

小児保健・医療領域における積極的予防に関する系統的レビュー

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小児期の健康増進には、特定の疾患の診断・治療だけではなく、一般集団を対象とした予防的介入が有効となり得る。本研究では、コクラン (Cochrane Database of Systematic Reviews) 及びキャンベル (Campbell Library) の2つのデータベースを用いて、学校および家庭・地域・クリニック等で実施されている子どもの健康課題に関する介入研究のオーバービュー・レビューを行った。その結果、感染症、アレルギー疾患、問題行動、メンタルヘルス、栄養・運動等の生活習慣の改善、歯科、事故・けが予防、リプロダクティブ・ヘルス、喫煙・飲酒・薬物予防などに関する介入プログラムが報告されていた。小児期における予防的介入は、生涯の健康増進にも寄与する可能性があるため、関連のエビデンス整理が今後も必要である。

A. 研究目的

小児期の健康増進には、特定の疾患に対する診断や治療だけでなく、一般集団を対象とした、積極的予防介入が有効となり得る。本研究では、一般集団 (Unselected population) の子どもを対象とした予防的介入プログラムに関するエビデンスを包括的に収集し、その概要及び介入の効果を整理することを目的とした。

3年間の研究期間で、学校（デイケア・プレスクールを含む）で実施された介入プログラム（H28-29年度）と、学校以外で実施されたプログラム（H30年度）に分け研究を行った。

B. 研究方法

• レビューの採用基準

本研究では、コクラン及びキャンベルの2つのデータベースを用いて、系統的レビューの検索を行い、オーバービュー・レビューを行った。この二つのデータベースは、それぞれ保健医療と教育分野において、系統的レビューに特化し

たものであり、統一された方法論に基づいて、エビデンスの収集・統合・評価を行っている。表1に本研究に含めた系統的レビューの採用基準を示し、表2にコクランの系統的レビューの検索式を記載した。Campbellに関しては、検索時点（2018年10月）で出版されていた全てのレビュー（154件）を対象にスクリーニングを行った。

【表1 本研究の採用基準】

| | |
|--------------|-------------------------|
| Population | 小児 (0～20歳前後) 及びその保護者 |
| Intervention | 学校・家庭・地域・クリニック等でのあらゆる介入 |
| Comparison | 介入の不実施、通常のケア／カリキュラム |
| Outcome | 子どもの健康課題 (身体的・精神的・社会的) |
| Study design | ランダム化比較試験 (RCTs) |

| | |
|---------|--|
| 除外する SR | <ul style="list-style-type: none"> ハイリスク児対象の治療・療育 (*targeted population) 全年代を対象 (結果が大人と子どもで分けられていない) 妊娠中・分娩時のケア 学校以外での介入に関して: 途上国対象、2013年以前の出版 |
|---------|--|

| | |
|-----|---|
| | explode all trees |
| #13 | school*:ti, ab, kw in Cochrane Reviews |
| #14 | center*:ti, ab, kw in Cochrane Reviews |
| #15 | education*:ti, ab, kw in Cochrane Reviews |
| #16 | kinder*:ti, ab, kw in Cochrane Reviews |
| #17 | preschool*:ti, ab, kw in Cochrane Reviews |
| #18 | program*:ti, ab, kw in Cochrane Reviews |
| #19 | training*:ti, ab, kw in Cochrane Reviews |
| #20 | #13 or #14 or #15 or #16 or #17 or #18 or #19 in Cochrane Reviews |
| #21 | #11 and #20 in Cochrane Reviews |

【表 2】 CDSR の検索式

| | |
|-----|---|
| #1 | MeSH descriptor: [Infant] explode all trees |
| #2 | infant*:ti, ab, kw in Cochrane Reviews |
| #3 | MeSH descriptor: [Child] explode all trees |
| #4 | child*:ti, ab, kw in Cochrane Reviews |
| #5 | MeSH descriptor: [Adolescent] explode all trees |
| #6 | adolescent*:ti, ab, kw in Cochrane Reviews |
| #7 | MeSH descriptor: [Young Adult] explode all trees |
| #8 | young*:ti, ab, kw in Cochrane Reviews |
| #9 | MeSH descriptor: [Students] this term only |
| #10 | student*:ti, ab, kw in Cochrane Reviews |
| #11 | #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 in Cochrane Reviews |
| #12 | MeSH descriptor: [Schools] |

• 結果の記述

本研究に含めた系統的レビューは、介入のテーマ (アウトカム) ごとに分類し、介入プログラムの内容及びその効果を記載した。

(倫理面への配慮)

本研究では、既に出版された系統的レビューを対象にオーバービュー・レビューを行ったため、倫理審査委員会への申請は不要と考えられた。

C. 研究結果

• スクリーニング結果

コクラン及びキャンベルのデータベースを検索後 (最終検索日: 2018年10月)、学校での介入研究に関して 51 件、学校以外の家庭・地域・クリニック等で実施された介入研究に関して 28 件の系統的レビューを検討した。

• 介入プログラムのテーマ及び概要

学校で実施された介入研究のテーマは、感情・行動上の問題（11件）、感染症（1件）、事故・けが予防（5件）、メンタルヘルス（4件）、栄養（4件）、歯科（4件）、身体発育・活動（9件）、視聴覚（1件）、リプロダクティブ・ヘルス（10件）、飲酒・喫煙・薬物（8件）であった（重複あり）。

家庭・地域・クリニック等での介入のテーマは、感染症（6件）、養育（5件）、死亡率（2件）、アレルギー疾患（2件）、行動上の問題（2件）、歯科（4件）、リプロダクティブ・ヘルス（3件）、栄養摂取の改善（2件）、喫煙（2件）であった。

