Bachelor Thesis:

Vaccine Hesitancy among Pregnant Women: Reasons and Future Recommendations.

A systematic literature review.

Maastricht University, Faculty of Health, Medicine and Life Sciences

Bachelor of Science European Public Health

Sofia Lombatti - 8th June 2023

What is the problem?

- Vaccine hesitancy refers to «delay in acceptance or refusal of vaccines despite availability of vaccination services» (ECDC, n.d.)
- Despite the positive outcomes of vaccinations, vaccination coverage started decreasing in 2020 (WHO, 2021).
- This is a problem, especially among vulnerable groups, for example, pregnant women.
- Vaccination is a vital aspect of prenatal care, which protects both the fetus and the mother according to passive immunity (Cullen et al., 2020).

What is the problem? (2)

- During pregnancy, changes in heart, lungs and immune functions make the woman more likely to get ill with a higher chance of pre-term labour and hospitalization (CDC, 2022)
- The Pertussis vaccine reduces by 90% the risk of infant mortality of <8 weeks; 88% of hospitalized infants in ICU due to Covid-19 were born from unvaccinated mothers (Giles et al., 2018; Halasa et al., 2022).
- Healthcare professionals are the main barriers and facilitators to getting vaccinated during pregnancy. 81% of women considered no recommendation by an HCP the most significant barrier (Qiu, Bailey & Thorne, 2021).
- Across the European Region, maternal immunisation has different approaches: timing, number of doses, and mandatory vaccinations (Maltezou et al., 2021).

Table 2
Recommended timing and indications for influenza vaccination of pregnant women by country.

Country	1st trimester	2nd trimester	3rd trimester
Albania			
Austria			
Belarus			
Belgium			
Bosnia and Herzegovina			
Bulgaria			
Croatia			
Cyprus			
Czech Republic			
Denmark			
Estonia			
Finland			
France			
Germany			
Greece			
Hungary			
Iceland			
Ireland			
Italy			
Latvia			
Liechtenstein			
Lithuania			
Luxembourg			
Malta			
Moldova			
Monaco			
Montenegro			
Netherlands			
North Macedonia			
Norway			
Poland			
Portugal			
Romania			
Russia			
Serbia			
Slovakia			
Slovenia			
Spain			
Sweden[1]			
Switzerland			
Ukraine			
United Kingdom			

Green color: all women; yellow color: only women with high-risk conditions; red color: during epidemics [1]from week 16

Table 3
Recommended timing and indications for pertussis vaccination of pregnant women by country.

Country	1st trimester	2nd trimester	3rd trimester
Albania			
Austria			
Belarus			
Belgium[1]			
Bosnia and Herzegovina			
Bulgaria			
Croatia			
Cyprus			
Czech Republic			
Denmark[2]			
Estonia[3]			
Finland			
France			
Germany			
Greece			
Hungary			
Iceland			
Ireland			
Italy			
Latvia			
Liechtenstein			
Lithuania			
Luxembourg[4]			
Malta			
Moldova			
Monaco			
Montenegro			
Netherlands			
North Macedonia			
Norway			
Poland			
Portugal[5]			
Romania			
Russia			
Serbia			
Slovakia			
Slovenia			
Spain[6]			
Sweden			
Switzerland			
Ukraine			
United Kingdom[7]			

Green color: all women; dark green color: if more than 10 years have elapsed after the last dose; yellow color: premature labor expected; red color: during epidemics; orange: during epidemics or high-risk condition

