participants at both time points was 43 years</p> <p>Eight focus groups six months post-intervention; number of participants not stated</p> <p>Geographical Setting: London & North & South of England</p>	
Interventions	<p>Programme of interventions:</p> <ol style="list-style-type: none"> 1. One policy communication session of 30 minutes duration (we judged this at organisation/employer level) 2. One policy communication session of 30 minutes and one stress management training session of three hours duration (at organisation/employer and job task levels) 3. One policy communication session of 30 minutes and one negative behaviour awareness training session of three 3 hours duration (at organisation/employer and individual/job interface levels) 4. One day-long event comprising of a policy communication session, stress management and negative behaviour awareness training (at organisation/employer, job task and individual/job interface levels) 	
Outcomes	Self-report of bullying using Bullying Risk Assessment Tool (BRAT); witnessing of bullying, sickness absence, measured approximately six months post-intervention	
Notes	<p>Broad theoretical underpinning: intervention designed using literature review and knowledge of local context</p> <p>Funding source: British Occupational Health Research Foundation (BOHRF)</p> <p>Declarations of interest: none stated</p> <p>We requested raw data from the authors to conduct proper analysis on it but they did not respond</p>	
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Blinding Subjects	High risk	no blinding
Blinding Outcome Assessors	High risk	no blinding

Hoel 2006 (Continued)

Retrospective unplanned subgroup analyses	Low risk	no evidence of data dredging
Follow-up	Unclear risk	approximately six months; based on unmatched self-report of behaviour
Statistical tests	Unclear risk	appropriate but mainly descriptive
Compliance	Unclear risk	problems with compliance reported; “unwillingness/resistance on behalf of participants to engage”
Outcome measures	High risk	self-reported outcome measures susceptible to social desirability; descriptive & qualitative data reported; “showing increases in scores as +; decreases as -; and no changes as 0”
Selection bias (population)	Unclear risk	employees from different types of public sector organisations
Selection bias (time)	Low risk	all participants recruited within the same timeframe
Randomisation	Low risk	cluster randomisation
Allocation concealment	Unclear risk	Unable to determine (UTD), assignment not reported
Adjustment for confounding	High risk	Influencing factors have been described but not taken into account
Incomplete outcome data	Unclear risk	loss indicated but not possible to determine if taken into account

Kirk 2011

Methods	Controlled before and after study
Participants	49 employees; 46 completed study (three did not complete study or had missing data); type of employment was not specified Gender: 13 males & 33 female Age: age range 19 to 62 years; mean age 35.1 years; SD = 11.6 Geographical Setting: New South Wales or Queensland, Australia
Interventions	The intervention was self-administered expressive writing. All participants (control and intervention) were asked to write for 20 minutes per day over the 3 days following submission of the pre-test survey. The extent to which participants complied with the writing instructions was assessed by asking participants to report on how many days (out of the 3 days) they wrote in their journals, and on how many of the days they wrote for the full 20 minutes. The intervention group was asked to write on their ‘deepest thoughts

	and feelings' related to their past work-day. The control group was asked to write on any topic not related to their work-day (individual/job interface level)
Outcomes	Emotional self-efficacy, emotional intelligence, mood, incivility victimisation, incivility perpetration; measured two weeks post-intervention
Notes	<p>The following tools were used pre-intervention, and again two weeks after finishing the 3-day writing intervention. All were shown as having moderate to high internal consistency, with levels of Cronbach's alpha 0.75 to 0.92:</p> <ul style="list-style-type: none"> • The Emotional Self-Efficacy Scale assesses confidence in emotional processing (Kirk 2008); • The Assessing Emotions Scale is a 33-item measure of self-rated characteristic emotional intelligence (Schutte 1998); • The Positive Affect and Negative Affect Schedule (PANAS) assesses positive and negative mood (Watson 1988); • Workplace incivility victimisation was assessed using the Uncivil Workplace Behavior Questionnaire (UWBQ; Martin 2005); • A modified perpetrator version of the UWBQ (the UWBQ-P) was used to assess incivility perpetration. The item content for the new measure was the same as for the original UWBQ. The only difference was that respondents were asked to indicate how often they had engaged in the uncivil behaviours listed in the measure (as opposed to being the target of the behaviours) over the past 2 weeks. <p>Theoretical underpinning: self-efficacy Funding source: none stated Declarations of interest: none stated</p>

Risk of bias

Bias	Authors' judgement	Support for judgement
Blinding Subjects	High risk	not possible
Blinding Outcome Assessors	High risk	no blinding
Retrospective unplanned subgroup analyses	Low risk	no data dredging
Follow-up	Unclear risk	Details of pre- and post-intervention for the experimental group are provided (two week time frame) . No data provided for control group
Statistical tests	Low risk	ANCOVA
Compliance	Low risk	acceptable compliance was reported
Outcome measures	Unclear risk	outcome measures were self-reported, susceptible to social desirability but used scales with acceptable Cronbach's Alpha reported

Kirk 2011 (Continued)

Selection bias (population)	High risk	convenience sample of employees in both arms; “on an alternating basis”
Selection bias (time)	Unclear risk	timescale not reported
Randomisation	High risk	no randomisation
Allocation concealment	High risk	no randomisation
Adjustment for confounding	High risk	confounders not identified
Incomplete outcome data	Low risk	three participants dropped out and were withdrawn

Leiter 2011

Methods	Controlled before and after study
Participants	<p>Time 1 (before the intervention): 1173 health care workers in three district health authorities and two hospitals completed a survey (N = 262 in the intervention units and N = 911 in the comparison units)</p> <p>Time 2 (6 months after the start of the intervention): 907 health care workers completed the survey (N = 181 in intervention units; N = 726 in comparison units)</p> <p>472 participants completed surveys at both Time 1 and Time 2</p> <p>Gender: Participants were predominantly female at both time points. Time 1: (N = 1009, 86.0%; male: N = 139, 11.8%; 25 non-responders). Time 2: participants were mainly female (N = 793, 87.4%; male: N = 96, 10.6%, 18 non-responders).</p> <p>Age: Time 1: Average age of 42.54 years (SD 10.12); Time 2: Average age of 42.27 years (SD 10.60)</p> <p>Employment Status: Full-time (N = 833, 71.0%); Part-time (N = 232, 19.8%); Casual (N = 85, 7.2%); and Temporary (N = 8, 0.7%)</p> <p>Geographical Setting: Nova Scotia and Ontario</p>
Interventions	<p>‘Civility, Respect, and Engagement in the Workforce’ (CREW) is a tailored, flexible intervention that responds to identified work group needs. The goal of CREW is to support work units to identify their strengths and areas for improvement with regard to civility. It comprises: identification of facilitators, self-report surveys (pre and post-intervention), and facilitated group work based on survey findings. During the intervention, the organizations hold weekly workgroup-level conversations about civility. A comprehensive educational toolkit is made available to each intervention site to support facilitators (organisational/employer level)</p>
Outcomes	<ol style="list-style-type: none"> 1. Workplace civility levels at the participating sites; measured as the average of an 8-item civility self-report scale; range 1 (strongly disagree) to 5 (strongly agree); 2. Experienced incivility supervisor; average of 10 items measured with a Likert scale ranging from 0 (never) to 6 (daily) 3. Experienced incivility co-worker; average of 10 items measured with a Likert scale ranging from 0 (never) to 6 (daily)

Leiter 2011 (Continued)

	<p>4. Instigated incivility (incivility perpetration); average of five items measured with a Likert scale ranging from 0 (never) to 6 (daily)</p> <p>5. Self-reported number of days off work due to sickness in the past month</p> <p>All measured at 6 months after the intervention.</p> <p>In addition the authors measured a number of other outcome measures but they did not match with the ones we used as inclusion criteria</p>
Notes	<p>Theoretical underpinning: social interactions at work</p> <p>Funding: from the Partnerships in Health Services Improvement of the Canadian Institutes for Health Research, the Nova Scotia Health Research Foundation, the Ontario Ministry of Health, and the Social Sciences and Humanities Research Council of Canada awarded to Michael P Leiter (principal investigator)</p> <p>Additional 12 month follow-up reported separately (Leiter 2011)</p> <p>Declarations of interest: None stated.</p>

