Social Science & Medicine 112 (2014) 1–11

Contents lists available at ScienceDirect

Social Science & Medicine

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

Review

Attitudes to vaccination: A critical review

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ARTICLE INFO

Article history:
Received 6 July 2013
Received in revised form
9 March 2014
Accepted 15 April 2014
Available online 16 April 2014

Keywords:
Europe
Vaccination
Immunisation
Public health
Choice
Attitude
Perception
Hesitancy

ABSTRACT

This paper provides a consolidated overview of public and healthcare professionals' attitudes towards vaccination in Europe by bringing together for the first time evidence across various vaccines, countries and populations. The paper relies on an extensive review of empirical literature published in English after 2009, as well as an analysis of unpublished market research data from member companies of Vaccines Europe. Our synthesis suggests that hesitant attitudes to vaccination are prevalent and may be increasing since the influenza pandemic of 2009. We define hesitancy as an expression of concern or doubt about the value or safety of vaccination. This means that hesitant attitudes are not confined only to those who refuse vaccination or those who encourage others to refuse vaccination. For many people, vaccination attitudes are shaped not just by healthcare professionals but also by an array of other information sources, including online and social media sources. We find that healthcare professionals report increasing challenges to building a trustful relationship with patients, through which they might otherwise allay concerns and reassure hesitant patients. We also find a range of reasons for vaccination attitudes, only some of which can be characterised as being related to lack of awareness or misinformation. Reasons that relate to issues of mistrust are cited more commonly in the literature than reasons that relate to information deficit. The importance of trust in the institutions involved with vaccination is discussed in terms of implications for researchers and policy-makers; we suggest that rebuilding this trust is a multi-stakeholder problem requiring a co-ordinated strategy.

1. Introduction

Vaccines are widely recognised by health authorities and the medical community as a major tool for achieving public health successes such as the eradication of smallpox (Andre et al., 2008; ECDC, 2012). Yet, for many individuals, this is not a sufficient basis with which to embrace vaccination whole-heartedly. They doubt the benefits of vaccines, worry over their safety and question the need for them, an attitude we refer to as vaccine hesitancy. An attitude of hesitancy differs from an action of vaccine refusal. Even those who are vaccinated can harbour hesitancy towards certain aspects of vaccination.

The policy concern is that hesitancy soon becomes refusal, as suggested by theory and experience (Salathé and Bonhoeffer, 2008), and unvaccinated clusters emerge in which disease outbreaks can occur (Gangarosa et al., 1998; Jansen et al., 2003). For example, a UK study of 14,578 children found that three-quarters of parents whose children were not vaccinated with MMR made a conscious decision to not vaccinate (Pearce et al., 2008). The refusal rate suggests that the traditional assumption that parents suffer information deficit, lack access to the facts or are misinformed is, at best, an incomplete understanding of vaccination attitudes (Hobson-West, 2003). We assume that, at one point, these parents were hesitant before they made their decision, and so there is an important distinction to be drawn between hesitancy and outright rejection.

If we take the distinction between hesitancy and rejection seriously, it becomes clear that whilst coverage rates are helpful for identifying those who reject, the metric does little to help us understand hesitant attitudes, their origins and the scope to change them. The goal of maintaining high coverage rates helps to ensure vaccination benefits are delivered widely, but the very act of delivering wide scale vaccination can make vaccines 'victims of their own success'. As the ravages of disease become less familiar to people, it may become more challenging to articulate the desirability of vaccination. Nichter (1995: p 617, 625) distinguished

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http://dx.doi.org/10.1016/j.socscimed.2014.04.018

between '*active demand*' (an appreciation of the benefits of and the need for vaccination) and '*passive acceptance*' (vaccination denoting compliance or yielding to power). Nichter (1995: p 625) pointed out that "demand is often low, even among populations having impressive immunisation rates". When hesitancy is prevalent, ensuring compliance and high coverage rates may not be enough to ensure that vaccination is sustainable in the future (Roalkvam et al., 2013: p 192). Closer examination is needed of what is required for the development of active demand.

The central concepts for cultivating active demand are trust and legitimacy (as set out in Roalkvam et al., 2013). By trust, we mean the ability to rely on somebody else's claims about a situation, and by legitimacy we mean the grounds upon which policymakers make decisions (O'Neill, 2002). When trust and legitimacy are lacking, many feel the need to re-interpret information about vaccination. Such re-interpretation can be elaborate: for example, some distinguish between 'natural immunity' and 'artificial immunity' induced through vaccination, and some believe a child's immune system can become 'overloaded' (Leach and Fairhead, 2007: p 52–55). The specifics of such re-interpretations are often localised and historically dependent: for example, the autism claims implicating the MMR vaccine were mostly a UK phenomenon, and the multiple sclerosis claims implicating the HepB vaccine were mostly a French phenomenon.

