

15/11/2021 v3

## RESEARCH PROTOCOL

# The influence of the COVID-19 pandemic and social media on behaviour of pregnant and lactating women towards vaccination: a scoping review

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### Background

In March 2020, the World Health Organization (WHO) announced that the COVID-19 outbreak, caused by the SARS-CoV-2 virus, could be characterized as a pandemic. As of November 8<sup>th</sup> 2021, there have been >400 million confirmed COVID-19 cases and almost 6 million COVID-19 confirmed deaths worldwide. Similar to other populations, pregnant and lactating women can encounter SARS-CoV-2 and might contract COVID-19. SARS-CoV-2 infection during pregnancy is associated with increased rates of stillbirth, preterm birth, pre-eclampsia and caesarian delivery. Furthermore, pregnant women are at increased risk of hospitalization, admission to intensive care unit and death compared to non-pregnant women (1,2). If breastfeeding women contract COVID-19, they can become seriously ill impeding them from continuing breastfeeding. Besides, they can transmit the disease via droplet transmission to their newborn child (3).

One of the most important approaches to control the ongoing pandemic is COVID-19 vaccination. Since the beginning of 2021, several COVID-19 vaccines have been licensed and

15/11/2021 v3

implemented worldwide. Since pregnant and lactating women were initially not included in pre-marketing clinical trials, many questions rose about development, safety, immunogenicity and effectiveness of COVID-19 vaccines in these target groups. Although there was absence of data on safety and efficacy of COVID-19 vaccines during pregnancy or lactation, several countries started to recommend vaccination in these target groups (4).

The COVID-19 pandemic and its accompanying vaccination campaign led to an abundance of misinformation about vaccination on the Internet (5). Fake news that has circulated about COVID-19 vaccination in pregnant women, women of childbearing age and lactating women included: 1. COVID-19 vaccination could cause infertility 2. there is an increased risk of miscarriage/stillbirth after receiving a COVID-19 vaccine while pregnant 3. it is unsafe for breastfeeding women to receive a COVID-19 vaccine (6). These myths can feed vaccine hesitancy in this important target group. Since the World Health Organization (WHO) described in 2019 vaccine hesitancy as one of the top 10 global health threats (7), it is important to tackle these obstacles and to improve vaccine uptake.

To set up right interventions to improve vaccine confidence, it is necessary to determine the factors that influence vaccine decision-making in pregnant and lactating women. The systematic review of Kilich et al. describes determinants that influence vaccine confidence among pregnant women (8). However, this study is limited to pre-pandemic information, does not include lactating women and does not focus on social media.

### Research question

What is the impact of the COVID-19 pandemic and social media on vaccine confidence in pregnant and lactating women?

### Objectives

1. Comparing vaccine confidence in pregnant and lactating women before and after the COVID-19 pandemic.
2. Describing vaccine willingness towards COVID-19 vaccination in pregnant and lactating women.

15/11/2021 v3

3. Determination of factors linked to vaccine (un)willingness towards COVID-19 vaccination in pregnant and lactating women.
4. Appraise the impact of social media on vaccine confidence in pregnant and lactating women.

### Methods

We propose to answer the research question above by conducting a scoping review following the PRISMA guidelines. The study will begin November 2021 and will be finished as soon as possible (before end of December 2021).

#### Search strategy

The review will be conducted by doing a literature study. First, grey literature will be searched. This search includes a general web search on Google (limited to the first 50 results) and Google Scholar (limited to the first 200 results). Search terms will be adjusted and refined based on the number and types of relevant hits. If there is a relevant publication found, it will be considered for inclusion.

PubMed will be used as database to search literature. Due to time pressure, only one database will be searched. Since PubMed gives access to three components (MEDLINE, PubMed Central and Bookshelf) and contains more than 34 million citations and abstracts of biomedical literature and life sciences, this database is selected.

#### Inclusion and exclusion criteria

All articles, without language restriction, published from November 22<sup>nd</sup> 2018 (since Kilich et al. searched all articles by November 22<sup>nd</sup> 2018) related to the research question will be included.

Following criteria will lead to exclusion:

1. Reviews
2. Articles whose focus is not our target population (pregnant and lactating women)
3. Abstracts, no full text available

15/11/2021 v3

4. Articles describing outcomes of COVID-19 infection or COVID-19 vaccination in pregnant and lactating women.

#### Data charting

Included articles will be abstracted and synthesized by one reviewer following the procedure described below. Verification will be done by a second reviewer. Disagreements will be addressed through discussion between the reviewers and the other researchers.

Synthesis of included articles:

- a. Study characteristics

- i. Author(s)
- ii. Year of publication
- iii. Year the study was conducted
- iv. Type of publication (e.g. clinical trial, survey,...)
- v. Publication title
- vi. Journal in which study is published
- vii. Country of publication
- viii. Language of dissemination
- ix. Topic of the study

- b. Study methods

- i. Study location (country, city)
- ii. Study design
- iii. Study population
- iv. Study sample size (N= xxx)
- v. Follow-up time / timing of the study

- c. Results

- i. COVID-19 vaccine coverage (N= xxx)
- ii. COVID-19 vaccine willingness (N= xxx)
- iii. Factors influencing COVID-19 vaccine willingness
- iv. Vaccine coverage other than COVID-19 (N= xxx)
- v. Vaccine willingness other than COVID-19 (N= xxx)
- vi. Social media platforms described

15/11/2021 v3

- vii. Influence of social media
- d. Quality of the study
  - i. Strengths
  - ii. Limitations
  - iii. Bias (selection / performance / performance / attrition / reporting / other)

## References

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2. Wei SQ, Bilodeau-Bertrand M, Liu S, Auger N. The impact of COVID-19 on pregnancy outcomes: A systematic review and meta-analysis. Vol. 193, *CMAJ*. Canadian Medical Association; 2021. p. E540–8.
3. Bhatt H. Should COVID-19 Mother Breastfeed her Newborn Child? A Literature Review on the Safety of Breastfeeding for Pregnant Women with COVID-19. Available from: <https://doi.org/10.1007/s13668-020-00343-z>
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7. WHO. WHO ten threats for global health [Internet]. [cited 2022 Jul 15]. Available from: <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019>
8. Kilich E, Dada S, Francis MR, Tazare J, Chico RM, Paterson P, et al. Factors that influence vaccination decisionmaking among pregnant women: A systematic review and meta-analysis. *PLoS One*. 2020 Jul 1;15(7 July 2020).