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## 'It's not for the children's sake': A qualitative inquiry into the barriers and facilitators underlying parents' decision-making for vaccinating children against influenza in Denmark

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### ABSTRACT

Recently, the Danish Health Authority began recommending vaccinating children aged 2–6 years against seasonal influenza, underscoring the pivotal role of children in its transmission dynamics within the wider population and the need to protect vulnerable population groups after COVID-19. Under a third followed the recommendation. For the routine Danish childhood vaccine program coverage is usually well above 90%.

Through a qualitative in-depth study with 28 key informants during the 2022/2023 influenza season, we investigated the barriers and facilitators of parents' decision-making for vaccinating their children against influenza. We found that parents' decision-making was influenced by a range of factors that present barriers or facilitators at the individual or collective levels, depending on personal antecedents and family situations. We also gained insights on how COVID-19 mass vaccination shaped parents' attitudes and awareness toward influenza vaccination, explaining why many parents who fully complied with the COVID-19 recommendations elected to opt out of influenza.

The implications of these findings extend beyond the concrete context of parent's decision-making regarding influenza vaccination, contributing to our understanding of vaccine confidence in at least two ways. First, the limited public controversy regarding childhood influenza vaccination allows for a perspective onto low vaccine uptake that does not resort to the usual framing of a well-defined "crisis". Second, the interaction between COVID-19 vaccination and the childhood influenza vaccination reveals how the massive pressure on parents to vaccinate themselves and their children against COVID-19 contributed to an erosion of vaccine confidence in general.

### 1. Introduction

In Denmark, seasonal influenza vaccination has traditionally been recommended to everyone aged 65 years and above, as well as for persons with certain chronic diseases, pregnant women, and staff in the healthcare and elderly care sector (Statens Serum Institut, 2022a). However, in 2021, the Danish Health Authority started recommending influenza vaccination for children aged 2–6 years (Danish Health Authority, 2022a), noting that while children are at low risk of influenza complications, they are drivers of influenza infection in broader society.

This was particularly important since authorities anticipated a more severe influenza season (because the COVID-19 pandemic had led to lower-than-usual incidence of influenza in previous years) and wished to reduce the pressure on hospitals (Danish Health Authority, 2021).

Influenza vaccination coverage was low compared with routine childhood vaccines. Only 29.3% of the target group got vaccinated during 2021/2022 (Statens Serum Institut, 2022b), whereas routine childhood vaccines usually reach coverages of more than 90% (Statens Serum Institut, 2023b). Likewise, for the 2022/23 influenza season, it was reasonable to expect a less-than-perfect uptake of this

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recommendation in light of the confluence of two recent developments. First, there is an increased focus on children's infection risks among parents (Fersch et al., 2022). Second, and concomitantly, there is increasing public focus on the benefits and risks of vaccines for all age groups concerning COVID-19 vaccination programs (Schneider-Kamp, 2022) and in particular for children in the light of a perceived misbalance of risks and benefits (Szilagyi et al., 2021). Notably, the Danish Health Authority had initially recommended COVID-19 vaccines to children aged 5–11 years in November 2021 (Danish Health Authority, n.d.), and there was a strong push to vaccinate from authorities, schools, and the public, referring to the need for children to vaccinate for the reopening of society. However, coverage only reached approximately 45% (Statens Serum Institut, 2022c). By June 2022, the Danish Health Authority stated that it had not been necessary to COVID-19-vaccinate 5-11-year-old children (TV2 News, 2022, p. 2). This led to strong reactions from some parents who had felt coerced to vaccinate their children despite not perceiving their kids at high risk for severe COVID-19 (Lynggaard, 2022). Some of these parents have expressed that the incident has decreased their trust in all recommendations from health authorities.

### 1.1. Vaccine hesitancy and the dilemma of public health

The term vaccine hesitancy has emerged to understand non-compliance with public health advice (Larson et al., 2014) and is often framed as an indecision to get vaccinated, positioned between vaccine refusal and vaccine acceptance (Dubé et al., 2013). The WHO (MacDonald, 2015) conceptualizes vaccine hesitancy as grounded in 3Cs: complacency (lack of personal incentives), convenience (burden of getting vaccinated), and confidence (lack of trust in vaccines regarding safety, effectiveness, administering providers, and policymakers). Betsch et al. (2018) extended the 3C to a 5C model, including calculation (extensive information search) and collective responsibility (willingness to protect others).

Direct and indirect benefits and the ensuing collective responsibility have been debated heavily. Already Colgrove (2006) argues that “the balance between the rights of the individual and the claims of the collective” arguably is “one of the most fundamental and enduring tensions in the enterprise of public health”, with vaccination “unlike other procedures” being “performed on healthy people”. Forster et al.'s (2016) found that “discourses of the social responsibility to contribute to herd immunity” compel individuals to consider the protection of others as secondary only to protecting recipients from disease. Scholars have employed the dilemmatic tension between direct and indirect benefits to justify universal vaccination as a public good and non-compliance as free-loading on the risks of others (Giubilini, 2019; Navin, 2015).

Recently, the impact of COVID-19 mass vaccination programs on this balance has surfaced in public and academic debates. Kadambari and Vanderslott (2021) discuss whether lower vaccination rates among ethnic minorities in the UK stemmed from the UK program, reflected longstanding problems between these communities and authorities, or were the result of some as-of-yet unknown complex mechanism.