介入プログラムの種類は、以下のように分類された。

- 教育（個別面談、グループセッション、電話、家庭訪問、パンフレット・DVD等の教材配布、マスメディアの告知等）
- カウンセリング・心理療法
- アクティビティ・エクササイズ
- 栄養（サプリメント・学校給食）
- 内科・薬物（予防接種・ワクチン）
- 規則（校則）変更
- 物資の提供
- ヘルスサービスの提供
- 金銭的インセンティブ
- スクリーニング・健診

特に多数の教育プログラムが報告されていた、行動上の問題（いじめ・暴力等）、飲酒・喫煙・薬物使用、リプロダクティブ・ヘルス（性感染症予防・避妊）に関しては、知識・情報提供の他、コミュニケーション能力等の社会的スキルに焦点をあてた介入プログラム（social competence/ social influence approaches等）が多くみられた。

介入プログラムの提供者は（研究者自身が行っているもの以外では）、学校での介入研究で

は主に教員、スクールカウンセラー、スクールナースなどで、学校以外のセッティングでは、医師、歯科医師、看護師、歯科衛生士などの医療従事者が中心であった。その他にも、栄養士や心理士、ソーシャルワーカーや地域のボランティア、大学生、警察官などが参加している介入プログラムも報告されていた。

介入の実施期間は1回のみでの介入・セッションから、数年以上、介入を継続しているものもあった。またフォローアップの期間も、介入直後のみ、数か月、数年間など様々であった。飲酒（Foxcroft 2011）や薬物使用（Faggiano 2014）の予防に関するレビューでは10年以上、喫煙予防を目的とした介入プログラムでは、20年間以上のフォローアップを行っている研究も報告されていた（Thomas 2015）。

• 介入の効果

学校での介入研究では、飲酒・喫煙・薬物使用、望まない妊娠・避妊の実施、男女間の暴力・虐待、うつ予防、むし歯予防、感染症予防（手洗いの促進）、問題行動（攻撃的・非社会的行動）、BMI、社会情緒的アウトカム（自尊心）等のアウトカムに関して介入の効果ありと報告されていた。また、WHOのHPS/Health Promoting School framework（1990年代以降WHOにより提案されてきた健康教育・保健活動の枠組み）や、Multiple risk behavior interventions（2つ以上のリスク行動をターゲットとした介入プログラム）に関しては、いじめや喫煙・飲酒予防、食事・身体活動の改善等、複数のアウトカムに対して、その有効性が報告されていた（Langford 2014、MacArthur 2018）。

学校以外の、家庭・地域・クリニック等で行われた介入プログラムでその有効性が報告されていたのは、感染症（予防接種および保護者への情報提供）、行動上の問題（ペアレント・

トレーニング)、むし歯予防(シーラント、フッ素ジェル)、避妊の実施、エネルギー摂取量、喫煙予防であった(Appendixとして結果の詳細をまとめた)。

D. 考察

多くのレビューで課題として指摘されていたのが、長期的な影響や費用対効果に関する研究が不足しているという点で、今後の政策決定には、これらの情報がより重要であると指摘されていた。例えば喫煙予防に関する介入プログラムでは、家庭と学校でのプログラムを組み合わせた介入がより効果的な可能性があること(Thomas 2015)、またクリニックでの避妊法に関する教育セッションに関するレビューでは、より集中的(intensive)な内容で効果があるかもしれないと報告されていた(Lopez 2016)。しかし同時に、通常の学内・診療業務に加えてこれらのプログラムを実施することは、現場でのハードルが高くなるだろうとも述べられていた。新たにリソースや時間を使ってプログラムを実施するためには、それをサポートできる、効果的な介入プログラムに関するエビデンスの集積が重要である。

小児期の生活習慣が成人期の生活習慣に及ぼす影響も指摘されている。感染症、NCDs、歯科、生活習慣病予防など、小児期の多様な健康課題に対応するためには、多職種連携による包括的なアプローチが必要である。小児期に問題となる健康課題に関して、それが予防可能であるというエビデンスを引き続き示していくことは、各自治体の母子保健活動にとっても、有益な情報を提供できる可能性がある。

E. 結論

本研究では、学校および、家庭や地域、保健医療機関で実施されている予防的介入プログ

ラムの内容及びその効果を概観した。小児期における予防的介入は、生涯の健康増進に寄与する可能性がある。有効な介入プログラムの実施に向け、関連するエビデンス整理が、今後も必要である。(本研究結果は、今後の論文発表を予定している。)

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F. 研究発表

1. 論文発表

なし

2. 学会発表

なし

G. 知的財産権の出願・登録状況

1. 特許取得

なし

2. 実用新案登録

なし

3. その他

なし

Appendix 結果の詳細表 (※有効性が報告されていた結果を抽出)

