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Reasons for non-vaccination: Parental vaccine hesitancy and the childhood influenza vaccination school pilot programme in England

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ABSTRACT

Introduction: In 2013, the annual influenza immunisation programme in England was extended to children to reduce the burden of influenza, but uptake was sub-optimal at 53.2%.
Aim: To explore the reasons some parents decided not to vaccinate their child against influenza as part of the pilot programme offered in schools.
Methods: Cross-sectional qualitative study conducted between February and July 2015. 913 parents whose children were not vaccinated against influenza in the school pilots in West Yorkshire and Greater Manchester, England, were asked to comment on their reasons for non-vaccination and invited to take part in a semi-structured interview. 138 parents returned response forms, of which 38 were eligible and interested in participating and 25 were interviewed. Interview transcripts were coded by theme in NVivo.
Results: A third of parents who returned response forms had either vaccinated their child elsewhere, intended to have them vaccinated, or had not vaccinated them due to medical reasons (valid or perceived). Most interviewees were not convinced of the need to vaccinate their child against influenza. Parents expressed concerns about influenza vaccine effectiveness and vaccine side effects. Several parents interviewed declined the vaccine for faith reasons due to the presence of porcine gelatine in the vaccine.
Conclusions: To significantly decrease the burden of influenza in England, influenza vaccination coverage in children needs to be >60%. Hence, it is important to understand the reasons why parents are not vaccinating their children, and to tailor the communication and immunisation programme accordingly. Our finding that a third of parents, who did not consent to their child being vaccinated as part of the school programme, had actually vaccinated their child elsewhere, intended to have their child vaccinated, or had not vaccinated them due to medical reasons, illustrates the importance of including additional questions or data sources when investigating under-vaccination.

1. Introduction

Influenza causes considerable morbidity and mortality worldwide and represents a public health problem with significant socio-economic implications [1]. A core strategy for controlling influenza is annual seasonal influenza vaccination, recommended in high risk groups (individuals with specific chronic medical conditions, pregnant women, children, adults over 65 years old, and health care workers) [1]. The groups targeted in national influenza immunisation programmes vary by country [1,2] and vaccination coverage rates differ according to target group, country and region [1,3]. There have been numerous studies exploring reasons for non-vaccination with influenza vaccine globally, with the majority focused on healthcare workers [4].

The Strategic Advisory Group of Experts (SAGE) on Immunisation's vaccine hesitancy working group has defined vaccine hesitancy as: "a behaviour, influenced by a number of factors including issues of confidence (do not trust vaccine or provider), complacency (do not perceive a need for a vaccine, do not value the vaccine), and convenience (access)" [5]. Vaccine hesitancy is complex and context specific, varying across time, place and vacci-

Abbreviations: LAIV, live attenuated influenza vaccine; NHS, National Health Service; PHE, Public Health England.

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nes [5,6], and has the potential to pose a significant threat to global efforts to reduce the burden of seasonal and pandemic influenza. Hence, it is vital to understand the reasons people are hesitant about receiving influenza vaccines across different contexts [5,7,8].

In 2012, the Joint Committee on Vaccination and Immunisation (JCVI) recommended the extension of the influenza immunisation programme to children, based on an analysis which highlighted the cost effectiveness of vaccinating children due to direct and indirect benefits to the individual and the population [8]. Due to the scale of the programme (~9 million children aged 2–17 years), the programme is being implemented in phases [9]. The first phase started in 2013/14, with 2–3 year olds offered the influenza vaccine through general practices (GPs) and a pilot of 4–11 year olds in seven geographical areas across England, mostly offered through children's primary schools apart from one very rural area where the vaccine was offered through local pharmacies and GPs [9]. In 2014/15, the national programme was expanded from 2 to 3 year olds to include 4 year olds (provided through GPs as before). The pilot of primary school aged children continued, and an additional 16 pilot areas introduced vaccination for secondary school students in years 7 and 8. As vaccine uptake was low at 53.2% [10], we conducted this qualitative study to explore the reasons some parents decided not to vaccinate their child against influenza as part of the school pilot programme, and how these could be addressed.