### 1.2. Parents as vaccine decision-makers

Parents perceive themselves as health risk managers of their children (Stjerna et al., 2017) and, in this capacity, routinely make decisions on behalf of their children. With vaccination, this decision-making process has been shown to undergo three stages (Brunson, 2013): awareness (of benefits and risks of vaccinating children), assessment (based on social norms, acquaintances, and/or information), and decision (to vaccinate children or not). Quadri-Sheriff et al. (2012) review 29 studies, finding vaccine safety and direct vaccine benefits such as the child's protection from disease are the primary facilitators for parents to decide to vaccinate their children, with indirect benefits such as the protection of others comprising important secondary facilitators.

In-depth studies of barriers and facilitators of vaccination programs targeting children such as HPV have resulted in a growing nuancing of the debate from ascribing problems mainly to parental attitudes (Javanbakht et al., 2012) to a broadened socio-ecological approach focusing also on social norms, administering providers, and policymakers and facilitating attention to vulnerable groups (Batista Ferrer et al., 2016). Dutta et al. (2021) highlighted the importance of community engagement in eliminating barriers. In a recent ‘meta-analytical’ overview of polio vaccination, Ezezika et al. (2022) identified fear, community trust, infrastructure, beliefs about the intervention, influential opinions, intervention design, and geo-politics as barriers and facilitators.

### 1.3. Influenza vaccination for children

The indirect benefits of established childhood vaccination programs are well documented (Anderson et al., 2018). Universal childhood influenza vaccination likely also provides indirect benefits for the general population (Jordan et al., 2006). Bhat-Schelbert et al. (2012) identified fear (of adverse effects), misinformation (confounding flu and cold), and mistrust (routinely exacerbated by the media) together with a perceived lack of necessity and low convenience as barriers, while the protection of at-risk family members, recommendations by trusted acquaintances, high-quality information on influenza disease burden and vaccine safety and effectiveness, and school vaccination acted as facilitators.

Kang et al. (2017) investigated the school setting further, finding a facilitating role for beliefs that vaccination is beneficial, important, and a social norm, with the presentation of adverse effects and contraindications, concerns for sterility, distrust in schools, and privacy concerns acting as barriers. Price et al. (2022) investigated parents' perceptions of barriers and facilitators of vaccinating their children against influenza in 2019/20, i.e., just before the COVID-19 pandemic reached Europe, finding parents rather confident in vaccine safety and considering convenient access and civic responsibility to protect others as the main barriers and facilitators.

### 1.4. Aim of the study

This study aims to investigate the barriers and facilitators of parents' decision-making for vaccinating their children against influenza in a post-COVID-19 context. To this end, we collected qualitative data in Denmark in 2022/23. We combine the broadened socio-ecological approach with the insight that barriers and facilitators are logically, albeit inversely, related, relying on an inductive analysis to stay open to novel factors.

The resulting insights into decision-making processes provide a basis for understanding parents' general vaccine hesitancy post-COVID-19 and explaining the further drop in the Danish vaccination rate to 21.5% of children aged 2–6 years at the end of the 2022/23 influenza season.

## 2. Material and methods

### 2.1. Context

The Danish welfare state has a tax-financed public healthcare system (Christiansen & Markkola, 2006), built around the right to virtually free medical services. In 2018 (i.e., before the COVID-19 pandemic) public opinion regarding vaccine risks and benefits was evenly split between positive and neutral (Figueiredo et al., 2020). Regarding COVID-19 vaccination, polls revealed that approximately seven out of 10 adults were in favor of getting vaccinated while only one out of 10 were against vaccination (European Commission, 2021). COVID-19 vaccination coverage in Denmark reached a global peak, with more than 95% of those aged above 50 years being vaccinated with two doses of vaccines (Statens Serum Institut, 2023a).

Until the COVID-19 pandemic, the Danish childhood vaccination program consisted of three doses of diphtheria, tetanus, acellular pertussis, polio, and Haemophilus influenzae type b vaccine plus a pneumococcal vaccine at three, five, and 12 months of age, followed by MMR at 15 months and four years of age, a diphtheria-tetanus-pertussis-polio revaccination at five years of age and two doses of Human Papillomavirus (HPV) vaccine at 12 years of age (Statens Serum Institut, 2019a). The Danish criteria for introducing new vaccines include a severity criterion, stating that the disease must be serious for the individual child (Danish Health Authority, 2022b). Therefore, vaccines against milder diseases such as rotavirus vaccines have not been introduced.

In the Danish context, vaccination programs are collaborative efforts of various institutional stakeholders: Statens Serum Institut (SSI), operating under the Danish Ministry of Health; the Danish Ministry of Health itself; the Danish Health Authority (Sundhedsstyrelsen); general practitioners (GPs); and, in the case of some vaccines, regional vaccination centers. SSI approves, assesses, and endorses vaccines, whereas the Danish Health Authority is responsible for promoting vaccination programs. The practical implementation of childhood vaccination programs is shouldered by GPs. Parents are responsible for booking an appointment with the GP. In recent years, systems for inviting and reminding parents via a public electronic post system have been used (Statens Serum Institut, 2019b).