Risk of bias

Bias	Authors' judgement	Support for judgement
Blinding Subjects	High risk	no blinding
Blinding Outcome Assessors	High risk	no blinding
Retrospective unplanned subgroup analyses	Low risk	no evidence of data dredging
Follow-up	Low risk	details provided and addressed
Statistical tests	Low risk	"three-level hierarchical linear modelling" (HLM)
Compliance	Unclear risk	not reported
Outcome measures	Unclear risk	all outcome measures were self-reported, susceptible to social desirability but used valid & reliable scales
Selection bias (population)	Unclear risk	participants from different settings
Selection bias (time)	Low risk	all participants recruited within the same time frame
Randomisation	High risk	no randomisation
Allocation concealment	High risk	not randomised, not applicable
Adjustment for confounding	High risk	Confounders not identified
Incomplete outcome data	Unclear risk	loss indicated but not possible to determine if taken into account

McGrath 2010

Methods	Controlled before and after study
Participants	60 adults with mild or moderate intellectual disabilities from 3 work centres (42 intervention/18 control) Gender: work centre A: 10 men/10 women, N = 20; work centre B: 10 Men/12 Women, N = 22; work centre C: 8 Men/10 Women, N = 18 Age: work centre A: 17 to 52 years; mean age 36 years (SD = 8.98); work centre B: 17 to 55 years; mean age 35 years (SD = 13.76); work centre C: 18 to 60 years; mean age 33 years (SD = 11.07) Geographical setting: Southwest Ireland
Interventions	A ten-week anti-bullying programme; cognitive behavioural in nature; one 90-minute session each week at centre A; the same programme at centre B with additional community input; centre C acted as a waiting list control (no intervention). (individual/job interface level)
Outcomes	Levels of victimisation and bullying behaviour; a modified version of the Mencap Bullying Questionnaire (1999) was used to measure victimisation pre-, post-intervention, and at three-month follow-up
Notes	Very specific group of participants; findings not generalisable to population as a whole No information on how or why the intervention might work. Theoretical underpinning: cognitive behavioural approach Funding source: none stated Declarations of interest: none stated.

Risk of bias

Bias	Authors' judgement	Support for judgement
Blinding Subjects	High risk	no blinding
Blinding Outcome Assessors	High risk	no blinding
Retrospective unplanned subgroup analyses	Low risk	no data dredging
Follow-up	Low risk	"Participants were re-interviewed...three months after first administration..., and again for a three month follow-up immediate post intervention and three month follow-up"
Statistical tests	Low risk	appropriate for a small study
Compliance	Low risk	explicit
Outcome measures	High risk	self-reported outcome measures, susceptible to social desirability

McGrath 2010 (Continued)

Selection bias (population)	Low risk	similar work centres in neighbouring towns
Selection bias (time)	Low risk	recruited over same time
Randomisation	High risk	no randomisation
Allocation concealment	High risk	no randomisation
Adjustment for confounding	High risk	confounders not identified
Incomplete outcome data	Low risk	data provided, no loss to follow-up

Osatuke 2009

Methods	Controlled before and after study (two administrations; CREW-1 & CREW-2)
Participants	<p>CREW-1: Eight VHA facilities provided 899 participants (included eight intervention workgroups); although two workgroups could not be matched. This resulted in six intervention workgroups; N = 425 pretest and N = 328 posttest matched to six comparison workgroups (participants N = 236 pre-test, and N = 407 post-test)</p> <p>CREW-2: Twenty VHA facilities provided thirty-eight workgroups, from 1 to 5 workgroups each; 1295 participants altogether. Of the 38 workgroups, 17 intervention groups could be matched (N = 688 pre-test, and N = 647 post-test), and 17 comparison groups (N = 607 pre-test, and N = 680 post-test)</p> <p>Demographic details were not assessed</p> <p>Gender: not provided</p> <p>Age: not provided</p> <p>Geographical setting: all over the US</p>
Interventions	'Civility, Respect, and Engagement in the Workforce' (CREW) is a tailored, flexible intervention that responds to identified work group needs. The goal of CREW is to support work units to identify their strengths and areas for improvement with regard to civility. It comprises: identification of facilitators, self-report surveys (pre and post-intervention), and facilitated group work based on survey findings. During the intervention, the organizations hold weekly workgroup-level conversations about civility. A comprehensive educational toolkit is made available to each intervention site to support facilitators (organisational/ employer level)
Outcomes	Civility levels at the participating sites; measured by an 8-item civility self-report scale Follow-up was 11 and 14 months post intervention for CREW 1 and CREW 2 respectively
Notes	<p>Theoretical underpinning: social interactions at work</p> <p>Funding: research undertaken by staff from Veterans Health Administration National Center for Organization Development</p> <p>Declarations of interest: none stated</p>

<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Blinding Subjects	High risk	not possible
Blinding Outcome Assessors	High risk	not possible, outcomes self-assessed
Retrospective unplanned subgroup analyses	Low risk	no unplanned subgroup analysis
Follow-up	Unclear risk	Follow-up 11-14 months; "...matching individual CREW participants' ratings from pre-intervention to post-intervention surveys was impossible"
Statistical tests	Low risk	ANOVA
Compliance	Unclear risk	not reported
Outcome measures	Unclear risk	all outcome measures were self-reported, susceptible to social desirability but used valid & reliable scales
Selection bias (population)	Unclear risk	participants from different settings
Selection bias (time)	Low risk	recruited over same time
Randomisation	High risk	no randomisation
Allocation concealment	High risk	not randomised
Adjustment for confounding	High risk	confounders not identified
Incomplete outcome data	Unclear risk	loss indicated but not possible to determine if taken into account

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Barrett 2009	Did not include outcome measures as specified in our PICOS. This study examined the effect of a targeted team-building intervention (organisation/employer level) that was aimed at improving group cohesion, turnover and nurse satisfaction in an acute care teaching hospital in the United States of America (US). It was a quasi-experimental pre-post intervention design without a

(Continued)

	<p>control group. There was no matching of participants pre- and post-test and each unit in which participants were located had its own individual dynamics and issues that needed to be addressed. The study outcomes did not include a change in the number of reported cases of bullying or level of absenteeism</p>
Beirne 2013	<p>Study design not as specified in our PICOS.</p> <p>A qualitative case study to compare two anti-bullying initiatives (organisation/employer level); one in the public and one in the private sector in the United Kingdom (UK). They highlighted the complexity of bullying in the workplace and called for a more grounded approach to engage with the specific workforce. Not a control study</p>
Bortoluzzi 2014	<p>Study design not as specified in our PICOS.</p> <p>This study examined the predictors of bullying (individual/job interface level) in an observational study among nurses in public hospital corporations in northern Italy. It showed that leadership style explained 33.5% of the variance in the onset of bullying; this is useful, but no intervention was tested</p>
Bourbonnais 2006a	<p>Did not include an intervention as specified in our PICOS.</p> <p>This study tested a participative intervention (job/task level; see Bourbonnais 2006b for full details of intervention) to prevent workplace-related mental health problems among 'care providing personnel' in two hospitals in Quebec, Canada. Whilst it was effective in that regard, their focus did not extend to prevention of bullying per se. This is a psychosocial intervention, not focused on bullying</p>
Brunges 2014	<p>Did not include an intervention as specified in our PICOS.</p> <p>This study from the US takes a long-term approach consisting of several interventions (organisation/employer level) and although some interesting effects were seen on workplace engagement and job satisfaction, their study lacked precision and did not focus on bullying prevention. The improvements/interventions are spread over long periods and the 'results' are diffuse, and due to the prolonged timeframe, it was not possible to control a number of variables</p>
Ceravolo 2012	<p>Did not include an intervention as specified in our PICOS.</p> <p>This was a pre- and post-intervention survey of registered nurses' perception of lateral violence and turnover in the workplace (organisation or employer level). Improvements were noted following workshops designed to enhance assertive communication skills, raise awareness of the impact of lateral violence behaviour, and develop healthy conflict resolution skills. No control group was used</p>
Chipps 2012	<p>This was a pilot study described as a 'quasi-experimental pre-test and post-test comparison' of an educational programme (individual/job interface level), with 16 participants. The group acted as their own control</p>
Collette 2004	<p>Study design not specified in our PICOS.</p> <p>This was a case study, examining a team-based approach to the retention of nursing staff (organisation/employer level) in a hospital in East Melbourne, Australia. This study only had an indirect impact on bullying and there was no control group</p>
Cooper-Thomas 2013	<p>Study design not specified in our PICOS.</p> <p>This was a survey of a convenience sample of 727 employees from nine healthcare organisations in New Zealand, which focused on the potential buffering effects of perceived organisational support, and organisational anti-bullying initiatives (organisation/employer level)</p>