2. Methods

2.1. Study population, recruitment and sampling

The study population consisted of parents, in West Yorkshire and Greater Manchester, who chose not to vaccinate their child against influenza in the school pilot programme in the 2014/15 season, but were willing to be contacted for further information. We chose West Yorkshire and Greater Manchester as vaccine uptake in the school influenza pilots had been had been low in these areas and the regions were diverse demographically. The pilot programme took place in 20 schools in West Yorkshire and 94 schools in Greater Manchester. The providers were community based health organisations that administered and delivered immunisations in schools.

Study invitation packs were distributed by the organisations who were administering the pilot programmes in these areas. They included a cover letter introducing the research topic, an information sheet giving further details about the study, and a response form (Appendix 1). The response form allowed respondents to register their interest in participating in an interview, and also included the question "We would be grateful if you could tell us why you decided not to vaccinate your child as part of the school immunisation programme".

We applied a purposive sampling approach to ensure that our sample reflected a wide range of socio-demographic characteristics and supplemented this with snowball sampling, asking parent participants if they knew anyone else who had refused vaccination that might be interested in participating in the study.

Study data were collected through semi-structured interviews using an interview topic guide (Appendix 2). The topic guide captured basic socio-demographic information and covered five main subject areas: (1) Participants understanding and experience of the childhood flu immunisation pilots, (2) decision-making about participation in the flu pilots, (3) reasons for not accepting the flu vaccine, (4) risk–benefit considerations, and (5) where they considered themselves on the spectrum of vaccine hesitancy. The interview guide was developed to encourage participants to talk and give their views and opinions, and not with the intention of convincing parents to immunise their child. With the permission of study participants, interviews were recorded verbatim with the use of a digital recorder. Interview recordings were transcribed anonymously by a professional transcription service.

In total, 1223 invitation packs were sent to 913 parents, in West Yorkshire and Greater Manchester, who did not consent to their child being vaccinated against influenza as part of the childhood pilot programme but agreed to be contacted (January – February 2015). 138 parents returned response forms, of which fifty-nine parents expressed interest in being interviewed as part of the study, and 38 of the 59 were eligible (they did not want their child to be vaccinated as part of the childhood flu pilot programme) (Fig. 1). We approached all 38 eligible parents. Thirteen parents were unavailable (either did not answer the phone or were unable to meet) and one parent was no longer interested. One additional parent was identified through snowballing and agreed to be interviewed.

In total, we interviewed 25 parents. Twenty-two interviews were audio-recorded face-to-face, two interviews were audio-recorded over the phone, and one interview was carried out face-to-face with note taking and no audio recording. Of the 25 parents interviewed, 21 were mothers, four were fathers, 16 were from West Yorkshire and nine from Greater Manchester. The parents ranged in age from 33 to 49 years (mean 43 yrs, median 44 yrs). Two parent's children were in primary school and 23 were in secondary school. Thirteen interviewees were 'White-British', six 'Asian British – Indian' and three 'Asian British – Pakistani'. Eleven parents interviewed were Muslim (adherent of Islam), nine were Christian, and five stated they had no religion.

2.2. Data analysis

Interview transcripts were coded with a thematic analysis technique [11] using the qualitative analysis software QSR International's NVivo 11. Two investigators (PP & TC) coded the transcripts, when developing the coding framework, to develop an initial codebook with consensus around the key themes of the analysis.