学校で実施された介入研究

| Outcome | Included reviews | Intervention and comparator | No of children | No of RCTs | Relative effect size (95% CI) | Quality (Certainty) of evidence (GRADE) | Authors' conclusions |
|---|----------------------|---|------------------|------------|---|---|---|
| Emotional and behavioral improvement | | | | | | | |
| <i>Social and emotional outcomes</i> | Maynard 2017 | A mindfulness component/strategy vs. no intervention or treatment as usual | 4,352 | 28 | Overall mean effect 0.22 (0.14, 0.30) at post-test (11/28 studies were QED) | The quality of the evidence varied | <ul style="list-style-type: none"> • Found positive effects on socioemotional outcomes. |
| <i>Self-esteem improvement</i> | Ekeland 2004 | Exercise only vs. no intervention | 380 | 8 | SMD 0.49 (0.16, 0.81) | Moderate to high risk of bias | <ul style="list-style-type: none"> • Conclusions are based on several small low-quality trials. • "Since there are no known negative effects of exercise and many positive effects on physical health, exercise may be an important measure in improving children's self-esteem." |
| | Ekeland 2004 | Comprehensive exercise program vs. no intervention | 161 | 4 | SMD 0.51 (0.15, 0.88) | Moderate to high risk of bias | <ul style="list-style-type: none"> • Found a positive effect overall. |
| <i>Aggressive and disruptive behavior</i> | Wilson 2006 | universal social information processing programs vs. no intervention, usual care | NR | 73 | Overall mean effect size 0.21 (range: -0.58 to 1.48) Majority of effects (over 75%) are positive (included non-RCTs) | There was significant heterogeneity in outcomes | <ul style="list-style-type: none"> • Anti-bullying interventions showed a reduction for reports of being bullied, although there was a considerable amount of heterogeneity. • A multiple risk behaviour intervention reported the effect of their intervention on bullying others. • "Available evidence is strongest for universal school-based interventions that target multiple-risk behaviours, demonstrating that they may be effective in preventing...engagement in antisocial behavior." |
| <i>Bullying</i> | Langford 2014 | Anti-bullying interventions (HPS) vs. no intervention or alternative program | 26,176 26,256 | 6 6 | OR 0.90 (0.78, 1.04) <i>bullying others</i> OR 0.83 (0.72, 0.96) <i>being bullied</i> | Low | |
| | Langford 2014 | Multiple risk behaviour interventions (HPS) vs. no intervention or alternative program | 363 4,743 | 1 1 | OR 0.49 (0.34, 0.71) <i>bullying others</i> OR 0.97 (0.90, 1.05) <i>being bullied</i> | Low | |
| <i>Antisocial behaviour</i> | MacArthur 2018 | Multiple risk behaviour interventions (aimed to address at least two risk behaviours) vs. no intervention/ usual practice | 20,756 | 13 | OR 0.81 (0.66, 0.98) <i>up to 12 months post intervention</i> | Very low | |
| Infection reduction | | | | | | | |
| <i>Diarrhea</i> | Ejemot-Nwadiaro 2015 | Handwashing program vs. no intervention | 45,380 4,664 | 2 9 | RR 0.66 (0.43, 0.99) <i>low- or middle-countries</i> RR 0.70 (0.58, 0.85) <i>high-income countries</i> | Low High | <ul style="list-style-type: none"> • "Hand washing promotion probably reduces diarrhoea episodes" • "Less is known about how to help people maintain hand washing habits in the longer term" |
| Mental health improvement | | | | | | | |
| <i>Depression diagnosis</i> | Hetrick 2016 | Psychological interventions (Depression prevention interventions) vs. any comparator | 2,050 | 10 | RD -0.01 (-0.03, 0.01) <i>up to 12 months</i> | Moderate | <ul style="list-style-type: none"> • "Overall the results show small positive benefits of depression prevention" • "Prevention programmes delivered to universal populations have a sobering lack of effect when compared with an attention placebo control." |
| <i>Depression symptoms (self-rated)</i> | Hetrick 2016 | Psychological interventions (Depression prevention interventions) vs. any comparator | 9,013 | 31 | SMD -0.11 (-0.17, -0.05) <i>post intervention</i> | Moderate | |

| | | | | | | | |
|--|----------------|---|-----------------|----------|---|--|---|
| <i>Body Image Assessment</i> | Pratt 2002 | Media Literacy & Advocacy approach (for preventing eating disorders) vs. usual school curriculum | 298 | 2 | SMD -0.28 (-0.51, -0.05) | Limited evidence | <ul style="list-style-type: none"> The one significant pooled effect in the current review (media literacy and advocacy programs in reducing acceptance of societal body image ideals) does not allow for any firm conclusions to be made about the impact of prevention programs for eating disorders in children and adolescents. |
| <i>Nutrition</i> | Langford 2014 | Nutrition only (HPS) vs. usual practice or alternative intervention | 6,210 | 9 | SMD 0.15 (0.02, 0.29) | Low | <ul style="list-style-type: none"> These analyses demonstrate that there was a large degree of heterogeneity in these outcomes across studies. Nutrition only interventions were effective on average at increasing reported fruit and vegetable intake among students. |
| <i>Oral health improvement</i> | Marinho 2015 | Fluoride gel vs. placebo or no treatment | 3,198 8,479 | 10 25 | PF 32% (19%, 46%) measured by D(M)FT PF 28% (19%, 36%) measured by D(M)FS (4/25 trials were clinical setting) | Moderate | <ul style="list-style-type: none"> There is moderate quality evidence of a large caries-inhibiting effect of fluoride gel in the permanent dentition. There is little information on adverse effects or on acceptability of treatment. |
| | Marinho 2016 | Fluoride mouthrinse (primarily supervised use in school setting) vs. placebo or no treatment | 15,305 5,105 | 35 13 | PF 0.27 (0.23, 0.30) measured by D(M)FS PF 0.23 (0.18, 0.29) measured by D(M)FT | Moderate | <ul style="list-style-type: none"> Found that supervised regular use of fluoride mouthrinse is associated with a large reduction in caries increment in permanent teeth. |
| | Marinho 2015 | Fluoride gel vs. placebo or no treatment | 1,254 | 3 | PF 20% (1%, 38%) measured by D(M)FS increment nearest to 3 years (1 trial was clinical setting) | Low | <ul style="list-style-type: none"> The evidence on primary dentition is low quality because of the small number of studies available. |
| | Marinho 2016 | Fluoride mouthrinse (primarily supervised use in school setting) vs. placebo or no treatment | 1,700 | 4 | RR 1.33 (0.62, 2.83) | Very low | <ul style="list-style-type: none"> found little information about potential adverse effects and acceptability. |
| <i>Physical and developmental change</i> | | | | | | | |
| <i>BMI</i> | Langford 2014 | Physical activity only (HPS) vs. usual practice or alternative intervention | 1,430 | 3 | MD -0.38 (-0.73, -0.03) BMI MD -0.47 (-0.69, -0.25) zBMI | Moderate | <ul style="list-style-type: none"> There is evidence that physical activity interventions were able to reduce BMI in students. |
| | Naude 2018 | Lower total fat intake \leq 30%TE vs. usual or modified fat intake | 191 | 1 | MD -1.50 (-2.45, -0.55) > 1 to 2 years | Moderate | <ul style="list-style-type: none"> Lower total fat intake (\leq 30%TE) probably reduced BMI in children over a period of 1 to 2 years (1 study) |
| <i>BMI reduction</i> | Waters 2011 | Childhood obesity interventions vs. no intervention or alternative program | 27,946 | 37 | SMD -0.15 (-0.21, -0.09) from baseline to post intervention (12 studies were community setting) | Reasonable (Cochrane 'Risk of bias tool) | <ul style="list-style-type: none"> We found strong evidence to support beneficial effects of child obesity prevention programmes on BMI, particularly for programmes targeted to children aged six to 12 years. However, given the unexplained heterogeneity and the likelihood of small study bias, these findings must be interpreted cautiously. |
| <i>Physical activity</i> | MacArthur 2018 | Multiple risk behaviour interventions (aimed to address at least two risk behaviours) vs. no intervention/ usual practice | 6,441 | 4 | OR 1.32 (1.16, 1.50) up to 12 months post intervention | Moderate | <ul style="list-style-type: none"> Available evidence is strongest for universal school-based interventions that target multiple-risk behaviours, demonstrating that they may be effective in...improving physical activity among young people. |