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Crawford 1999	Did not include outcome measures specified in our PICOS. Reports on two organisational interventions in two organisations in the UK aimed at preventing bullying in the workplace. The first intervention was the implementation of the Dignity at Work Policy and procedures in an organisation where bullying had been identified as an issue (society/policy level). The outcomes from the policy implementation were not clear. The second organisational intervention briefly described was the response of an organisation to the systematic bullying of staff by a manager (individual/job interface). It was reported that the bully left the organisation but the reason was not stated. There was insufficient detail about the intervention and lack of data from which evidence of effectiveness of either intervention could be determined. The study outcomes did not include a change in the number of reported cases of bullying or level of absenteeism
Egues 2014	Did not include an intervention as specified in our PICOS. This study from the US provides weak evidence that education workshops have an effect on knowledge of student nurses. However, it is not prevention in a workplace setting (unclassified level of intervention)
Feda 2010	Did not include an intervention as specified in our PICOS. A case control design was used, in educational workplace settings in the US, to analyse nine different written violence policies and their impact on work-related physical assault (unclassified level of intervention)
Gedro 2013	Study design not specified in our PICOS. This is a case study which was focused on workplace incivility from the US. It mainly includes a description of the workshops and feedback from participants (organisation/employer level)
Gilbert 2013	Study design not specified in our PICOS. A survey of 238 students from a business school in the US, which sought to understand the complexities of workplace bullying by exploring the use of a bullying policy as a means of mitigation, particularly in relation to gender norms (society/policy level)
Grenyer 2004	Did not include outcome measures as specified in our PICOS. Reports on a pilot of an aggression minimisation programme for all public health staff who were at risk in New South Wales (Individual/job interface level). It involved twenty-two hours of training divided into four modules. Two pilot samples were evaluated and the outcomes focused on the perceived confidence of staff in dealing with incidents of aggression and not on the outcomes of relevance to this review
Griffin 2004	Did not include an intervention as specified in our PICOS. An exploratory design from the US with an applied intervention of 'cognitive rehearsal techniques', which staff were encouraged to use as a shield against incidences of lateral violence (Individual/job interface level). There was no control nor any pre- or post-test measures. The intervention was focused on 'how to respond' if bullied. Hence, it was considered to be a management of bullying intervention rather than prevention of bullying
Holme 2006	Study design not specified in our PICOS. This paper reports on a consultancy project from the UK where managers in a company of 900 staff were trained to implement a new harassment and bullying policy (society/policy level), through involvement in work-based projects. This was a case study with no control
Karakas 2015	Study design not specified in our PICOS This study was a non-controlled before and after study from Turkey, which focused on assertiveness training

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	for nurses who had scored 204 points or more on a mobbing instrument which 'demonstrated that they had experienced mobbing'. There was no control (Individual and/ job interface level)
Lasater 2015	Did not include outcome measures as specified in our PICOS. This was an interrupted time series study from the US, which focused on a three-part educational intervention (organisation/employer level), addressing incivility in the workplace
Latham 2008	Did not include an intervention as specified in our PICOS. This study from the US was based on a description of the impact of a mentor and advocacy programme on the broader context of a healthcare workforce environment (organisation/employer level). The outcomes were measured through a survey, with the focus on perceptions of the impact of the programme on the environment in which the registered nurses worked and not specifically on bullying. The intervention was not focused on bullying at work
Longo 2011	Study design not specified in our PICOS. This was a programme evaluation of a healthcare workforce partnership community collaboration from the US, aimed at nursing retention (society/policy level). It involved a range of initiatives which culminated in a train the trainer conference. There was no control group
Léon-Pérez 2012	Did not include an intervention as specified in our PICOS. This was a two-wave prospective intervention study in a Spanish manufacturing corporation, which focused on conflict management training of 42 employees, not on prevention (organisation/employer level). It did not employ a control group
Mallette 2011	Did not include outcome measures as specified in our PICOS. An experimental educational intervention using a pre/post design with a control group from Ontario, Canada. The intervention was computer-based learning, using avatars in scenarios to address horizontal violence (individual/job interface level). The study outcomes did not include change in the number of reported cases of bullying or level of absenteeism
Meloni 2011	Did not include outcome measures as specified in our PICOS. A case study approach to the implementation and evaluation of a zero tolerance of bullying and harassment programme (organisation/employer level) in one hospital in Australia. There was no control, and outcomes were based on employee satisfaction surveys
Melwani 2011	Did not include an intervention as specified in our PICOS. This study focused on three experiments that tested the outcomes of being a recipient of contempt in the work domain (individual/job interface level) at a university in the US. Contempt is a possible component of bullying, but the study did not focus on prevention
Mikkelsen 2011	Did not include outcome measures as specified in our PICOS. This Danish study used a quasi-experimental approach to evaluate interventions in two organisations (organisation/employer level). The Interventions were largely educational in nature, including directed teaching sessions, meetings, and paper-based information. The results were broadly qualitative and there were no control groups Source of funding: Danish Work Environment Research Fund and The National Research Centre for the Working Environment

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Nikstatis 2014	Did not include outcome measures as specified in our PICOS. This was a before-and-after design from the US, with 38 participants, testing an educational intervention on the causes and effects of incivility, using case studies and discussion of team building skills and ways to prevent incivility (job/task level). The study did not employ a control group
Oostrom 2008	Did not include an intervention or outcome measures as specified in our PICOS This was an evaluation of an aggression management training programme from The Netherlands (Individual/job interface level). Using an alternative approach to a control group, the authors of the study referred to as an internal referencing strategy, which they considered 'ruled out some major threats to internal validity without the need for a control group'. The intervention dealt with the management of aggression rather than prevention of bullying at work. The study outcomes did not include change in the number of reported cases of bullying or level of absenteeism. The intervention was not focused on bullying at work
Pate 2010	Did not include outcome measures as specified in our PICOS. This was a longitudinal study, which produced limited data on perceptions of bullying in a single organisation in the UK, following the implementation of bullying and harassment policies (organisation/employer level). It clearly indicated how leadership by a CEO can effect a perception of positive change in an organisation, but pointed to the difficulty of measuring the success of workplace bullying policies. The study did not employ a control group
Probst 2008	Did not include outcome measures as specified in our PICOS. The authors reported on initial outcomes that appeared to improve employees' knowledge and understanding of the interrelated job associated problems (society/policy level). The International Labour Organisation multilevel longitudinal intervention (SOLVE) focused on the reduction of psychosocial problems in the workplace; stress, tobacco, alcohol, and drugs, HIV/AIDS and violence. However, the data did not allow for a comprehensive evaluation of SOLVE, but were limited to giving an indication of how employees had gained knowledge. The intervention was not focused on bullying at work
Stagg 2011	Did not include an intervention as specified in our PICOS. This study utilised an intervention designed by Griffin 2004 . While this study from the US was aimed at determining whether cognitively rehearsed responses to common bullying behaviours decreased bullying, we judged that it did not focus on prevention but rather on how to increase staff nurses' knowledge of workplace bullying management (Individual/job interface level)
Stevens 2002	Study design not specified in our PICOS. This was a case study within a broad review of the workplace, conducted in a large Australian teaching hospital (organisation/employer level). No research was involved.
Strandmark 2014	Study design not specified in our PICOS. This was a Swedish study, which employed a community-based, participatory research approach (society/policy level), which aimed to achieve zero tolerance for bullying
Wagner 2012	Study design and outcome measures not as specified in our PICOS This was a post-hoc analysis, with 339 participants in the US, who undertook training in new norms of workplace culture to prevent and resolve incidents of workplace violence (organisation/employer level). The study did not include measures of effectiveness or outcome measures; it was not a before-after design, nor did it have a control group

(Continued)

Woodrow 2014	Study design not specified in our PICOS. This was a case study from the UK, designed to explore the policies and procedures in place to prevent bullying, and to examine the extent and quality of local implementation of bullying policies (organisation/ employer level). No comparative research was involved
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DATA AND ANALYSES

Comparison 1. CREW intervention vs no intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Self-reported civility	2		Mean Difference (Random, 95% CI)	0.17 [0.07, 0.28]
2 Self-reported co-worker incivility	1		Mean Difference (Random, 95% CI)	Totals not selected
3 Self-reported supervisor incivility	1		Mean Difference (Random, 95% CI)	Totals not selected
4 Self-reported frequency of incivility perpetration	1		Mean Difference (Random, 95% CI)	Totals not selected
5 Self-reported absenteeism in previous month	1		Mean Difference (Random, 95% CI)	Totals not selected