## 2.2. Study design and techniques

We collected qualitative data on the vaccination-related perceptions, attitudes, and strategies of parents of children aged 2–6 years in Denmark during the 2022/23 influenza season. We conducted 25 in-depth interviews in the period from December 2022 to March 2023. The interviews had a length of 48 min on average, with the shortest interview lasting 34 min and the longest 88 min.

The semi-structured interviews relied on a thematic interview guide initially developed based on insights from previous studies and comprising 27 questions (4 closed, 23 open-ended) distributed over five themes, with the first covering demographic information on the family such as age, marital status, occupational and educational backgrounds, family structure, and age, gender, and school form of children. The four main themes covered informants' perceptions of the influenza vaccine, their decision-making regarding this vaccine, their stance on vaccines in general, and the impact of the COVID-19 pandemic on this stance. The guide was updated and augmented continuously during data collection, nuancing the questions without adding further.

## 2.3. Sampling and recruitment

Informants for the interviews were recruited through purposive sampling based on the snowball method (Bernard, 2011), with the initial pool of informants predominantly recruited through local nursery schools and preschools to gain access to parents of children aged 2–6 years. We considered at most two referrals per informant. To be eligible, informants had to be parents of at least one child aged 2–6 years during the 2022/23 influenza season and had to be aware (Brunson, 2013) of the offer to vaccinate their children against influenza. Furthermore, informants had to be Danish citizens and/or long-term residents to ensure exposure to the Danish childhood vaccination programs.

The recruited sample consists of 28 key informants (23 mothers, 5 fathers), with whom a total of 25 interviews were performed, as three of the interviews were conducted in the presence of both the mother and the father. The physical locations for the interviews were determined at the convenience of the informants and included the informants' homes (13), their workplaces (and), and public venues (2). For interviews outside the informants' homes, we secured private meeting facilities. The first interview was performed in December 2022, followed by 8 interviews in January, 7 in February, and 9 in March 2023. After 17

interviews, the additional data collected supported rather than extended the existing categorizations and themes. This is well-aligned with expectations from the literature for theoretical saturation and high categorization confidence (Rowlands et al., 2016). The sample with an overview of the main characteristics of the informants is presented in Table 1.

## 2.4. Ethical considerations

All informants consented to the publication of diligently translated and deidentified direct quotes from the interview transcriptions. We applied best practices for informant anonymity to ensure the deidentification of the quotes (Saunders, 1995).

The data collection and processing were reported to the Danish Data Protection Agency through the research institution of the authors. Ethical clearing by the Danish National Committee on Health Research Ethics was not required for this type of purely observational study, as we neither performed interventions nor collected biological material from the participants.

## 2.5. Analysis

We analyzed the data through a three-stage process. First, the data were coded inductively, leading to categories of agency, risk, and trust. We relied on manual semantic coding in an iterative process between the authors, refining and highlighting codes during each iteration. Second, we connected and cross-analyzed the codes across the three categories, uncovering three themes of mechanisms underlying vaccination decision-making. Third, we analyzed the personal, environmental, and contextual factors that moderate these mechanisms into barriers and facilitators at both the individual and collective levels.

## 3. Results

In this section we present three themes from our analysis, each building upon the others. First, parents understood that influenza vaccination – unlike how they perceived previous vaccines – was designed to protect older or otherwise vulnerable populations, not necessarily the children themselves. Second, this “new” rationale for vaccination of children to protect other vulnerable groups was not the only element that was seen as novel. The influenza vaccine was also seen as a novel vaccine compared with “classical” vaccines. For some parents, the novelty of the influenza vaccine appeared to reduce their vaccine confidence. Third, parents discussed their decisions regarding the influenza vaccine in relation to the COVID-19 vaccination program. We see here that issues raised in the first two themes became refracted through their experiences of the COVID-19 pandemic.

### 3.1. ‘It’s not for the children’s sake’

In the Danish influenza vaccination program, parents were explicitly confronted with the idea that they should vaccinate their children for the good of the wider society – specifically the older generations (Danish Health Authority, 2021). This caused skepticism among those who actively chose not to vaccinate their children:

Why should we start [immunizing against influenza] now, and for whose sake is it? Is it for our children or is it for others? Is it for society or who is it really for? [...] They're small kids and they're not supposed to take social responsibility. [Clara]

A few informants felt that the arguments about ‘communal spirit’ had become a ‘cliché’ and that it might be used to justify the implementation of further vaccine programs for children based on ‘economic’ reasons, which the Danish authorities indeed already allude to (Danish Health Authority, 2021).

