

# COVID-19 Vaccine Hesitancy and Fertility



Elif Nur Koçak<sup>1\*</sup>, Dilan Çetinavcı<sup>2</sup>, Servet Yüce<sup>1</sup>

## Dear Editor,

A new severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) first appeared in Wuhan, China in December 2019, causing an infectious disease called 'coronavirus disease 2019' (COVID-19) (1). While many countries continue to fight new infections caused by COVID-19, they have stepped up the development of vaccines to provide immunity against the virus and stop transmission (2).

"Vaccine hesitancy" that defined as reluctance to receive safe and recommended available vaccines, was already a growing concern prior to the COVID-19 pandemic (3). Among the reasons for vaccine hesitancy, "concern about side effects" is reported most commonly (3). As a result of the spread of false information on social media that COVID-19 vaccines will cause infertility in women, vaccine hesitations in women of reproductive age have increased (4). While the importance of the vaccine in the fight against COVID-19 is obvious, anti-vaccination and vaccine hesitations hinder this fight for various reasons.

Infertility is defined as the inability of couples to have a baby despite 12 months of unprotected intercourse (5). COVID-19 can affect many systems, including the female reproductive system. SARS-CoV2 binds to angiotensin converting enzyme (ACE)-2 and modulates ACE-2 expression in host cells, COVID-19 may impair female reproductive functions via ACE-2 (6). There are some studies examining the effects of existing COVID-19 vaccines on the female reproductive system that protect against COVID-19. In a study by Orvieto et al, 36 couples continued IVF treatment 7-85 days after receiving the mRNA SARS-CoV-2 vaccine, and no inter-cycle differences were observed in ovarian stimulation and embryological variables before and after vaccination. After mRNA SARS-CoV-2 vaccine, no detrimental effects on ovarian stimulation traits, embryological variants, or proportion of top quality embryos were observed (7).

In a recent study, it has been shown that the SARS-CoV-2 spike antibody developed by vaccination or natural infection in women does not prevent embryo

implantation or early pregnancy development (8). Bentov et al reported that COVID-19 infected and vaccinated groups has similar follicular steroidogenesis, and normal estrogen and progesterone levels. According to the study, there was no measurable deleterious effects on ovarian follicle function caused by COVID-19 and mRNA vaccine (9). According to literature, while it is possible for SARS-CoV-2 to adversely affect female fertility, the COVID-19 vaccine does not affect fertility.

In addition, COVID-19 may affect male urogenital system. There may be direct damage to spermatocytes via the ACE enzyme (10). In a study by Safrai et al in which a total of 43 male patients (14 with male infertility and 29 with normal spermatogram results) who underwent IVF at a university hospital in vitro fertilization center were examined, spermatogram data of these patients were compared before and after Pfizer/Biontech mRNA vaccination. The results obtained showed that the vaccine did not impair sperm parameters. While vaccination does not affect sperm, SARS-CoV-2 affects sperm. For this reason, it is recommended that couples who want to have children should be vaccinated (11).

Widespread claims about the fertility-impairing effects of COVID-19 vaccines appear to be unfounded and false. With the data obtained from existing studies, it is not possible to say that COVID-19 vaccines contribute to female and male infertility. Larger and more studies should be conducted on COVID-19 vaccines and infertility. The potential risk and effects of SARS-CoV-2 infection on various body systems, including the reproductive system should be avoided by vaccination.

## Authors' Contribution

Project design: ENK, DÇ. Literature search: ENK. Writing and editing the text: ENK, DÇ, SY. Language, grammar and proof-reading: SY. Revisions: DÇ, ENK, SY. All authors read and approved the study.

## Conflict of Interests

Authors declare that they have no conflict of interests.

## Ethical Issues

Not applicable.



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