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## Understanding barriers to influenza vaccination among parents is important to improve vaccine uptake among children

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### ABSTRACT

The COVID-19 pandemic has significantly altered public perceptions of vaccines, particularly among parents. In high-income countries like the United Kingdom (UK) and Australia, factors such as misinformation, the expedited approval process of COVID-19 vaccines and unique local challenges have contributed to vaccine hesitancy, resulting in uneven uptake across various vaccination programs. Despite efforts like school-based influenza vaccination programs in the UK and free influenza vaccines in Australia, vaccination rates continue to decline. This is especially concerning given the concurrent circulation of COVID-19 and influenza during the winter months, which places additional strain on healthcare systems. Drawing on existing evidence, this commentary examines key factors influencing childhood vaccination rates and provides preliminary policy recommendations to address these challenges. Three actionable recommendations are outlined, including strategies to counter misinformation, improve accessibility, and strengthen public trust in vaccination programs. These insights aim to guide the development of effective interventions to increase vaccination uptake.

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Influenza; child health; vaccination; vaccines; vaccine hesitancy

### Introduction

The COVID-19 pandemic, which began in December 2019, fundamentally changed public perceptions of health and vaccination, particularly parental views on vaccines, introducing new barriers to pediatric immunizations.<sup>1</sup> As vaccine hesitancy continues to rise in the wake of the pandemic, understanding parents' concerns has become increasingly important. Many parents, including those in higher-income settings, now express heightened concerns about vaccine safety and efficacy.<sup>2,3</sup> These concerns are primarily related to safety trials, potential side effects and expedited vaccine development, complicating efforts to maintain high immunization rates for childhood vaccines.<sup>4-7</sup> Additionally, logistical barriers such as limited access to healthcare services, inconvenient clinic hours, and transportation challenges further complicate vaccination uptake.<sup>8</sup>

This shift in parental views poses a serious challenge to healthcare systems, as it strains hospital resources, increasing demand for medical staff, hospital beds and equipment.<sup>9-11</sup> Vaccination plays an important role in safeguarding individual health, reducing healthcare system pressures and ensuring stable and accessible care for vulnerable populations such as children and the elderly. The World Health Organization<sup>12</sup> defines vaccine hesitancy as “the delay in acceptance or refusal of vaccines despite the availability of vaccination services.” In 2019, the WHO<sup>13</sup> listed vaccine hesitancy as one of the top 10 global health threats. A 2022 survey in the United States reported a rise in childhood vaccine hesitancy during the

pandemic, with 43% of parents citing safety concerns,<sup>14</sup> up from 30% pre-pandemic.<sup>15</sup> Similar trends were observed in the UK, where vaccine confidence declined significantly across all demographic groups.<sup>16</sup> In Australia, 31.9% of individuals reported reduced willingness to get the COVID-19 vaccine between August 2020 and January 2021, shifting from ‘definitely’ to ‘probably’ willing.<sup>17</sup>

The pandemic also gave rise to a significant surge in misinformation, or what the WHO<sup>18</sup> referred to as an “infodemic.” Misinformation about both the virus and vaccines, including medical misconceptions, vaccine-related fears and conspiracy theories, has further complicated public understanding and response efforts.<sup>19</sup> A study analyzing fact-checked COVID-19 related posts on X (formerly Twitter) found that misleading information spread more rapidly than partially false claims, often disseminated by verified accounts, including those of organizations and celebrities.<sup>20</sup> This misinformation has fostered fear and confusion, presenting a major barrier to achieving widespread vaccination and further complicating public health response.<sup>21</sup> Therefore, engaging in meaningful discussions with parents is crucial to addressing vaccine hesitancy and improving childhood immunization rates.<sup>22,23</sup>

### Summary of existing evidence

A specific area of concern in this context is influenza vaccination uptake among children. In the United Kingdom, influenza

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vaccination for children aged 4 and older is delivered through the school system in partnership with UKHSA and local NHS trusts. This program has been rolled out in phases following promising results in reducing transmission among children and the wider community.<sup>24</sup> The nasal spray flu vaccine is typically offered to children aged 2 to 18 years.<sup>25</sup> Although there are no specific targets for influenza vaccine uptake in children, UKHSA aims to meet or exceed previous year's uptake rates.<sup>26</sup> During the COVID-19 pandemic, public health officials aimed to increase influenza vaccination rates to prevent a "twindemic" of simultaneous influenza and COVID-19 outbreaks.<sup>27</sup> While the UK offers these vaccinations for free, many parents remain reluctant to vaccinate, limiting the program's reach and effectiveness.<sup>28</sup>

Data from the England 2023–24 winter season show a slight decline in vaccination uptake among primary school children, with a decrease of 1.2% points compared to previous years. While vaccination rates for secondary school children increased, this was partly due to the expansion of eligibility to include Years 10 and 11, resulting in an overall uptake of 49.9% across all school years. Some regions, such as London (40%) North East and Yorkshire (46.4%), Midlands (47.4%) and North West (48.3%), reported even lower rates.<sup>26</sup> Evidence suggests that vaccinating children aged 5–16 could lead to a reduction of 0.70 infections per dose and 1.95 deaths per 1,000 doses.<sup>29</sup> Therefore, addressing parental concerns and increasing vaccine uptake would help reduce both the incidence and severity of influenza across the UK population, leading to improved public health outcomes.