While some like Christina accept that regular childhood vaccination

**Table 1**  
Overview of key informants.

Informant pseudonym	Age	Occupation	Parental role(s)	#children 2–6 years	Age of children in years	Genders of children	Influenza vaccination status	Family structure/#children
Clara	33	Student	Mother	2	6/3	F/F	None	Nuclear/2
Signe	31	Therapist	Mother	1	3	M	None	Nuclear/2
Julie	32	Medical industry, on leave	Mother	1	4	F	Full	Nuclear/2
Peter	40	Corporate executive	Father	2	6/2	M/M	None	Nuclear/3
Linda	39	Animal health services	Mother	3	2/4/6	M/M/M	None	Nuclear/3
Isabella	27	Social assistance recipient	Mother	1	4	F	Full	Single parent/1
Karen	34	Healthcare researcher	Mother	2	5/2	F/M	Full	Nuclear/2
Trine/Rasmus	26/ 31	Laboratorian and tradesperson	Mother/ Father	1	3	F	Full	Nuclear/1
Natasha	33	Health consultant	Mother	2	5/2	M/M	None	Nuclear/2
Josefine	30	Engineer	Mother	2	4/2	F/M	Full	Nuclear/2
Emma/Thorbjørn	33/ 32	Student and unemployed	Mother/ Father	1	4	F	Full	Blended/2
Katja	42	Job seeking	Mother	1	4	M	Full	Same sex/2
Hanne	43	Administrative worker	Mother	1	5	M	Full	Nuclear/1
Sofie	42	Teacher	Mother	2	6/2	F/F	Full	Nuclear/2
Simone	30	Student	Mother	1	3	F	Full	Nuclear/2
Caroline	29	Maternity leave	Mother	1	2	M	Full	Nuclear/2
Anja	34	Corporate consultant	Mother	1	5	M	Full	Nuclear/2
Mads	31	Healthcare researcher	Father	1	3	F	Partial	Nuclear/1
Maja & Jonathan	34/ 42	Healthcare professionals	Mother/ Father	1	2	F	Full	Blended/4
Lucy	41	Student	Mother	2	6/4	M/M	None	Nuclear/2
Christina	32	Therapist	Mother	1	4	M	None	Nuclear/2
Lærke	30	Student	Mother	1	3	F	Full	Nuclear/1
Lene	36	Job seeking	Mother	1	3	F	Full	Nuclear/1
Charlotte	32	Therapist	Mother	1	4	M	None	Nuclear/2
Line	37	Research assistant	Mother	1	3	F	Partial	Nuclear/1

programs also contain societal elements, they did not feel the case was strong enough with influenza:

The children's vaccination program, that is not for my son's sake that he is being vaccinated against measles. Well, I don't think so. [...] There's just a small group for whom it's gonna be a danger. And that is the overall reason why my child is being vaccinated. So, I'm all for that argument [...] But maybe not with influenza.

For those who did vaccinate their children, the idea of protecting wider society was encouraging. The act of assuming collective responsibility for the health system, particularly to prevent transmission to the elderly, was perceived as a moral duty that required communal participation. Collective protection was a particular selling point for those who knew people who might be vulnerable to influenza.

Parents' focus on their family circumstances and closest network was a significant facilitator. They wanted to protect both their older relatives and babies. Some were candid like Maja and Anja and suggested that they did this to protect their own families and did not consider the wider societal perspective. Such an individualized perspective also presented itself as a barrier to vaccination. For example, being aware of the health authorities' goal to protect the older populations, Signe consulted her parents, parents-in-law, and grandparents regarding whether they would prefer her son to be vaccinated before visiting them:

They [older relatives] weren't really that afraid of being in contact with our son. [...] As they thought it was up to us, we decided that he wouldn't be vaccinated.

Consulting with the older relatives was not a universal barrier, though, since for Charlotte, the opposite was true:

We have not spoken openly in our family about what we have chosen in terms of vaccines. Because we don't want it to be a discussion.

To summarize, we found that aspects of collective protection, articulated through an appeal to "communal spirit", presented a possible facilitator, while this also drew skepticism. They seemed to work predominantly in situations where members of the closest social network

such as older relatives were perceived to be at risk.

### 3.2. Novelty versus familiarity with the classic program

The stress on the "communal spirit" of influenza vaccination was not the only issue that parents felt was new and potentially disturbing. Hesitant parents noted that its novelty relative to the more-established childhood vaccination schedule deepened their concerns. Signe called this program 'the classic one [...] like polio and so on', and, for brevity, so does the remainder of this article.

Whether or not they chose to vaccinate, many informants articulated their experiences with the classic program as both children and parents:

It's always been like that. That's what I grew up with. [Clara]

We remember getting it ourselves. [Peter]

They get a certain value because they're permanent now. [Mads]

These statements attest to the trust associated with the classic program. Despite the trust in the program's stability, the informants understood that the program was not a static entity. The introduction of HPV vaccines in 2009, for example, was something many parents remembered happening as a distinct change from their own childhoods. In 2015, after a period of massive media coverage questioning the safety of the HPV vaccination, a rapid decline in HPV vaccination coverage was observed. Health authorities introduced an information campaign, and a year after the launch of the campaign, the number of positive comments had increased from less than 50% to approximately 75% (Pedersen et al., 2020). Recent research has demonstrated the impact of such information campaigns on parental decision-making in the contexts of COVID-19 and influenza vaccination in France (Berthélémy et al., 2023).

While the awareness of the potential benefits of HPV vaccination had thus been increasing, this was not (yet) so regarding influenza:

Why do they have to have it all of a sudden now? [Clara]

We don't really think that's necessary. [Natasha]



The introduction of the influenza vaccine raised the question of what the childhood vaccination program should and should not include, or in the words of Signe: 'Where is the limit?'. However, for vaccination-confident parents, the fact that this new vaccine was recommended by the same authorities who recommend the classic program spoke of its importance:

I trust if that's what the health authorities have chosen for the children, then that's probably what they should have. [Simone]

However, novelty in the program was not in itself a problem for other informants. The novel method of delivery via a nasal spray was welcomed by some parents, such as Hanna who considered it 'a lot more gentle' than an injection. However, for other informants such as Peter, 'even though' the spray was more appealing than an injection, it was not a sufficient argument to vaccinate their children. For Sofie, the spray was challenging because she now had to explain an entirely different procedure to her child. A few others noted that the novel form of delivery made them question the safety of the vaccine.