Comparison 2. Expressive writing vs. control writing

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Incivility victimisation (25th percentile pre-test)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
2 Incivility victimisation (50th percentile pre-test)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
3 Incivility victimisation (75th percentile pre-test)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
4 Incivility victimisation (pooled)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
5 Incivility perpetration	1		Mean Difference (IV, Random, 95% CI)	Totals not selected

Comparison 3. Cognitive Behavioural intervention vs. no intervention

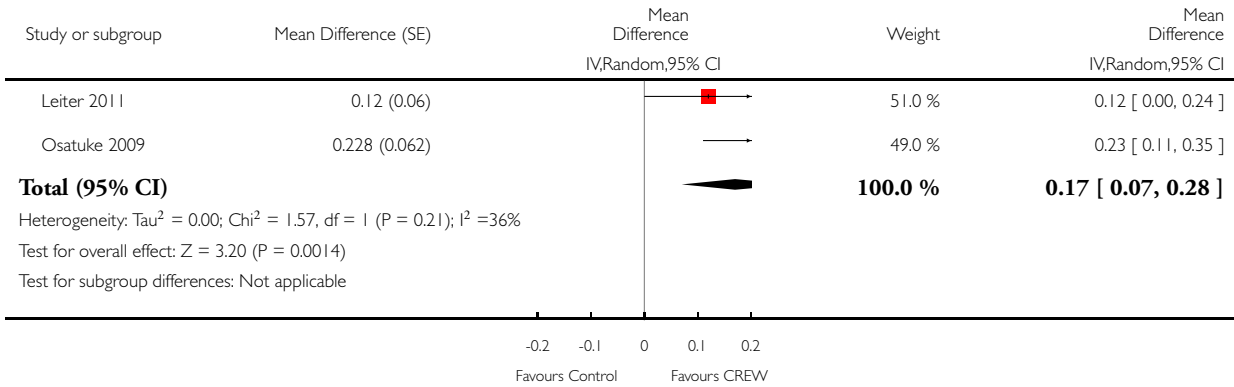
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Victimization	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
1.1 Pre-intervention	1		Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.2 Post-intervention	1		Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.3 Follow-up at three months	1		Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Perpetration	1		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
2.1 Pre-intervention	1		Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 Post-intervention	1		Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 Follow-up at three months	1		Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 1.1. Comparison 1 CREW intervention vs no intervention, Outcome 1 Self-reported civility.

Review: Interventions for prevention of bullying in the workplace

Comparison: 1 CREW intervention vs no intervention

Outcome: 1 Self-reported civility

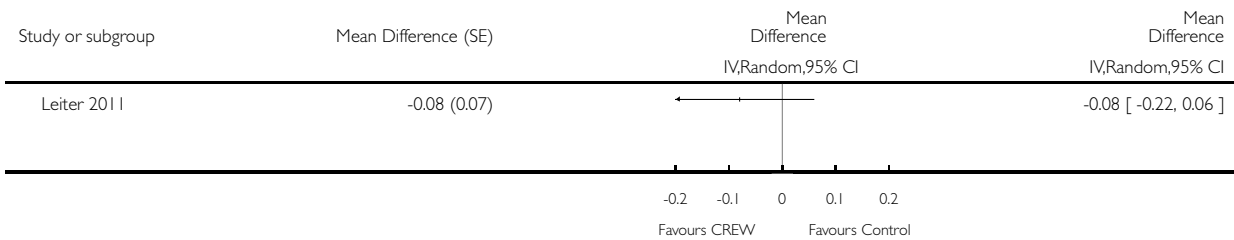


Analysis 1.2. Comparison 1 CREW intervention vs no intervention, Outcome 2 Self-reported co-worker incivility.

Review: Interventions for prevention of bullying in the workplace

Comparison: 1 CREW intervention vs no intervention

Outcome: 2 Self-reported co-worker incivility

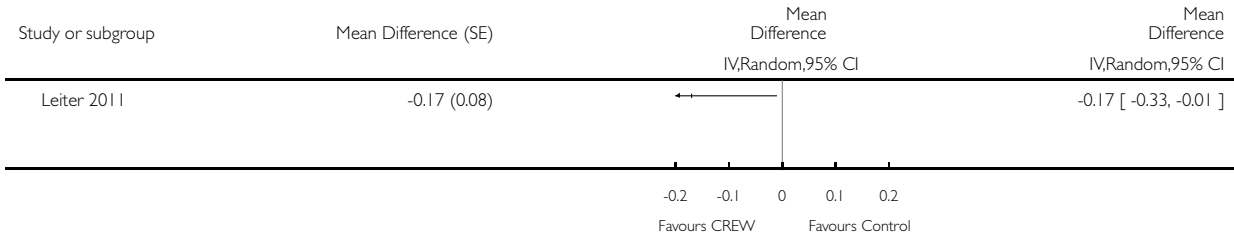


Analysis 1.3. Comparison 1 CREW intervention vs no intervention, Outcome 3 Self-reported supervisor incivility.

Review: Interventions for prevention of bullying in the workplace

Comparison: 1 CREW intervention vs no intervention

Outcome: 3 Self-reported supervisor incivility

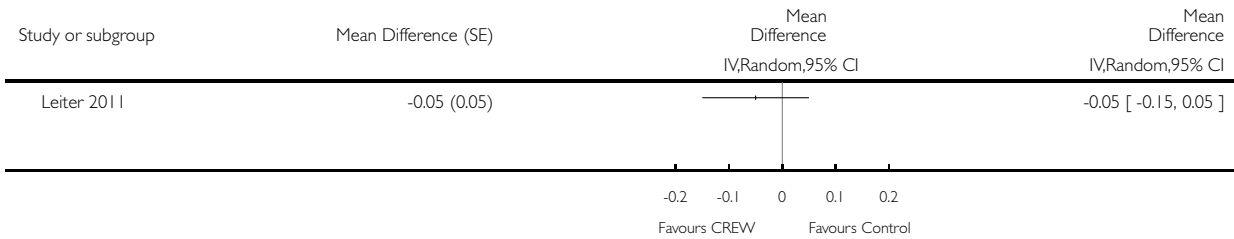


Analysis 1.4. Comparison 1 CREW intervention vs no intervention, Outcome 4 Self-reported frequency of incivility perpetration.

Review: Interventions for prevention of bullying in the workplace

Comparison: 1 CREW intervention vs no intervention

Outcome: 4 Self-reported frequency of incivility perpetration

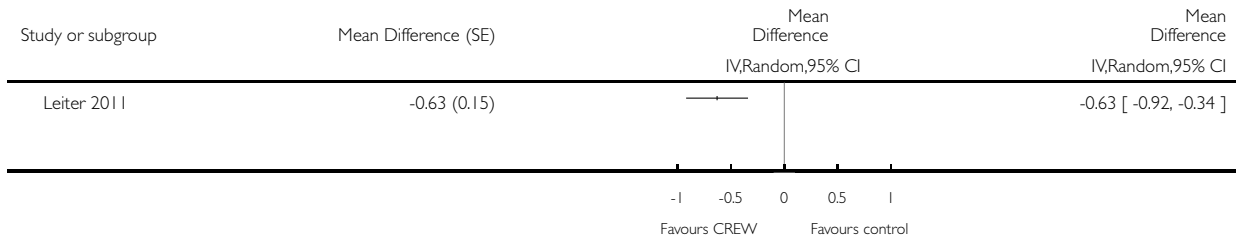


Analysis 1.5. Comparison 1 CREW intervention vs no intervention, Outcome 5 Self-reported absenteeism in previous month.

Review: Interventions for prevention of bullying in the workplace

Comparison: 1 CREW intervention vs no intervention

Outcome: 5 Self-reported absenteeism in previous month

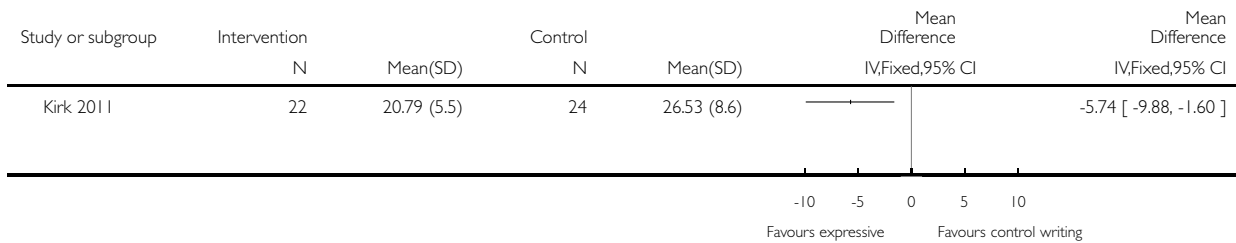


Analysis 2.1. Comparison 2 Expressive writing vs. control writing, Outcome 1 Incivility victimisation (25th percentile pre-test).

