

## Attitudes and risk perception of parents of different ethnic backgrounds regarding meningococcal C vaccination

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### Abstract

The aim of the present study is to assess the attitudes of parents toward vaccination as well as their risk perception of disease and vaccination. We interviewed 1763 parents of different ethnic groups (among others, Dutch, Turkish, Moroccan, and Surinamese parents). Results show that there were large differences in knowledge about disease and risk perception of disease and vaccination among parents of different ethnic backgrounds. Generally, people largely overestimated the risk of contracting the disease and the risk of dying after contracting the disease. Dutch parents were best informed, least worried, had the most critical attitude toward the campaign, and the lowest vaccination level compared to other parents. The differences in knowledge about vaccination and the more critical attitude of Dutch parents emphasize the need to take more into account parents' perspectives when designing information leaflets or other information media.

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### 1. Introduction

Although the National Vaccination Program in the Netherlands has been successful, and about 95% of Dutch children receive the recommended vaccinations [1,2], there is some concern that the compliance is decreasing. Some of the larger cities in the Netherlands show a decrease in vaccination level, especially among infants and especially among infants of Dutch descent [1]. This decrease in vaccination level is a worldwide concern [3]. If the vaccination level decreases even further, it is likely that the number of cases of infectious diseases will increase as happened in the past in, for example, the Netherlands (measles) and the UK (pertussis) [4,5]. Traditionally, opponents of vaccination generally use religious arguments or they base their arguments on anthroposophical ideas [6,7]. There are also other reasons why parents feel am-

bivalent toward immunization [8]. The declining incidence of vaccine-preventable diseases has led to a heightened public focus on the issue of vaccine safety, and parents may overestimate the risk of side effects of vaccination or harbor doubts about its effectiveness [9–11]. Without having any direct experience of the severe consequences of infectious diseases, risks of vaccination are sometimes seen as greater than the risks of non-immunization [9]. Parents' appraisal of the various risks of vaccination might therefore differ from that of health professionals [12].

As there are ethnic differences in healthcare use in general [13], ethnicity may also play a role in parents' attitudes toward childhood vaccination and compliance with vaccination. Some studies [14–16] showed ethnic differences in vaccination coverage, while other studies did not [17]. Streefland et al. [2] noted that immigrants in the Netherlands often see vaccination as something self-evident, suggesting that their compliance might be even higher than that of Dutch parents. However, the few studies that have been done about

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attitudes toward vaccination of parents with different ethnic backgrounds (e.g. [18]) did not reveal any differences. In the Netherlands, many people from ethnic minority groups live in the four largest cities (about 30% of the total population), while in other parts of the Netherlands 10% of the population, at most, is from the ethnic minorities [19]. The largest ethnic minority groups are Turkish, Moroccan, Surinamese people and people from the Antilles. Surinam is a former part of the Netherlands and many people moved from Surinam to the Netherlands when Surinam became independent. The Antilles is still a part of the Netherlands. People from Morocco and Turkey came to the Netherlands (from 1965 onwards) to find employment.

Learning more about parents' concerns about, and attitude toward vaccination is important when designing more effective informational material. In this study, we focus on the appraisal of vaccination risks of parents with different ethnic backgrounds, and their attitude toward vaccination. We were able to interview parents who enrolled their children for vaccination against meningococcal C during the 2002 large-scale one-time catch-up vaccination campaign for children aged between 14 months and 18 years old in the Netherlands. For this study, we asked parents about their perceptions of the risks of disease, side effects of vaccination, and their evaluation of the vaccination campaign.

## 2. Methods

### 2.1. Subjects and procedure

As part of the vaccination catch-up campaign, all children in Amsterdam aged 6–14 years old (approximately 68,000), were invited by mail for a vaccination against group-C meningococci on September 3rd and 4th, 2002. Children 5 years old and younger and children aged 15–18 were invited for a meningococcal vaccination a few months earlier. Accompanying each invitational letter was an information leaflet describing clinical aspects of a meningococcal infection (causing meningitis and/or sepsis) and its main symptoms, severity of the disease, different meningococcal serogroups (A, B, W135, and Y), and mentioning that B and C are the most common serogroups causing disease in the Netherlands. The leaflet further described that this vaccination would protect against meningococcal C infection only, and that a vaccine against meningococci B was not available. It also included limited information on possible side effects such as rise in temperature, listlessness, headache, and effects related to the injection itself such as redness, swelling, and pain. No probabilities were given. Vaccination was free of charge.

The children and their parents were invited on one of the 2 days on a predetermined time in the local Ajax soccer stadium, the Arena in Amsterdam. After having received their vaccination, they were invited for a structured interview by one of the 30 interviewers. The interviewers had received a

30-min training course by one of the authors (L.H.) and an instruction sheet. If the child was accompanied by a couple, the female of the couple was selected for the interview. Exclusion criteria for participation in the study were: difficulties in understanding the Dutch language, and not being the parent of the child.

### 2.2. Questions

The interviews consisted of questions specifically designed for this study and were read out loud by the interviewer. If individuals refused to be interviewed, the reasons for refusal were recorded. Interviews lasted between 5 and 10 min. The questionnaires assessed sociodemographic characteristics of the parent (gender, age, marital status, number of children, country of birth, country of birth of parents, level of education, religion and religiousness—practicing or non-practicing), and the age and gender of the children that were vaccinated. Individuals were asked whether they had completely or partially read the leaflet and, in an open-ended question, whether they knew for which disease the child had just been vaccinated. After these questions, individuals were told that the child had been vaccinated for meningitis or meningococcal disease to make sure that all parents answered the questions that followed having the same background information about the disease. Previous worries (“How much did you worry before the vaccination that your children would get the disease?”) and previous perceived risk (“How high did you think the risk was that your children would contract the disease, before the vaccination?”) were measured using a visual analog scale (VAS). Asking how many children of a total of 150,000 children living in Amsterdam would get the disease if not vaccinated, assessed numerical risk estimation. In addition, asking how many children of a total of 100 children with the disease would die from it, assessed numerical risk estimation of death. The perception of these risks was also assessed using a VAS scale. Furthermore, respondents were asked about whether they thought the vaccination had severe side effects (yes/no). Asking if there was a residual risk of contracting the disease after vaccination (yes/no) assessed understanding of the effectiveness of the vaccination. Attitudes toward the vaccination campaign were measured using a VAS scale with four semantic differential word pairs (reassuring/not reassuring; useful/useless; not mandatory/mandatory; self-evident/not self-evident).

### 2.3. Statistical analysis

A univariate analysis was done on all continuous dependent variables with ethnicity (measured as country of birth of mother), religion (practicing or not), and educational level (low, moderate, high) as independent variables in the same analysis so that effects of independent variables were corrected for each other. It was expected that there would be a relationship between ethnicity, religion, and educational level. Tukey's post hoc tests were done to determine the sig-

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