To summarize, we found that while novelty in the program and the delivery method presented a potential barrier to vaccination for some informants, it was moderated by the degree to which a new vaccine was perceived to be related to familiar established vaccination programs.

### 3.3. COVID-19 as the elephant in the room

Temporally situated in direct prolongation of the population-wide COVID-19 vaccination programs of 2021 and 2022, for several informants, their experiences with COVID-19 vaccination influenced their decision-making regarding influenza vaccination to a certain level.

For some, experiences with COVID-19 undermined the "communal spirit" arguments for influenza vaccination. For example, Charlotte considered it 'reprehensible' for the health authorities to ask children to be vaccinated against COVID-19 because they were least at risk, and now felt the same about influenza. Peter likewise did not feel that vaccinating kids was morally right:

I was really furious that one would ask me to vaccinate my child [against COVID-19] to save other people's lives but [in the process] I had to risk my child somehow.

The Danish Health Authority's admission that, in hindsight, it was probably not necessary to vaccinate children made informants like Peter evaluate that part of the COVID-19 vaccination program as 'completely hopeless'.

Thorbjørn, who did vaccinate his child, reflected on the effects of this admission:

I think it's fair enough that in retrospect you go out and say that the kids maybe didn't need to get it. I think it's a nice announcement, it's also nice to hear they're honest. But I think it's also made people wonder regarding the influenza vaccine: they were wrong then, so maybe they're wrong again.

Beyond this loss of trust regarding the vaccination of children, some informants also refer to the impact of more general experiences with COVID-19 vaccination. While Isabella did vaccinate her children, she acknowledged that 'you felt like some sort of guinea pig', while Josefine mentioned the AstraZeneca controversy (MacIntyre et al., 2021), showing that even vaccine-confident parents had been confronted with the issue of novelty and had been forced to actively consider this before vaccinating their children. Christina did not vaccinate her child against influenza, despite intending to, because COVID-19 made her reassess which vaccines were important and she 'began to feel a bit like now the infection maybe should just be able to run'.

For others, experiences with COVID-19 vaccination had made them explicitly engage with the ethics and efficacy of vaccination in a way

they had not before. Clara, for example, had doubts about vaccinating herself against COVID-19, which had made her realize that she had 'probably a little doubt in general' about vaccination:

We had to decide for the first time [with the COVID-19 vaccines] whether [my daughter] should have anything beyond what you get in the child vaccination program.

Similarly, Linda had been hesitant because of the novelty of the COVID-19 vaccine. This was a risk she was willing to take for herself but not necessarily for her children:

I thought it was somewhat of a big decision to make on behalf of my children. They are vaccinated with all the child vaccines. But it [COVID-19 vaccine] was a little new, and yes, so, we thought it wasn't what we thought they should have.

Those who chose to vaccinate their children against influenza acknowledged that there had been worries regarding COVID-19, and, in Katja's words, they could 'understand if others felt it was not for them, and that it was important to wait and see exactly how safe and effective the vaccines would become'.

While some informants expressed support for the classic vaccination program, they acknowledged that it was difficult to decide whether to vaccinate their children against influenza. A few others felt that the influenza vaccine was probably more appropriate for children than the COVID-19 vaccine, since the vaccine had been used for years and, therefore, had a longer track record.

On the other hand, among some parents, experiences with COVID-19 vaccination hardened their support for vaccines. Awareness of the effects of vaccine-preventable diseases in certain populations made parents consider the benefits of influenza vaccination for their children:

Corona has made us more aware that children are also badly hit when they are hit. [Hanne].

Also, for instance, Anja's experiences of seeing the staff of her child's kindergarten being badly affected by coronavirus made the communal arguments for influenza vaccination more compelling.

To summarize, we found that vaccination decisions were also refracted through the lens of COVID-19. The effects were dual, with COVID-19 vaccination experience acting as both a barrier and a facilitator depending on contextual, environmental, and personal factors.

### 3.4. Barriers and facilitators of vaccination decision-making

For each of the three themes presented above, we found both individual and collective aspects. Notably, our data demonstrated that each of these aspects might act as either a barrier or a facilitator of influenza vaccination, depending on contextual, environmental, and personal factors.

Collective protection of the general population presented a barrier when approached from a self-concerned individualized perspective, but it was a facilitator for informants with an altruistic orientation. This altruistic motivation can be linked to an intersection of two larger contemplative processes that concern the social norm and broader attitudes to health and deterrence (Larson et al., 2014; MacDonald, 2015).

Collective protection of the closest network was moderated by the degree to which family members and closest friends were perceived to be at risk. This perception appeared to prioritize the potential benefits to the entire family rather than individual preferences. Such perceptions and judgments of risk and benefits can be placed in parallel to the social norms expected from the decision-makers based on the their roles and positions within the larger family (Forster et al., 2016).