Review: Interventions for prevention of bullying in the workplace

Comparison: 2 Expressive writing vs. control writing

Outcome: 1 Incivility victimisation (25th percentile pre-test)

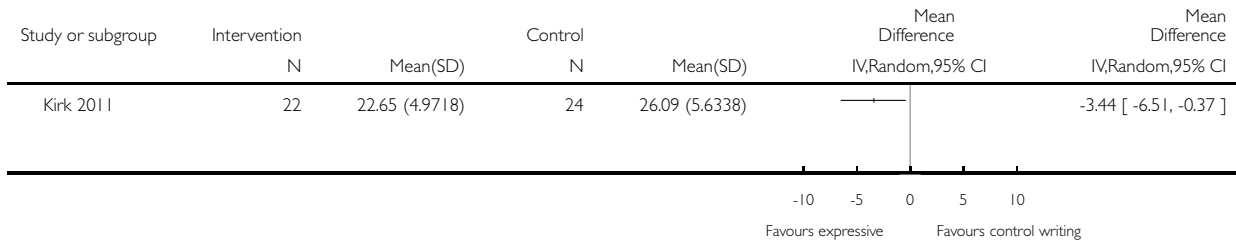


Analysis 2.2. Comparison 2 Expressive writing vs. control writing, Outcome 2 Incivility victimisation (50th percentile pre-test).

Review: Interventions for prevention of bullying in the workplace

Comparison: 2 Expressive writing vs. control writing

Outcome: 2 Incivility victimisation (50th percentile pre-test)

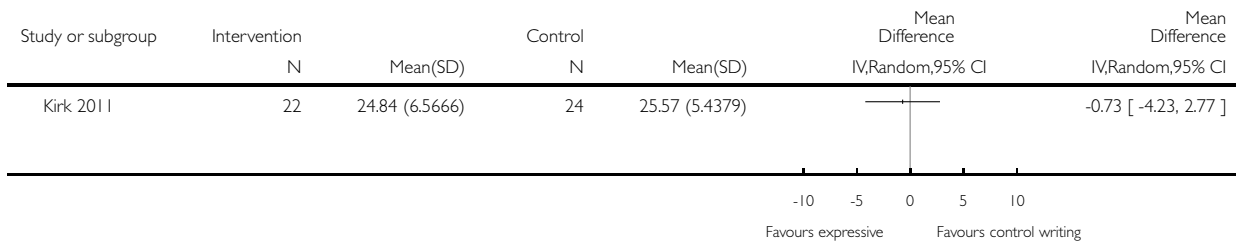


Analysis 2.3. Comparison 2 Expressive writing vs. control writing, Outcome 3 Incivility victimisation (75th percentile pre-test).

Review: Interventions for prevention of bullying in the workplace

Comparison: 2 Expressive writing vs. control writing

Outcome: 3 Incivility victimisation (75th percentile pre-test)

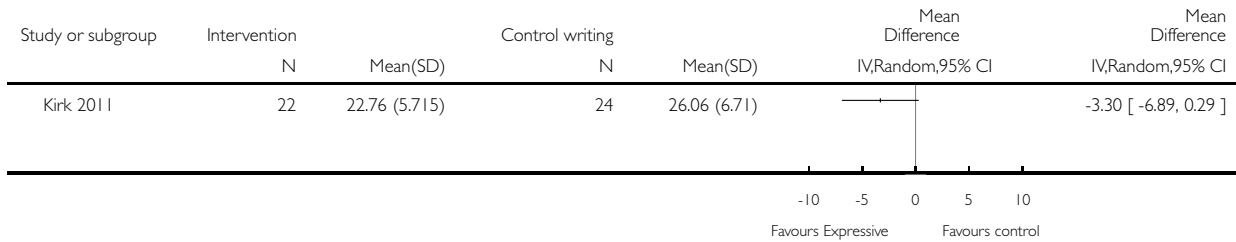


Analysis 2.4. Comparison 2 Expressive writing vs. control writing, Outcome 4 Incivility victimisation (pooled).

Review: Interventions for prevention of bullying in the workplace

Comparison: 2 Expressive writing vs. control writing

Outcome: 4 Incivility victimisation (pooled)

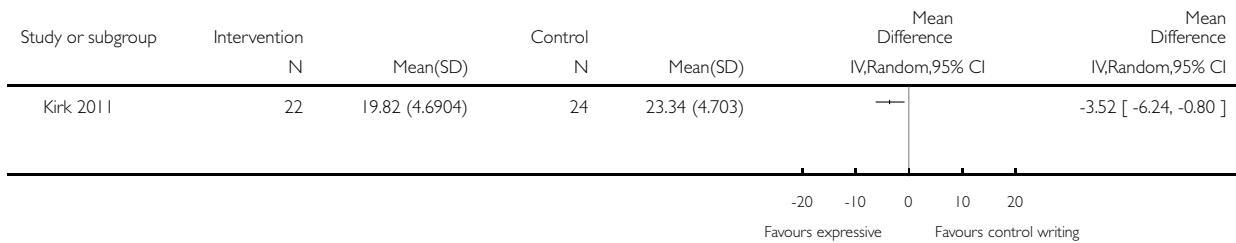


Analysis 2.5. Comparison 2 Expressive writing vs. control writing, Outcome 5 Incivility perpetration.

Review: Interventions for prevention of bullying in the workplace

Comparison: 2 Expressive writing vs. control writing

Outcome: 5 Incivility perpetration

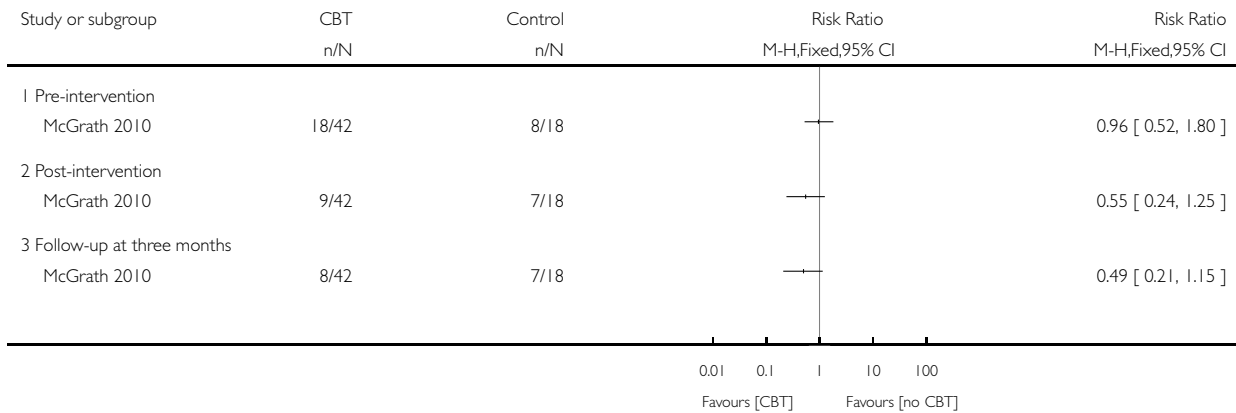


Analysis 3.1. Comparison 3 Cognitive Behavioural intervention vs. no intervention, Outcome 1 Victimisation.

