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School-Based Education Programmes for the Prevention of Child Sexual Abuse

Karen Zwi, Sue Woolfenden, Danielle Wheeler, Tracey
O'Brien, Paul Tait, Katrina Williams



THE CAMPBELL COLLABORATION

Colophon

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Corresponding author	Karen Zwi, PhD School of Women's and Children's Health University of New South Wales & Sydney Children's Hospital Sydney Children's Hospital High Street Randwick Sydney NSW 2031 Australia Telephone: +61 02 9382 1412 E-mail: Zwi@sesiahs.health.nsw.gov.au
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The Campbell Collaboration
P.O. Box 7004 St. Olavs plass
0130 Oslo, Norway
www.campbellcollaboration.org

Cover sheet

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School-based education programmes for the prevention of child sexual abuse

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Contact reviewer: Dr Karen Zwi

Senior Lecturer and Community Paediatrician

School of Women's and Children's Health

University of New South Wales & Sydney Children's Hospital

Sydney Children's Hospital

High Street Randwick

Sydney

NSW AUSTRALIA

2031

Telephone 1: +61 02 9382 1412

E-mail: Zwi@sesiahs.health.nsw.gov.au

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Synopsis

School-based programmes for preventing child sex abuse may improve knowledge and self-protective behaviours but also increase anxiety; further research is needed

Childhood sexual abuse is a serious problem for school aged children worldwide. There is no consistent definition of sexual abuse. Some studies restrict sexual abuse to instances of sexual body contact with the child, while others define sexual abuse as any sexual behaviour in a child's presence. Whatever its form, childhood sexual abuse can have a very negative impact on a child. The United Nations' Convention on the Rights of the Child states that "children have the right to be protected from being hurt and mistreated, physically or mentally" and the international community needs to investigate ways this can be done effectively. One widespread method used is to teach school aged children, using school-based programs, about child sexual abuse and how to protect themselves from it. It is important to know if this approach works, for how long it works and if it causes any unintended harm to children and adolescents. This is the purpose of this systematic review.

While this review found improvements in knowledge and protective behaviours among children who had received school-based programs, these results should be interpreted with caution. The reasons for a need for caution is that there were problems with the way that many of the original studies were analysed, children's knowledge was tested only a short time period after the program, the studies were conducted in North America and therefore may not apply to other countries and cultures, and several studies reported harms, such as increased anxiety in children. Potential harms need to be closely monitored in future studies and existing school based programs. It is difficult to know if the changes in children's knowledge and protective behaviours seen in the studies will result in prevention of child sexual abuse. As such, school-based programs should, at best, be seen as part of a community approach to the prevention of child sexual abuse.

Abstract

Background

Child sexual abuse is a significant problem that requires an effective means of prevention.

Objectives

To assess: if school-based programmes are effective in improving knowledge about sexual abuse and self-protective behaviours; whether participation results in an increase in disclosure of sexual abuse and/or produces any harm; knowledge retention and the effect of programme type or setting.

Search strategy

Electronic searches of Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, PsycINFO, CINAHL, Sociological Abstracts, Dissertation Abstracts and other databases using MESH headings and text words specific for child sexual assault and randomised controlled trials (RCTs) were conducted in August 2006.

Selection criteria

RCTs or quasi-RCTs of school-based interventions to prevent child sexual abuse compared with another intervention or no intervention.

Data collection & analysis

Meta-analyses and sensitivity analysis, using two imputed intraclass correlation coefficients (ICC) (0.1, 0.2), were used for four outcomes: protective behaviours, questionnaire-based knowledge, vignette-based knowledge and disclosure of abuse. Meta-analysis was not possible for retention of knowledge, likelihood of harm, or effect of programme type and setting.

Main results

Fifteen trials measuring knowledge and behaviour change as a result of school-based child sexual abuse intervention programmes were included. Over half the studies in each initial meta-analysis contained unit of analysis errors. For behaviour change, two studies had data suitable for meta-analysis; results favoured intervention (OR 6.76, 95% CI 1.44, 31.84) with moderate heterogeneity ($I^2=56.0\%$) and did not change significantly when adjustments using intraclass coefficients were made. Nine studies were included in a meta-analysis evaluating questionnaire-based knowledge. An increase in knowledge was found (SMD 0.59; 0.44, 0.74, heterogeneity ($I^2=66.4\%$)). When adjusted for an ICC of 0.1 and 0.2 the results were SMD 0.6 (0.45, 0.75) and 0.57 (0.44, 0.71) respectively. Heterogeneity decreased with increasing ICC. A meta-analysis of four studies evaluating vignette-based knowledge favoured intervention (SMD 0.37 (0.18, 0.55)) with low heterogeneity ($I^2=0.0\%$) and no significant change when ICC adjustments were made. Meta-analysis of between-group differences of reported disclosures did not show a statistically significant difference.

Reviewers' conclusions

Studies evaluated in this review report significant improvements in knowledge measures and protective behaviours. Results might have differed had the true ICCs from studies been available or cluster-adjusted results been available. Several studies reported harms, suggesting a need to monitor the impact of similar interventions. Retention of knowledge should be measured beyond

3-12 months. Further investigation of the best forms of presentation and optimal age of programme delivery is required.

Background

Sexual abuse of a child or adolescent is a significant problem that can impact negatively on the psychosocial development of children (Fleming 1999). Sexual abuse contravenes Article 19 of the Convention on the Rights of the Child, which states that "children have the right to be protected from being hurt and mistreated, physically or mentally" (United Nations 1989).

There is no consistent definition of sexual abuse in the literature. Some studies restrict sexual abuse to instances of sexual body contact with the child, such as the fondling of breasts or genitals and/or attempted or completed digital or penile penetration (Wyatt 1999). Others define sexual abuse as any sexual behaviour that is unwanted and can include the exposure of sexual organs to a child or the viewing of pornographic material in a child's presence (Goldman 1997).

Most cases of child sexual abuse, whether the type of abuse is fondling or completed penetration, go unreported to authorities (Wyatt 1999). Studies of prevalence of sexual abuse of children have collected data by interviewing adults about their childhood experiences. Rates of sexual abuse reported by women in such studies in North America range from 2% to 62%, and by men from 3% to 16% (Finkelhor 1994). In the UK a survey of the childhood experiences of 2,869 18-24 year olds found that 19% reported abuse and a further 5% were defined as having 'at risk' consensual sex when aged 13-15 with someone 5 years or older (Cawson 2000). Far fewer studies have been conducted in developing countries.

Risk factors for child sexual abuse include female gender of the child, domestic violence, poor parental attachment, and parental alcoholism (Fergusson 1996, Mullen 1998). Social isolation of girls has been found to almost double the risk of abuse (Fleming 1997). Pre-adolescent children (aged ten to twelve years) are most at risk, with a second smaller peak reported in children aged six to seven years (Finkelhor 1986). The perpetrator is most likely to be a family member or family acquaintance known to the child. Despite identification of these risk factors, sexual abuse has been reported across all demographic, ethnic and family groups, in both males and females, and perpetrators can include those outside the family as well as within it, (Finkelhor 1993) they can be adults or in the case of sexual abuse of adolescents, other young people.

There is an association between a history of childhood sexual abuse and adverse psychosocial outcomes in the survivor, such as depression (Roosa 1999), post-traumatic stress disorder (Widom 1999), antisocial and suicidal behaviours (Bensley 1999), eating disorders (Perkins 1999), alcohol and substance abuse (Spak 1998), post-partum depression and parenting difficulties (Buist 1998), sexual re-victimisation and sexual dysfunction (Fleming 1999). Given the retrospective nature of these studies, it is unclear what proportion of survivors go on to experience adverse outcomes and how sexual abuse interacts with other potential risk factors for these adverse outcomes. One review (Rind 1998) found consistent confounding between child-sexual assault and family environment and concluded that family environment explained more variation in adjustment at adulthood. However a subsequent study reported that when potential confounders, such as family and social backgrounds, are controlled for through multivariate analysis, the strength of the association between child sexual assault and adult psychopathology is reduced but not eliminated (Fleming 1999).

Education programmes have been developed in an effort to reduce the occurrence of sexual abuse in children and adolescents. Strategies have targeted various audiences including offenders, parents, teachers and medical professionals (Leder 1999). Child-directed abuse prevention programmes have been widely adopted by schools in the western world (Tutty 1997). These programmes aim to transfer the knowledge and self-protective behaviours learnt by the child in the classroom to a real-life situation. Education programmes cover themes such as identifying

potential abuse situations, 'good touch' versus 'bad touch' concepts and how and whom to tell if abuse has occurred (Taal 1997). A wide variety of programme formats and teaching styles are used. Some programmes are more passive, using film, lectures or puppet shows. Others require more active participation such as role-playing and rehearsing protective behaviours.

Despite widespread adoption into the school curriculum by many countries, the effectiveness of such programmes remains controversial. Two previous reviews of school-based education programmes have been published. The most recent, a meta-analysis of 16 published studies (Rispen 1997), found education programmes to be effective particularly in preschool children, but knowledge learnt decreased over time. In this meta-analysis only two outcome measures were analysed: knowledge of sexual abuse concepts and acquisition of self-protection skills. An earlier systematic review of 19 controlled trials reported that education programmes improve knowledge and safety skills but do not reduce the occurrence of sexual abuse (Macmillan 1994). However, studies that were not RCTs were included in this review, increasing the risk of bias, and further, no meta-analysis of the data was performed.

It has been suggested that education programmes can cause harm to the participating child or adolescent (Taal 1997). This is reported to be a common parental concern (Tutty 1997). Some studies report few or no evaluated negative effects on children (Tutty 1997) whereas others suggest potentially harmful sequelae. For example, older children have been found to experience more negative feelings about non-sexual physical touch following participation in the education programme (Taal 1997, Rispen 1997). Therefore, there is a need to rigorously evaluate the evidence for these programmes both in terms of beneficial and harmful outcomes and update our current knowledge base.

Objectives

To assess if:

1. school based programmes are effective in improving the knowledge of school aged children about sexual abuse and self-protective behaviours;
2. learned knowledge of sexual abuse and protective behaviours is retained over time;
3. participating in a school based programme about sexual abuse produces any harm;
4. there is an increase in disclosure of sexual abuse in school aged children following participation in a school based programmes;
5. programme type (active or passive involvement of the child) or setting (primary or secondary school) affects the child or adolescent's ability to gain knowledge and protective behaviours about sexual abuse.

Criteria for considering studies for this review

Types of studies

Randomised controlled trials or quasi-randomised controlled trials where participants were allocated to the intervention or control group by day of the week, alphabetical order, or other sequential allocation such as class or school.

Types of participants

Children and adolescents attending primary or secondary school.