The relative novelty of the influenza vaccine and the ensuing lack of a population-level track record regarding its effectiveness and safety were perceived as a barrier by some. However, it became a facilitator for those who leaned on the fact that the influenza vaccine was introduced by the same authorities responsible for the classic childhood vaccination

program. These barriers and facilitators may act simultaneously as disparate factors and jointly in the decision-making process. The issue of novelty as a disparate factor directly speaks to a lack of confidence in the vaccine and the administering providers (MacDonald, 2015). However, when combined with the recall of positive personal experiences with the classic program, this seems to have increased public trust (Larson et al., 2014) and increased their willingness to accept influenza vaccines. At the individual level, the novelty of the intranasal delivery method presented a barrier for some informants but was on the other hand perceived as gentler than an injection by others.

The COVID-19 pandemic vaccination program seems to have increased the awareness of, and reflection on, vaccination in general. At the individual level, unsurprisingly, these reflections concerned the balance between personal risks and benefits. At the collective level, we observed a tension between a general awareness of the importance of vaccination for public health and reflective uncertainties regarding the guidelines of health authorities. These uncertainties partly rose since the COVID-19 vaccination program for children is now perceived as not having been as crucial as initially portrayed. Inconsistencies in how messages about COVID-19 vaccination were framed created public uncertainty, reducing faith in previously-trusted health authorities. (Chong & Druckman, 2007).

The interconnectedness and tensions between individual and collective barriers and facilitators are presented in Fig. 1. Framing barriers and facilitators in this way allows for two important observations. First, individual aspects are dominated by considerations of confidence (or the lack thereof) in the safety and effectiveness of the vaccine and administering providers. Second, whether an aspect acts as a barrier or facilitator often depends on the tension between different Cs from the 5C model (Betsch et al., 2018). The tension between self-concerned versus altruistic perspective stems from the tensions between complacency and collective responsibility. The lack of a track record versus association with existing programs stems from calculation versus confidence. Reflective doubt versus perceived importance stems from (the lack of) confidence versus collective responsibility. Finally, vaccines perceived as inessential versus family members at risk stems from complacency versus collective responsibility.

#### 4. Discussion

The coverage with the classic Danish vaccination program is usually well above 90%, and it has remained stable during the last few years. However, despite pressure, coverage with COVID-19 vaccines to

children aged 5–11 years did not exceed 45% – and for the newly recommended influenza vaccine to 2-6-year-old children, coverage is below a third. In their assessment, the Danish Health Authorities speculate whether including influenza vaccination in the childhood immunization program might unintentionally cause parental noncompliance with serious disease vaccination and reduce the credibility of the childhood vaccination program in general (Danish Health Authority, 2021).

We found that the novelty of the influenza vaccine, its positioning as a communal preventive measure, and the general awareness of vaccines post COVID-19 influenced parents’ decision making and their understandings of their relative responsibility towards their children and the wider population. This was ultimately framed through perceptions of the risks and benefits of vaccination.

The dynamics of trust and mistrust in the influenza vaccine are closely tied to trust in the health system overall. A study of childhood vaccination programs for children in Finland has shown that mistrust develops through a cumulating skeptical attitude towards vaccination which then manifests in widespread mistrust after an inciting incident such as introducing mandatory mass vaccination (Nurmi & Jaakola, 2023), leading to skepticism, mistrust, and, ultimately, to a lack of confidence in the administering providers (MacDonald, 2015). Vaccination decisions among our informants were thus not made in a vacuum. Parents’ closest social networks were often mentioned as our informants looked to explain their decisions to the interviewer. Parents also used their past experiences with their children’s health to decide how risky they perceived influenza to be compared with the vaccination itself. These perceptions of benefits and risks acted as determinants of vaccine hesitancy (Larson et al., 2014).

Influenza vaccination, however, reframed some prior assumptions about vaccination, amplified by the specter of the COVID-19 pandemic. In Denmark, when deciding on which vaccines to include in the vaccination program, the “severity principle” usually weighs high (Danish Health Authority, 2021, pp. 3–4). Thus, it is new to vaccinate against diseases (COVID-19, influenza) that are predominantly serious for other groups than those targeted. While the classic program was framed as protecting children individually against “dangerous” diseases (alongside its communal benefits), the advertising material for influenza explicitly framed the vaccine as protecting older and other vulnerable populations through vaccinating children as vectors of influenza transmission. This shift seems to have caused a dissonance in understanding the intention behind the vaccination program, where the protection of one vulnerable group hinged on vaccinating another. Such recursive framing (Chong & Druckman, 2007) of health promotion messages seems to have added

