Research briefing

Interventions for Increasing Vaccine Uptake Amongst the Elderly

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Abstract

Elderly groups are severely affected by COVID-19, a major health issue that caused in its first year approximately 72 million deaths in the UK alone. However, the leading determinants of vaccine hesitancy are still present among the elderly. To address this, it is important not only to develop interventions but to understand and test them. This briefing discusses five psychological interventions for diminishing vaccine hesitancy amongst the elderly. The first one enhanced feelings of ownership over the vaccine by nudging patients through text reminders. The second was a phone questionnaire and interviews of patients, considering psychological antecedents of influenza and pneumococcal vaccination. The third intervention used a scalable messaging strategy via Facebook with accurate information about social norms concerning COVID-19 vaccine uptake. The fourth consisted of the distribution of flyers in point-of-care clinics, followed by guidance on vaccines in medical appointments. In the final intervention, comparative data on the efficacy of COVID-19 and flu vaccines were sent by text. Given the limitations of the others, a combination of the third and fourth interventions is proposed.

Keywords: vaccine uptake; elderly; COVID-19; interventions; research briefing

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Interventions for Increasing Vaccine Uptake Amongst the Elderly

The COVID-19 pandemic was a major health issue that caused in its first year approximately 72 million deaths in the UK alone (UK Health Security Agency, 2023). Soon enough, vaccines started being developed to contain the virus, which still impacts people today. Generally, vaccines prevent at least 3.5 million deaths (World Health Organization, 2023). But even now, people can be hesitant

about its newness and potential side effects, worry about its safety, and mistrust vaccine benefits (Paul, Steptoe and Fancourt, 2021; Lewandowsky *et al.*, 2021). Among the elderly, who are considered a high-risk group, common misunderstandings regarding contraindications and worries about vaccine side effects often play a significant role in causing hesitation towards getting vaccinated (Wang *et al.*, 2023; Gallant *et al.*, 2021; Malani, Solway and Kullgreen, 2020). To address this issue, it is important not only to develop interventions that aim to increase vaccinations but to understand the distinct barriers (such as the ones involving knowledge and beliefs and environmental barriers like vaccine shortages and difficulties with the booking process) and test the interventions' effectiveness (Batteux *et al.*, 2022). This briefing discusses five psychological interventions useful for diminishing vaccine hesitancy amongst the elderly, chosen in Batteux's (2022) systematic review and Google Scholar using the keywords "psychological intervention", "COVID-19", "vaccine hesitancy", "elderly", and "older adults''. The most effective intervention is highlighted at the end of this discussion, such that policymakers can better influence this hesitant risk group to obtain protection against COVID-19.

Behavioural incentives are like nudges to increase COVID-19 vaccinations and can improve vaccine uptake. Nudges are interventions that alter people's behaviour in a predictable manner without prohibiting any options or significantly shifting monetary benefit. For example, text-based reminders have been shown to heighten vaccinations with follow-through reminders, enhancing feelings of ownership over the vaccine (Dai *et al.*, 2021). This intervention consists of reminding healthcare system patients by text one and eight days after they have received a notification of vaccine eligibility. The contents of those reminders include encouragement to schedule a vaccination appointment, providing ownership, and link to the appointment-scheduling website, supplying a convenient way to easily book the appointment (Dai *et al.*, 2021). The first reminder boosted appointment and vaccination rates within the healthcare system by 6.07 (84%) and 3.57 (26%) percentage points, respectively, and the second improved those outcomes by 1.65 and 1.06 percentage points, respectively (Dai *et al.*, 2021). One limitation was that 10% of participants did not keep or show up for their first-dose appointment, demonstrating that one of the biggest barriers to increasing vaccinations is getting participants to schedule and show up to their first-dose appointment. Dai *et al.*'s (2021) intervention nudged the other 90% of the sample. Finally, vaccinations were increased in the healthcare system, providing evidence that text reminders are

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appropriate but raising the question of whether they would be functional for older people even though easy bookings can generally be effective with this method.

An intervention called Vaccination60+ was conducted by Heinemeier *et al.* (2023) to increase influenza and pneumococcal vaccinations in the elderly in Germany. A phone questionnaire (using random digit dialling followed by an interview) covered awareness and influenza knowledge, the antecedents of vaccination, vaccination intentions and behaviour, and media use. By using the telephone method, researchers were adapting materials to the age group, since the elderly use more traditional media for receiving medical information and searching for healthy behaviours, attitudes, and motivating factors for physical activity (Betsch *et al.*, 2018; Enwald *et al.*, 2017). Psychological antecedents of influenza and pneumococcal vaccination, known in the literature as the 5C, were used to analyse their relative impact compared to that of other factors. Confidence relates to trust in the effectiveness and safety of vaccines. Constraints include issues with their availability, affordability, and accessibility. Calculation means evaluating risks and benefits. Collective responsibility is understanding the value of and engaging in vaccination. Complacency describes perceived low risks (Heinemeier *et al.*, 2023). The results showed that psychological determinants of vaccine hesitancy must be considered; the amount of explained variance in vaccination behaviour nearly doubled post-intervention, and vaccination intentions yielded significant results. One limitation was that antecedents were accessed only by participants who had heard about the pneumococcal illness before, which limited the sample and, consequently, the possible range of generalisation. Thus, phone questionnaires might be a good way to reach the elderly to get them vaccinated, mostly when psychological antecedents are considered.

