PROTOCOL V2.0

**ADMINISTRATIVE INFORMATION**

**Title:** How effective are behaviour change interventions to influence HPV vaccine uptake in an education setting: A systematic review and behaviour change techniques analysis

**Identification (1a):** This report is a protocol of a systematic review

**Update (1b):** This is not an update of a previous systematic review

**Registration (2):** GitHub

**Authors:** Harriet Bland, Charlotte Albury, Joseph Lee, James Harwood, Nia Roberts, Tharin Azad

**Contact (3a):**

**Institutional affiliation:** Nuffield Department of Primary Care Health Sciences, University of Oxford (Harriet Bland, Charlotte Albury, Joseph Lee, James Harwood, Tharin Azad), Bodleian Health Care Libraries, University of Oxford (Nia Roberts)

**Email:** [harriet.bland@jesus.ox.ac.uk](mailto:harriet.bland@jesus.ox.ac.uk),

[charlotte.albury@phc.ox.ac.uk](mailto:charlotte.albury@phc.ox.ac.uk), [joseph.lee@phc.ox.ac.uk](mailto:joseph.lee@phc.ox.ac.uk), [james.harwood@stx.ox.ac.uk](mailto:james.harwood@stx.ox.ac.uk), [tharin.azad@spc.ox.ac.uk](mailto:tharin.azad@spc.ox.ac.uk), [nia.roberts@bodleian.ox.ac.uk](mailto:nia.roberts@bodleian.ox.ac.uk)

**Contributions (3b):**

Harriet Bland: Lead author, Investigation, Screening studies according to eligibility criteria, Data curation, Risk of bias, Behaviour change techniques coding, Formal analysis, Writing publication

Charlotte Albury: Supervision, Conceptualisation, Validation, Behaviour change techniques coding, Writing publication

Joseph Lee: Supervision, Conceptualisation, Validation, Behaviour change techniques coding, Writing publication

James Harwood: Supervision, Conceptualisation, Validation, Behaviour change techniques coding, Writing publication

Nia Roberts: The information specialist consulted for advice on search strategy

Tharin Azad: Risk of bias

Jamie Chua: Screening studies according to agreed exclusion and inclusion criteria

**Amendments (4):** This is the first amendment of a previously published protocol. Amendments made to roles of contributors.

**Support**

**Sources (5a): N/A**

**Sponsor (5b): N/A**

**Role of sponsor/funder (5c): N/A**

**INTRODUCTION**

**Rationale (6)**

Human papillomavirus (HPV) is a group of viruses that can cause genital warts and certain types of cancer, such as anal and cervical. Vaccination is effective in preventing disease and transmission. Although the exact recommendation for vaccination varies between healthcare systems, vaccination is usually recommended for adolescents between the ages of 11-17. The UK programme takes place predominantly in schools. Many diverse interventions have been trialled to increase uptake of HPV vaccination. Previous systematic reviews have identified these trials, but struggled to deal with the heterogeneity of interventions. As a result, it is still unclear what makes interventions effective, and what to do in practice.

Behaviour change techniques (BCTs) are the ‘active ingredients’ in complex interventions; any behaviour change intervention can be classified according to the BCTs it employs. We will use BCTTv1 taxonomy to group interventions for mapping and analyses.

**Objectives (7)**

With this review we aim to assess the effectiveness of interventions for HPV vaccine uptake compared to usual care in an education setting, according to the BCTs they use.

1. Identify and describe the behaviour change techniques (using BCTTv1) that have been used in existing behavioural intervention trials aimed at increasing HPV vaccine uptake in an education setting
2. Assess the effectiveness of employing at least 1 BCT compared to usual care on vaccine uptake
3. Assess and compare the effectiveness of different BCTs (or combinations/domains of BCTs) on vaccine uptake
4. Assess the effectiveness of interventions aimed at the potential vaccinee, parent(s)/guardian(s), or both

**Population**

11-17 year olds who are eligible for vaccination in an education setting (including home schooled children and children not in mainstream schools if available) in their high income country of residence, and their parent(s)/guardian(s). If a paper is found that includes other age ranges as well as 11-17 it will be included provided that the eligible age group can be separated in the data.