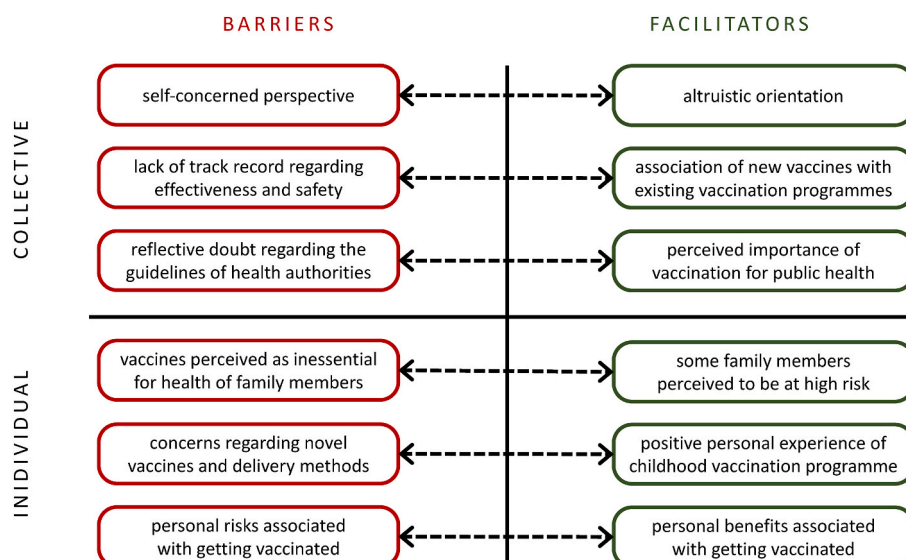


Fig. 1. Barriers and facilitators underlying decision-making for novel vaccination programs.

conflicts rather than persuaded hesitant parents. For many parents, therefore, centering the communal good over the benefits of their child was a relatively new concept. Vaccination (and particularly childhood vaccination) has always contained a public health rationale (Millward, 2019), often with a focus on achieving herd immunity (Fine et al., 2011). However, until COVID-19, only vaccines perceived to protect against severe diseases for the individual child had been part of the classic program.

The aspects of communal protection were first discussed extensively during the COVID-19 vaccination program. In that case, however, parents had already made active decisions about their vaccinations before being forced to think about their children's vaccinations (Schneider-Kamp, 2022). For influenza, vaccine-hesitant parents felt they were being asked to make decisions purely on behalf of their children.

Our findings demonstrate the complexity of the interactions between value orientations on a spectrum from self-concerned to altruistic and the variety of personal family situations impacting risk-benefit evaluations of vaccinating, demonstrating how contextual, individual, and collective influences converge with vaccine-specific issues as per the vaccine hesitancy matrix (MacDonald, 2015). The risks and benefits of vaccination were relative and interpreted via experience and contemporary discourses around vaccination. If the authorities are to increase uptake in future influenza vaccination programs for children, they need to effectively market the communal benefits of vaccination and convince parents that the risks of vaccination are worth taking. This is likely only done with better data on the overall health effects of influenza vaccines for children (Benn et al., 2023).

#### 4.1. Novelty, familiarity, and risk perception

Researchers have shown how a vaccine's novelty can increase hesitancy among parents and even others (Larson et al., 2014). As a vaccine becomes more established, trust increases (Chen & Hibbs, 1998). Hesitant informants cited the novelty of the vaccine as a risk but also noted that its novelty relative to the more established childhood vaccination schedule amplified their concerns.

The delivery of the influenza vaccine as a nasal spray presented yet another novelty. Historically, modified vaccine delivery has been an important tool for increasing uptake. The oral polio vaccine in the 1960s, for example, was considered more palatable for parents and children because of a lack of a needle (Lindner & Blume, 2006), while the rise of multivalent vaccines has been driven by a desire to reduce the number of appointments and therefore the amount of discomfort and inconvenience (Elliman & Bedford, 2003). We found that concerns about the safety of the delivery method presented a minor barrier among a minority of informants.

In conclusion, novelty had the potential to increase hesitancy, but this was relative to attitudes towards other vaccines, particularly those in the classic program. For vaccine-positive parents, it seems new vaccines might gain credibility from their association with the successes of that program.

#### 4.2. The amplifying potential of the COVID-19 pandemic

Our findings demonstrate the degree to which parents' views of the influenza vaccination had been affected by the collective experience of the COVID-19 mass vaccination campaign. For those parents for whom the novelty of influenza was an issue, concerns about the speed at which the COVID-19 vaccine was rolled out were cited, supporting prior research showing similar responses to COVID-19 vaccination in adults (Schneider-Kamp, 2022). For more vaccine-confident parents, it was the success of the COVID-19 vaccination campaign that gave credibility to the influenza vaccine. This reshaped parents' confidence in the vaccination system, although this was in many ways Bayesian, with prior trust in the health authorities, medical science, and the classic program appearing to decide the future probability of accepting influenza

vaccination.

The barriers and facilitators we uncovered largely contribute to the confidence aspect of the 3Cs (MacDonald, 2015) rather than to complacency or convenience. While this might partially be attributable to our eligibility criteria and convenient access to vaccinations and high trust in authorities' recommendations in Denmark (Schneider-Kamp, 2022), the emerging picture appears consistently different from the one painted by pre-COVID-19 studies in socioeconomically and culturally relatively close contexts (Bhat-Schelbert et al., 2012; Kang et al., 2017; Price et al., 2022). An explanation might be that the COVID-19 mass vaccination campaign fostered active and nuanced deliberation regarding the decision-making to vaccinate one's children.

Pre-COVID-19, multiple studies identified indirect vaccine benefits and the implied collective responsibility as facilitators (Thomson et al., 2016). In contrast, post-COVID-19, Chiavenna et al. (2023) show that parents' decision-making for vaccinating their children against COVID-19 is not influenced significantly by stressing the indirect benefits in health communication – in contrast to non-parents, where such communication significantly boosts vaccine confidence. These experimental results align with our observation of COVID-19 as a game changer for vaccine hesitancy and confidence. The picture is further completed by Jacoby et al. (2022) finding that indirect benefits are important for COVID-19 vaccine uptake among adults but do not play a significant role in decision-making for vaccinating children. Together, these and our observations that the protection of others mostly focuses on family members and closest networks imply a first partial answer to Kadambari and Vanderslott's (2021) discussions, indicating a schism between putting yourself at risk and putting your children at risk for the benefit of others.