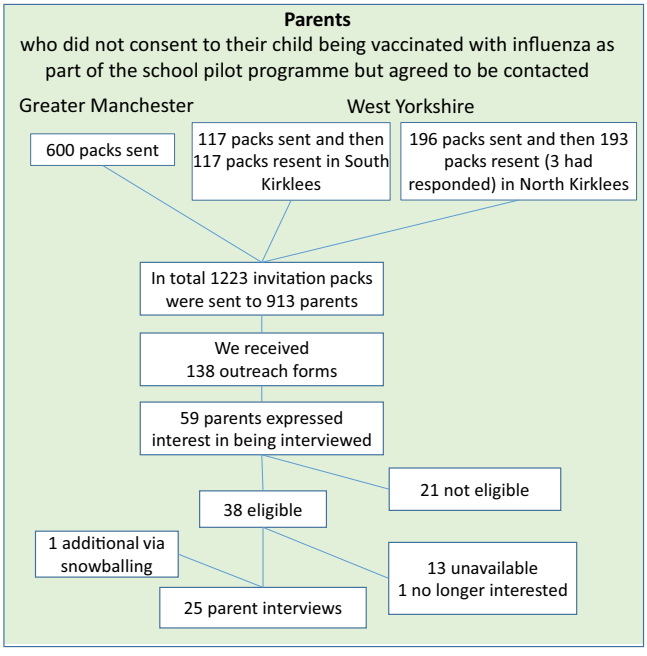

Fig. 1. Flow chart of study participants.

2.3. Ethics

This study was reviewed and approved by the LSHTM Observational Research Ethics Committee (LSHTM Ethics ref 8710). The study investigators obtained informed consent from participants before each interview. Anonymity of participants has been maintained when presenting the study findings.

3. Results

3.1. Response forms

We received 138 response forms (15.1%). In response to the question on the form "We would be grateful if you could tell us why you decided not to vaccinate your child as part of the school immunisation programme", 47 parents and guardians (34%) indicated that either their child was already vaccinated (n = 13), they wanted to vaccinate their child (n = 6), or they could not vaccinate their child due to medical reasons (n = 28); 83 parents and guardians (60%) responded that their child was not vaccinated due to a lack of perceived need for the vaccine or due to safety and other concerns discussed below; and eight parents and guardians (6%) did not give a reason (Fig. 2).

The most frequently cited concerns were about the presence of porcine gelatine (40), side effects (13), and effectiveness of the vaccine (12) (NB. parents could list more than one concern). Other concerns included the presence of chemicals in the vaccine, concerns about the vaccination programme being a pilot or about it being a new vaccine, concerns over the perception that their children were being used to protect others, suspicions about business motives, mistrust of the health service, concerns about vaccine delivery, concerns about testing drugs on children, and concerns about there being too many vaccines.

3.2. Interview findings

3.2.1. No perceived need for the vaccine

Twenty-two parents interviewed expressed the view that their child did not need the influenza vaccine. These parents viewed their child as healthy, with a strong immune system, or at low risk of catching influenza, thought that it was better to build their immune system with disease, or thought that if their child were to get influenza that their child would be at low risk of complications: "He is healthy; he's very active; he's not ill very often... I could understand the reason why you'd have it done if he was in any way unwell, or had any health issues" (P4); "How do we build up his own immune system against things, and how do we fight things if we're always vaccinating?" (P9).

3.2.2. Concerns about vaccine effectiveness and safety

Eleven of the parents who were interviewed voiced concerns about the effectiveness of the vaccine: "The people I'm aware of who have had vaccinations have then developed flu, and in one case, quite a serious case of it. So, I'm not entirely convinced of its effectiveness" (P7); "Several children at my daughter's school, after four weeks of having the vaccination were off school with flu. My [unvaccinated] daughter's not been off school with flu yet" (P14).

Ten parents were concerned about side effects from the vaccine. One parent's older daughter had a high fever and vomiting following vaccination a previous year. Since then, the mother has not had either of her daughters vaccinated against influenza due to concerns about side effects. This parent also had concerns about the influenza vaccine being a nasal spray: "I read about... the spray one [vaccine] being a little tad more dangerous because it's so near to the brain" (P15). Another parent was influenced by her mother that was concerned about side effects: "My mum always tells me, 'I hate the flu vaccine because it makes me poorly afterwards.' I think my kids are fine, I'm going to give them the vaccine and they're going to get poorly" (P23).

