



Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Review

A systematic review of factors affecting vaccine uptake in young children

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ARTICLE INFO

Article history:

Received 16 March 2017

Received in revised form 11 September 2017

Accepted 13 September 2017

Available online xxxx

Keywords:

Child immunisation

Parents

Psychological factors

Uptake

Health behaviours

ABSTRACT

Background: Many parents make a conscious decision not to vaccinate their child. Multiple beliefs and perceptions surround this choice. If uptake of routine child vaccination is to increase, public health communications about vaccines must be informed by evidence on the factors affecting uptake.

Method: We conducted a systematic review to investigate psychological, social and contextual factors associated with uptake of routine vaccines in young children. Studies were included if they reported analyses of the association between psychological factors and uptake or included parents' self-reported reasons for or against vaccination.

Results: Our search identified 9110 citations after deduplication. Sixty-eight citations describing sixty-four studies were included in the review. The quality of the studies was mixed. There is strong evidence for an association between vaccination uptake and: not perceiving vaccines to cause adverse effects; general positive attitudes towards vaccination; positive vaccine recommendations; and perceiving fewer practical difficulties of vaccination. While there was good evidence for an association between vaccination and perceived susceptibility to the illness, evidence for an association between perceived severity of an illness and vaccination was weak. Other factors associated with vaccination include knowledge about the vaccine, social influences and trust in the healthcare profession. Having increased information about the vaccine was associated with vaccination, but the influence of different sources of information needs more research.

Conclusion: Understanding which factors are consistently associated with the decision to vaccinate one's child is important to identify messages which should be targeted by public health communications about routine child vaccinations.

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<https://doi.org/10.1016/j.vaccine.2017.09.046>

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Please cite this article in press as: Smith LE et al. A systematic review of factors affecting vaccine uptake in young children. Vaccine (2017), <https://doi.org/10.1016/j.vaccine.2017.09.046>

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1. Introduction

In 2015 almost six million children died globally before the age of five [1]. Over half died from preventable infectious diseases [2]. Although vaccines reduce morbidity and mortality [3], some parents do not vaccinate their children. While in developing countries lack of access to vaccination and family characteristics such as low education, literacy and socio-economic status make up the majority of reasons why children are not vaccinated [4], in developed countries parents make conscious decisions not to use readily available vaccines. Understanding how to encourage uptake is an important public health aim.

Many studies in this area are guided by an explicit theory of behaviour change (e.g. [5–7]), which identify factors which may predict vaccination behaviour [8]. Vaccine refusal has been associated with: perceived costs of vaccination, such as believing that vaccines cause short- or long-term side-effects [9] or are ineffective [10]; attitudinal factors such as believing that children receive too many vaccinations and that vaccines overload the immune system [11]; conflict with religious beliefs [12]; distrust of healthcare systems and governments [9,13]; and emotional factors such as preferring to suffer the negative consequences of inaction rather than those caused by vaccinating [10]. Other factors include forgetting and not knowing that the child needs a vaccine booster [9,13].

Past literature reviews have focused on vaccines such as MMR [11] and HPV [14]. However, it is difficult to generalise these findings to all routine vaccinations. We used a systematic review to identify psychological, social and contextual factors affecting the uptake of routine childhood vaccination for healthy children aged 5 and under in high-income countries.

2. Method

We carried out a review in accordance with PRISMA criteria [15]. We searched Embase, Medline, PsycINFO, Maternity and Infant Care, Health Management Information Consortium and Social Policy and Practice through OvidSP, and Scopus. Databases were searched from inception to the 22nd November 2016. We used the following search terms: ((vaccine* OR inocul* OR immunis*) AND (child* OR newborn OR infant OR baby) AND (uptake OR

adherence OR compliance OR decision* OR hesitanc* OR concern OR doubt)). Where possible, we limited the search to human studies. A MeSH terms search yielded 52,429 citations. Checking a random sample of 100 of these yielded no relevant papers. The MeSH search was therefore abandoned as impractical.

2.1. Inclusion criteria

Inclusion criteria were:

Participants: Studies were included if children were aged five or under. Studies were excluded if children were recruited because of pre-existing ill health.

Predictors/Exposures: Studies were included if they presented data on the association between possible psychological predictors and childhood vaccination, or gave a quantitative account of parents' self-reported reasons for or against vaccination. Studies presenting only demographic predictors or predictors related to the mode of delivery of information, presence of an intervention (such as sending a reminder for the appointment) or frequency of vaccination appointment reminders were excluded.

Outcomes: Studies were included if they presented data on uptake of a named vaccine and if the vaccine was part of the routine vaccination schedule in that region.

Study reporting: Studies using quantitative methodology and conducted in high-income countries (as defined by the World Bank [16]) were included. For pragmatic reasons, we included only studies published in English.

2.2. Data extraction

For each study, we extracted details concerning country, study design, vaccine, psychological predictors of uptake and reasons for and against vaccination.

2.3. Risk of bias

Risk of bias was assessed using an adaptation of the Downs & Black [17] checklist, which is suitable for use in systematic reviews [18] and has been validated [19]. Items relating to interventions were dropped as they were not relevant to any included study.

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