

Promoting informed decision making about maternal pertussis vaccination

Citation for published version (APA):

Anraad, C. (2023). *Promoting informed decision making about maternal pertussis vaccination*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20230411ca>

Document status and date:

Published: 01/01/2023

DOI:

[10.26481/dis.20230411ca](https://doi.org/10.26481/dis.20230411ca)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

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Impact paragraph

Vaccination is a proven effective strategy to prevent infectious diseases. Most countries have extensive childhood vaccination programmes to prevent infectious diseases from spreading, and to protect children against illness. Vaccinations are further recommended to protect oneself when travelling to places where certain infectious diseases are present and in specific populations and contexts. Most recently, vaccinations have helped us prevent illness and deaths caused by the COVID-19 pandemic. Vaccination is voluntary, and not everyone finds deciding about vaccinations easy. There is a lot of contradicting information and misinformation present online, and not everyone has faith in governments and national health institutes providing the vaccinations. This leads to sub-optimal reach of vaccination programmes. Therefore, there is a need for adequate information, counselling, and easy access to vaccinations.

This thesis is about how we can support people with their informed decision making about vaccination and increase uptake of vaccinations, specifically in the uptake of Maternal Pertussis Vaccination (MPV). This is a vaccination offered to pregnant individuals at 22 weeks of pregnancy, to protect new-born babies against pertussis, commonly known as whooping cough. From 2005 until 2014, 1,711 cases of pertussis were reported in Dutch infants (Health Council of the Netherlands, 2015c). Of these cases 1,279 were five months of age or younger with 1,020 being admitted to hospital and five mortalities. Based on these numbers, it was decided that MPV should be offered to all pregnant individuals. As of December 2019, MPV is offered by the Youth Health Services in the Netherlands. The aim of this thesis was to understand how pregnant individuals decide about MPV, and to develop and test programmes to promote informed decision making.

We identified needs around decision making about MPV and found that in addition to existing information, interactive online information could be a valuable addition. However, this is not suitable for all groups, especially people with low literacy or people who simply prefer not to use online information. Therefore, we developed two interventions: an online decision aid and a Centering Pregnancy group-care session about MPV. In the online decision aid, people could interactively learn about MPV, and weigh the pros and cons of MPV. The second intervention is based on Centering Pregnancy group-based antenatal care, meaning that individual consultations with an obstetric care provider are replaced with group sessions with 8-12 participants. We developed a training for group-care facilitators and a manual for the session about MPV, that can be used in one of the CP sessions during pregnancy. The session was offered to pregnant individuals between 16 and 18 weeks of pregnancy. Both interventions were developed with the input of the target group and relevant stakeholders.

We evaluated the decision aid and found that it increases how sure people felt about their decision and how informed their decision was. It also increased several factors associated with MPV uptake such as the perceived risk that the participant's baby gets whooping cough. Participants experienced the decision aid overall positively. However, the decision aid did not contribute to a significant increase in MPV uptake, although vaccination rates were higher than average for the studied sample. This needs further exploration in future research. Because a large-scale study with a CP group-care intervention was impossible during the COVID-19 pandemic, we conducted a smaller feasibility study. Interviews with both participants and facilitators of CP indicated that the session met their needs. Those who said that they had not yet decided about MPV before the session, indicated that the session helped them in their decision.

Scientific relevance

This thesis contributes to the field of research on vaccine acceptance and hesitancy. Our finding that the commonly found determinants of MPV uptake have less predictive value under low certainty has consequences for how we study vaccination behaviour and calls for studies specifically among those experiencing low certainty. Additionally, we provided a lead for research about affect regarding vaccinations and emphasised its importance in vaccination behaviour. We also described implications of different ways of measuring informed decision making, providing recommendations for how to measure this in vaccination behavioural research. Furthermore, we hope that this thesis contributes to more use of systematic and user-centred needs assessments and design methods for interventions.

The early studies in this thesis have been published in scientific journals and the rest of the studies have been submitted for publication. Results have also been presented at national and international conferences. We chose conferences both in the field of vaccines and vaccination uptake and health psychology because the studies are relevant for both fields.