In Australia, similar trends in vaccine hesitancy have emerged post-COVID, with public health authorities facing challenges in promoting influenza vaccination amongst children.<sup>30</sup> A 2021 survey of general practitioners and general practice nurses revealed multiple barriers to vaccination, including perceived hesitancy among parents and competing clinical demands.<sup>31</sup> Despite free influenza vaccines being offered to children 6 months to 5 years, the gap between parents' intentions to vaccinate their children and the actual uptake had widened.<sup>32</sup> A 2023 global systematic review indicated that while 64% of parents intended to vaccinate their children, hesitancy remained high, with 34% of parents reluctant to vaccinate.<sup>33</sup> Amongst parents who intended to vaccinate, only 41% of children received the vaccine in the last influenza season.

While substantial research has explored vaccine hesitancy, particularly during the COVID-19 pandemic,<sup>34</sup> the widening gap between intention and behavior, as highlighted by Walters and colleagues<sup>32</sup> present a complex challenge that has not been fully addressed. Existing research has primarily focused on attitudes and beliefs but often overlooks practical, systemic and psychological barriers, such as difficulties in accessing healthcare services,<sup>35</sup> fear of side effects,<sup>36</sup> mistrust in medical professionals,<sup>37,38</sup> and exposure to misinformation.<sup>39</sup>

Our forthcoming research seeks to address this gap by examining both logistical and psychological barriers to childhood influenza vaccination in the UK. We will explore how regional disparities, socioeconomic factors and concerns about vaccine safety influence vaccination decisions, particularly in areas with lower coverage. We will also consider how the

success of the HPV vaccine program delivered in schools can inform influenza vaccination strategies. This research aims to identify key barriers and facilitators that influence parental decisions and inform the development of interventions to increase vaccine uptake.

To bridge the intention-behavior gap, future interventions must address the specific barriers preventing parents from vaccinating their children, such as safety concerns, fear of side effects, and misinformation. Engaging community-level health workers in vaccine education and improving health literacy among high-risk underserved populations can also play a critical role. By addressing these challenges, public health strategies will become more effective, increasing vaccination rates and reducing the spread of influenza.

## Recommendations for policymakers and for research funders

The planned research will provide valuable insights to guide specific policy recommendations to increase vaccine uptake. Based on existing knowledge, several broad recommendations can be made:

- (i) Policymakers should allocate funding to develop communication strategies that address regional disparities in influenza vaccine uptake, particularly in areas with historically low vaccination rates. Utilizing local community leaders and trusted healthcare providers to disseminate these messages could improve credibility and message receptivity.<sup>6</sup>
- (ii) Policymakers should prioritize reducing logistical barriers to vaccination, such as transportation, clinic hours and service availability, while also tailoring interventions to be culturally sensitive and responsive to the specific needs of communities to maximize their effectiveness.<sup>28</sup> Simultaneously, investment in enhancing vaccine education and digital health literacy among parents and high-risk populations is essential.<sup>40</sup> Strengthening these efforts can empower individuals to make informed health decisions, foster public trust in vaccines and improve vaccination uptake.<sup>41</sup>
- (iii) Funders should prioritize research into both the practical and psychological barriers preventing parents from vaccinating their children. Behavioral science interventions, such as reminders or 'nudges,' have been shown to positively impact vaccine uptake.<sup>42,43</sup> Using behavior change techniques (BCTs) to create transparent, credible messages will help build trust in the vaccination process.<sup>44</sup>

## Conclusion

In conclusion, the COVID-19 pandemic has presented significant challenges to childhood immunization efforts. Parental concerns about vaccine safety, coupled with the pervasive spread of misinformation, have intensified vaccine hesitancy. These issues are further compounded by systemic and logistical barriers that disproportionately affect certain regions and

socioeconomic groups. Addressing these challenges requires a multifaceted approach that directly tackles safety concerns, builds trust in medical systems and reduces logistical obstacles to vaccination. Tailored, evidence-based interventions – grounded in behavioral science and informed by robust research – are essential to bridging the gap between intention and behavior. By fostering trust, enhancing education and improving access to vaccination services, policymakers and researchers can design more effective public health strategies. Such efforts will not only increase vaccine uptake but also reduce the prevalence and severity of preventable diseases like influenza, ultimately safeguarding the health and well-being of communities across the UK and beyond.

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## Notes on contributor

*Dr. Daniel Gaffiero* is a Lecturer in Health Psychology at the Department of Health, Psychology and Social Care at the University of Derby. His PhD focused on exploring cognitive biases in chronic pain, but his research has since expanded to include health promotion and public health, with a particular emphasis on psychological factors influencing vaccination. Gaffiero has recently published in high-impact academic journals, contributing to key developments in these areas of health psychology.

In addition to his research, Gaffiero serves as the Deputy Programme Director for the MSc Health Psychology on-campus program, where he plays a key role in program delivery, curriculum development, and student support. His teaching approach emphasizes the integration of theory and practice, aiming to foster critical thinking and applied skills in students. Gaffiero is also the Deputy Chair of the Midlands Health Psychology Network (UK), where he actively collaborates to inspire the next generation of health psychologists.

His future research interests include examining the barriers and facilitators impacting breast screening uptake across multiple countries and exploring cognitive biases in the context of endometriosis. Gaffiero is committed to addressing psychological factors that influence healthcare behaviors, with the aim of improving public health outcomes through targeted interventions.

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