**Intervention**

Any behavioural intervention above usual care

**Comparator**

Usual care only – which may vary between healthcare systems.

**Outcome**

Uptake of at least 1 dose of the HPV vaccine

**METHODS**

**Eligibility criteria (8)**

|  |  |
| --- | --- |
| **Inclusion criteria** | **Exclusion criteria** |
| Individuals of either sex | Studies that fail to report vaccine uptake quantitively |
| Individuals eligible for vaccination in an education setting (including home schooled children and children not in mainstream schools if applicable) between the ages of 11-17 | Studies that don’t examine HPV vaccine uptake with behaviour interventions or usual care |
| If a paper is found that includes other age ranges as well as 11-17, it will be included provided that the vaccination is delivered in an education setting and the eligible age group can be separated in the data. | Studies not published in English |
| Studies from September 2008 onwards | Studies that fail to distinguish HPV vaccination from general vaccination programmes |
| Randomised (and cluster-randomised) controlled trials | Studies that are not peer reviewed  All other study designs |
| Studies in High Income Countries as named in the World Bank 2023 list | Studies in low and middle income countries |
| Studies administered by any health provider, provided this is in an education setting | Studies set outside of educational settings |

**Information sources (9)**

Papers in CENTRAL, EMBASE, Medline and ERIC will be searched using keywords and MeSH terms, in addition to studies in the references of those included

**Search strategy (10)**

An information specialist (Nia) was consulted for advice on search strategy. ‘human papillomavirus’, ‘vaccine’ ‘initiation’ and ‘education’ were used as key word prompts.

**Study records**

**Data management, selection process and collection process (11)**

Data and reference management software will be used. All titles and abstracts of studies retrieved by the search strategy and those from the references of included studies will be screened independently for eligibility by 2 reviewers. Only papers in the English language will be included. Any disagreement will be resolved by discussion, and, where required, moderation by a third reviewer.

The full texts of papers with potentially eligible abstracts will then be independently reviewed, to see if they are eligible for inclusion, by 2 reviewers. Any disagreement will be resolved by discussion, and, where required, moderation by a third reviewer. Behaviour change technique coding will be carried out by a trained BCT coder and some secondary coding performed by a second trained BCT coder. Any disagreement will be resolved through discussion, or, where required, moderation by a third BCT coder.

**Data items (12)**

Data extraction tables will be used to assess all variables listed above. This will include Title, Authors, Date, Setting, Design, Intervention and Control descriptions, numbers of participants and events in the study arms.

**Outcomes and prioritisation (13)**

The primary outcome is HPV vaccine uptake, defined as uptake of at least 1 dose of the HPV vaccine.

**Risk of bias in individual studies (14)**

Risk of bias will be assessed independently by 2 reviewers using the Cochrane risk of bias tool.

**Data synthesis (15)**

Data will be assessed qualitatively using BCTTv1 coding and descriptive statistics. Any intervention above usual care will be analysed compared to usual care to assess the effectiveness of at least one of any behaviour change intervention. Where possible if there is vast heterogeneity in the usual care arm, the BCTs used will also be coded. If there is sufficient data, random-effects meta-analysis and subgroup analyses will be performed.

The subgroups are meta-analyses analysed by:

* Interventions at adolescents aged 11-17, interventions aimed at parent(s)/guardian(s) and interventions aimed at both the above groups
* The BCT ‘Information about health consequences’, where possible
* Total number of BCT used and common combinations of BCTs

**Meta-bias(es) (16)**

Where possible we will assess for publication bias using a funnel plot and Egger’s test (if there are more than 10 studies addressing the same question)

**Confidence in cumulative evidence (17)**

GRADE will not be used for this review.