Review: Interventions for prevention of bullying in the workplace

Comparison: 3 Cognitive Behavioural intervention vs. no intervention

Outcome: 1 Victimisation

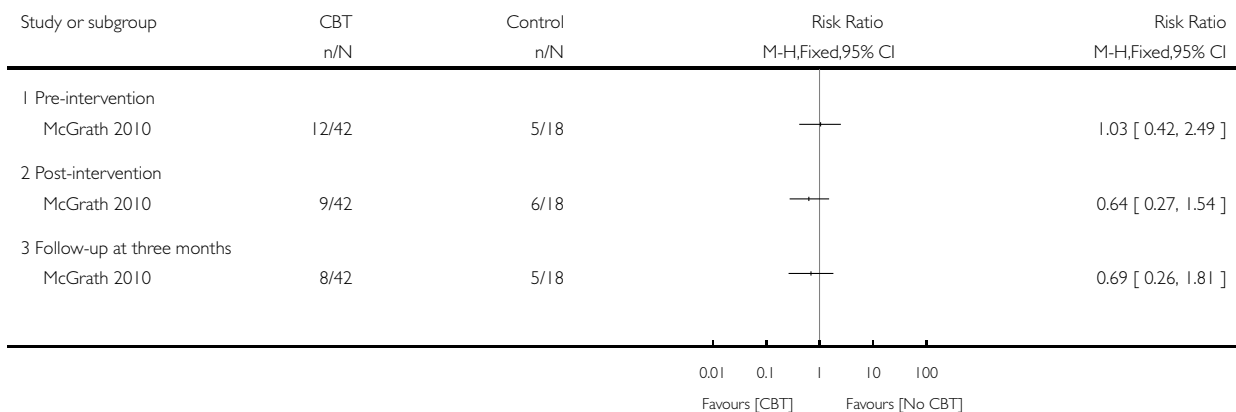


Analysis 3.2. Comparison 3 Cognitive Behavioural intervention vs. no intervention, Outcome 2 Perpetration.

Review: Interventions for prevention of bullying in the workplace

Comparison: 3 Cognitive Behavioural intervention vs. no intervention

Outcome: 2 Perpetration



APPENDICES

Appendix I. Search Strategies

OSH (International bibliographic, CISDOC, HSELINE, NIOSHTIC, NIOSHTIC-2, RILOSH; OSH UPDATE; via The Cochrane Library)

1. DC{ OUBIB or OUCISD or OUHSEL or OUNIOC OR OUNIOS or OURILO}
2. GW{bullying OR bully OR bullie* OR harassment* OR intimidat* OR aggression* OR personality clash OR horizontal violence}
3. GW{cross over* or double blind* or singl* blind* or clinical trial*}
4. GW{random* or factorial* or crossover* or placebo* or assign* or allocat* or volunteer*}
5. #3 OR #4 #1
6. AND #2 AND #5
7. GW{controlled trial* or evaluation or intervention stud* or comparative stud* or controlled stud* or experiment* or time series or impact* or intervention* or chang* or evaluat* or effect*}
8. GW{before and after}
9. #7 OR #8
10. #1 AND #2 AND #9
11. #10 NOT #6
12. GW{{{work* or occupation* or prevention* or protect*} and (effect* or control* or evaluation* or program*)}}
13. #1 AND #2 AND #12
14. #13 NOT (#6 OR #10)
15. #6 OR #11 OR #14

CENTRAL (The Cochrane Library)

bullying OR bully OR bullie* OR harassment* OR Mobbing* OR intimidat* OR aggression* OR “Personality clash” OR “horizontal violence”

2. MeSH descriptor Work, this term only
3. MeSH descriptor Workplace, this term only
4. MeSH descriptor Employment, this term only
5. MeSH descriptor Health Personnel, explode all trees
6. MeSH descriptor Occupational Health Services, explode all trees
7. MeSH descriptor Health Care Sector, explode tree 1
8. (workplace* OR worksite* OR “workplace” OR “workplaces” OR “worksite” OR “worksites” OR “work setting” OR “work settings” OR “work environment” OR “work location” OR “work locations” OR Job):ti,ab,kw or (work*):ti
9. (worker* OR Staff OR personnel OR “human resources” Or colleague* OR Nurse* OR doctor* OR Physician* OR midwife* OR midwives* OR “allied health professionals” OR employee* OR employer*):ti,ab,kw
10. (small AND medium* AND enterpri*):ti,ab,kw
11. (company OR Companies OR business* OR factory OR factories OR Office* OR organisation* OR organization*):ti,ab,kw and(scheme OR strategy OR strategies OR policy OR policies OR climate OR culture OR sociocultural OR program OR programs):ti,ab,kw
12. (legislati*):ti,ab,kw

13. (#2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12)

14. (#1 AND #13)

PUBMED (via Ovid)

1.bullying OR bully OR bullie* OR harassment* OR mobbing* OR intimidat* OR aggression* OR "personality clash" OR "horizontal violence"

2.Work[Mesh] OR Workplace[Mesh] OR Employment[Mesh] OR Health personnel[Mesh] OR Occupational Health Services[Mesh] OR Health Care Sector[Mesh]

3.workplace*[tiab] OR worksite*[tiab] OR "work place"[tiab] OR "work places"[tiab] OR "work site"[tiab] OR "work sites"[tiab] OR "work setting"[tiab] OR "work settings"[tiab] OR "work environment"[tiab] OR "work location"[tiab] OR "work locations"[tiab] OR job[tiab] OR work*[ti]

4.worker*[tiab] OR staff[tiab] OR personnel[tiab] OR "human resources"[tiab] OR colleague*[tiab] OR nurse*[tiab] OR doctor*[tiab] OR physician*[tiab] OR midwife*[tiab] OR midwives*[tiab] OR "allied health professionals"[tiab] OR employee*[tiab] OR employer*[tiab]

5. small[tiab] AND medium*[tiab] AND enterpri*[tiab]

6.(company[tiab] OR companies[tiab] OR business*[tiab] OR factory[tiab] OR factories[tiab] OR office*[tiab] OR organisation*[tiab] OR organization*[tiab]) AND (scheme[tiab] OR strategy[tiab] OR strategies[tiab] OR policy[tiab] OR policies[tiab] OR climate[tiab] OR culture[tiab] OR sociocultural[tiab] OR program[tiab] OR programs[tiab])

7.intervention* OR legislati*[tiab]

8. 2 OR 3 OR 4 OR 5 OR 6 OR 7

9.1 AND 8

10. (randomized controlled trial[pt] OR controlled clinical trial[pt] OR randomized[tiab] OR placebo[tiab] OR drug therapy[sh] OR randomly[tiab] OR trial[tiab] OR groups[tiab] NOT (animals [mh] NOT humans [mh]))

11.9 AND 10

12."Controlled Clinical Trial"[pt] OR "Evaluation Studies"[pt] OR "Comparative Study" [pt]

13."Intervention Studies"[Mesh] OR "Random Allocation"[Mesh] OR "Evaluation Studies as Topic"[Mesh] OR "Controlled Clinical Trials as Topic"[Mesh]

14. "pre test"[tw] OR "post test"[tw] OR pretest[tw] OR posttest[tw] OR impact[tw] OR intervention*[tw] OR chang*[tw] OR evaluat*[tw] OR effect*[tw] OR "before and after"[tiab] OR randomized[tiab] OR randomised[tiab] OR placebo[tiab] OR randomly[tiab] OR trial[tiab] OR groups[tiab]

15. Animals[Mesh] NOT Humans[Mesh]

16. (12 OR 13 OR 14) NOT 15

17.9 AND 16

18. 17 NOT 11

19. (effect*[tw] OR control[tw] OR controls*[tw] OR controla*[tw] OR controle*[tw] OR controli*[tw] OR controll*[tw] OR evaluation*[tw] OR program*[tw]) AND (work[tw] OR works*[tw] OR work*[tw] OR worka*[tw] OR worke*[tw] OR workg*[tw] OR worki*[tw] OR workl*[tw] OR workp*[tw] OR occupation*[tw] OR prevention*[tw] OR protect*[tw])

20. 9 AND 19

21. 20 NOT (11 OR 17)

22. 11 OR 17 OR 20

EMBASE (via Ovid)

1. 'bullying'/exp

2. bullying:ab,ti OR bully:ab,ti OR bullie*:ab,ti OR harassment*:ab,ti OR mobbing*:ab,ti OR intimidat*:ab,ti OR aggression:ab,ti

3. 'personality clash' OR 'horizontal violence'

4. #1 OR #2 OR #3

5. 'work'/exp OR 'employment'/exp OR 'health care personnel'/exp OR 'occupational health service'/exp OR 'named groups by occupation'/exp OR 'work environment'/de

6. workplace*:ab,ti OR worksite*:ab,ti OR 'work place':ab,ti OR 'work places':ab,ti OR 'work site':ab,ti OR 'work sites':ab,ti OR 'work setting':ab,ti OR 'work settings':ab,ti OR 'work environment':ab,ti OR job:ab,ti OR work*:ti