3.2.3. Concerns about vaccine constituents: porcine

Eleven parents interviewed declined the vaccine for religious reasons due to the presence of porcine gelatine in the vaccine: "In Islam we're forbidden to have any, we're forbidden to eat pig meat and have anything derived from pig" (P2); "It had gelatine, and we know that we don't consume gelatine because it's derived from a pig, so I just put no" (P6). Two parents specifically stated that although there may have been transformation of the porcine during the vaccine production process it was still not permissible to eat, inject or inhale it: "No matter how much it changes, the source remains the same" (P3).

For the parents that declined the vaccine for faith reasons, religion also influenced other health decisions, and they actively identify porcine content in other products, and seek alternative products or ways to remove the porcine component, such as emptying contents of medication from gelatine capsules: "Our GPs know... they will offer it [an alternative medicine without porcine

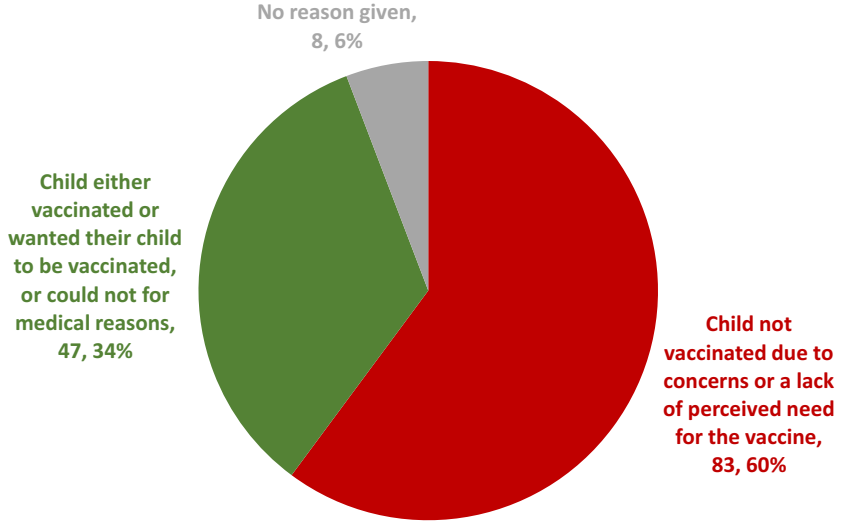

Fig. 2. Reasons given by parents and guardians, on the outreach form, for not vaccinating their child.

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gelatine] to us... The pharmacist will say you can open your capsule... and use the powder" (P6).

Most of the parents who did not vaccinate their child for faith reasons due to the presence of porcine, stated they would vaccinate their child if there was the option of an alternative vaccine that did not contain porcine: "If you can't have it due to your religion, there should be an alternative, I think, even if it's not as effective" (P6).

3.2.4. Factors that would help address vaccine hesitancy

Parents stated that they would be more likely to accept influenza immunisation for their child in the future if there was an epidemic among children, or if family or friends became at risk, and if they were given more information: "If you said to me that he was at high risk and it was life-threatening then I would do it" (P13). Several participants requested receiving information about how the school flu pilots went: "I'd like to know what went on in the pilot scheme, how effective it was... if they said, well, normally 60% of children get flu and this year it's only 10%, I might look at it and think well actually maybe I should change my mind" (P12); "Has the vaccination really made a difference because that will influence my next year's decision on whether anything is worth having" (P10). For parents who did not vaccinate their child for faith reasons, there was some positivity but also some uncertainty as to whether reassurance from religious leaders would influence parent's decision to vaccinate their child.

4. Discussion

This study aimed to examine parental concerns about the influenza vaccine and explore how these concerns influenced their decision not to vaccinate their child during the 2014/15 childhood influenza immunisation pilots in West Yorkshire and Greater Manchester.

The study highlighted a range of parental concerns and a lack of perceived need for the influenza vaccine for children. Parents stated they would consider vaccinating their child in future years if they received feedback as to how the childhood vaccination programme had reduced the amount of influenza. Other parents wished to be told why their child's age group was being targeted. A previous study has shown that one of the reasons for not being immunised was also a lack of information [12]. However, it is worth noting the difficulties and complexities of addressing vaccine hesitancy and of directly correcting misperceptions [13].