Types of interventions

School-based education programmes focusing on either knowledge of sexual abuse concepts

and/or skill acquisition in protective behaviours compared with no intervention or the standard school curriculum.

Types of outcome measures

The following child outcomes were considered important in this review:

- development and maintenance of protective behaviours
- knowledge of sexual abuse and abuse prevention concepts
- retention of knowledge over time
- parental or child anxiety
- disclosure of sexual abuse by child or adolescent during or after participating in programmes

Included studies required at least one standardised outcome measure (such as a standardised questionnaire) for both the intervention and control groups, pre and post intervention (see below for examples).

Standardised questionnaires included the 'Children's Safety Knowledge and Skills Questionnaire' (Kraizer 1981; Kraizer 1986), the 'Control in Sexual Conflicts Questionnaire' (Taal 1997), the 'Choice of Safety Strategy Questionnaire' (Taal 1997), the "What If" Situations Test and the Personal Safety Questionnaire (Wurtele 1998).

Search strategy for identification of studies

Relevant trials were identified through searching the Cochrane Central Register of Controlled Trials (CENTRAL), 2006 (Issue 3), and the following databases:

Biomedical Sciences Databases

MEDLINE : dates searched 1966 to August 2006

EMBASE : dates searched 1980 to August 2006

CINAHL : dates searched 1982 to August 2006

PsycINFO : dates searched 1806 to August 2006

Social Sciences Databases:

Sociological Abstracts : dates searched 1963 to August 2006

Social Science Citation Index : dates searched 1956 to August 2006

Others

ERIC : dates searched 1966 to August 2006

Dissertation Abstracts : dates searched late 1960s to 2006

National Child Protection Clearinghouses for the UK, Australia, Canada and USA

The following search strategy was used to search CENTRAL:

CHILD

CHILD*

TEENAGE*

ADOLESCEN*

((#1 or #2) or #3) or #4)

SEX OFFENSES

RAPE

INCEST*

(SEX* near OFFENCE*)

(SEX* near OFFENSE*)

(SEX* near ABUS*)
(SEX* near ASSAULT*)
(SEX* near MOLEST*)
(SEX* near CRIM*)
(SEX* near COERC*)
((((((((#6 or #7) or #8) or #9) or #10) or #11) or #12) or #13) or #14) or #15
(#5 and #16)

Search terms were modified to meet the requirements of individual databases as regards to differences in fields. All terms necessary to the education programmes and the participant groups were used. An optimally sensitive search strategy to identify randomised controlled trials was used. There were no language restrictions. Other sources of information searched included the bibliographies of systematic and non-systematic reviews and reference lists of articles identified through the search strategy. In order to identify unpublished studies, experts in the field were contacted by letter.

Methods of the review

Selection of trials

Two reviewers (KZ and SW) screened independently the titles and abstracts from the search. Copies of studies that appeared to meet the inclusion criteria were retrieved for full-text assessment and data extraction. Articles that clearly did not fulfil inclusion criteria as judged by titles and abstracts were excluded. Uncertainties concerning the appropriateness of studies for inclusion in the review were discussed with a third reviewer (KW). There were no disagreements between reviewers.

Assessment of methodological quality

Included studies were evaluated for methodological quality. Two reviewers (KZ, SW) independently assigned each included study to allocation concealment quality categories as described in the Cochrane Handbook for Systematic Reviews of Interventions ([Higgins 2005](#)). Categories are as follows:

- (A) indicates adequate concealment of the allocation (for example, by telephone randomisation, or use of consecutively numbered, sealed, opaque envelopes);
- (B) indicates uncertainty about whether the allocation was adequately concealed (for example, where the method of concealment is not known);
- (C) indicates that the allocation was definitely not adequately concealed (for example, open random number lists or quasi-randomisation such as alternate days, odd/even date of birth, or hospital number).

Study quality was assessed for adequacy of allocation concealment, percentage loss to follow-up, quality of randomisation, intention to treat analysis, and standardisation and blinding of outcome assessment. Blinding of education providers and participants was thought not to be applicable, but blinding of outcome assessors was rated as "met", "unmet" or "unclear" as lack of blinding may have introduced bias. Any discrepancies between reviewers were negotiated with a third reviewer (KW).

Data management

A data extraction form was developed and data extraction was performed independently by two reviewers (KZ, SW). Any discrepancies were negotiated with a third reviewer (KW). The data were entered into RevMan 4.2.7 by one reviewer (KZ) and checked for accuracy by the other reviewers. Authors of studies in which methods of allocation concealment, randomisation or

blinding were unclear asked to provide additional information. Studies with insufficient information to allow inclusion in meta-analyses ([Saslowsky 1986](#), [Harvey 1988](#)) and those that used cluster randomisation were also contacted with a request to provide additional data. The majority did not respond to these requests and those who did were unable to provide the information and data required. It is not possible to be sure that the correspondence was received by the authors in all instances.

One study ([Saslowsky 1986](#)) did not report standard deviations (SD) but did report an F-statistic, which allowed a pooled SD to be calculated using a minor extension to the methods in section 8.5.2.4 of the Cochrane Handbook.

Data synthesis and measures of treatment effect

The authors used random effects meta-analyses where interventions and outcome measures were sufficiently similar. Odds ratios and 95% confidence intervals were pooled for studies which reported categorical data.

Means and standard deviations were reported for continuous variables. Meta-analysis using weighted mean mean differences (and 95% confidence intervals) was not appropriate as different outcome measures were used across studies. Standardised mean difference was used where outcomes measures differed but were considered to measure the same construct.

Missing data

Missing data was detailed in the results of this review and trial authors were contacted to provide outstanding data.

Sub-group analysis

The authors anticipated subgroup analyses to assess the impact of:

1. clinically different interventions e.g. passive or active education programme;
2. clinically relevant differences between groups of participants, specifically:
 - gender of the children
 - previous reported abuse
 - school setting - primary or secondary school.

Subgroup analyses were not conducted because there was insufficient information provided in original studies about issues that were hypothesized as being relevant for subgroup analysis, such as gender and previous reported abuse. Further, there were insufficient numbers of studies to allow meaningful comparisons.

Assessment of heterogeneity

Consistency of results was assessed visually and by examining I^2 ([Higgins 2002](#)), a quantity which describes the proportion of variation in point estimates that is due to heterogeneity rather than sampling error. We supplemented this with a statistical test of homogeneity to determine the strength of evidence that the heterogeneity was genuine.

Investigation of bias

Funnel plots were planned but could not be drawn to investigate any relationship between effect size and study precision (closely related to sample size) due to small study numbers. If this is possible in future updates of this review then publication or related biases, systematic differences between small and large studies and clinical diversity of the included studies will be further examined as possible explanations ([Egger 1997](#)).

Sensitivity analysis

Sensitivity analysis was conducted to determine the impact of unit of analysis errors, arising from inadequate adjustment for cluster randomisation in published results. As no intraclass correlation coefficients (ICC) were available from trial authors and no published ICC for child protection school-based interventions could be found, we used intraclass correlation coefficients of 0.1 and 0.2, as used in a review of school based programmes to prevent violence (Mytton 2006). This was based on a published ICC of 0.15 for similar trials (CPPRG 1999b in Mytton 2006). ICC were used to calculate a design effect for each study as recommended in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2005). For meta-analyses, standardised mean difference effect sizes were computed. These were weighted using the generic inverse variance function, and random effects assumptions were employed.

Description of studies

A total of 6755 titles were identified from the search strategy. Of these, 104 abstracts were reviewed. There were no language restrictions for the search but all articles reviewed were written in English. Of the 104 abstracts screened, 57 were not relevant to the review and 26 were review articles, meta-analyses or secondary analyses. Of the remaining 22 studies formally reviewed as full papers, 7 were excluded as they were not school-based interventions or were not randomised or quasi-randomised or, in the case of one article (Tutty 2000) which presented a secondary analysis of earlier results (Tutty 1997), added to the reference list of secondary references to included studies.

The final review included 15 trials, with data published in 16 papers, all found via electronic searches as described above (see Table of included studies).

Review of grey literature

Searching of National Child Protection Clearinghouses for the UK, Australia, Canada and USA did not identify any additional trials.

Unpublished studies

Information concerning relevant unpublished data was sought through international and national child protection email lists and authors/experts in the field were contacted. No further RCTs were identified.

Included studies***Participants***

The number of participants in the five RCTs in which participants were randomised as individuals ranged from 48 (Fryer 1987) to 231 (Tutty 1997), and in the ten cluster-randomised studies ranged from 74 (Poche 1988) to 1269 (Oldfield 1996). Eight studies (including one study in which participants were randomised as individuals and seven cluster RCTs) each included more than 200 participants (see Table - Characteristics of included studies). Twelve studies included approximately equal numbers of male and female participants. Gender was not recorded in two studies (Harvey 1988; Fryer 1987) and females only were studied in one (Lee 1998).

School settings

School settings were as follows: early primary (kindergarten to Grade 2) for four studies (Blumberg 1991; Fryer 1987; Harvey 1988; Poche 1988); late primary for four studies (Dake 2003; Hazzard 1991; Wolfe 1986; Kolko 1989); early and late primary school for five studies (Hebert 2001; Oldfield 1996; Saslawsky 1986; Tutty 1997; Wurtele 1986). Two studies were

based in high school settings and therefore had more emphasis on date rape and sexual violence than the primary school questionnaires (Lee 1998; Pacifici 2001). In one high school study (Lee 1998) the participants were adolescent Chinese females with mild intellectual disability from four special schools. All other participants attended mainstream schools in Canada and the United States, including twelve in urban, two in rural (Wurtele 1986, Harvey 1988) and one in both urban and rural settings (Dake 2003). None of the studies included participants on the basis of previously reported abuse.

Interventions and comparison group activities

All interventions used an active education programme involving various combinations of role play, film/video and discussion. Eight studies used established prevention programmes including: the TOUCH program (Saslowsky 1986; Wurtele 1986), STOP! (Stop, Tell someone, Own your body, Protect yourself) (Blumberg 1991), CAPPP (Child Abuse Primary Prevention Program) (Blumberg 1991), TRUST (Oldfield 1996), Good Touch/Bad Touch programme (Harvey 1988), BST (Behavioural Skills Training) (Lee 1998; Wurtele 1986) and ESPACE (Hebert 2001), and "Children Need to Know Personal Safety Training Programme" (Fryer 1987).

Seven interventions were brief (less than 90 minutes total duration) (Blumberg 1991; Hebert 2001; Oldfield 1996; Poche 1988; Saslowsky 1986; Wolfe 1986; Wurtele 1986) and the remainder were sustained (lasting from 90 up to 320 minutes). One study (Harvey 1988) measured the effects of a three-session intervention over seven weeks. In ten studies, the control group was on a waitlist or received the standard curriculum. In the five remaining studies, the control group interventions were as follows: discussion about self concept (Saslowsky 1986); multimedia presentation with no child abuse content (Harvey 1988; Wurtele 1986); fire prevention (Blumberg 1991), and an attention control programme (Lee 1998).