7. small NEXT/5 medium* AND enterpri*

8. worker*:ab,ti OR staff:ab,ti OR personnel:ab,ti OR 'human resources':ab,ti OR colleague*:ab,ti OR nurse*:ab,ti OR doctor*:ab,ti OR physician*:ab,ti OR midwife*:ab,ti OR midwives*:ab,ti OR 'allied health professionals':ab,ti OR 'allied health personnel':ab,ti OR employee*:ab,ti OR employer*:ab,ti
9. (company:ab,ti OR companies:ab,ti OR business*:ab,ti OR factory:ab,ti OR factories:ab,ti OR office*:ab,ti OR organisation*:ab,ti OR organization*:ab,ti) AND (scheme:ab,ti OR strategy:ab,ti OR strategies:ab,ti OR policy:ab,ti OR policies:ab,ti OR climate:ab,ti OR culture:ab,ti OR sociocultural:ab,ti OR program:ab,ti OR programs:ab,ti)
10. legislati*:ab,ti OR intervention*:ab,ti
11. #5 OR #6 OR #7 OR #8 OR #9 OR #10
12. #4 AND #11
13. #12 AND [embase]/lim NOT [medline]/lim
14. random* OR factorial* OR crossover* OR cross NEXT/1 over* OR placebo* OR doubl* NEXT/1 blind* OR singl* NEXT/1 blind* OR assign* OR allocat* OR volunteer*
15. 'crossover procedure'/exp OR 'double blind procedure'/exp OR 'single blind procedure'/exp OR 'randomized controlled trial'/exp
16. 'clinical trial (topic)'/exp
17. #14 OR #15 OR #16
18. #13 AND #17
19. 'evaluation'/exp OR 'intervention study'/exp OR 'comparative study'/exp OR 'controlled study'/exp
20. 'pre test':ab,ti OR pretest:ab,ti OR 'post test':ab,ti OR posttest:ab,ti
21. experiment*:ab,ti OR 'time series':ab,ti OR impact*:ab,ti OR intervention*:ab,ti OR chang*:ab,ti OR evaluat*:ab,ti OR effect*:ab,ti OR 'before and after':ab,ti OR trial:ab OR groups:ab
22. #19 OR #20 OR #21
23. #13 AND #22
24. #23 NOT #18
25. (effect* OR control* OR evaluation* OR program*) AND (work* OR occupation* OR prevention* OR protect*)
26. #13 AND #25
27. #26 NOT (#18 OR #23)
28. #18 OR #23 OR #26

PsycINFO (via Ovid)

1. bullying/
2. exp Harassment/
3. (bullying or bully or bullie* or harassment* or intimidat* or aggression*).ab,ti.
4. personality clash.mp.
5. horizontal violence.mp.
6. 1 or 2 or 3 or 4 or 5
7. exp Health Personnel/
8. exp Occupational Health/
9. exp Occupations/
10. personnel/
11. employee interaction/
12. (workplace* or worksite* or work place* or work site* or work setting* or work environment* or job).ab,ti.
13. (small* adj5 medium* adj5 enterpri*).mp.
14. (worker* or staff or personnel or human resources or colleague* or nurse* or doctor* or physician* or midwife* or midwives* or allied health professionals or allied health personnel or employee* or employer*).ab,ti.
15. work*.ti.
16. 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
17. ((company or companies or business* or factory or factories or office* or organization* or organisation*) and (scheme or strategy or strategies or policy or policies or climate or culture or sociocultural or program or programs)).ab,ti.
18. legislati*.ab,ti.
19. 16 or 17 or 18

20. 6 and 19
21. (random* or factorial* or crossover* or placebo* or assign* or allocat* or volunteer*).mp.
22. (cross over* or double blind* or singl* blind*).mp.
23. clinical trials/
24. 21 or 22 or 23
25. 20 and 24
26. (controlled trial* or evaluation or intervention stud* or comparative stud* or controlled stud*).ab,ti.
27. (experiment* or time series or impact* or intervention* or chang* or evaluat* or effect*).ab,ti.
28. (before and after).ab,ti.
29. intervention/
30. 26 or 27 or 28 or 29
31. 20 and 30
32. 31 not 25
33. ((work* or occupation* or prevention* or protect*) and (effect* or control* or evaluation* or program*)).mp.
34. 20 and 33
35. 34 not (25 or 31)
36. 25 or 31 or 34

CINAHL Plus (via EBSCO host)

1. TX bully*
2. TX bullies
3. AB harass*
4. AB intimidat*
5. TX mobbing
6. AB aggress*
7. TX "personality clash"
8. TX "horizontal violence"
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. AB work*
11. AB employ*
12. AB occupation*
13. AB job
14. AB staff
15. AB personnel
16. TX "human resources"
17. AB colleague*
18. TX enterpri*
19. TX compan*
20. TX business*
21. TX factory
22. TX factories
23. TX office*
24. TX organisation*
25. TX organization*
26. 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25
27. AB random*
28. AB control*
29. AB therapy
30. AB placebo
31. AB trial
32. AB evaluat*
33. TX study

- 34. TX impact
- 35. TX intervention*
- 36. TX chang*
- 37. AB effect*
- 38. AB prevent*
- 39. AB protect*
- 40. AB program*
- 41. 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40
- 42. 9 and 26 and 41

IBSS (via EBSCO host)

- #1. bullying OR bully OR bullie* OR harassment* OR mobbing* OR intimidat* OR aggression* OR “personality clash” OR “horizontal violence”
- #2. Work OR Workplace OR Employment OR Health personnel OR Occupational Health Services OR Health Care Sector
- #3. AB, TI(workplace*) OR AB, TI (worksite*) OR AB, TI (work place) OR AB, TI (work places) OR AB, TI (work site) OR AB, TI (work sites) OR AB, TI (work setting) OR AB, TI (work settings) OR AB, TI (work environment) OR AB, TI (work location) OR AB, TI (work locations) OR AB, TI (job) OR AB, TI (work*)
- #4. AB, TI(worker*) OR AB, TI(staff) OR AB, TI(personnel) OR AB, TI(human resources) OR AB, TI(colleague*) OR AB, TI(nurse*) OR AB, TI(doctor*) OR AB, TI(physician*) OR AB, TI(midwife*) OR AB, TI(midwives*) OR AB, TI(allied health professionals) OR AB, TI(employee*) OR AB, TI(employer*)
- #5. AB, TI(small) AND AB, TI(medium*) AND AB, TI(enterpri*)
- #6. (AB, TI(company) OR AB, TI(companies) OR AB, TI(business*) OR AB, TI(factory) OR AB, TI(factories) OR AB, TI(office*) OR AB, TI(organisation*) OR AB, TI(organization*)) AND (AB, TI(scheme) OR AB, TI(strategy) OR AB, TI(strategies) OR AB, TI(policy) OR AB, TI(policies) OR AB, TI(climate) OR AB, TI(culture) OR AB, TI(sociocultural) OR AB, TI(program) OR AB, TI(programs))
- #7. AB, TI(intervention*) OR AB, TI(legislati*)
- #8. #2 OR #3 OR #4 OR #5 OR #6 OR #7
- #9. #1 AND #8
- #10. (randomized controlled trial OR controlled clinical trial OR AB, TI(randomized) OR AB, TI(placebo) OR drug therapy OR AB, TI(randomly) OR AB, TI(trial) OR AB, TI(groups) NOT (animals NOT humans))
- #11. #9 AND #10
- #12. (Controlled Clinical Trial) OR (Evaluation Studies) OR (Comparative Study)
- #13. (Intervention Studies) OR (Random Allocation) OR (Evaluation Studies) OR (Controlled Clinical Trials)
- #14. “pre test” OR “post test” OR pretest OR posttest OR impact OR intervention* OR chang* OR evaluat* OR effect* OR AB, TI(“before and after”) OR AB, TI(randomized) OR AB, TI(randomised) OR AB, TI(placebo) OR AB, TI(randomly) OR AB, TI(trial) OR AB, TI(groups)
- #15. Animals NOT Humans
- #16. (#12 OR #13 OR #14) NOT #15
- #17. #9 AND #16
- #18. #17 NOT #11
- #19. (effect* OR control OR controls* OR controla* OR controle* OR controli* OR controll* OR evaluation* OR program*) AND (work OR works* OR work’* OR worka* OR worke* OR workg* OR worki* OR workl* OR workp* OR occupation* OR prevention* OR protect*)
- #20. #9 AND #19
- #21. #20 NOT (#11 OR #17)
- #22. #11 OR #17 OR #20

ASSIA (via EBSCO host)

- #1. bullying OR bully OR bullie* OR harassment* OR mobbing* OR intimidat* OR aggression* OR “personality clash” OR “horizontal violence”
- #2. Work OR Workplace OR Employment OR Health personnel OR Occupational Health Services OR Health Care Sector