| | | | | | | | |
|---|----------------|--|----------------|----------|--|-----------------------------|---|
| | Dobbins 2013 | School-based physical activity programs vs. usual program | 4,123 | 5 | Effect range for physical activity rate in intervention group (53% - 92%) vs. (44% - 91%) in control group. Showing increased time of engaging moderate to vigorous physical activity (ranging from 5 to 45 min more) after exposed to intervention. | Low | <ul style="list-style-type: none"> • Positive effects on behavior and one physical health status measure were found. • "(Included) studies are at a minimum of moderate risk of bias, and the magnitude of effect is generally small" • "Additional research on the long-term impact of these interventions is needed." |
| <i>Physical activity duration</i> | Dobbins 2013 | School-based physical activity programs vs. usual program | 15,743 | 23 | Effect range for physical activity duration in intervention group (3 min - 158 min) vs. (3 min - 143 min) in control group. Indicating improvement of moderate to vigorous physical activity engagement during school hours OR 2.74 (2.01, 3.75). | Low | |
| <i>Inactivity</i> | Dobbins 2013 | School-based physical activity programs vs. usual program | 9,372 | 16 | Effect range for time spent watching television in intervention group is (85 min - 285 min) vs. (89 min - 288 min) in control group. Indicating between 5 to 60 min less per day in spending time watching television. | Low | |
| <i>Physical activity and fitness</i> | Langford 2014 | Physical activity + nutrition (HPS) vs. usual practice or alternative intervention | 6,190 4,230 | 6 3 | SMD 0.14 (0.03, 0.26) <i>Physical activity</i> SMD 0.35 (-0.20, 0.90) <i>Physical fitness</i> | Low/ moderate | <ul style="list-style-type: none"> • "There was evidence that physical activity + nutrition interventions were effective at increasing fitness levels in students." |
| <i>Sense organ diseases</i> | | | | | | | |
| <i>Spectacle wearing</i> | Evans 2018 | Vision screening and provision of free spectacles vs. vision screening and no provision of free prescription | 1,092 | 2 | RR 1.60 (1.34 to 1.90) <i>Follow-up: 6 months</i> | High certainty evidence | <ul style="list-style-type: none"> • "There are no studies comparing vision screening with no vision screening." • "Vision screening plus provision of free spectacles improves the number of children who have and wear the spectacles they need compared with providing a prescription only." |
| <i>Sexual health improvement</i> | | | | | | | |
| <i>Dating violence knowledge</i> | De La Rue 2014 | Prevent dating/ sexual violence program vs. waitlist or TAU | 4,849 4,110 | 5 3 | SMD 0.36 (0.13, 0.59) <i>Immediate post-test</i> SMD 0.24 (-0.45, 0.93) <i>Follow-up</i> | Medium-to-high risk of bias | <ul style="list-style-type: none"> • "Tentatively supports the use of dating violence prevention programs in schools as a means to address this need." |
| <i>Dating violence attitudes</i> | De La Rue 2014 | Prevent dating/ sexual violence program vs. waitlist or TAU | 4,918 4,110 | 6 3 | SMD 0.12 (0.06, 0.18) <i>Immediate post-test</i> SMD 0.13 (-0.02, 0.27) <i>Follow-up</i> | Medium-to-high risk of bias | <ul style="list-style-type: none"> • "highlight the need for modifications to programs in order to support schools using time and resources to implement teen dating violence prevention programs." |
| <i>Rape myths acceptance</i> | De La Rue 2014 | Prevent dating/ sexual violence program vs. waitlist or TAU | 895 | 2 | SMD -0.46 (-0.78, -0.15) <i>Immediate post-test</i> | Medium-to-high risk of bias | <ul style="list-style-type: none"> • "The studies included in this review show evidence of improvements in protective behaviours and knowledge among children exposed to school-based programmes, regardless of the type of programme." • "Studies have not yet adequately measured the long-term benefits of programmes in terms of reducing the incidence or prevalence (or both) of child sexual abuse in programme participants." |
| <i>Protective behaviours about sexual abuse</i> | Walsh 2015 | School-based education programmes for the prevention of child sexual abuse vs. no intervention or standard school curriculum | 102 | 2 | OR 5.71 (1.98, 16.51) | Moderate | |
| <i>Knowledge about sexual abuse</i> | Walsh 2015 | School-based education programmes for the prevention of child sexual abuse vs. no intervention or standard school curriculum | 4,657 1,688 | 18 11 | SMD 0.61 (0.45, 0.78) <i>Questionnaire-based</i> SMD 0.45 (0.24, 0.65) <i>Vignette-based</i> | Moderate | |
| <i>Disclosures (sexual abuse)</i> | Walsh 2015 | School-based education programmes for the prevention of child sexual abuse vs. no intervention or standard school curriculum | 1,788 | 3 | OR 3.56 (1.13, 11.24) <i>past or current child sexual abuse made during or after programme completion</i> | Moderate | |
| <i>Knowledge outcomes about sexual health</i> | Underhill 2008 | Abstinence-plus programs (condom or contraception use) vs. usual/ no prevention services | 21,471 | 10 | "almost every trial assessing HIV-related knowledge favored the intervention group over controls" | | <ul style="list-style-type: none"> • "This review provides overwhelming evidence that abstinence-plus programs consistently and significantly improve participants' knowledge of HIV/AIDS information" |