Outcome measures

Protective behaviours

Two studies measured change in behaviour using a simulated abduction situation and monitored the child's response to the situation (Poche 1988; Fryer 1987). Both studies used a 'simulated stranger test' to assess self-protective behaviour.

Knowledge

Knowledge outcome measures varied between studies and five studies used more than one measure of knowledge (Hebert 2001; Wurtele 1986; Saslowsky 1986; Lee 1998; Harvey 1988). Knowledge measures used can best be differentiated as questionnaire-based measures or measures that used vignettes or visual prompts to elicit a response from the child about safe behaviour in that situation. One study used only vignettes (Blumberg 1991); seven studies used only questionnaire-based measures (Dake 2003, Hazzard 1991; Kolko 1989; Oldfield 1996; Pacifici 2001; Tutty 1997; Wolfe 1986) and five studies used both measures (Harvey 1988; Hebert 2001; Lee 1998; Saslowsky 1986; Wurtele 1986).

Questionnaire-based measures

The Children's Knowledge of Abuse Questionnaire (CKAQ) was used in four studies (Hebert 2001; Oldfield 1996; Tutty 1997, Fryer 1987), the Personal Safety Questionnaire (PSQ) in four (Hebert 2001; Saslowsky 1986; Wurtele 1986; Lee 1998) and the Children Need to Know Knowledge Attitude Test (CNKKAT) in one (Kraizer 1981). One study (Tutty 1997) reported on the two components of the CKAQ-R separately, unlike the other studies, where this measure was reported as a single measure. The Sexual Attitudes Survey, with four subscales, was used by one high school study (Pacifici 2001). Other standardised knowledge questionnaires (Wolfe 1986; Dake 2003; Hazzard 1991; Kolko 1989; Harvey 1988) were also used.

Vignette or visual prompt measures

The "What If" Situations Test (WIST) was used by three studies (Lee 1998; Saslawsky 1986; Wurtele 1986) and the Touch Discrimination Task by one (Blumberg 1991). The remaining two studies used a range of approaches involving pictures and verbal stories (Harvey 1988, Hebert 2001).

The use of more than one measure by studies to assess knowledge gain was not anticipated at the outset of this systematic review. The two types of measures were administered differently. Questionnaire-based measures were administered as self completed questionnaires for all but one study (Saslawsky 1986), while the vignette or visual prompt measures were administered by interview. The different methods of administration and the type of response required from the child means that these two outcomes may measure different aspects of children's knowledge. Therefore it was decided to consider them as separate knowledge outcomes. In addition, interventions, outcomes and populations used in primary and secondary schools were sufficiently different for them to be considered separately. Thus, results are presented by school age and the two knowledge outcomes, questionnaire-based and vignette plus questionnaire.

Retention of learned protective behaviours and knowledge over time

No studies assessed retention of protective behaviour skills beyond the immediate intervention period. In relation to retention of knowledge, two studies reported immediate post-test knowledge only (Dake 2003; Fryer 1987). One study measured retention of knowledge at 6 months (Kolko 1989). The longest follow-up period was 12 months (Hazzard 1991). In all other studies, follow up assessments occurred two to three months after the intervention (Blumberg 1991; Harvey 1988; Hebert 2001; Lee 1998; Oldfield 1996; Pacifici 2001; Poche 1988; Saslawsky 1986; Wolfe 1986; Wurtele 1986).

Two studies (Harvey 1988; Kolko 1989) compared knowledge retention between the intervention and control groups. For the remainder, no comparison with the control group was available at follow-up because the control groups had then been exposed to the intervention.

Harms caused by participation in a school based programme about sexual abuse

Information regarding harms was actively measured in six studies (Hazzard 1991; Hebert 2001; Lee 1998; Oldfield 1996; Tutty 1997; Wurtele 1986). Harm was measured using the State-Trait Anxiety Inventory for Children (STAIC) (Hazzard 1991; Oldfield 1996), the Revised Children's Manifest Anxiety Scale (RACOMAS) (Oldfield 1996), Fear Assessment Scale (Lee 1998), Appropriate Touch subscales of the CKAQ (Tutty 1997), and parent satisfaction questionnaires (Hazzard 1991; Hebert 2001; Tutty 1997; Wurtele 1986). Harm was discussed but not measured in two studies (Fryer 1987; Kolko 1989).

Methodological quality of included studies**Allocation concealment**

Fourteen studies stated that participants were randomised. One study was quasi-experimental (Kolko 1989). Allocation concealment was deemed adequate for one study (Pacifici 2001), as defined by guidelines in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2005). Computerised randomisation was used in two studies (Pacifici 2001; Dake 2003). No information about methods of randomisation or allocation concealment was reported in the other 12 papers or following contact with the authors.

Unit of randomisation

Ten studies used cluster randomisation methods. The unit of randomisation was school class in

five studies (Blumberg 1991; Oldfield 1996; Poche 1988; Wolfe 1986; Pacifici 2001) and the school in five (Dake 2003; Hazzard 1991; Hebert 2001; Lee 1998; Kolko 1989). However, in one study (Poche 1988) randomisation of the class was not independent of the school attended, that is, classrooms were randomised within schools. Unit of analysis errors occurred in all cluster randomised studies. That is, all studies analysed results for individuals instead of class or school and no intra-class correlation coefficients were reported.

In the remaining RCTs the unit of randomisation was the individual student. Three of the individually randomised studies (Wurtele 1986; Fryer 1987; Saslawsky 1986) assessed outcomes within one day of the intervention, minimising the opportunity for discussion between control and intervention group children. Two of the individually randomised studies (Harvey 1988; Tutty 1997) delayed outcome assessment for weeks, potentially allowing between group discussions that could decrease between group differences.

One study was quasi-experimental (Kolko 1989). That is, schools were assigned to by school district to treatment or control groups. This study used one control school and six intervention schools.

Blinding of outcome assessors

Outcomes assessors were reported to be blind to the intervention groups for six studies (Blumberg 1991; Harvey 1988; Oldfield 1996; Pacifici 2001; Saslawsky 1986; Wurtele 1987). Outcome assessors were not blind to treatment allocation in five studies (Dake 2003; Hazzard 1991; Hebert 2001; Kolko 1989; Lee 1998). It was unclear if blinding occurred in four studies and this could not be clarified by contact with authors (Fryer 1987; Poche 1988; Tutty 1997; Wolfe 1986).

Loss to follow-up

The number of participants lost to follow-up varied. Seven studies (Hebert 2001; Oldfield 1996; Poche 1988; Saslawsky 1986; Tutty 1997; Wolfe 1986; Wurtele 1987) did not report their attrition rate. For the remaining studies the overall attrition rate varied from less than 10% (Blumberg 1991; Fryer 1987; Hazzard 1991; Kolko 1989; Lee 1998), to 16% (Pacifici 2001), 21% (Harvey 1988) and 24% (Dake 2003). Only three studies reported their results in such a way that loss to follow-up for intervention and control groups could be compared: Blumberg 1991 (8% role play, 3% multimedia, 5% control), Fryer 1987 (4% intervention, 12% control) and Kolko 1989 (7% intervention, 12% control). No study reported analysis on an intention to treat basis.

Results

Development of Protective Behaviours

Two studies measured changes in behaviour following the intervention (Fryer 1987; Poche 1988). Both studies used participants in early primary school. One study (n=74) (Poche 1988) measured whether or not children stated "no" or voiced the need to ask either a parent or teacher for permission to go with a simulated abductor, or if the child ran away when approached. In this study there was a substantial difference in the proportion of children with positive behaviours for children given no presentation (15%), children given a standard presentation (56%), children who watched a video teaching self protective skills (79%), and children who had both watched the video and then participated in a rehearsal of safe behaviours (89.5%). The study used cluster randomisation but did not adjust for this at analysis, therefore unit of analysis errors were present. Another study (n=48, individually randomised) (Fryer 1987) found that children who had received the intervention were less likely to go with a simulated abductor than the control group, who received no intervention (21.5% vs 47.6%, p=0.05).

To conduct a meta-analysis we used only the intervention from the Poche study that was most

similar to the Fryer study, namely video and behaviour rehearsal. Comparison was always to the control. Without any correction for cluster randomisation, meta-analysis using a random effects model favoured treatment: OR 6.76, 95% CI 1.44, 31.84 (Comparison 01 Outcome 01). Heterogeneity was moderate (I^2 56%). A sensitivity analysis was performed to assess the effects of adjusting the Poche study for cluster randomisation. The trial that required modification was small and resulting data from the adjustment for estimated ICCs had to be rounded to whole numbers. Using this method and an ICC of 0.1, OR=7.02 (1.24, 39.63, I^2 =57.5%) (Comparison 01 outcome 02). For ICC 0.2, OR=6.17 (1.30, 29.23, I^2 =44.2%) (Comparison 01 Outcome 03).

In addition to the above assessment, Fryer 1987 used the Harter Perceived Competence Scale for Children (HPCS) (Harter 1982) a measure of self-esteem and the Children's Knowledge of Abuse Questionnaire (CKAQ). Results of these measures were not reported for intervention versus control. However, they were used to assess the impact of knowledge and self-esteem on behaviour change in the intervention group. They report that knowledge and self-esteem were found to be predictive of the protective behaviour outcome. That is, children with high self esteem who had improved knowledge scores post intervention, exhibited behaviours more likely to prevent victimisation than children from the same group.

Improved knowledge of children about sexual abuse and self-protective behaviours

Primary schools

Questionnaire-based measures

Eleven studies used questionnaire-based knowledge outcomes in primary schools. One study did not report knowledge outcomes as a separate outcome (Fryer 1987). Two further studies reported outcomes but did not provide data in a way that could be included in meta-analysis (Harvey 1988; Saslawsky 1986). Both of these studies were individually randomised and reported a statistically significant increase in knowledge in the intervention group. For one (Harvey 1988) the knowledge test used was a non-validated measure. One study (Saslawsky 1986) did not report standard deviations. A pooled SD was calculated for the Personal Safety Questionnaire (PSQ) which facilitated inclusion in a meta-analysis.