#3. AB, TI(workplace*) OR AB, TI (worksite*) OR AB, TI (work place) OR AB, TI (work places) OR AB, TI (work site) OR AB, TI (work sites) OR AB, TI (work setting) OR AB, TI (work settings) OR AB, TI (work environment) OR AB, TI (work location) OR AB, TI (work locations) OR AB, TI (job) OR AB, TI (work*)

#4. AB, TI(worker*) OR AB, TI(staff) OR AB, TI(personnel) OR AB, TI(human resources) OR AB, TI(colleague*) OR AB, TI(nurse*) OR AB, TI(doctor*) OR AB, TI(physician*) OR AB, TI(midwife*) OR AB, TI(midwives*) OR AB, TI(allied health professionals) OR AB, TI(employee*) OR AB, TI(employer*)

#5. AB, TI(small) AND AB, TI(medium*) AND AB, TI(enterpri*)

#6. (AB, TI(company) OR AB, TI(companies) OR AB, TI(business*) OR AB, TI(factory) OR AB, TI(factories) OR AB, TI(office*) OR AB, TI(organisation*) OR AB, TI(organization*)) AND (AB, TI(scheme) OR AB, TI(strategy) OR AB, TI(strategies) OR AB, TI(policy) OR AB, TI(policies) OR AB, TI(climate) OR AB, TI(culture) OR AB, TI(sociocultural) OR AB, TI(program) OR AB, TI(programs))

#7. AB, TI(intervention*) OR AB, TI(legislati*)

#8. #2 OR #3 OR #4 OR #5 OR #6 OR #7

#9. #1 AND #8

#10. (randomized controlled trial OR controlled clinical trial OR AB, TI(randomized) OR AB, TI(placebo) OR drug therapy OR AB, TI(randomly) OR AB, TI(trial) OR AB, TI(groups) NOT (animals NOT humans))

#11. #9 AND #10

#12. (Controlled Clinical Trial) OR (Evaluation Studies) OR (Comparative Study)

#13. (Intervention Studies) OR (Random Allocation) OR (Evaluation Studies) OR (Controlled Clinical Trials)

#14. “pre test” OR “post test” OR pretest OR posttest OR impact OR intervention* OR chang* OR evaluat* OR effect* OR AB, TI(“before and after”) OR AB, TI(randomized) OR AB, TI(randomised) OR AB, TI(placebo) OR AB, TI(randomly) OR AB, TI(trial) OR AB, TI(groups)

#15. Animals NOT Humans

#16. (#12 OR #13 OR #14) NOT #15

#17. #9 AND #16

#18. #17 NOT #11

#19. (effect* OR control OR controls* OR controla* OR controle* OR controli* OR controll* OR evaluation* OR program*) AND (work OR works* OR work* OR worka* OR worke* OR workg* OR worki* OR workl* OR workp* OR occupation* OR prevention* OR protect*)

#20. #9 AND #19

#21. #20 NOT (#11 OR #17)

#22. #11 OR #17 OR #20

ABI GLOBAL (via EBSCO host)

#1. bullying OR bully OR bullie* OR harassment* OR mobbing* OR intimidat* OR aggression* OR “personality clash” OR “horizontal violence”

#2. Work OR Workplace OR Employment OR Health personnel OR Occupational Health Services OR Health Care Sector

#3. AB, TI(workplace*) OR AB, TI (worksite*) OR AB, TI (work place) OR AB, TI (work places) OR AB, TI (work site) OR AB, TI (work sites) OR AB, TI (work setting) OR AB, TI (work settings) OR AB, TI (work environment) OR AB, TI (work location) OR AB, TI (work locations) OR AB, TI (job) OR AB, TI (work*)

#4. AB, TI(worker*) OR AB, TI(staff) OR AB, TI(personnel) OR AB, TI(human resources) OR AB, TI(colleague*) OR AB, TI(nurse*) OR AB, TI(doctor*) OR AB, TI(physician*) OR AB, TI(midwife*) OR AB, TI(midwives*) OR AB, TI(allied health professionals) OR AB, TI(employee*) OR AB, TI(employer*)

#5. AB, TI(small) AND AB, TI(medium*) AND AB, TI(enterpri*)

#6. (AB, TI(company) OR AB, TI(companies) OR AB, TI(business*) OR AB, TI(factory) OR AB, TI(factories) OR AB, TI(office*) OR AB, TI(organisation*) OR AB, TI(organization*)) AND (AB, TI(scheme) OR AB, TI(strategy) OR AB, TI(strategies) OR AB, TI(policy) OR AB, TI(policies) OR AB, TI(climate) OR AB, TI(culture) OR AB, TI(sociocultural) OR AB, TI(program) OR AB, TI(programs))

#7. AB, TI(intervention*) OR AB, TI(legislati*)

#8. #2 OR #3 OR #4 OR #5 OR #6 OR #7

#9. #1 AND #8

#10. (randomized controlled trial OR controlled clinical trial OR AB, TI(randomized) OR AB, TI(placebo) OR drug therapy OR AB, TI(randomly) OR AB, TI(trial) OR AB, TI(groups) NOT (animals NOT humans))

#11. #9 AND #10

- #12. (Controlled Clinical Trial) OR (Evaluation Studies) OR (Comparative Study)
 #13. (Intervention Studies) OR (Random Allocation) OR (Evaluation Studies) OR (Controlled Clinical Trials)
 #14. “pre test” OR “post test” OR pretest OR posttest OR impact OR intervention* OR chang* OR evaluat* OR effect* OR AB, TI (“before and after”) OR AB, TI (randomized) OR AB, TI (randomised) OR AB, TI (placebo) OR AB, TI (randomly) OR AB, TI (trial) OR AB, TI (groups)
 #15. Animals NOT Humans
 #16. (#12 OR #13 OR #14) NOT #15
 #17. #9 AND #16
 #18. #17 NOT #11
 #19. (effect* OR control OR controls* OR controla* OR controle* OR controli* OR controll* OR evaluation* OR program*) AND (work OR works* OR work* OR worka* OR worke* OR workg* OR worki* OR workl* OR workp* OR occupation* OR prevention* OR protect*)
 #20. #9 AND #19
 #21. #20 NOT (#11 OR #17)
 #22. #11 OR #17 OR #20

Business Source Premier (via EBSCO host)

1. 'Bullying in the workplace'
2. Scholarly Peer Reviewed Journals
3. S1 & S2

OpenGrey (Previously OpenSIGLE-System for Information on Grey Literature in Europe)

1. (bullying OR bully OR bullie* OR harassment* OR intimidat* OR aggression*) AND (workplace* OR work site* OR work setting* OR work environment* OR job OR worker* OR staff OR personnel OR human resources OR colleague*) AND (scheme OR strategy OR strategies OR policy OR policies OR climate OR culture OR sociocultural OR program OR programs OR interven* OR legislati*)

CONTRIBUTIONS OF AUTHORS

Patricia Gillen led the writing of the protocol and the review with contributions from Marlene Sinclair, George Kernohan, Cecily Begley, and Ans Luyben. All authors screened references for studies to include, and extracted data. George Kernohan led on the analysis and all authors contributed to the final drafting of the review.

DECLARATIONS OF INTEREST

Patricia Gillen: I was awarded the Royal College of Midwifery Ruth Davies Research Bursary in 2004 for PhD study into the nature and manifestations of bullying in midwifery. However, the RCM did not influence the study or findings reported. The definition used at the beginning of my PhD study was one used by the RCM in their research in 1996.

Marlene Sinclair: None known.

George Kernohan: None known.

Cecily Begley: None known.

Ans Luyben: None known.

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External sources

- No sources of support supplied

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

1. British Nursing Index (BNI) has now been amalgamated into CINAHL (which is now known as CINAHL Plus), so we did not search BNI separately.
2. ABI Global replaced the Emerald database search.
3. An initial search of the databases 'Index to Theses' and 'Health Management Information Consortium' (HMIC) did not retrieve any studies to include so we excluded these from further searches.
4. In [Types of interventions](#), we broadened the inclusion criterion from “enhancements to reporting mechanisms that make it easier for individuals to report *bullying*” to “enhancements to reporting mechanisms that make it easier for individuals to report *problematic behaviour*”, in order to include all such prevention interventions.
5. We expanded the primary outcomes to include self-report measurement. In the protocol we had assumed that we would have data from employers, but this was not always available.