| | | | | | | | |
|---------------------------------------|----------------|---|-----------------|--------|--|--|--|
| <i>Condom use</i> | Lopez 2016 | Multifaceted program vs. usual health education | 3,869 3,869 | 1 1 | ORa 1.91 ± 0.27 after year 1 (2-year program) ORa 1.68 ± 0.25 12 months after year 2 | Moderate | <ul style="list-style-type: none"> • Most trials that aimed to prevent STI/HIV and pregnancy focused on condom use. • "many trials assessed contraceptive use as an outcome but did not report whether the content included contraceptive methods and their relative effectiveness" • "Despite the concern about reducing pregnancy rates among adolescents, the evidence base for school-based programs to improve contraceptive use is still somewhat limited." |
| | Lopez 2016 | Sexual risk reduction (abstinence until older) vs. usual health education | 1,742 | 1 | OR 0.67 (0.47, 0.96) No condom use at last vaginal sex (3 months) OR 0.59 (0.36, 0.95) Vaginal sex without condom in past 3 months (3 months) | Moderate | |
| | Lopez 2016 | Sexual risk avoidance (abstinence until marriage) vs. usual health education | 1,742 | 1 | OR 0.70 (0.52, 0.93) No condom use at last vaginal sex (3 months) OR 0.61 (0.45, 0.85) No condom use at last vaginal sex (15 months) | Moderate | |
| <i>Oral contraceptive use</i> | Lopez 2016 | Peer-led interactive prevention vs. usual health education (didactic teacher-led sex education) | 2,110 | 1 | OR 0.57 (0.36, 0.91) 17 months | Moderate | |
| <i>Use of effective contraceptive</i> | Lopez 2016 | Multifaceted program vs. usual health education | 3,869 3,869 | 1 1 | ORa 1.62 ± 0.22 after year 1 (2-year program) ORa 1.76 ± 0.29 12 months after year 2 | Moderate | |
| Substance used or abuse | | | | | | | |
| <i>Alcohol use</i> | Foxcroft 2011a | Alcohol-Specific Programs vs. standard curriculum | 23,293 | 11 | 6 studies showed some evidence of effectiveness compared to a standard curriculum. | The reporting quality of trials was poor | <ul style="list-style-type: none"> • Could not conduct meta-analysis because of the heterogeneity and lack of information about the contents of prevention programs. • "certain generic psychosocial and developmental prevention programs can be effective and could be considered as policy and practice options" |
| | Foxcroft 2011a | Generic alcohol prevention programs vs. standard curriculum | 99,597 | 39 | In 14 studies, interventions demonstrated significantly greater reductions in alcohol use either through a main or subgroup effect | | <ul style="list-style-type: none"> • "Available evidence is strongest for universal school-based interventions that target multiple-risk behaviours, demonstrating that they may be effective in preventing...engagement in alcohol use." |
| | MacArthur 2018 | Multiple risk behaviour interventions (aimed to address at least two risk behaviours) vs. no intervention/ usual practice | 8,751 | 8 | OR 0.72 (0.56, 0.92) up to 12 months post intervention | Moderate | |
| <i>Illicit drug use</i> | Faggiano 2014 | Social competence education vs. usual curricula for illicit drug use | 9,456 2,678 | 4 1 | RR 0.9 (0.81, 1.01) marijuana use <12 months RR 0.86 (0.74, 1) marijuana use ≥12 months | Moderate High | <ul style="list-style-type: none"> • "School-based programs based on a combination of social competence and social influence approaches show, on average, small but consistent protective effects in preventing drug use, although some outcomes did not show statistical significance." • "Some programs based on the social competence approach alone also show protective effects for some outcomes." |
| | Faggiano 2014 | Social competence education vs. usual curricula for illicit drug use | 2,090 1,075 | 1 1 | RR 0.69 (0.4, 1.18) hard drug use <12 months MD -0.01(-0.06, 0.04) hard drug use ≥12 months | Moderate High | |
| | Faggiano 2014 | Social competence education vs. usual curricula for illicit drug use | 2,512 1,566 | 2 1 | RR 0.27 (0.14, 0.51) any drug use <12 months MD 0.02 (-0.05, 0.09) any drug use <12 months | Moderate Moderate | |
| | Faggiano 2014 | Social influence education vs. usual curricula for illicit drug use | 10,716 5,862 | 3 1 | RR 0.88 (0.72, 1.07) marijuana use <12 months RR 0.95 (0.81, 1.13) marijuana use ≥12 months | Moderate Moderate | |
| | Faggiano 2014 | Combined education vs. usual curricula for illicit drug use | 8,701 26,910 | 3 6 | RR 0.79 (0.59, 1.05) marijuana use <12 months RR 0.83 (0.69, 0.99) marijuana use ≥12 months | Moderate Moderate | |
| | Faggiano 2014 | Combined education vs. usual curricula for illicit drug use | 693 1,066 | 1 2 | RR 0.85 (0.63, 1.14) hard drug use <12 months RR 0.86 (0.39, 1.9) hard drug use ≥12 months | High High | |
| | Faggiano 2014 | Combined education vs. usual curricula for illicit drug use | 6,362 | 1 | RR 0.76 (0.64, 0.89) any drug use <12 months | High | |