Nine studies were included in a meta-analysis (Comparison 02 Outcome 01). One study (Hazzard 1991) established two intervention groups (teacher and child training compared with child training) but showed no between intervention group differences. The authors then combined the results of both interventions groups into a single intervention group for analysis. These combined results were used in the meta-analysis. The combined intervention group had significantly higher mean knowledge scores than the control. The result of the meta-analysis showed an increase in knowledge (SMD 0.59; 0.44, 0.74) with high heterogeneity (I^2 =66.4%, P =0.0002). Of the studies included in this meta-analysis, six were cluster randomised studies and all were analysed with unit of analysis errors. Of the cluster randomised studies, three were randomised by school (Dake 2003; Hebert 2001; Kolko 1989) and three by classroom (Wolfe 1986; Hazzard 1991; Oldfield 1996). ICCs were estimated, as described above, for sensitivity analyses to adjust for unit of analysis errors. The same ICC was applied to both school and class randomised studies. When adjusted for an ICC of 0.1 the meta-analysis results were SMD 0.6 (0.45, 0.75) (Comparison 02 Outcome 02) and adjusted for an ICC of 0.2 the results were 0.57 (0.44, 0.74) (Comparison 02 Outcome 03). Heterogeneity decreased with increasing ICC adjustments, and was I^2 =28.1% (P =0.19) and 0% (P =0.45) respectively. Confidence intervals widened for individual studies when adjustments for unit of analysis errors were made.

Vignette or visual prompt measures

Five primary school based studies used vignette or visual prompt measures (Blumberg

1991; Harvey 1988; Hebert 2001; Saslawsky 1986; Wurtele 1986). One study (Harvey 1988) did not report standard deviations and thus could not be included in a meta-analysis. The study reported statistically significant between group differences in favour of the intervention group. The authors measured the effects of a three-session intervention over seven weeks. The intervention group performed better on a test of good-touch/sexually abusive touch (ANCOVA, adjusted means 6.95 vs 5.74, $p < 0.05$), but no significant difference was found on asking children to identify sexually abusive scenes that related to course material covered (direct test 7.91 vs 7.28, NS). One study (Saslawsky 1986) did not report standard deviations. These were calculated by the review authors to enable inclusion in meta-analysis. Thus, four studies were included in a meta-analysis (Blumberg 1991; Hebert 2001; Saslawsky 1986; Wurtele 1986). Blumberg 1991 used two treatment groups; results were combined for meta-analysis. The overall SMD was 0.37 (0.18, 0.55) (Comparison 02 Outcome 04). Heterogeneity for this meta-analysis was low; $I^2 = 0\%$, $P = 0.43$. Two studies (Blumberg 1991; Hebert 2001) were of cluster randomised design. To assess the impact of unit of analysis error, sensitivity analyses were conducted for estimated ICCs (as above). For an ICC of 0.1, overall SMD was 0.35 (0.13, 0.58) $I^2 = 0\%$ $P = 0.45$ (Comparison 02 Outcome 05) and for an ICC of 0.2, SMD was 0.48 (0.18, 0.79) $I^2 = 0\%$, $P = 0.85$ (Comparison 02 Outcome 06). Thus correcting for unit of analysis errors decreased the precision of the estimate of treatment effect.

High school studies

One high school study (Pacifci 2001) used a sustained intervention and reported four subsets of an outcome measure. Trial authors report no statistically significant differences on MANOVA.

One cluster randomised study (Lee 1998) compared evaluated knowledge and skills in female adolescents with mild intellectual disability. A sustained intervention was used with the comparison group receiving an intervention unrelated to prevention of child sexual assault. The study reported significant improvements in the following knowledge outcomes: WIST (14.97 vs 9.32, $p < 0.001$) or the Personal Safety Questionnaire (PSQ) (8.97 vs 7.97, $p < 0.005$). A positive association between IQ and treatment effect was seen for one of the outcome measures requiring participants to recognise appropriate requests ($r = +0.24$, $p = 0.04$).

Retention of learned protective behaviours and knowledge over time

Two studies (Harvey 1988, Kolko 1989) compared knowledge retention between the intervention and control groups, and both reported significantly better retained knowledge in the treatment compared to the control group. Harvey 1988 reassessed knowledge seven weeks post-intervention (mean 3.57 vs 2.08, $p < 0.01$). Results could not be used in a meta-analysis as only the results of MANCOVA were reported. Kolko 1989 reported significant retention of awareness ($p < 0.01$, Mean difference 1.2 (0.96, 1.44) and correct knowledge of programme concepts/skills ($p < 0.0001$, mean difference 0.60 (0.08, 1.12) at six months post treatment.

One study (Wurtele 1986) reassessed PSQ and WIST scores in all intervention groups at six weeks. Overall there was a significant time effect for both knowledge measures. There was a non-significant decrease in PSQ score in the BST group; all other groups showed increased knowledge over time for both measures. In the study involving girls with mild intellectual disability (Lee 1998), PSQ and WIST scores were maintained in the intervention group at two months post-intervention. However the intervention group showed a decreasing trend in recognition of appropriate touch at 2 month follow-up.

Two studies assessed retention approximately three months after the intervention (Oldfield 1996; Saslawsky 1986). One study (Oldfield 1996) retested a random sample of children from the intervention group ($N = 111$, one classroom per grade) three months after treatment to determine knowledge retention. There was an increase in CKAQ score and stability of the difficult-to-

acquire items (which include saying "no" to authority figures, making appropriate judgements regarding keeping secrets and that trusted adults can be perpetrators of child maltreatment) over time, but tests of statistical significance were not reported. Another study (Saslawsky 1986) reported mean scores of two knowledge variables three months after initial post-intervention testing, in the intervention group. Mean scores showed non-significant increases over time.

The longest follow-up period was 12 months post-intervention (Hazzard 1991). This study tested knowledge scores for 103 of 311 eligible children from two schools previously randomised to receive the intervention. Less than one third of the original sample was available due to either non-participation of one school in the follow-up phase (n=74), children not returning to participating schools, or carers not providing follow-up consent forms. Children participating in the follow-up were randomised to two groups; one was given a one hour booster session. There were no significant differences between the group given the booster session and those who were not at 12 months follow-up. Comparison of six week and one year follow-up scores for both groups showed no significant differences over time.

Harms caused by participation in a school based programme about sexual abuse

Two studies reported no significant increase in anxiety in the treatment group. Oldfield 1996: ANOVA $F(1,593)=0.05$, $p=0.825$; Hazzard 1991: results of repeated measures analysis of covariance not reported but stated as not significant. Treatment group mean 29.7, control mean 29.9. Standard deviations not reported. Three studies reported adverse effects such as 13-25% of intervention children being more fearful of strangers (Hazzard 1991; Hebert 2001), increased dependency behaviours (13%) (Hebert 2001), more aggressive behaviour towards peers (15%) or siblings (29%) (Hebert 2001) and negative reactions, such as nightmares, bedwetting, reluctance to go to school or crying more easily, in less than 5% of children following intervention (Tutty 1997; Hazzard 1991). No meta-analysis was conducted for adverse events. Only three of the included studies compared harms between treatment and control groups. Two studies used the State-Trait Anxiety Inventory for Children (STAIC) (Hazzard 1991; Oldfield 1996). The third study measured fear in a different population, high school children with intellectual impairment (Lee 1998). For other descriptions of harms there is insufficient information to be certain that the results presented refer to both intervention and control groups or just intervention groups.

Increase in disclosure of sexual abuse in school-aged children following participation in school based programmes

Disclosure of past or current abuse was recorded in three studies (Oldfield 1996; Hazzard 1991; Kolko 1989). One study (Kolko 1989) measured change in disclosure by asking children how much more likely they were to disclose inappropriate touching to an adult, as well as recording the number of children who reported an experience of physical touching in both groups. The study was quasi-experimental, with six non-randomised intervention groups and one control, assigned based on school district. The study reported a non-significant difference between the proportion of children in the intervention and control group who reported an experience of physical touching at post-training (11.3% vs 0%, $p=0.07$). Also reported was that a total of 20 disclosures to guidance counsellors were reported from five of the six intervention schools following the intervention, while the control school reported none. No comparative analysis between intervention and control groups was reported. One study (Hazzard 1991) measured disclosures but was unable to distinguish between treatment and control groups due to data reporting methods. Eight of 526 (1.5%) participants reported ongoing sexual abuse and 20 (3.8%) reported past sexual abuse. Five ongoing cases of physical abuse and one case of past physical abuse were also reported. One study (Oldfield 1996) reported 5 disclosures from 1269 children. Four were from the intervention group and one from the control group. Methods to assess the validity of disclosures varied between studies, with some study disclosures verified by Child Protection Services (Oldfield 1996) and the verification of other study disclosures unclear (Kolko 1989;

Hazzard 1991). Random effects meta-analysis of the two studies showed a non-significant increased odds of disclosure in children given the intervention programme: odds ratio 4.8 (0.85, 27.18) $I^2=0\%$, $P=0.70$ (Comparison 03). Results of random effects meta-analysis modified for unit of analysis errors for ICC of 0.1 and 0.2 were odds ratio 2.4 (0.27, 21.35) and 1.84 (0.20, 17.34) respectively.

Effect of programme type, age and setting

Only one study made a direct comparison between active or passive involvement in intervention types (Blumberg 1991). Two different presentation types, role-play and multimedia including a film, were compared with a non-intervention control. ANOVA was performed on change scores. There was a statistically significant difference in Total Touch Discrimination Scores among the three treatment groups compared to the control group ($F(2,225)=3.95$, $p<0.05$). Comparison of the two treatment groups, role play vs multimedia, by the authors of this review found mean difference 0.38 (95% CI 0.06, 0.70). Subsequent analysis which adjusted for unequal group sizes found a significant difference favouring the role play group only compared to the control group ($t(225)=4.80$, $p<0.05$). Comparison of the two treatment groups, role play vs multimedia, by the authors of this review found mean difference 0.38 (95% CI 0.06, 0.70).

Ten studies examined whether there was an effect of age on knowledge increase and seven of these found a significant association (Dake 2003; Hazzard 1991; Hebert 2001; Lee 1998; Oldfield 1996; Saslawsky 1986; Tutty 1997). In one study (Dake 2003) younger students gained significantly more knowledge than did older students. In four studies, older children demonstrated significantly more knowledge gain about abuse prevention as compared with younger children (Hazzard 1991; Oldfield 1996; Tutty 1997; Saslawsky 1986). The direction of the effect was not specified in two studies (Lee 1998; Hebert 2001). One study (Tutty 2000) conducted a secondary analysis of earlier results (Tutty 1997) to look systematically at age differences between younger (5 to 7 years) and older (8 to 13 years) primary school children and demonstrated that older children gained more than younger children from the intervention. The four studies that found no significant association with age conducted studies with narrow age ranges (Blumberg 1991; Wolfe 1986; Kolko 1989; Harvey 1988). One study could not examine any association with age as the study population were all of a similar age in a single year at high school (Pacifci 2001). It was not possible to evaluate the effectiveness of programmes delivered in primary as compared with secondary schools as only two studies looked at high school interventions, one of which did not specify the direction of effect (Lee 1998), and the other did not examine the effect of age (Pacifci 2001). There was insufficient age-specific data reported to determine at which age interventions are best delivered.

