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Strategies intended to address vaccine hesitancy: Review of published reviews

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ABSTRACT

When faced with vaccine hesitancy, public health authorities are looking for effective strategies to address this issue. In this paper, the findings of 15 published literature reviews or meta-analysis that have examined the effectiveness of different interventions to reduce vaccine hesitancy and/or to enhance vaccine acceptance are presented and discussed. From the literature, there is no strong evidence to recommend any specific intervention to address vaccine hesitancy/refusal. The reviewed studies included interventions with diverse content and approaches that were implemented in different settings and targeted various populations. Few interventions were directly targeted to vaccine hesitant individuals. Given the paucity of information on effective strategies to address vaccine hesitancy, when interventions are implemented, planning a rigorous evaluation of their impact on vaccine hesitancy/vaccine acceptance will be essential.

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1. Introduction

The high rate of childhood vaccination coverage in most countries indicates that vaccination remains a widely accepted public health measure [1]. However, national estimates of vaccination coverage do not reflect variability within the countries. Under-vaccinated individuals tend to cluster together, leading to increased transmission of vaccine-preventable diseases [2]. Sub-optimal vaccine coverage rates can, in part, be attributed to vaccine hesitancy. Many studies have also shown that even parents who have their children vaccinated can have doubts or even fears about immunisation [3–6]. Vaccine hesitancy is receiving increasing public health attention in developed and developing countries around the world. Evidence suggests that in North America, Europe, and in other parts of the world, public confidence in vaccines is decreasing and anti-vaccine movements are becoming stronger [7]. When faced with vaccine hesitancy, public health authorities are looking for effective strategies to address it.

Many public health interventions to promote vaccination have been based on a “knowledge-deficit” approach assuming that vaccine hesitant individuals would change their mind if given the proper information. However, research on vaccine acceptance has shown that individual decision-making regarding vaccination is far more complex and may involve emotional, cultural, social, spiritual or political factors as much as cognitive factors [8–10].

In this paper, a review of published reviews on strategies to address vaccine hesitancy and, more broadly, to enhance vaccine acceptance, is presented, and promising approaches on how to address vaccine hesitancy and its determinants are discussed. This review of published reviews aims to complement the systematic review on strategies to address vaccine hesitancy commissioned by the Working Group on Vaccine Hesitancy [11].

2. Methods

To identify relevant literature reviews or meta-analysis reviewing interventions to address vaccine hesitancy and/or to enhance vaccine uptake, a search was conducted in the electronic databases PubMed, EMBASE, Global Health, CINAHL, PsycINFO, SocINDEX with Full Text, ERIC for the period January 2008 to November 2014.

The search strategy was built using a combination of keywords (principal terms and synonyms) for four concepts: (1) interventions, (2) beliefs, attitudes and knowledge, (3) vaccination and (4)

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² All members of SAGE Working Group on Vaccine Hesitancy are listed in Appendix.

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Table 1
Search strategy: keywords in free text terms.

Concepts	Keywords (free text terms)
Interventions	Intervention, social marketing, advertising, campaign, education, marketing, promotion, program
Beliefs, attitudes and knowledge	Knowledge, attitude, practice, behavior, behaviour, awareness, vaccine hesitancy, vaccine hesitant, vaccine-hesitant
Vaccination Review	Immunisation, immunization, vaccination Review, systematic review, meta-analysis

review (Table 1). Within each concept, keywords were combined with the Boolean search operators. The different concepts were also linked with the Boolean and Positional search operators. Keywords were searched in “titles, keywords and abstracts”. In each database, the use of free text terms was combined with controlled language by using the appropriate thesaurus (for instance, Medical Subject Heading terms in PubMed).

In addition, further studies were retrieved from reference listing of relevant articles and consultation with members of the WHO SAGE Working Group on Vaccine Hesitancy.

Abstracts of all identified papers were reviewed. Articles were included if they met the following criteria: were reviews or meta-analysis of interventions to address vaccine hesitancy and/or to improve vaccine acceptance (original studies, guidelines, letters or editorials were excluded); were reviewing interventions targeting parents and/or health-care providers; were published in books, journals or website from 1 January 2008 to 30 November 2014; were written in English. Because of the particularities in the delivery of the annual influenza vaccines, reviews that focused exclusively on strategies to increase influenza vaccine uptake were excluded.