| | | | | | | | |
|--------------------------------|----------------|---|-----------------|--------|--|---|--|
| | MacArthur 2018 | Multiple risk behaviour interventions (aimed to address at least two risk behaviours) vs. no intervention/ usual practice | 11,058 4,140 | 5 5 | OR 0.74 (0.55, 1.00) <i>Illicit drug use up to 12 months post intervention</i> OR 0.79 (0.62, 1.01) <i>Cannabis Use up to 12 months post intervention</i> | Low Moderate | <ul style="list-style-type: none"> • "Available evidence is strongest for universal school-based interventions that target multiple- risk behaviours, demonstrating that they may be effective in preventing...engagement in illicit drug use." • There is evidence that both tobacco only and multiple risk behaviour interventions are effective in reducing smoking in school-aged children. |
| <i>Tobacco used or smoking</i> | Langford 2014 | Tobacco interventions (HPS) vs. usual practice or alternative intervention | 4,747 | 3 | OR 0.77 (0.64, 0.93) | Moderate | <ul style="list-style-type: none"> • "At longer than one year, there was a significant effect of the interventions in preventing young people from starting smoking" • "Programmes that used a social competence approach and those that combined a social competence with a social influence approach were found to be more effective than other programmes." • "no overall effect was detected at one year or less" |
| | Langford 2014 | Multiple risk behaviors interventions (HPS) vs. usual practice or alternative intervention | 9,992 | 5 | OR 0.84 (0.76, 0.93) | Moderate | |
| | Thomas 2013 | Information giving curricula vs. control intervention or no intervention | 100 | 1 | OR 0.12 (0.00, 14.87) <i>1 year or less</i> OR 0.12 (0.00, 14.87) <i>longest follow-up</i> | Sensitivity analyses suggested that neither selection nor attrition bias affected the results | |
| | Thomas 2013 | Social competence curricula vs. control intervention or no intervention | 7 | 7 | OR 0.52 (0.30, 0.88) <i>longest follow-up</i> | | |
| | Thomas 2013 | Social influences curricula vs. control intervention or no intervention | 20,467 | 25 | OR 1.00 (0.88, 1.13) <i>1 year or less</i> OR 0.92 (0.84, 1.01) <i>longest follow-up</i> | | |
| | Thomas 2013 | Combined social competence and social influences curricula vs. control intervention or no intervention | 5,370 | 7 | OR 0.49 (0.28, 0.87) <i>1 year or less</i> OR 0.50 (0.28, 0.87) <i>longest follow-up</i> | | |
| | Thomas 2013 | Multimodal programs vs. control intervention or no intervention | 6,000 | 5 | OR 0.89 (0.73, 1.08) <i>1 year or less</i> OR 0.95 (0.64, 1.43) <i>longest follow-up</i> | | |
| | Thomas 2013 | Other interventions vs. control intervention or no intervention | 297 | 2 | OR 2.49 (0.10, 61.80) <i>1 year or less</i> OR 0.91 (0.50, 1.66) <i>longest follow-up</i> | | |
| | MacArthur 2018 | Multiple risk behaviour interventions (aimed to address at least two risk behaviours) vs. no intervention/ usual practice | 15,354 | 9 | OR 0.77 (0.60, 0.97) <i>up to 12 months post intervention</i> | Moderate | <ul style="list-style-type: none"> • "Available evidence is strongest for universal school-based interventions that target multiple- risk behaviours, demonstrating that they may be effective in preventing...engagement in tobacco use." |
| | Wolfenden 2017 | Any strategy with the intention of improving the implementation of health promoting policies, programs or practices for physical activity, healthy eating, obesity prevention vs. no intervention or control intervention | (112 schools) | 2 | • "both trials reporting tobacco use reported significant reductions in such measures in interventions schools" | Very low | <ul style="list-style-type: none"> • "We are uncertain whether strategies to improve the implementation of school-based policies, practices or programs targeting risk factors for chronic disease impact on measures of student physical activity, diet, weight status, tobacco or alcohol use" |

CI: confidence interval, RR: risk ratio, MD: mean difference, SMD: standard mean difference, PF: prevented fraction
HPS: WHO's Health Promoting Schools