Discussion

The majority of studies evaluated in this review report significant improvements in knowledge measures and protective behaviours in simulated at-risk situations. The few studies targeting behaviour change suggested that a higher proportion of children in intervention groups were likely to demonstrate safe behaviours. Most studies found retention of knowledge when measured at 2 to 3 months after the intervention, and two found retention for longer time periods, up to one year (Hazzard 1991; Kolko 1989). Although harm to participants was not measured in the majority of studies, negative outcomes were reported in several studies (Hazzard 1991; Hebert 2001; Tutty 1997). Disclosures of abuse were poorly reported in most studies, and it is not evident whether or not disclosures were associated with participation in the intervention. Insufficient data was provided to evaluate the effectiveness of different types of programmes and settings (high or primary school) and the optimal age for providing interventions.

The quality of most studies in this review was limited by inadequate allocation concealment and

assessor blinding, poor reporting about losses to follow-up and failure in many studies to actively establish whether or not participants experienced any harm as a result of participation in a programme. The other major methodological concern is due to cluster randomisation methods used in 10 of the included studies. Children were randomised in groups of classrooms or schools (cluster randomisation) to lessen the likelihood of contamination, and for ease of implementation. However the appropriate analysis for cluster randomisation was not used in most studies and this may result in the overestimation of the effect of an intervention.

To summarise findings of this review and illustrate the impact of unit of analysis errors on reported findings, meta-analyses with sensitivity analyses with two imputed intraclass correlation coefficients (0.1, 0.2) were completed for two outcome types: behaviour and knowledge. Knowledge outcomes were further categorised into questionnaire-based and vignette or visual prompt-based, and these were analysed separately. While these analyses show a consistent trend towards improvements in both behaviour and knowledge in the intervention groups, their validity in estimating the size or the statistical significance of the effect of these interventions is questionable. Initial unadjusted analyses do not take account of unit of analysis errors that occurred in at least half of the studies in each meta-analysis. ICCs used are imputed and may not be appropriate for all or any of the studies included. Therefore, results might have differed had the true ICCs from these studies been available, or had cluster-adjusted results been provided by the authors. For one analysis (behaviour) the validity of the method used is particularly uncertain given the small sample size. Furthermore, the same ICC was used for studies that had undertaken cluster randomisation at both school and class level which could further overestimate the magnitude of the findings. Meta-analysis was not possible for assessment of retention of knowledge, likelihood of harm, disclosures as a result of child sexual abuse prevention programmes, or effect of programme type and setting.

There are additional reasons why the results of this review should be considered with caution for decision-making about implementation of CSA prevention programmes in schools. For both of the meta-analyses about knowledge, a difficulty arises in interpreting these findings in real terms because of the wide range of measures used and the need, therefore, to report results as standardised mean differences. Use of a standardised mean difference means that in those analyses we have considered the different methods of assessment as though they were one standardisable method. It is therefore not easy to translate this figure back to the original measure to determine the improvement in knowledge. As such, although statistically significant results for knowledge increase are reported for at least one outcome measure in 11 of 12 studies that assessed knowledge, it is uncertain whether the magnitude of the differences translate to clinically important knowledge increase.

There were variations in study approaches that make practical decisions regarding developing child sexual abuse programmes in schools problematic. Firstly, the duration of the intervention varied. This will have implications for delivery in the school setting and the ideal duration of programmes is not yet known. Secondly, the age group of the children receiving the intervention varied. Several studies showed significant improvement in knowledge acquisition in older primary school children (8-13 years) compared with younger children (5-7 years) (Oldfield 1996; Saslawsky 1986; Tutty 1997) and this has implications for programme delivery. However, it is not clear from these studies if the harms were different for different age groups. In addition, the age of optimal knowledge gain would need to be combined with age of vulnerability to best offer opportunities to prevent child sexual assault. Thirdly, although there was insufficient information to allow comparison of different types of program delivery between studies, there were within study improvements in knowledge and preventive behaviours reported when knowledge was reinforced through different media such as video or play, followed by discussion or role-play (Blumberg 1991; Wurtele 1986; Poche 1988). This finding warrants further investigation.

Fourthly, there were variations in duration of follow-up information with most studies reporting only short term outcomes (within 3 months of the intervention). Retention of knowledge should be measured beyond 3-12 months to evaluate the lasting benefit of these interventions. If the benefits are not sustained beyond 12 months, consideration of re-delivery of programmes on a yearly basis will be needed. Also the usefulness of a systematic review depends upon the ability of its inclusion criteria to apply to populations of local interest. It should be acknowledged that all of the trials included in this review were conducted in the United States of America. Whether similar effects would be seen when implemented in other countries is not yet known.

The results of one study (Fryer 1987) suggest that children with greater self-esteem, as measured by the Harter Perceived Competence Scale, exhibited better protective behaviours following intervention. This finding warrants further investigation to determine if self-esteem training should be included as a component of CSA prevention interventions.

Some studies undertook simulations which exposed children to potentially stressful situations, such as an approach by and invitation to go with an unknown adult. Although this is as close as researchers can get to testing whether the child's knowledge can be translated into appropriate behaviour, the impact of this type of outcome assessment should be rigorously monitored to ensure that it does not induce anxiety for the participants, or desensitise children to similar occurrences in the future. In addition, disclosures of sexual and physical abuse were made following the interventions. Details of how these disclosures were dealt with were not given. Appropriate systems for dealing with disclosures are important should such interventions be implemented.

Even if knowledge and protective behaviours are successfully imparted and retained in most participants, this does not necessarily translate into reduction in risk of abuse. Children may have difficulty applying their knowledge in real life situations, or be successfully coerced in a variety of ways that they may find difficult to relate to the education programme. It is therefore yet to be determined if increased knowledge and protective behaviours reduces the likelihood of child sexual abuse. Long-term follow-up from large cohort studies would be needed to answer this question. However, even large cohort studies may not provide definitive evidence for changes in child sexual abuse incidence, as it is under-identified and difficult to prove.

While interventions appear to increase protective behaviours and knowledge about sexual abuse, it is important that this improved knowledge is not seen as a replacement for adult responsibility to ensure child safety. Nor should increased education replace the need for appropriate medical and legal handling of those affected by sexual assault. There is no evidence that these programmes reduce the incidence of child sexual assault or lead to easier access to necessary services for children who have been assaulted. The findings of this review need to be considered in the context of effective prevention interventions, including in non-school settings, and the changing social contexts and experiences of children and adolescents.

In producing this review our aim was to provide an unbiased review of the evidence available. We have therefore attempted to be comprehensive in our reporting and transparent in our methodology. The methodological decision to produce a meta-analysis was complex, involving a balance between the quest for an easily digestible summary of the information, and the danger of application of results when significant methodological caveats exist. We present the meta-analysis with accompanying cautions as outlined above and invite debate and comments regarding the route we have chosen. One approach to dealing with the dangers in over interpretation may be to present the Forest plots without the meta-analysis to best illustrate trends but discourage overzealous application of the results to the real world while there is still uncertainty about whether or not that is warranted.

Reviewers' conclusions

Implications for practice

Currently schools implement a variety of interventions aimed at preventing child sexual assault. The studies evaluated in this review report significant improvements in knowledge measures as well as improvements in protective behaviours in simulated at risk situations. However these studies also report harms, and illustrate the need to monitor and address the impact of these interventions. In addition, these studies have several methodological weaknesses which may have led to an overestimation of their effectiveness. It is likely that these interventions will be most useful as part of wider community initiatives promoting the safety of children. Furthermore, children's increased knowledge of abuse should not be seen as a replacement for society's responsibility to ensure child safety. It must be emphasised that increasing children's knowledge in this area does not mean they are in any way 'responsible' for abuse which might then occur by not being able to replicate this knowledge in a actual abuse situation.

Implications for research

Further studies should address problems with study design, in particular unit of analysis errors in cluster randomised trials. Future studies where cluster randomisation is used should publish intra-class correlation coefficients ([Campbell 2004](#)). It may then be possible for future meta-analyses to be more robust, and to overcome inadequate sample size and study power to test for differences for age groups and intervention approaches.

Further investigation of the best forms of presentation of child sexual abuse programs and the ideal age of participating children is required along with whether programme delivery needs to be repeated. Any research should take into account the potential harms of the intervention. In addition, children's and young people's views on sexual abuse and its prevention should be an essential part of any evaluation.

Characteristics of included studies

Study ID	Methods	Participants	Interventions	Outcomes	Notes	Allocation concealment
Blumberg 1991	Cluster RCT blinding: yes	264 kindergarten to 3rd graders mean age: 7.2 years 53% males 47% females setting: 3 city primary schools country: USA attrition: 6% intervention; 5% control	intervention: role play (STOP) or multimedia (CAPPP) curriculum duration control: fire prevention duration: 1 hr	continuous data: Touch Discrimination Task disclosure: no simulation: no harm: not reported last assessment: 3-94 days post intervention	author contact: yes intention to treat analysis: no Unit of analysis error	B
Dake 2003	Cluster RCT blinding: no	450 3rd graders mean age: 8.7 years 51% males 49% females setting: 6 urban and 2 rural schools country: USA attrition: 24%	intervention: role play, video, discussion control: waitlist duration: 1hr x 2 sessions	continuous data: Knowledge questionnaire (self developed, piloted and evaluated); includes Students' Perceived Efficacy Subscale (how confident children felt to take action in abuse situations)	author contact: yes intention to treat analysis: no Unit of analysis error	B
Fryer 1987	RCT blinding: not clear	48 kindergarten to year 2 mean age: not given % males: not recorded % females: not recorded setting : city primary school country: USA attrition:<10%	intervention: role play control: wait list intervention duration:20 min/day for 8 days	continuous data: HPCS & CNKKAT - no data reported. simulated abuse situation harm: discussed times undertaken: immediate post test	author contact: yes intention to treat analysis: no	B
Harvey 1988	RCT blinding: yes for assessors of outcome	90 kindergarten mean age: 70 months % males: not recorded	intervention: role play control: read stories/film not related to CSA	continuous data: direct test (scenario); generalised test (scenario); knowledge scores	author contact: yes intention to treat analysis: unclear	B

