Introduction

Despite a high vaccination coverage, the Netherlands recently experienced epidemics of vaccine preventable diseases largely confined to an orthodox protestant minority (250 000 persons) with low vaccination coverage due to religious objections. Several local projects were carried out to increase protection against vaccine preventable diseases in this minority, without much results. Nevertheless, with every epidemic or possible threat of an epidemic, public debate focuses on methods to increase vaccination coverage. Recently, Members of Parliament suggested the Minister of Health to summon unvaccinated youngsters to consult the youth health service to get personal information on the benefits of vaccination and then decide themselves whether they want to be vaccinated. This suggestion was supported by KNMG, the Royal Dutch Medical Association. It is assumed that unvaccinated youngsters need sound medical information to convince them to accept vaccination. This assumption, however, has not been checked with the target group.

Among orthodox protestants, religious aspects play an important role in the decision on vaccination. In the Bible one can find arguments pro as well as contra vaccination. The orthodox protestant minority is divided in various denominations, some of them are pronounced in their refusal of vaccination. However, all orthodox protestant denominations state that ultimately their members are free to decide themselves whether or not to vaccinate, having to account for their choice only to God. The attitude towards vaccination is, in general, often not the result of thorough deliberation. People may simply follow the decision of others, because they expect them to have made a deliberate decision, or just because they want to belong to the group. Especially youngsters are very sensitive to peer group opinion. Therefore decisions on vaccination of orthodox protestant youngsters may be influenced by peer group opinion as well.

In this study we assessed whether orthodox protestant youngsters are in need of information on vaccination and if so, what are their preferred sources of information.

Methods

The study population consisted of orthodox protestant youngsters in the age of 16–23-years old. According to orthodox protestant customs, these youngsters come of age and may reconsider their parent’s decision on vaccination. As they usually marry young, they will soon have to decide on vaccination of their own children as well.

Various ways of recruitment were used. To reach the target group we cooperated with NPV Dutch Patients Association, an association on biblical foundations of 70 000 members, representing members who accept vaccination as well as those who refuse.

The NPV invited all 550 youth members by e-mail to answer an online questionnaire. Moreover, the NPV members were invited to forward the invitation, including the web link to the questionnaire, to their family and friends (snowball method). Apart from this, banners were placed on specific websites for the orthodox protestant youth, flyers were distributed at an orthodox protestant family fair and an article on the survey was published in the orthodox protestant newspaper, all including the web link.
The questionnaire, that was filled out anonymously, contained questions on denomination, education, vaccination status, need for information on vaccination and preferred source of information. Descriptive analyses were performed, using SPSS version 16.0.

Results

About 1778 online questionnaires were filled out. Sixty-five questionnaires were excluded from further analyses because of missing data on denomination, vaccination status or need for information, resulting in a response of 1713 completed questionnaires. Six hundred and six respondents (35%) were not vaccinated. Further analyses focus on these unvaccinated respondents.

Characteristics of respondents

About 11% of the unvaccinated respondents were recruited directly via NPV e-mails, 39% via family or friends by the snowball method, another 30% via websites for orthodox protestant youth and the remaining 20% in other ways. According to postal codes respondents were living all over the Netherlands. Mean age was 19 years. Women (75%) and high educated people (39%) were over-represented. The distribution of the orthodox protestant denominations among the respondents was conform the distribution on national level.

Need for information

Only 21% of the unvaccinated orthodox protestant youngsters indicated that they were interested in medical information on vaccination, see table 1. As far as they were interested, they preferred to get medical information from the NPV. The youth health service—although an option in multiple choice questions—was hardly ever mentioned.

About half (53%) of the unvaccinated youngsters was interested in information on religious aspects of vaccination and 60% was interested in information on their peer groups’ opinion. For both aspects, the NPV was -again- the preferred source of information.

To gain more thorough insight into the target population we performed subgroup analyses for men and women and for low/ middle and high educated youngsters. There were no significant differences in need for information between these subgroups.

Table 1 Need for information on vaccination of unvaccinated orthodox protestant youngsters in the Netherlands (n = 606) and their preferred sources of information

<table>
<thead>
<tr>
<th>Interested in subject</th>
<th>n (%)</th>
<th>Preferred source of information</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical information</td>
<td>128 (21)</td>
<td>General practitioner</td>
<td>17 (13)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Youth health service</td>
<td>4 (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPV*</td>
<td>88 (69)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>19 (15)</td>
</tr>
<tr>
<td>Religious information</td>
<td>321 (53)</td>
<td>Parents</td>
<td>38 (12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Church</td>
<td>77 (24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPV*</td>
<td>162 (50)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>44 (14)</td>
</tr>
<tr>
<td>Peer group information</td>
<td>366 (60)</td>
<td>Family/friends</td>
<td>52 (14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School</td>
<td>41 (11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Church</td>
<td>54 (15)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPV*</td>
<td>181 (49)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>38 (10)</td>
</tr>
</tbody>
</table>

*NPV, Dutch Patients Association, a Christian organization.

Discussion

We performed an open online survey to get more insight in the need for information on vaccination among unvaccinated orthodox protestant youngsters. For several reasons we choose for an internet survey. Internet use is widespread in the Netherlands, also among orthodox protestants. In 2008, 87% of the orthodox protestants had a computer at home and 88% of them were connected to the internet.10 As vaccination is a sensitive subject in the orthodox protestant minority, the anonymity of an online survey lowers the threshold for participation. Moreover, it enabled us to recruit participants from all over the country. Although the representativeness of the study population in an open survey might be questionable, we achieved a high response in this hard to reach population. The over-representation of women and high educated people among the respondents may indicate that they are more interested in the subject vaccination than men and lower educated people and that the overall need for information might be lower than our findings.

The results show that, as far as unvaccinated orthodox protestant youngsters are interested in vaccination, they are predominantly interested in information on religious aspects and their peer groups’ opinion. Probably these aspects are more important in their decision on vaccination than medical aspects. We didn’t ask why youngsters were not interested in medical aspects; however, some mentioned spontaneously that the subject was sufficiently covered in biology lessons at school.

The finding that the respondents preferred to get information via the NPV might of course be biased by the role of the NPV in the recruitment. However, among respondents otherwise recruited, the NPV was still by far the most popular source of information. The youth health service was hardly ever mentioned by the respondents. Healthy Dutch youngsters only have a few contacts with the youth health service in their lives, they seem to prefer a more familiar source of information.

For the NPV the results of our study are reason to start an information campaign on all aspects of vaccination, to promote discussion on the subject and deliberate decision. A deliberate decision, however, does not guarantee acceptance of vaccination. As the medical professionals of the youth health services are not expected and not equipped to provide the non-medical information the unvaccinated youngsters are interested in, the suggested compulsory consultation of the youth health service is not likely to be successful. Although
the results of the NPV campaign on vaccination coverage remain uncertain, this campaign meets at least the needs of the target population.

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**Conflicts of interest:** None declared.

**Key points**

- This study shows the importance of exploration of the target group before introducing a new policy.
- To improve vaccination coverage in the Netherlands, compulsory consultation of the youth health service has been suggested for unvaccinated youngsters, in order to get more information on the benefits of vaccination.
- Unvaccinated orthodox protestant youngsters are mainly interested in the religious aspects of vaccination and their peer groups’ opinion on the subject; their preferred source of information is a Christian patients organization.
- Compulsory consultation of the youth health service is not likely to be successful.

**References**