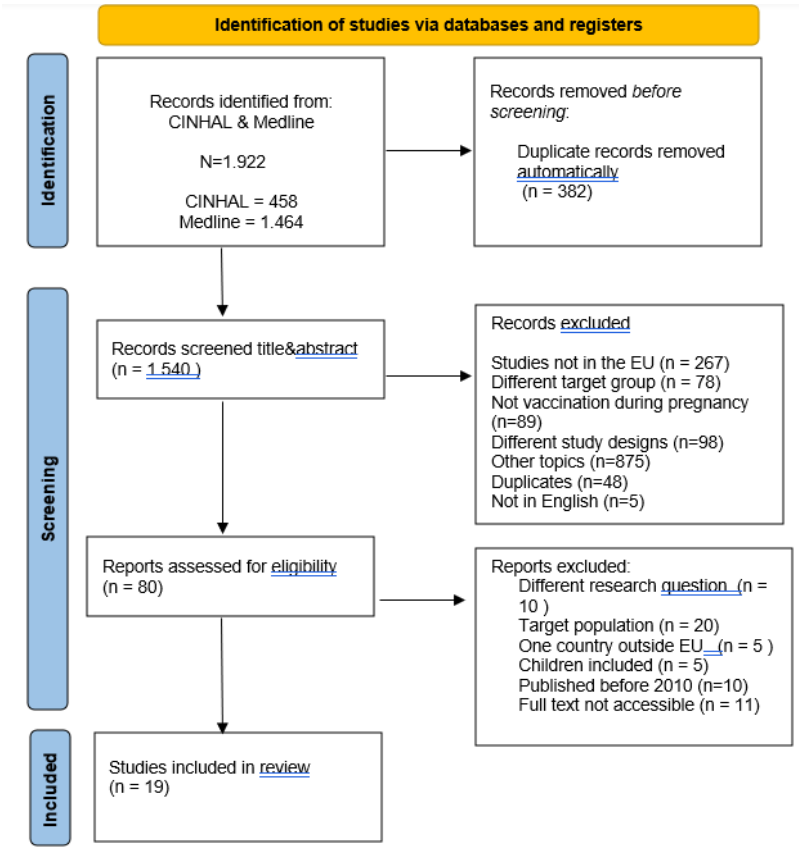
Helena C. Maltezou, Evgnosia Effraimidou, Dimitrios C. Cassimos, Snezana Medic, Maria Topalidou, Theocharis Konstantinidis, Maria Theodoridou, Alexandros Rodolakis,Vaccination programs for pregnant women in Europe, 2021,
Vaccine, Volume 39, Issue 41, 2021,Pages 6137-6143, ISSN 0264-410X.

https://doi.org/10.1016/j.vaccine.2021.08.074.

Research question?

What are the most common reasons for vaccine hesitancy among pregnant women, and what strategies could be proposed to mitigate this issue?