		% females: not redcorded setting: 4 rural schools country: USA attrition: 21%	duration: 0.5hr X 3 days	harm: not reported disclosure: no simulation: no times undertaken: 7 weeks		
Hazzard 1991	Cluster RCT blinding: no	399 3rd and 4th graders mean age: not given 50% males 50% females setting: 4 city primary schools country: USA attrition: 7%	intervention: multimedia discussion and role play control: wait list duration: 1hr X 3 sessions	continuous data: What Would You Do? video measure; knowldege scores; disclosure: yes simulation: no harm: parent questionnaire & STAIC times undertaken: 1 to 6 weeks post and 1 year follow up	author contact: yes intention to treat analysis: no Unit of analysis error	B
Hebert 2001	Cluster RCT blinding: no	133 1st and 3rd graders mean age: 7 years 2 months 50% males 50% females setting: 2 city primary schools country: Canada attrition: not reported	intervention: role play control: waitlist duration: 60-75 mins	continuous data: knowledge questionnaire (adapted from CKAQ and PSQ), satisfaction, parent questionnaire. disclosure: no simulation: no harm: discussed times undertaken: 2 months	author contact: yes intention to treat analysis: no Unit of analysis error	B
Kolko 1989	Cluster qRCT (assigned by school district) cluster blinding: no	337 3rd graders mean age: 8.3 years (expt); 8.5 years (control) 52% male (expt); 57% male (control) setting: primary school country: USA attrition: 0.7% (expt); 12% control	intervention: curriculum (discussion/book) control: waitlist duration: 45 mins x 2 sessions	continuous data: self report disclosure: yes simulation: no harm: discussed times undertaken: 2 weeks, 6 months	author contact: yes intention to treat analysis: no Unit of analysis error	D
Lee 1998	Cluster RCT	77 mild MR adolescents	intervention:	continuous data: WIST, PSQ	author contact: yes, no reply	B

	blinding: no	mean age: 13.44 years 0% males 100% females setting: 4 special schools country: China attrition: 6.3%	curriculum (Behavioural Skills Training program) control: Attention control program (no CSA content) duration: 45 mins x 2 sessions	disclosure: no simulation: no harm: Fear Assessment Scale times undertaken: 2 months	intention to treat analysis: no Unit of analysis error	
Oldfield 1996	Cluster RCT blinding: yes for assessment of outcome	1269 1st to 6th graders mean age: not reported 47% males 53 % females setting: 4 city primary schools country: USA attrition: not reported	intervention: project TRUST (play) followed by discussion, role play control: wait list duration: 45 mins	continuous data: CKAQ disclosure: yes simulation: no harm: RCMAS, STAIC times undertaken: 3 months	author contact: yes, no reply intention to treat analysis: not reported Unit of analysis error	B
Pacifici 2001	Cluster RCT (computerised registration) blinding: yes	547 10th graders mean age: not reported 48% males 52% females setting: 2 city high schools country: USA attrition: 16.3%	intervention: multi media & role play control: wait list duration: 80mins x 4 sessions	continuous data: Sexual Attitude Survey disclosure: no simulation: no harm: not reported last assessment: 10 days post intervention	author contact: yes date rape intention to treat Unit of analysis error	A
Poche 1988	Cluster RCT blinding: not clear	74 Kindergarten (29) & 1st graders (45) mean age: not reported 55% males 45% females setting: 3 city primary schools country: USA attrition: not reported	intervention: video and discussion +-role play control: standard curriculum & waitlist duration: 25mins (video); 45mins (video + role play); 60 mins (std)	continuous data: nil disclosure: no simulated abduction harm: not reported last assessment: one month post intervention	author contact: yes, no reply intention to treat analysis: no Unit of analysis error	B
Saslowsky 1986	RCT blinding: yes	67 total - 26 kindergarten and 1st graders; 41 5th and 6th graders	intervention: "TOUCH" film & discussion control: discussion about	continuous data: PSQ, WIST disclosure: no simulation: no	author contact: yes intention to treat analysis: no	B

		mean age: 6.2 years & 11.1 years 52% males 48% females setting: 2 city primary schools country: USA attrition: not stated	self-concept and personal values duration: 35min film + discussion; 50 min cntrl	harm: not reported last assessment: 3 months post intervention		
Tutty 1997	RCT blinding: not clear secondary analysis conducted in Tutty 2000	231 1st to 6th graders mean age: not reported 47% males 53% females setting: 2 city Catholic schools country: Canada attrition: not reported Secondary analysis - comparison between younger (5-7 years) and older children (8-13 years) as above	intervention: multimedia "Who Do You Tell" control: wait list duration: 60 mins x 2 sessions for 2 days	continuous data: Appropriate & Inappropriate Touch subscale of CKAQ disclosure: no simulation: no harm: Appropriate Touch subscale of CKAQ, parent questionnaire times undertaken: 5 weeks	author contact: yes, no reply intention to treat analysis: not reported	B
Wolfe 1986	Cluster RCT blinding: not clear	290 4th graders (214) and 5th graders (76) mean age: 10.3 years 49% males 51% females setting: 3 primary schools country: USA attrition: not reported	intervention: play and discussion control: wait list duration: 5 min play x 2 and 40 mins discussion	continuous data: Evaluation questionnaire (self developed, piloted and validated) disclosure: no simulation: no harm: not reported times undertaken: not reported	author contact: yes, no reply intention to treat analysis: no Unit of analysis error	B
Wurtele 1986	RCT blinding: yes for assessment of outcomes	71 total - 28 kindergarten and 1st graders and 43 5th and 6th graders mean age: 6.1 years and 11 years 50% males	intervention: "TOUCH" film; BST; BST and multimedia control: multimedia (no CSA content) duration: 60 mins	continuous data: PSQ, WIST disclosure: no simulation: no harm: parent questionnaire last assessment: 3 months	author contact: yes intention to treat analysis: not reported	B

50% females
setting: 1 rural primary
school
country: USA
attrition: not reported

Characteristics of excluded studies

Study ID	Reason for exclusion
Conte 1985	Not school based
Currier 1996	Comparative group design Abused vs nonabused children
Kraiser 1989	No control comparison presented
MacIntyre 1999	Comparative group design
MacIntyre D	Comparative group design Abused children Not school based
Peraino 1990	Not school based (preschool)
Taal 1997	Comparative group design
Telljohann 1997	Comparative group design
Tutty 1992	Non random allocation
Volpe 1984	Comparative group design
Weisz 2001	Comparative group design
Wurtele 1987	Comparative group design

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** indicates the primary reference for the study*

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Table of comparisons

01 Protective behaviours

01 no correction for clustering

02 ICC=0.1

03 ICC=0.2

02 Knowledge

01 Questionnaire-based knowledge

02 questionnaire ICC=0.1

03 questionnaire ICC=0.2

04 Vignette-based knowledge

05 vignette ICC=0.1

06 vignette ICC=0.2

03 Disclosures

01 Odds ratio: disclosures

02 Disclosures ICC=0.1

03 Disclosures ICC=0.2

Notes

Unpublished CRG notes

Exported from Review Manager 4.3

Published notes

This review is co-registered within the Cochrane Developmental, Psychosocial and Learning Problems Group.

Amended sections

Cover sheet

Synopsis

Abstract

Background

Objectives

Criteria for considering studies for this review

Search strategy for identification of studies

Methods of the review

Description of studies

Methodological quality of included studies

Results

Discussion

Reviewers' conclusions

Acknowledgements

Potential conflict of interest

References to studies

Other references

Characteristics of included studies

Characteristics of excluded studies

Comparisons, data or analyses

Additional tables and figures

Contact details for co-reviewers

Mrs Danielle M Wheeler
Research Manager
Cochrane Child Health Field
The Children's Hospital at Westmead
Locked Bag 4001
Westmead
New South Wales AUSTRALIA
2145
Telephone 1: +61 2 9845 1222
Facsimile: +61 2 9845 3389
E-mail: daniellw@chw.edu.au
Secondary address (home):
New South Wales AUSTRALIA
Telephone: 612 4575 3235

Dr Katrina Williams
Associate Professor, Community Paediatrician
Sydney Children's Hospital
University of NSW
Sydney Children's Community Health Centre
Cnr Avoc & Barker Street
Randwick
NSW AUSTRALIA
2031
Telephone 1: +61 2 9382 8183
Facsimile: +61 2 9382 8188
E-mail: Katrina.Williams@SESIAHS.HEALTH.NSW.GOV.AU

Dr Paul Tait
Department Head
Child Protection Unit
The Children's Hospital at Westmead
Locked Bag 4001
Westmead
NSW AUSTRALIA
2145
Telephone 1: 61 02 9845 2434
E-mail: PaulT2@chw.edu.au

Dr Susan Woolfenden
Ambulatory/Community Paediatrician

B Wing
Liverpool Hospital
PO Box 7103
Liverpool
NSW AUSTRALIA
BC 1871
Telephone 1: +61 2 9828 6782
Telephone 2: +61 438 732 641
Facsimile: +61 2 9828 6798
E-mail: Susan.Woolfenden@sswahs.nsw.gov.au

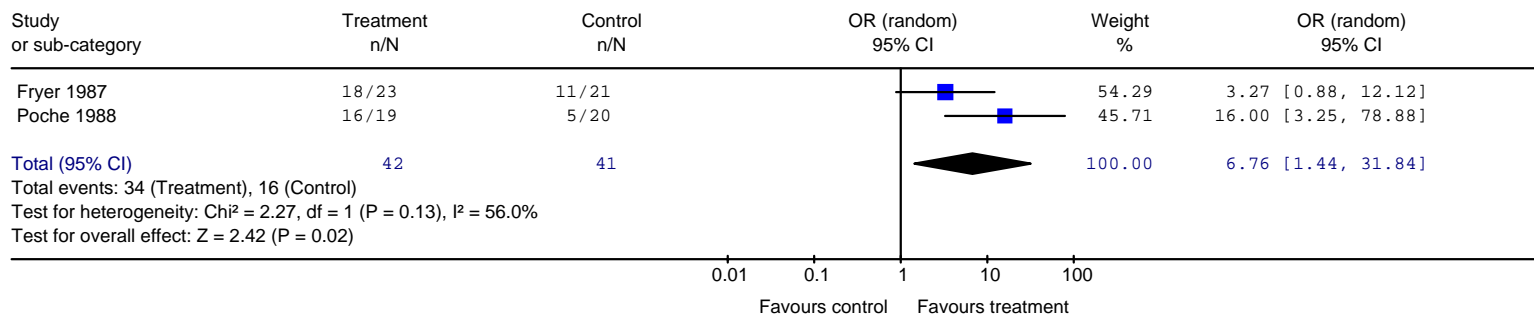
Dr Tracey O'Brien
Centre for Children's Cancer & Blood Disorders
Sydney Children's Hospital
High Street
Randwick
New South Wales AUSTRALIA
2031
E-mail: Tracey.O'Brien@sesiahs.health.nsw.gov.au

Review: School-based education programmes for the prevention of child sexual abuse