The main reasons given for the view that influenza vaccine was not needed for their children was that parents felt that their child was healthy, with a strong immune system, at low risk of catching influenza, that it is better to build their immune system with disease, and the view that if their child were to get influenza that their child would be at low risk of complications. These views have been reported in past studies on vaccine hesitancy of influenza vaccine and other childhood vaccines [4,5,14,15]. Reported concerns about vaccine effectiveness and concerns about side effects have also been identified in previous vaccine hesitancy studies [4,14–18].

Studies investigating the issue of non-vaccination due to religious beliefs about porcine-containing products, as identified in our research, have been conducted, as well as efforts to find ways to address hesitancy. In 2001, a group of Islamic scholars were convened by WHO to discuss and find ways to address the issue of porcine in vaccines and medicinal products and a statement was released confirming that: "The scholars determined that the transformation of pork products into gelatin alters them sufficiently to make it permissible for observant Muslims to receive vaccines containing pork gelatin and to take medicine packaged in gelatin capsules" [19]. Despite this statement, local concerns and hesitation continued, such as in India and Pakistan, where concerns were voiced about the oral polio vaccine containing porcine gelatine [20]. A more recent global study exploring animal derived medicinal products and religious patients' beliefs found that Muslims did not accept the use of porcine derived drugs, dressings or implants, unless in an emergency with no alternatives available [21]. Another study, examining the perceptions of Muslim patients and the influence of Muslim faith on medicine concordance, found that 58% of survey respondents would stop taking a medicine if they found out that it was haram (forbidden) [22]. In our study in England, global statements, such as the one issued by WHO, reflecting the views of multiple Islamic scholars, did not change the minds of some who deferred to their local religious leader over global statements.

Study limitations include the possibility of sample bias, since those that took part in our study might have different views to that of the general population. Muslim parents were overrepresented. Also, for example, parents who participated in our study might be more vocal or have a stronger viewpoint than others who did not return the consent form, agree to be contacted or illustrate interest in participating in our study.

Although our findings are not generalizable and cannot be extrapolated to be representative of all parents who did not accept the influenza vaccine for their child in West Yorkshire and Greater Manchester, this qualitative research increases awareness of different perspectives and views and reasons for non-vaccination, and has informed future delivery and communication strategies in England. For example, the childhood influenza information leaflet was adapted and now includes an additional section on children who were vaccinated last year needing a vaccine this year (to raise awareness that the vaccination is annual), and the word 'pigs' is only referred to once in the new leaflet instead of twice (parent feedback was that the word 'pig' could put people off).

5. Conclusions

The JCVI recommends a higher than 60% coverage of influenza vaccine in children in order to significantly decrease the burden of influenza in England. To achieve this target, it is important to understand the reasons why parents are choosing not to vaccinate their children, and to tailor the communication and immunisation programme to address this vaccine hesitancy. Thirty-four percent of parents, who did not consent to their child being vaccinated as part of the school programme, had actually vaccinated their child elsewhere, intended to have their child vaccinated, or had not vaccinated them due to medical reasons (whether valid or perceived). This finding illustrates the importance of including additional questions or data sources when investigating under-vaccination.

This study highlights the nature and range of parental concerns about the influenza immunisation school pilot programme in West Yorkshire and Greater Manchester, England, during the 2014/15 school pilots. The majority of parents interviewed illustrated a lack of perceived need for the influenza vaccine for children. Other issues expressed by parents about the vaccine were concerns about the presence of porcine gelatine, concerns about the vaccine's effectiveness and concerns about vaccine side effects. This study is a reminder of the importance of asking parents their reasons for non-vaccination to identify all reasons, including perhaps unexpected ones.

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Contributorship

PP, TC and HL created the study documents (interview topic guides, study information sheets, expression of interest form and consent form). PP and TC conducted the research interviews and coded the interview transcripts. PP drafted the initial manuscript. All authors contributed to multiple reviews and feedback on the manuscript and gave final approval before submission.

Disclosures

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Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.vaccine.2017.08.016.

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