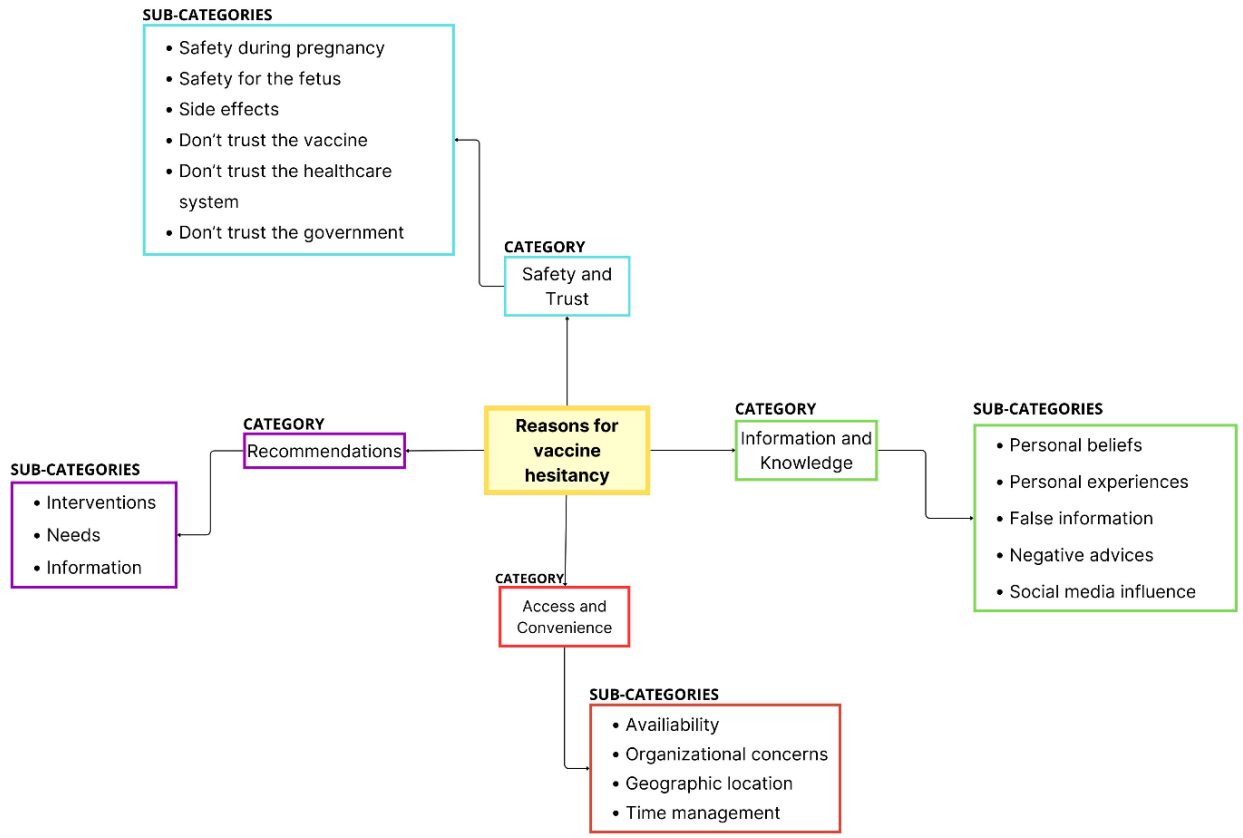
Methods (1)



- A systematic literature review was employed;
- Two databases were used: MEDLINE and CINHAL;
- Out of 1922 articles, 19 studies were included after two steps screening process and according to eligibility criteria;
- 11 cross-sectional studies; 8 interview studies;
- Two quality appraisal checklists were employed: the AXIS tool and CASP checklists
- A content analysis was performed using ATLAS.ti version 23.1.1
- 4 main categories were found, safety and trust, information and knowledge, access and convenience, and recommendations.

Methods (2): content analysis

1. Excel file with 201 reasons for hesitancy and 68 recommendations imported into ATLAS.ti;
2. Reasons for hesitancy and recommendations were coded -"in vivo code" and "quick coding";
3. 34 codes were found and grouped based on similarities;
4. 4 main codes were created.



Results Summary(1)

1. Safety and Trust:

- 60.4% of pregnant women in Germany **mistrusted the flu vaccine** (Bödeker et al., 2013).
- 80.9% of unvaccinated women did not vaccinate for Covid-19 due to **safety concerns** for the fetus and 49.6% for themselves (Davies et al., 2022)
- **Not** all types of vaccines were **perceived as equal**: the Pertussis was the most trusted; Influenza vaccine was not necessary and the Covid-19 vaccine least trusted (Marin-Cos et al., 2022).
- Safety and trust depended on **the healthcare system**; for some pregnant women, HCP only had economic interests (Marin-Cos et al., 2022).

Results Summary(2)

2. Information and Knowledge

- Pregnant women felt that **healthcare professionals did not discuss enough advantages and disadvantages** of vaccinations; 63.2% of pregnant women did not vaccinate due to the above reason (Egloff et al., 2022).
- The **type of information source** contributed to hesitancy: 78% who trusted social media rumours were hesitant (Citu et al., 2022). Moreover, those using less regulated sources of information such as Facebook had a 21.4% lower vaccination rate (Davies et al., 2022).
- The decision to get vaccinated is **influenced by others**: for example, mothers of pregnant women told their daughters that pertussis and influenza are harmless diseases since years ago, these vaccines were not offered (Wlson, Paterson & Lason, 2019). Moreover, male partners were usually excluded from this decision, 0.36% of women expressed husband aversion as a reason not to get vaccinated (Prospero et al., 2018).
- **Knowledge influenced hesitancy**; 33% of women believed that the influenza vaccine can cause the disease;13.5% believed that a healthy lifestyle is sufficient; 70% did not believe in scientific papers highlighting that there is no correlation between autism and vaccines (Bert et al., 2019)