Societal relevance

Our target group of pregnant individuals has been involved in the design of the interventions. By examining their information needs and preferences as well as their preferred mode of delivery of information, we were able to draw conclusions that can be used in practice immediately. For example, we now know which topics future communication should focus on, and which (sub-)topics are of less interest. This helps the development of communication materials providing pregnant individuals with information about MPV in the Netherlands. These results have been presented at an innovation session at the Dutch Youth Health Centre (NCJ) to healthcare professionals working in Youth Health Services. In addition, upon learning about the discrepancy between the needs of pregnant

women to be informed about MPV and to receive MPV by their obstetric care provider and the current practice of these tasks being performed by the Youth Health Services, we published an article in a Dutch scientific journal for health professionals to raise attention for this. Although in practice it may be a logistic challenge to have MPV delivered by obstetric care providers, it is easier to officially place the task of counselling about MPV with them, given that they do most of the counselling in practice.

When designing the interventions, we involved an advisory committee. The committee consisted of representatives of the RIVM (National Institute for Public Health and the Environment), holder of the National Immunisation Programme and responsible for communication about vaccinations in the Netherlands; the Royal Dutch Organisation of Midwives (KNOV) advocating for the interests of midwives in the Netherlands; the organisation training for Centering Pregnancy (foundation CenteringZorg); the overarching organisation of direct providers of the MPV to pregnant individuals (Dutch Youth Health Centre, NCJ), physicians from preventive Youth Health Services, responsible for administering child and maternal vaccinations; and, finally, the Netherlands Patients Federation. The RIVM was involved from the start of the project as co-applicant. Their early involvement helped us to align the design of the decision aid with their implementation context and their needs and requirements for future ownership, to maximise the chance of successful implementation. This means that they can imbed the decision aid in their information provision and disseminate it among the target group. Additionally, they can imbed information about new vaccinations during pregnancy (e.g., flu vaccination, expected to be offered in 2023) in the decision aid. The foundation CenteringZorg is a potential co-owner of the decision aid and was the implementation partner for the CP intervention. The CP intervention was developed in collaboration with CenteringZorg and was implemented through training of CP facilitators. Not only are the CP facilitators who took part in the study still using the MPV session in their CP practice, but the training is also imbedded in the CP facilitator training programme

The target group of pregnant individuals in the Netherlands can benefit from the implemented CP intervention and the decision aid that is ready to be implemented. The decision aid has been shown to promote informed decision-making about MPV and decrease perceived uncertainty about the decision. Informed decision-making can lead to more stable vaccination opinions and can lead to higher uptake of MPV. With MPV being the first vaccination in a series of parental vaccination decisions, informed decision making about MPV can also help uptake of childhood vaccinations.

The CP intervention was perceived positively by participants in our study, and most participants who had not yet made the decision indicated that the session about MPV helped

them. The existing information does not include interactive online information or group-care. Our interventions add this, to help optimise informed decision-making and MPV uptake. Once developed, they are relatively easy and cheap to use. The interventions can be disseminated through obstetric care providers into the current context of the information provided by the RIVM and within existing CP care. Since recruitment via the obstetric care provider increased the use of the decision aid in our study, we believe that obstetric care providers can play an important role in disseminating the decision aid, either in combination with the CP intervention or in individual consultations. The decision aid can also be disseminated by adding a link or QR-code to the invitation to get MPV handed out by obstetric care providers.

Furthermore, the systematic design of the decision aid has already led to the development and implementation of two other vaccination decision aids: one for COVID-19 vaccinations (www.coronavaccinatie-keuzehulp.nl) and one for Human Papilloma Virus (HPV) vaccination for adolescents and children (www.hpvkeuzehulp.nl). With the existing intervention blueprint, these decision aids could be developed very quickly. Relevant stakeholders (e.g., the Ministry of Health and the RIVM) were involved, texts and videos were adapted, and user tests were done with the target group to see where the decision aid needed adjustments.

Conclusion

We have contributed to knowledge about decision making about vaccination during pregnancy. We developed two interventions that have shown their ability to assist pregnant individuals decide about MPV: a decision aid and CP group-care intervention. The decision aid can be made accessible to the general population to help pregnant individuals in the Netherlands choose about MPV. The CP intervention can be offered to all pregnant individuals in CP groups. These interventions have the potential to help make vaccination decisions more robust, leading to a higher uptake of MPV and other vaccinations.