学校以外で実施された介入研究（家庭・地域・保健医療機関）

| Outcome | Included reviews | Intervention and comparator | No of children | No of RCTs | Relative effect size (95% CI) | Quality (Certainty) of evidence (GRADE) | Authors' conclusions |
|--|------------------|---|------------------------|-------------|---|---|--|
| Infection reduction | | | | | | | |
| <i>all-cause acute otitis media (follow-up after vaccinations of at least 6 months)</i> | Fortamier 2014 | Multiple pneumococcal conjugate vaccines vs. control treatment (in low-risk children) | 41,196 4,968 264 | 3 2 1 | RRR 7% (4 to 9) PCV7 RRR 34% (21 to 44) PD-PCV11 RRR 17% (-2 to 33) CRM197-PCV9 | High Moderate Moderate | <ul style="list-style-type: none"> • "Based on current evidence of the effects of PCVs for preventing AOM, the licensed 7-valent CRM197-PCV7 has modest beneficial effects in healthy infants with a low baseline risk of AOM." • "Currently, several RCTs with different (newly licensed, multivalent) PCVs administered during early infancy are ongoing to establish their effects on AOM. Results of these studies may provide a better understanding of the role of the newly licensed, multivalent PCVs in preventing AOM." • "In children aged between 3 and 16 years, live influenza vaccines probably reduce influenza (moderate-certainty evidence) and may reduce ILI (low-certainty evidence) over a single influenza season. In this population inactivated vaccines also reduce influenza (high certainty evidence) and may reduce ILI (low-certainty evidence)." • "We found very few randomised controlled trials in children under two years of age." |
| <i>Influenza assessed by laboratory confirmation (Follow-up over 1 or 2 influenza seasons)</i> | Jefferson 2018 | Influenza vaccine vs. placebo or do nothing | 7,718 1,628 | 7 5 | RR 0.22 (0.11 to 0.41) <i>live attenuated influenza vaccine</i> RR 0.36 (0.28 to 0.48) <i>inactivated influenza vaccine</i> | Moderate High | |
| <i>Influenza-like illness assessed by subjective report (Follow-up over a single influenza season)</i> | Jefferson 2018 | Influenza vaccine vs. placebo or do nothing | 124,606 19,044 | 7 4 | RR 0.69 (0.60 to 0.80) <i>live attenuated influenza vaccine</i> RR 0.72 (0.65 to 0.79) <i>inactivated influenza vaccine</i> | Low Moderate | |
| <i>Whooping cough (12 to 27 months)</i> | Zhang 2014 | Multi-component (≥ three) vaccines vs. control treatment | 46,283 | 6 | <ul style="list-style-type: none"> • "The efficacy of multi-component (≥ three) vaccines varied from 84% to 85% in preventing typical whooping cough" • "the efficacy of one- and two-component vaccines varied from 59% to 78% against typical whooping cough" | | <ul style="list-style-type: none"> • "Multi-component (≥ three) aP (Acellular pertussis) vaccines are effective in preventing whooping cough in children. Multi-component aP vaccines have higher efficacy than low-efficacy wP (whole-cell pertussis) vaccines, but they may be less efficacious than the highest-efficacy wP vaccines." • "Acellular vaccines have fewer adverse effects than whole-cell vaccines for the primary series as well as for booster doses." |
| Parenting | | | | | | | |
| <i>Vaccination status (3, 6, or 12 months post-intervention)</i> | Kaufman 2018 | Face-to-face information or educational interventions vs. control (no education, other education, or control not described) | 3,004 | 7 | RR 1.20 (1.04 to 1.37) | Low | <ul style="list-style-type: none"> • "There is low- to moderate-certainty evidence suggesting that face-to-face information or education may improve or slightly improve children's vaccination status, parents' knowledge, and parents' intention to vaccinate." |
| <i>Knowledge or understanding</i> | Kaufman 2018 | Face-to-face information or educational interventions vs. control (no education, other education, or control not described) | 657 | 4 | SMD 0.19 (0.00 to 0.38) | Moderate | |
| <i>Intention to vaccinate</i> | Kaufman 2018 | Face-to-face information or educational interventions vs. control (no education, other education, or control not described) | 179 | 2 | SMD 0.55 (0.24 to 0.85) | Low | |
| Emotional and behavioral improvement | | | | | | | |