Trust and legitimacy are crucial concepts for understanding why some sources of information on vaccination are consulted more than others, how information on vaccination is re-interpreted and how beliefs that are often contrary to medical science are formed (as in the examples above). They help to explain some of the puzzles thrown up by coverage rates, such as why the better educated (who mistrust) might reject vaccination more readily than the less educated (who accept passively) (Hak et al., 2005).

Concern about the trust in, and legitimacy of, institutions involved with vaccination has again come to the fore following the H1N1 influenza 'pandemic' that never arrived (Allam, 2009; Scoones, 2010). Claims that the 'pandemic' response may have been improperly influenced by commercial interests (Flynn, 2010; Godlee, 2010; Epstein, 2011) coincided with evidence of increasingly hesitant attitudes to vaccination (Sypsa et al., 2009; Poland, 2010; Chanel et al., 2011). The WHO Director-General said about H1N1: "we did not anticipate that people would decide not to be vaccinated … In today's world, people can draw on a vast range of information sources. People make their own decisions about what information to trust, and base their actions on those decisions" (Chan, 2010). Some policymakers were clearly surprised to discover that their organisations did not command the trust they expected when they recommended vaccination.

The erosion of public trust in institutions involved with vaccination could be related to broader social trends (Blume, 2006; Hobson-West, 2007; Poltorak et al., 2005). For scholars such as Hobson-West (2003), public health authorities issuing vaccination recommendations struggle to resonate with a general public who are now more enamoured with notions of individual empowerment and exercising patient-choice. For scholars such as Blume, public health narratives are undermined by multiple stakeholders in multiple ways; for example, by the creation of markets where individual health consumers are expected to exercise purchasing power (Blume, 2006) and by the pressure to conform to the standardised products of global vaccine producers (Blume and Zanders, 2006). Another example might be the way in which many stakeholders now strive for personalised medicine emphasising personal characteristics (rather than the community characteristics that public health would) (Hedgecoe, 2004). Individuals, governments, researchers, companies and health services are all responsible for such public health narratives.

What follows then is a review with an agenda that centres on attitudes to vaccination, and one that seeks to determine whether vaccine hesitancy is a prevalent phenomenon, what the reasons are for hesitancy, and what might constitute a basis for cultivating active demand. A number of recent reviews cover attitudes to vaccination. A US Centers for Disease Control review focused on parental perceptions but not those of healthcare professionals (Kennedy et al., 2011). A Canadian Institute of Health Research systematic review also focused only on parental beliefs (Mills et al., 2005); moreover, they excluded vaccine-specific papers, which we believe can be quite important. A European Centre for Disease Prevention and Control (ECDC) systematic review focused on what constitutes effective communication regarding vaccination, as opposed to explaining reported attitudes (Cairns et al., 2012). There are also at least 3 recent reviews (Allen et al., 2010; Brown et al., 2010; Hofmann et al., 2006) focussing on specific vaccines and/or populations (HPV, Influenza-health professionals and MMR-parents, respectively) which we hope to complement.

We aim to make three distinct contributions to this literature. As far as we are aware, we provide the first consolidated overview of vaccination attitudes (defined here as expressions of support or hesitancy) among public and healthcare professionals across different vaccines and countries in Europe. Secondly, we provide an extensive mapping of the empirical literature (mostly surveys) on attitudes to vaccination in Europe in the 'post-pandemic' period (2009–2012). Thirdly, the paper offers an analysis of unpublished market research data from member-companies of Vaccines Europe, and compares this with published literature.

2. A review of 2009–2012 literature

2.1. Review methodology

The literature containing European data was reviewed systematically in a multi-step process (Fig. 1) conducted in the UK. English language articles from 2009 until August 2012 were searched in PubMed, Embase, Cochrane and Web of Science databases. Search terms included immunisation, perceptions, and attitudes (full search string available on request). Expert knowledge of the literature, snowballing and Google searches were also used and exclusion criteria applied (Appendix 1) to derive the final set of articles for full review (Appendix 2).

The papers we reviewed contained a range of self-reported determinants of vaccination attitudes. During our review, we searched for reasons that were cited for attitudes of hesitancy and support. We then categorised reasons that were very similar so that

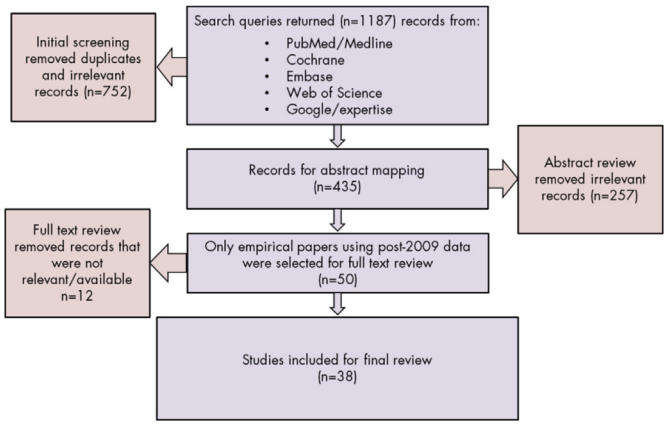

Fig. 1. Method flow-chart.