Results Summary(3)

3. Access and Convenience

- Unvaccinated women reported as a main **barrier «lack of time, responsibility of organizing appointments, time off work, difficult accessing childcare**» (Maisa et al., 2018).
- Vaccination **appointments on workdays** were found to be a barrier for women trying to get vaccinated (Ralph et al., 2022)
- 40% of unvaccinated pregnant women stated that the **Covid-19 vaccine was not offered** and 60% stated that the **Tdap/influenza vaccine was not offered by HCP** (Nowacka et al., 2022)
- 30.5% of unvaccinated pregnant women **reported a lack of motivation** (Prospero et al., 2018)

Results summary (4)

4. Recommendations:

- Nowacka et al., (2022) underlined that the **reasons** for hesitancy «**are quite universal in different settings»**
- **Training of staff** to offer unbiased information provision and easy access (Davies et al., 2022)
- Do **not** use an **«a propri approach»** by asking «Right, are we going to get vaccinations?»; instead use a **8-steps participatory approach** (Wlison, Paterson & Jarson
- Need for **comprehensive health education in society, schools and the media** (Marin-Cos et al., 2022); Provide various types of information sources (Campbell et al., 2015); and those who had an unvaccinated household should be involved in the discussion to increase uptake (Davies et al., 2022)
- **Antenatal vaccination clinics** led by midwives increased vaccine uptake; The national average for pertussis was 70.3%, and the uptake among women that attended the antenatal clinic was 90.6%; the regional average for pertussis was 74.5%, and the uptake among those who went to the clinic was 88.0% (Ralph et al., 2021)

Future recommendations:

1. Training healthcare workers is crucial in supporting pregnant women with advice based on the latest scientific information on safety data

This could be developed using the strategy by Wilson et al. (2019) on the eight steps participatory approach to develop practical training on approaching and effective dialogue with patients.

In the systematic review by Adeyanju et al., (2021) in Europe interventions should increase the knowledge of healthcare professionals on safety and effectiveness to provide patients with useful information and this should be combined with programs to improve communication skills.

2. Offering materials such as leaflets, fact sheets and reliable online sources could improve vaccine uptake and lower the chances of believing false myths; combined with counselling and a phone helpline could address women's concerns more in-depth

3. Antenatal vaccination clinics led by midwives increased vaccine uptake. This program will help to offer more appointments free walk-in clinics on Saturdays to increase access, not only on working days.

Strenghts and Limitations

Strenghts:

1. Findings in line with other systematic reviews, so easier to make generalizations to other settings
2. First systematic review to our knowledge employing a content analysis and providing recommendations which were suggested in the literature.
3. First systematic review to our knowledge suggests as a strategy the antenatal clinic led by midwives
4. One of the few systematic reviews on this topic in Europe, mainly including three different types of vaccinations

Limitations:

1. Critical appraisal checklists did not have a score
2. Selection bias
3. Information bias

Conclusions

- In Europe, a study by Maltezou et al., (2021) revealed that vaccination programs are highly heterogeneous and that vaccination programs should be strengthened in many European countries.
- → Therefore, the above recommendations could serve as a starting point to further research effective strategies to increase uptake and decrease hesitancy

- Three main reasons which increase vaccine hesitancy: information and knowledge, safety and trust, access and convenience.
- Future studies should focus on how to develop these strategies best. The differences among Member States should be considered in terms of budgets to allocate, health care systems and national priorities.

Thank you for your attention!