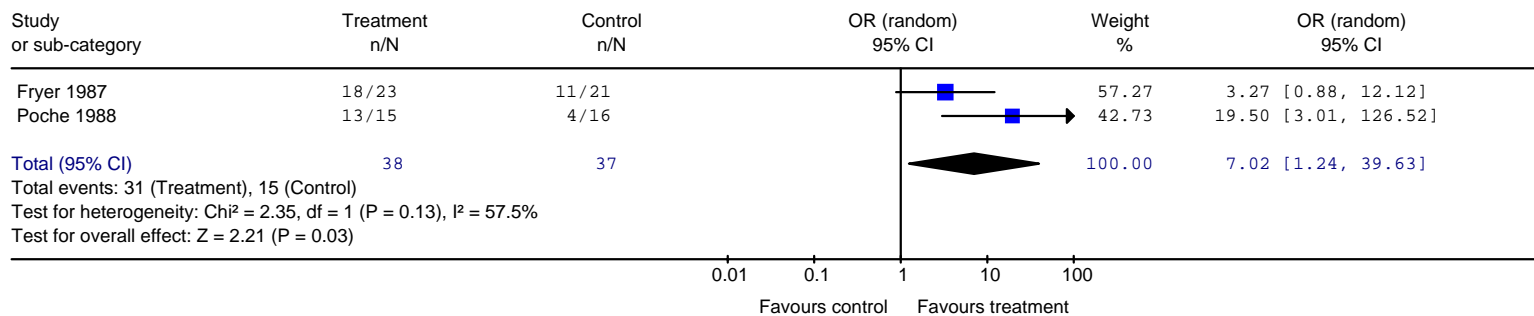
Total number of included studies: 15

Comparison or outcome	Studies	Participants	Statistical method	Effect size
01 Protective behaviours				
01 no correction for clustering	2	83	OR (random), 95% CI	6.76 [1.44, 31.84]
02 ICC=0.1	2	75	OR (random), 95% CI	7.02 [1.24, 39.63]
03 ICC=0.2	2	69	OR (random), 95% CI	6.17 [1.30, 29.23]
02 Knowledge				
01 Questionnaire-based knowledge	9	3022	SMD (random), 95% CI	0.59 [0.44, 0.74]
02 questionnaire ICC=0.1	9		knowledge (random), 95% CI	0.60 [0.45, 0.75]
03 questionnaire ICC=0.2	9		knowledge (random), 95% CI	0.57 [0.44, 0.71]
04 Vignette-based knowledge	4	523	SMD (random), 95% CI	0.37 [0.18, 0.55]
05 vignette ICC=0.1	4		knowledge (vignette)	0.35 [0.13, 0.58]
06 vignette ICC=0.2	4		knowledge (vignette)	0.48 [0.18, 0.79]
03 Disclosures				
01 Odds ratio: disclosures	2	1490	OR (random), 95% CI	4.80 [0.85, 27.18]
02 Disclosures ICC=0.1	2	431	OR (random), 95% CI	2.40 [0.27, 21.35]
03 Disclosures ICC=0.2	2	250	OR (random), 95% CI	1.84 [0.20, 17.34]

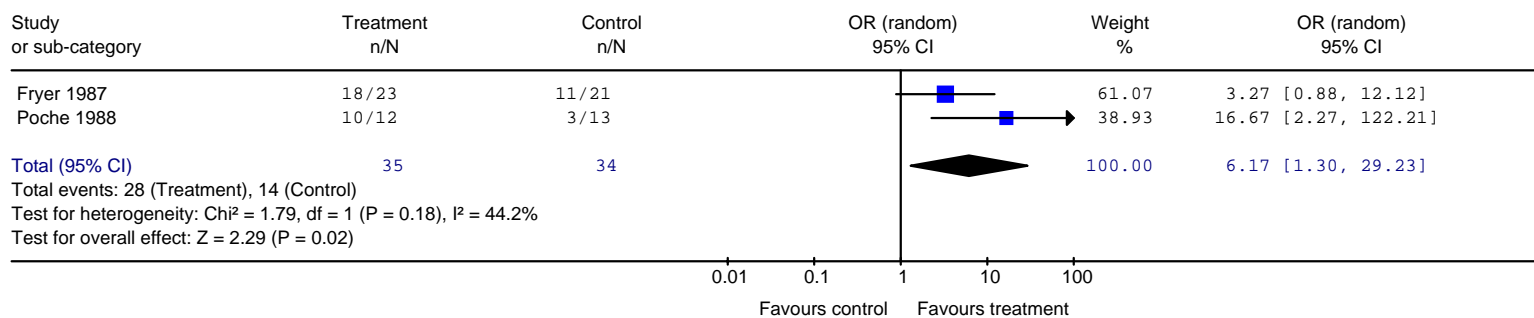
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 Comparison: 01 Protective behaviours
 Outcome: 01 no correction for clustering



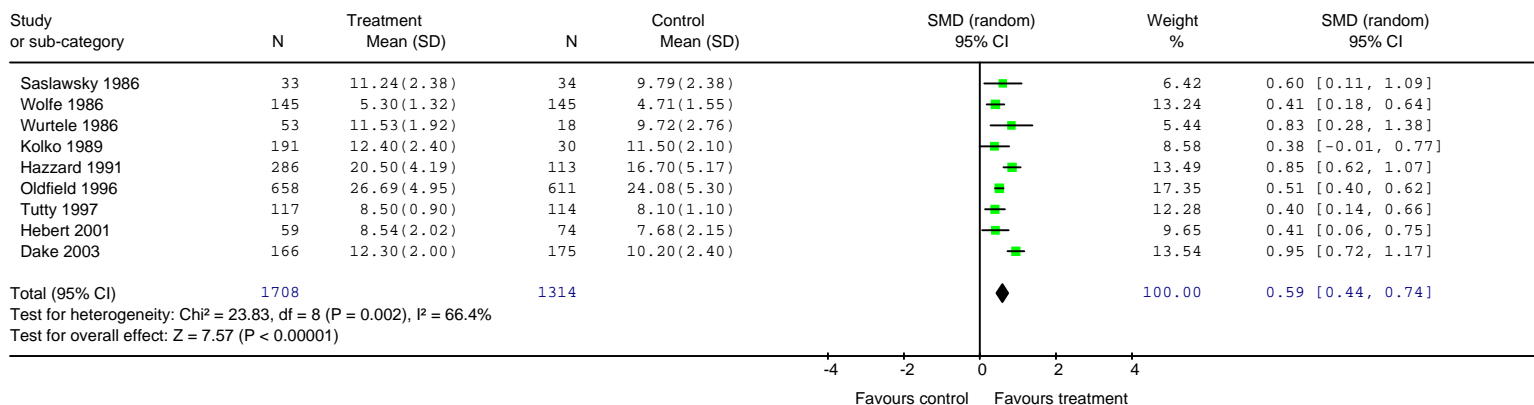
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 Comparison: 01 Protective behaviours
 Outcome: 02 ICC=0.1



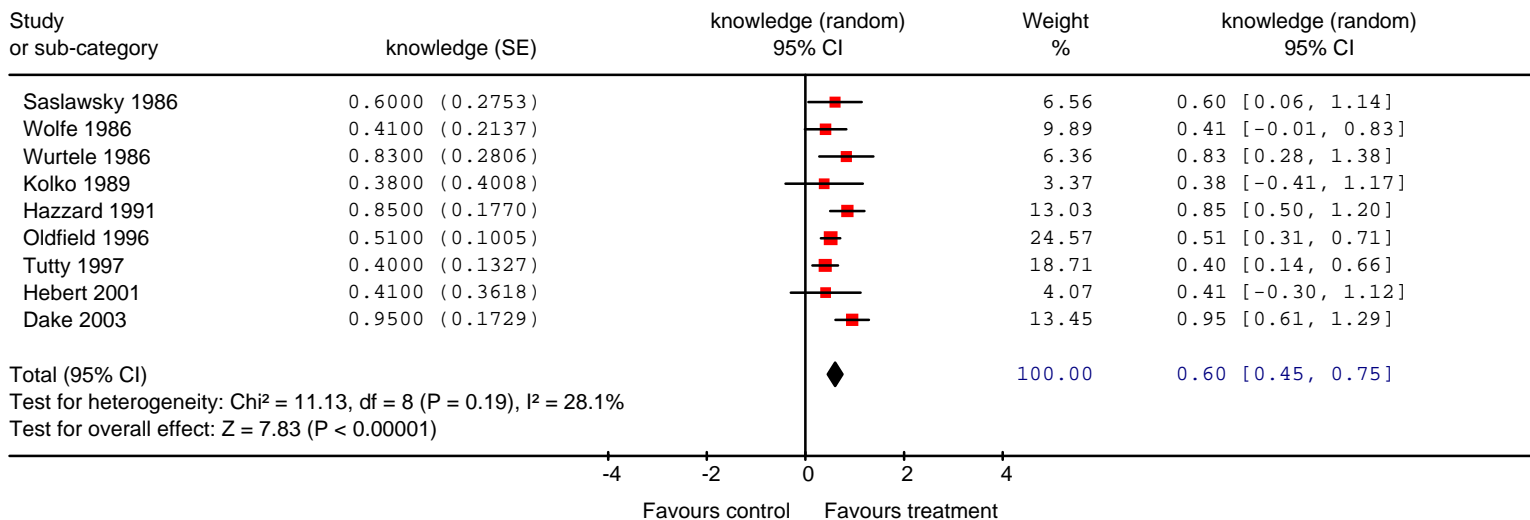
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 Comparison: 01 Protective behaviours
 Outcome: 03 ICC=0.2



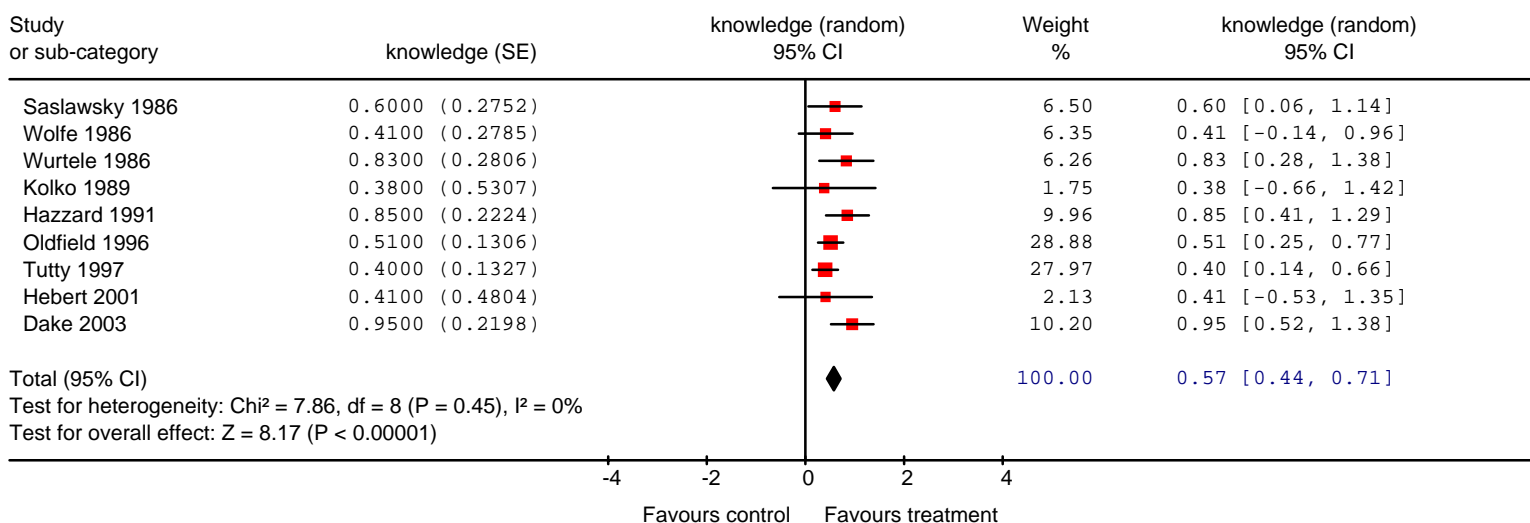
Review: School-based education programmes for the prevention of child sexual abuse
 Comparison: 02 Knowledge
 Outcome: 01 Questionnaire-based knowledge