While this trend emerges from the overall picture, the influence of the COVID-19 mass vaccination program appears highly individual. We found that experiences with COVID-19 vaccination increased skepticism for some while it did not appear to have significantly changed other parents' attitudes toward vaccination. This effect is not strongly tied to whether parents were confident or hesitant. However, it brought the question of vaccination into focus more than it would have been in the past. We observed a shift in decision-making from a reflex based on habit and passive compliance with health authorities' guidelines to an active decision based on reflecting on why children should be vaccinated, whether it is necessary, and what the available choices might be, inherently fostering the individualization through calculation (Betsch et al., 2018) and consequent contemplation.

These findings – concerning reflections on “making the right choice” – should be put into perspective in relation to a larger social process, namely the emergence of the “consumer role” in healthcare. These reflections underline the ambivalent role of choice in consumer empowerment in the healthcare sector (Schneider-Kamp & Askegaard, 2021). The discrepancies between the relative trust in the classic program and the skepticism surrounding the influenza vaccine program for children aged 2–6 years (even among parents who decided to vaccinate), testifies to the increased significance of consumer freedom, with its ensuing pros and cons. Consumers' free choice comes with the price of an increased risk of existential anxiety and tension between feelings of being in and out of control (Thompson et al., 1990). Restrictions of the free choice are in certain cases experienced as a relief from the risk of making the wrong decision. We believe that this increased prevalence of a consumer logic may explain both the instituted trust in the classic program – which was never really “chosen” – and the lack of trust in the program investigated here that comes across as a “market offering” to be chosen or not.

#### 4.3. Limitations and future directions for development

In our study, we strived to recruit a sample of informants that might be considered diverse in the Danish context with its dominating middle class (Kochhar, 2017). The recruited sample, however, overrepresents female informants, likely due to self-selection and/or sampling bias.



Furthermore, considering demographics and job functions as a proxy, our recruited sample overrepresents well-educated and socio-economically advantaged individuals while underrepresenting minorities and vulnerable populations. Future research in other contexts should aim to broaden the perspective and delve into aspects such as race/ethnicity, gender, social class, and their intersections. Further, the collected sample has an overrepresentation of parents who vaccinated their children fully or partially (68%) as compared to the national coverage in 2022/23 (21.9%), likely partially due to the eligibility criteria. Given the inductive approach taken, the relatively equal representation of both groups represents a strength rather than a challenge for the analysis. Independent of this, the eligibility criteria do exclude certain types of barriers such as complacency due to unawareness.

The data collected and the insights obtained from the current and future related studies have the potential to lay the foundation for developing frameworks and tools for assessing vaccine hesitancy among parents, e.g., by employing an approach inspired by the qualitative pre-test interview (Buschle et al., 2022). An integrative conceptualization of health capital as based on access to social, cultural, and economic resources (Schneider-Kamp, 2021) might not only shed further light on sociocultural determinants of vaccine hesitancy (Schneider-Kamp, 2022) such as health literacy and social embeddedness but also allow to unpack intersectionality and health inequalities (Buschle et al., 2022).

## 5. Conclusions

Parents' decision making around influenza vaccination was found to be influenced by a range of factors, none of which can be disentangled into barriers and facilitators without considering personal antecedents and family situations. We uncovered barriers and facilitators underlying decision-making for novel vaccination programs at the individual and collective levels. The COVID-19 pandemic's vaccination program had the effect of shaping parents' attitudes and awareness toward influenza vaccination, but the decision to vaccinate or not was also influenced by the degree of parents' general trust in the health authorities and public health advice.

The low uptake in influenza vaccination for children in Denmark extends our understanding of vaccine confidence in at least two ways. First, public controversy regarding the influenza vaccination of children was limited. This allows for a perspective onto a low(er than desired) vaccine uptake that does not resort to the usual framing of a well-defined "crisis". Second, there seems to be an interaction between the COVID-19 vaccination and the influenza vaccination of children. This interaction appears to be grounded in a crisis of confidence in vaccination due to the massive pressure on parents to vaccinate themselves and their children against COVID-19, suggesting a mechanism that explains why many Danish parents who fully complied with the COVID-19 vaccination recommendations elected to opt out of influenza vaccination for their children.

## CRedit authorship contribution statement

**Anna Schneider-Kamp:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Project administration, Writing – original draft, Writing – review & editing, Supervision, Visualization. **Gareth Millward:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Writing – original draft, Writing – review & editing. **Christine Stabell Benn:** Conceptualization, Formal analysis, Funding acquisition, Supervision, Writing – original draft, Writing – review & editing. **Shriram Venkatraman:** Data curation, Formal analysis, Funding acquisition, Writing – original draft, Writing – review & editing. **Maria Sejthen Reiss:** Methodology, Writing – review & editing, Data curation, Investigation. **Søren Askegaard:** Conceptualization, Formal analysis, Funding acquisition, Supervision, Writing – original draft, Writing – review & editing.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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