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The impact of vaccination and patient characteristics on influenza vaccination uptake of elderly people: A discrete choice experiment

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ABSTRACT

Objectives: To improve information for patients and to facilitate a vaccination coverage that is in line with the EU and World Health Organization goals, we aimed to quantify how vaccination and patient characteristics impact on influenza vaccination uptake of elderly people.
Methods: An online discrete choice experiment (DCE) was conducted among 1261 representatives of the Dutch general population aged 60 years or older. In the DCE, we used influenza vaccination scenarios based on five vaccination characteristics: effectiveness, risk of severe side effects, risk of mild side effects, protection duration, and absorption time. A heteroscedastic multinomial logit model was used, taking scale and preference heterogeneity (based on 19 patient characteristics) into account.
Results: Vaccination and patient characteristics both contributed to explain influenza vaccination uptake. Assuming a base case respondent and a realistic vaccination scenario, the predicted uptake was 58%. One-way changes in vaccination characteristics and patient characteristics changed this uptake from 46% up to 61% and from 37% up to 95%, respectively. The strongest impact on vaccination uptake was whether the patient had been vaccinated last year, whether s/he had experienced vaccination side effects, and the patient's general attitude towards vaccination.
Conclusions: Although vaccination characteristics proved to influence influenza vaccination uptake, certain patient characteristics had an even higher impact on influenza vaccination uptake. Policy makers and general practitioners can use these insights to improve their communication plans and information regarding influenza vaccination for individuals aged 60 years or older. For instance, physicians should focus more on patients who had experienced side effects due to vaccination in the past, and policy makers should tailor the standard information folder to patients who had been vaccinated last year and to patient who had not.

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1. Introduction

Influenza is a major cause of illness and death [1]. Every year in the United States, influenza infections are associated with approximately 55,000 of deaths, the majority occurring from seasonal influenza among adults aged 65 years or older [2,3]. The same phenomenon is seen in Europe with a lower-bound estimated rate of excess deaths of 40,000 cases per season [4].

Influenza vaccination is promoted by many health authorities, as the single option of influenza prevention [5]. However, despite general consensus and recommendations that annual influenza vaccination should be given to all individuals with age 60 years

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or older [5,6], many countries in Europe do not achieve high coverage in these groups [7]. In several countries, there is even a lowering trend of the influenza vaccination rate for elderly people [8,9]. To satisfy vaccination coverage recommendations in line with the EU and World Health Organization goals, more efforts are needed and more effective strategies have to be developed to increase influenza vaccination coverage [10].

A first important step towards better strategies is to obtain insights into how vaccination characteristics (the 'offer') and patient characteristics (the 'recipient') impact influenza vaccination uptake, assuming uptake is not random. These insights will be useful for i) general practitioners informing their patients (e.g., using more tailored type of invitation letter); and ii) policy makers to tailor their general brochures (e.g., focusing more on the facilitators or barriers regarding influenza vaccination uptake). However, there are no quantitative studies investigating how vaccination and patient characteristics impact on influenza vaccination uptake.

It is precisely this information that is needed to develop effective strategies to increase influenza vaccination uptake. Therefore, the aim of this study is to quantify how vaccination and patient characteristics impact on influenza vaccination uptake of elderly people. Towards this end we used a discrete choice experiment (DCE), a quantitative approach that is increasingly used in healthcare research to obtain quantitative information on the relative merits of complex outcomes. DCE combines an empirical task (respondents have to select one out of two stylized outcomes reflecting the decision at hand), with post hoc computations on the resulting data from a large set of respondents [11–13].

2. Methods

2.1. Discrete choice experiment

A DCE assumes that the overall preference for a multi-facetted medical intervention, such as an influenza vaccination, can be approached by first decomposing the intervention consequences into separate characteristics (technically called 'attributes'; e.g. vaccination effectiveness, risk of side effects, out-of-pocket costs) [14]. Those characteristics are further specified by variants of that characteristic (so-called attribute 'levels', such as for vaccination effectiveness 20%, 40%, 60%, 80% chance that the vaccinated person is protected against influenza symptoms).

The next step rests on the assumption that the individual's preference for a medical intervention (including rejection) is determined by the levels of those attributes [14]. The relative importance of attributes, and, within the attribute, the importance of the levels, can be empirically determined. In DCE, respondents are forced to make trade-offs by offering a series of choices between two (or more) medical intervention profiles [15] (see Fig. 1 for an example of such a so-called 'choice task'). Specific computational schemes enable the investigator to derive numbers for the relative preference for attribute levels [16].

2.2. Attributes and levels

We used a literature search [17–21], interviews with experts in the field of influenza vaccination (n = 4) and three focus groups with patients aged 60 years and older from general practices (n = 21; i.e., the target group) to develop and operationalize influenza vaccina-

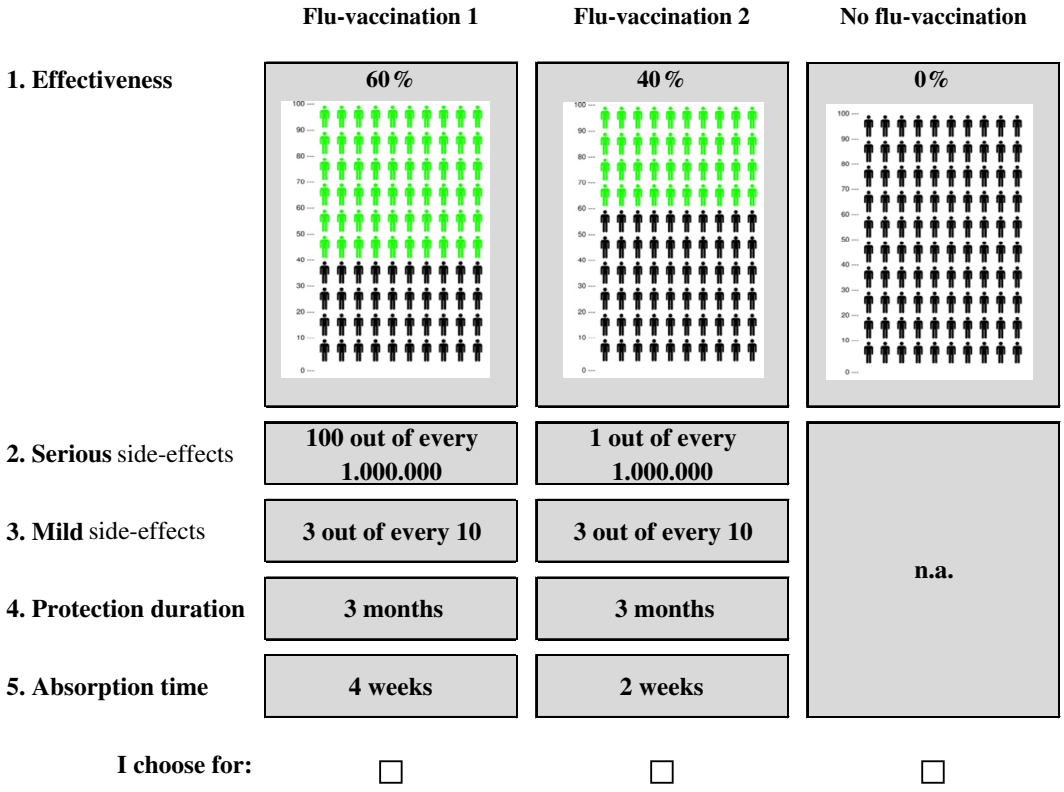

Fig. 1. Example choice set.

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