One intervention highlighted how vaccinations can be framed as a social norm and increase intentions to accept the COVID-19 vaccine (Moehring *et al.*, 2023). A scalable messaging strategy was operated via Facebook in 23 countries, with accurate information about descriptive norms or what other people believe, do, or say. In this way, people's confidence in the COVID-19 vaccine increased, and it was perceived as a social norm. In other words, by emphasising that others will or have been vaccinated and presenting people with information about the growing acceptance of coronavirus vaccines, vaccination intentions often increased. This could therefore have the potential to take effect among the elderly because Facebook is one of the social media platforms that is most used by them (71%), an emerging communication tool being progressively more used;

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older adults represented almost 13% of total Facebook users in 2023 (Statista, 2023; Khoros, 2024; Tech and Senior, 2023). In the intervention, the effects included an increase of over a third of the size of the total expansion in vaccine acceptance from the end of 2020 to January 2021 across all the countries involved (Moehring *et al.*, 2023). Acceptance of vaccines is likely to be influenced by beliefs in descriptive norms, which are closely associated with the perceptions of others' intentions to accept a vaccine. Messages with this information might have substantial effects on vaccination rates, since this is something that people are not that aware of, compared to observable preventative behaviours. A limitation of this intervention is that only intentions were measured, which could differ from actual uptake. Another limitation is that even though Facebook is currently being used by the elderly, it is still not a traditional form of media or way of communication, like television or phone calls; therefore, in this age group, this intervention may not have the expected impact. In essence, accurately communicating at which extent others intended to get vaccinated increased people's acceptance of vaccines, especially among people who were hesitant.

Point-of-care informational interventions occurred in Singapore, targeting seniors (Ho *et al.*, 2019). Flyers and posters were placed in private general practitioner (GP) clinics to encourage elderly patients to vaccinate against influenza and pneumococcal disease. When registering, patients aged 65 years or older were identified by clinic assistants (CAs) who handed them a flyer to read while they waited. Once with the doctor, patients would get counsel - agreeable patients who fulfilled eligibility criteria would be vaccinated (Ho *et al.*, 2019). CAs propelled the intervention, assessing patients through personal contact. Uptake rates exhibited, overall, a marked increase in clinics throughout the intervention phase as opposed to the control phase for both influenza (5.9% vs 4.8%; P = .047) and pneumococcal (5.7% vs. 3.7%; P = .001) vaccines (Ho *et al.*, 2019). Some limitations were that the oldest patients were less likely to accept the influenza vaccine, probably due to budget limitations, low perceived benefits, and the researchers' inability to measure true compliance in each clinic, since the staff were insufficient, relying on similar trials compliance, which tended to be as low as 21%. In general, this intervention was brief and low-cost, showing evidence of how clinical relationships can influence a patient's decision to receive vaccination.

Comparative data on the efficacy of COVID-19 and flu vaccines were sent by text in Davis, Golding, and McKay's (2022) intervention to influence people's intention to take the coronavirus vaccine. Participants (481 from the UK, mostly women, aged between 18 and 85 years, who had been pre-

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screened to have intermediate levels of vaccine hesitancy) were presented with a 200-word text (approximately) about COVID-19 vaccines in an online survey in Prolific (a platform that finds and recruits participants for online research) with the description of its safety and efficacy and the positive implications of extensive uptake. There were four conditions: no information (the participant did not receive the mentioned text and were only asked about vaccines and their intentions); COVID-19 vaccine information only; flu information – 60% (COVID-19 vaccine information and information that flu vaccine efficacy has not exceeded 60% in recent years); flu information – 40% (the same as the last one but average flu vaccine efficacy in recent years was told to be 40%) (Davis, Golding, and McKay, 2022). The likelihood of getting vaccinated was around .39 standard deviations (SD) higher (with a mean of 5.53) for individuals who only received details about COVID-19 vaccines and .31 SD higher (mean = 6.26) for participants who were informed of the 40% efficacy rate for the flu vaccine compared to the no information condition (Davis, Golding, and McKay, 2022). In other words, there was a positive effect in these two scenarios and a notably higher impact on those participants who were informed of the 40% flu vaccine efficacy. Some limitations of the intervention were that the study did not measure behaviour - only intentions - and that the effect was not significant. Overall, the single-shot messaging intervention strengthened vaccination intentions due to its approach to communicating in-context safety and the relative efficacy of the vaccine.

All in all, two of these interventions stood out: the intricate use of informational encouragement at point-of-care clinics (Ho *et al.*, 2019) and the emphasis on COVID-19 as a social norm through messages (Moehring *et al.*, 2023). These can be combined such that the posters and flyers given contain accurate data on the intention of others to vaccinate. Showing the flyer to the doctor and have a conversation about it, often leading to vaccination per se, is the most effective intervention - more resounding with the elderly, as it involves a chain of in-person events. Unlike the other interventions, this combination involves not only the doctor but the entire multidisciplinary team, which can be very effective for older adults who need integrated support. Furthermore, an in-person approach can be more functional than texts, social media, or even phone calls - it also does not require previous knowledge about other diseases to function. This intervention could be measured by a pre-post-test that includes many staff, so the compliance of each clinic can be measured as well. First, before the intervention, the clinics would be tested - asking the patients about their intentions to get vaccinated and about their actual vaccination uptake through a

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questionnaire. Afterwards, the intervention would occur. After a year, those clinics would be re-evaluated, and data would be compared - by then, the intervention would be reformulated and reapplied in the future. This gives the interventionists a solid foundation to measure actual vaccination behaviour instead of only intentions and make people show up to their appointments, from the first dose onwards, overcoming limitations from the other interventions. In this way, it is simpler to apply this highly effective, concise, and low-cost method of communication with a social normative impact if it is re-evaluated from time to time. Therefore, older adults can accept the COVID-19 vaccine and become less hesitant, since their social environment and personal clinicians would be emphasising the importance of protection against this major health issue.

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