3. Results

The search strategy yielded 15 literature reviews or meta-analysis that met the eligibility criteria [12–26]. The majority of these were published in the last 3 years (9/15). The number of studies included in each review ranged from 2 to 240 (median = 16 studies). Table 2 presents a summary of the purposes, settings and main conclusions of these reviews and meta-analysis.

Only two of the reviews identified directly targeted strategies to address vaccine hesitancy (defined as voluntary refusal or delay in acceptance of recommended childhood vaccines while vaccination services are available) [20,25]. Both of these reviews included almost exclusively studies conducted in the United States. Williams, after reviewing the effectiveness of 15 interventions to improve attitudes, vaccination intent or vaccine uptake, was unable to identify any type of intervention as being more effective than others [24]. She also noticed that few studies identified parents as vaccine-hesitant prior to participation [25]. Similarly, Sadaf et al. examined 30 studies that evaluated interventions to increase vaccine uptake; 17 of these were parent-centred information or education about vaccination. Although most of these studies reported a statistically significant improvement in parents' intentions to have their children vaccinated, the data were conflicting and thus offered only limited insights. These authors have concluded that their review did not identify any convincing

evidence on effective interventions to address parental vaccine hesitancy/refusal [20].

Globally, most of the interventions analysed in the reviews that were examined for the present study were primarily to inform or to educate about vaccination [13,14,16,17,20,21,25]. Brief written educational interventions (e.g. pamphlets) were one of the most tested interventions included in the reviews. Although some studies reported a statistically significant improvement in vaccine uptake, the data were very inconsistent and, in most cases, the evidence was of low or moderate quality. None of the reviews included any recommendation for a particular type of informational or educational intervention as an effective strategy to increase vaccine uptake or to reduce vaccine hesitancy. For instance, Odone et al. reviewed interventions that apply new media (Internet and social media) to promote vaccine uptake and increase vaccination coverage [16]. These authors concluded that text messaging, accessing vaccination campaign websites, using patient-held web-based portals and computerised reminders may increase vaccine uptake, whereas there was insufficient evidence to determine effectiveness of use of social networks, email communication and smartphone applications [17]. Cairns et al. examined the effectiveness of promotional communications in the European context and also concluded that there is good evidence that a range of promotional communications can positively change knowledge, attitudes and behaviours. However, because many communication interventions were part of multi-component strategies, the net contribution of communication in improving vaccine uptake was difficult to assess [13]. The conclusions of two Cochrane reviews examining interventions to inform and educate about early childhood vaccination also indicate that the evidence that this type of interventions may increase vaccine uptake is of low quality [16,21].

In collaboration with the US Centers for Disease Control and Prevention, the Community Guide³ also has regularly published evidence-based recommendations on interventions intended to improve routine delivery of universally recommended vaccinations in the United States [12]. This work is based on a logic framework that stratified population-based interventions to improve vaccination coverage by the outcomes that they attempted to influence, and divided them into three categories: (1) interventions to increase community demand for vaccinations; (2) interventions that enhance access to vaccinations and (3) provider-based interventions [27]. Interventions to increase community demand for vaccination recommended by the Community Preventive Services Task Force based on sufficient evidence of effectiveness in increasing vaccination rates in children and adults are: client or family incentive rewards (e.g. food vouchers, gift cards, lottery prizes, baby products, the provision of transportation or child care, provision of vaccination at no cost, etc.); reminder and recall interventions; multi-component interventions that also enhance access to vaccination services and reduce missed opportunities by vaccination providers and vaccine requirements for daycare or school entry [12]. Similar conclusions were reached by Ward et al. who reviewed strategies to increase vaccination uptake in Australia and by Williams et al. who looked at strategies to optimise vaccine uptake among preschool children in high-income countries [23,26].

Wigham et al. reviewed the effectiveness, acceptability and economic costs of financial incentives and quasi-mandatory schemes, defined as “interventions that increase demand for vaccinations by offering contingent rewards or penalties with real material value; or that restrict access to universal goods or services,” on uptake of preschool vaccinations [23]. Studies examined in this review

⁴ Organisation for Economic Co-operation and Development.

⁵ Interventions aimed at communities were defined as those directed at a geographic area, and/or interventions directed to groups of people who share at least one common social or cultural characteristic.

³ The Community Guide is a website that houses the official collection of all Community Preventive Services Task Force findings and the systematic reviews on which they are based (Online: <http://www.thecommunityguide.org/>).

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