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| Emotional and behavioural problems (postintervention) | Barlow 2016 | Group-based parent training programmes vs. waiting list, no intervention, or treatment-as-usual | 280 | 5 | SMD -0.81 (-1.37 to -0.25) (parent report) Scales used: BSI-II, BSQ, CAPEQ, CBCL, CBQ | Low | <ul style="list-style-type: none"> • "provide tentative support for the use of group-based parenting programmes to improve the overall emotional and behavioural adjustment of children with a maximum mean age of three years and 11 months, in the short-term." • "There is, however, a need for more research regarding the role that these programmes might play in the primary prevention of both emotional and behavioural problems, and their long-term effectiveness." |
| Externalising problems (postintervention) | Barlow 2016 | Group-based parent training programmes vs. waiting list, no intervention, or treatment-as-usual | 989 | 8 | SMD -0.23 (-0.46 to -0.01) (parent report) Scales used: CBCL, ECBI | Moderate | |
| Externalising problems - hyperactivity-inattention (postintervention) | Barlow 2016 | Group-based parent training programmes vs. waiting list, no intervention, or treatment-as-usual | 19 | 1 | SMD -1.34 (-2.37 to -0.31) (parent report) Scales used: HSQ | Very low | |
| Oral health improvement | | | | | | | |
| Dentine caries in permanent molars (Follow-up: 24 months) | Ahovu-Saloranta 2017 | Resin-based sealant applications on occlusal tooth surfaces of permanent molars vs. no sealant application | 1,548 | 7 | OR 0.12 (0.08 to 0.19) | Moderate | <ul style="list-style-type: none"> • "Resin-based sealants applied on occlusal surfaces of permanent molars are effective for preventing caries in children and adolescents." • "Information on adverse effects was limited but none occurred where this was reported. Further research with long follow-up is needed." • "There is moderate quality evidence of a large caries-inhibiting effect of fluoride gel in the permanent dentition. Information concerning the caries-preventive effect of fluoride gel on the primary dentition, which also shows a large effect, is based on low quality evidence from only three placebo-controlled trials." • "There is little information on adverse effects or on acceptability of treatment." |
| Changes in caries on the surfaces of permanent teeth (nearest to 3 years) | Marinho 2015 | Fluoride gel vs. placebo or no treatment | 8,479 | 25 | PR 28% (19%, 36%) measured by D(M)FS (2/25 trials were school setting) | Moderate | |
| Changes in caries on the surfaces of primary teeth (nearest to 3 years) | Marinho 2015 | Fluoride gel vs. placebo or no treatment | 1,254 | 3 | PR 20% (1%, 38%) measured by D(M)FS increment nearest to 3 years (2/3 trials were school setting) | Low | |
| Sexual health improvement | | | | | | | |
| Consistent oral contraceptive use | Lopez 2016 | Counseling + phone follow-up vs. counseling (Settings: clinic) | 767 | 1 | OR 1.41 (1.06 to 1.87) at 3 months OR 1.39 (1.03 to 1.87) at 6 months | Moderate | <ul style="list-style-type: none"> • "Of five studies with some effect, one provided moderate-quality evidence; four were older studies with low-quality evidence." • "More intensive strategies could be more effective, but would also be challenging for many clinics to implement." |
| Condom use at last sex | Lopez 2016 | Counseling + phone follow-up vs. counseling (Settings: clinic) | 767 | 1 | OR 1.45 (1.03 to 2.03) at 3 months | Moderate | |
| Use of effective contraceptive method | Lopez 2016 | Comprehensive service package vs. standard package (Settings: clinic) | 2,336 | 1 | OR 2.03 (1.04 to 3.98) at 6 months | Low | |
| Use of birth control methods (hormonal contraceptives) (follow up: range 6 months to 12 months) | Oringanje 2016 | Contraceptive-promoting interventions vs. no additional activity/ intervention to existing conventional population-wide activities | 3,091 | 2 | RR 2.22 (1.07 to 4.62) | High | <ul style="list-style-type: none"> • "A combination of educational and contraceptive-promoting interventions appears to reduce unintended pregnancy among adolescents." • "The variability in study populations, interventions and outcomes of included trials, and the paucity of studies directly comparing different interventions preclude a definitive conclusion regarding which type of intervention is most effective." |
| Unintended pregnancy (follow up: range 12 months to 36 months) | Oringanje 2016 | Multiple interventions (combination of educational and contraceptive-promoting interventions) vs. no additional activity/ intervention to existing conventional population-wide activities | 1,905 | 4 | RR 0.66 (0.50 to 0.87) | Moderate | |

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| <i>Oral contraceptive use (continuation at 6 months)</i> | Smith 2015 | Intervention comprised a range of different daily educational text messages for 180 days (vs. standard care) | 683 | 1 | RR 1.19 (1.05 to 1.35) | Low | <ul style="list-style-type: none"> • "Our review provides limited evidence that interventions delivered by mobile phone can improve contraception use." • "Whilst evidence suggests that a series of interactive voice messages and counsellor support can improve post-abortion contraception, and that a mixture of uni-directional and interactive daily educational text messages can improve OC adherence, the cost-effectiveness and long-term effects of these interventions remain unknown." |
| <i>Mean number of days between scheduled appointment and completed visit for Depo-Provera: first visit</i> | Smith 2015 | Intervention comprised daily text message appointment reminders 72 hours before appointment and healthy self-management messages (vs. standard care) | 87 | 1 | MD -8.60 days (-16.74 to -0.46) | Moderate | |
| Nutrition | | | | | | | |
| <i>Mean daily energy intake from food</i> | Hollands 2015 | Larger-sized portion, package, individual unit or item of tableware vs. smaller-sized portion, package, individual unit or item of tableware | 1,421 | | SMD 0.21 (0.10 to 0.31) | Moderate | <ul style="list-style-type: none"> • "This review found that people consistently consume more food and drink when offered larger-sized portions, packages or tableware than when offered smaller-sized versions." |
| <i>Mean quantity of energy-containing non-alcoholic beverages consumed in a single serve</i> | Hollands 2015 | Shorter, wider glasses or plastic bottles vs. taller, narrower glasses or plastic bottles | 96 | | SMD 2.31 (1.79 to 2.83) | Low | <ul style="list-style-type: none"> • "This suggests that policies and practices that successfully reduce the size, availability and appeal of larger-sized portions, packages, individual units and tableware can contribute to meaningful reductions in the quantities of food (including non-alcoholic beverages) people select and consume in the immediate and short term." |
| Substance used or abuse | | | | | | | |
| <i>New smoking at follow-up</i> <i>*Baseline never smokers only</i> | Thomas 2015 | Family intervention vs. no intervention control | 4,810 | 9 | RR 0.76 (0.68 to 0.84) | Moderate | <ul style="list-style-type: none"> • "There is moderate quality evidence to suggest that family-based interventions can have a positive effect on preventing children and adolescents from starting to smoke." • "Intensive programs may be more likely to be successful than those of lower intensity. There is also evidence to suggest that adding a family-based component to a school intervention may be effective." |
| | Thomas 2015 | Family intervention in addition to school intervention vs. school intervention only | 2,301 | 2 | RR 0.85 (0.75 to 0.96) | Moderate | |

CI: confidence interval, RR: risk ratio, RRR: relative reduction in risk, MD: mean difference, SMD: standard mean difference