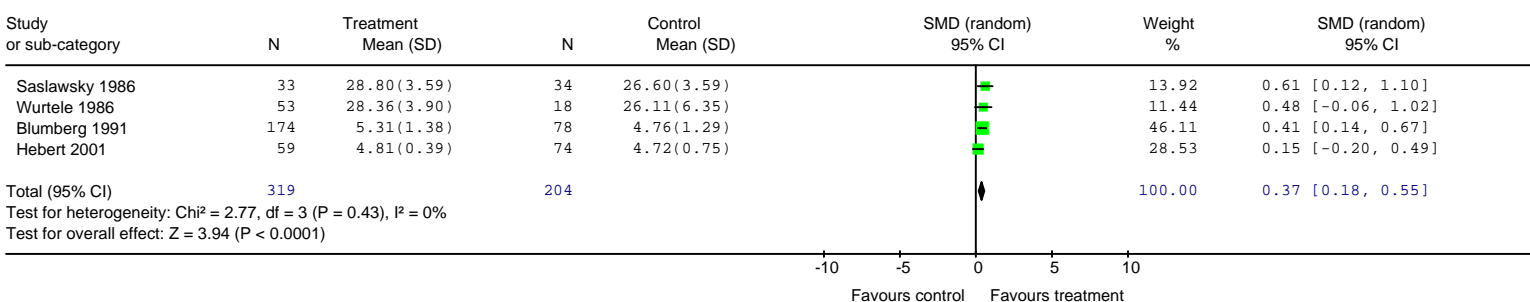
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 Outcome: 02 questionnaire ICC=0.1



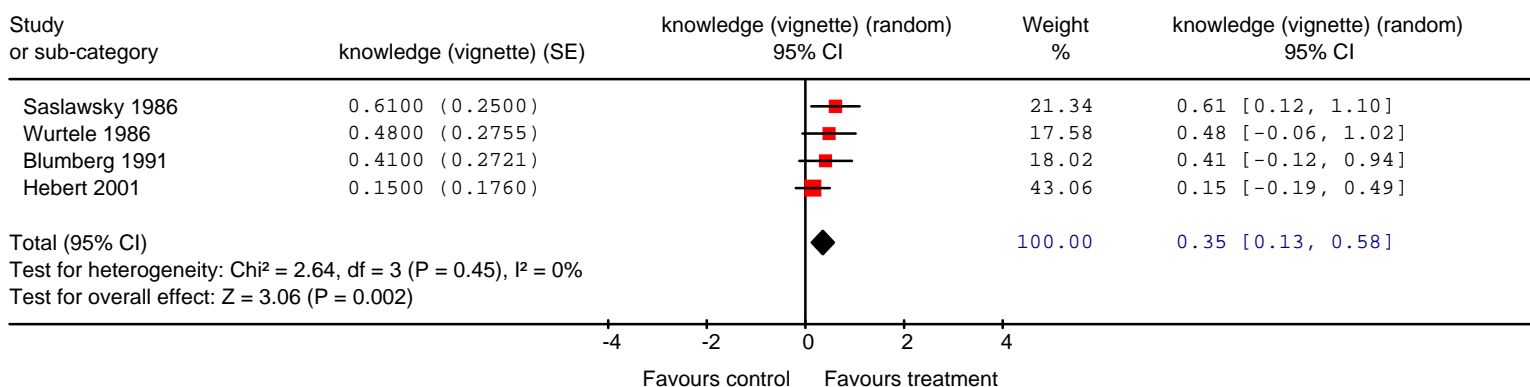
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 Comparison: 02 Knowledge
 Outcome: 03 questionnaire ICC=0.2



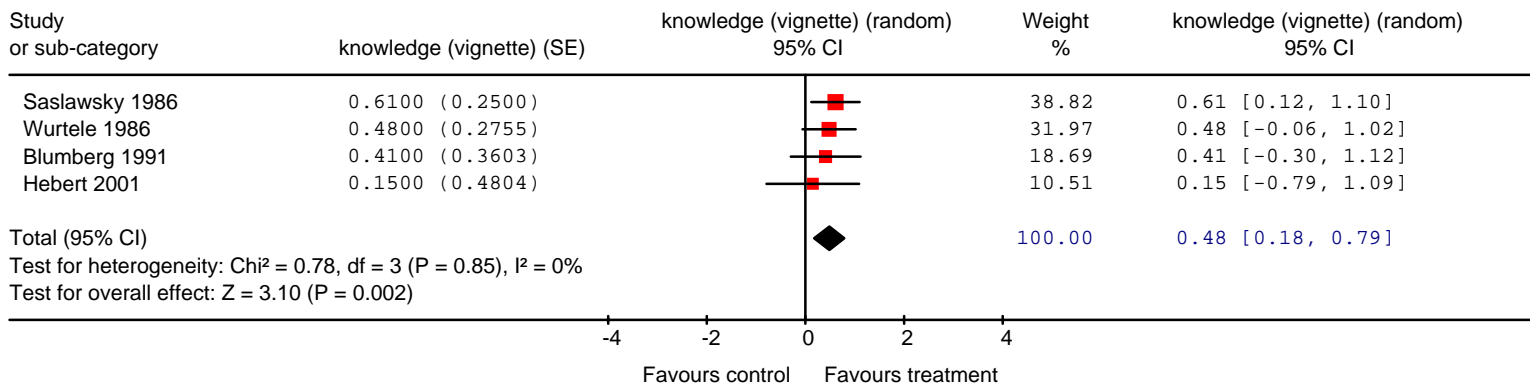
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 Comparison: 02 Knowledge
 Outcome: 04 Vignette-based knowledge



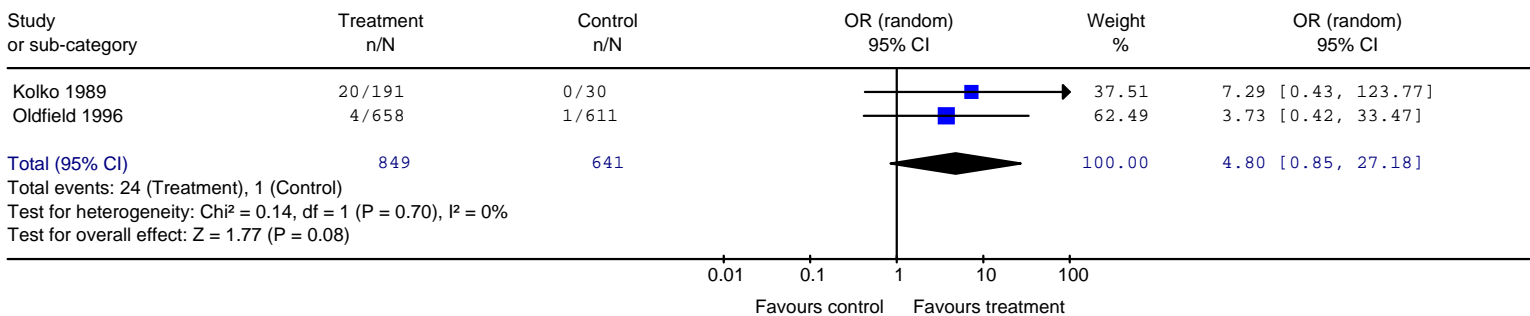
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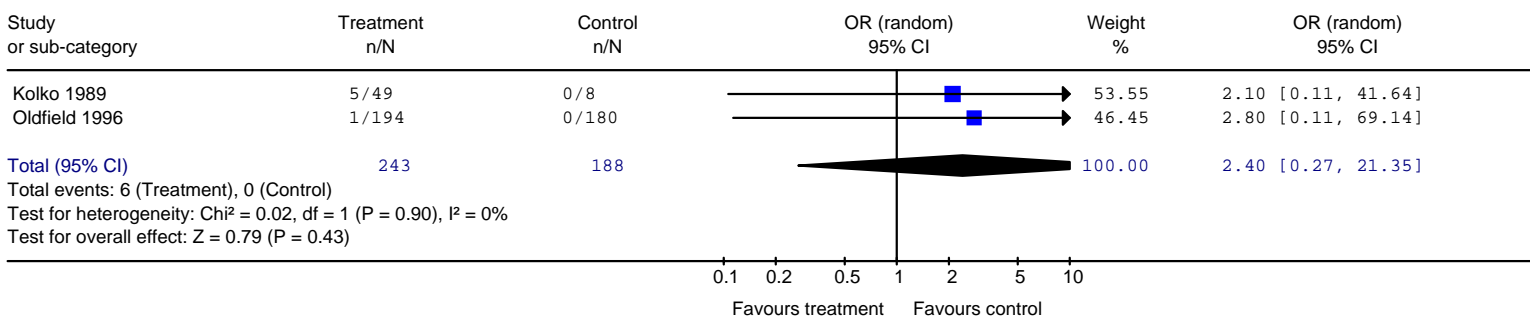
Review: School-based education programmes for the prevention of child sexual abuse
 Comparison: 02 Knowledge
 Outcome: 06 vignette ICC=0.2



Review: School-based education programmes for the prevention of child sexual abuse
 Comparison: 03 Disclosures
 Outcome: 01 Odds ratio: disclosures



Review: School-based education programmes for the prevention of child sexual abuse
 Comparison: 03 Disclosures
 Outcome: 02 Disclosures ICC=0.1



Review: School-based education programmes for the prevention of child sexual abuse
 Comparison: 03 Disclosures
 Outcome: 03 Disclosures ICC=0.2

